



JILANI ENERGY (PVT) LTD

JEL/NEPRA/PSL-02-23

March 15, 2023

The Registrar,  
National Electric Power Regulatory Authority,  
Islamabad.

Subject: **APPLICATION FOR GRANT OF ELECTRIC POWER SUPPLY LICENCE**

I, Aamir Javaid Malik, General Manager being the duly authorized representative of M/s Jilani Energy (Pvt) Ltd by virtue of [BOARD RESOLUTION / POWER OF ATTORNEY Dated.20-Feb-2023], hereby apply to the National Electric Power Regulatory Authority, for the grant of ELECTRIC POWER SUPPLY LICENCE to M/s Jilani Energy (Pvt) Ltd., pursuant to section I of the Regulation of Generation, Transmission and Distribution of Electric Power Act 1997.

I, hereby certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provision of the National Electric Power Regulatory Authority Licensing (Application, Modification, Extension and Cancellation) Procedure Regulation, 2021, and undertake to abide by the terms and provision of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and no material omission has been made.

A Bank Draft No.16478779 dated.15-03-2023 in the sum of Rs.657,742/- (Rupees. Six hundred fifty seven thousand seven hundred forty two only) being the licence application fee calculated in accordance with Schedule II to the National Electric Power Regulatory Authority Licensing (Application, Modification, Extension and Cancellation) Procedure Regulation, 2021, is also attached herewith.

Regards

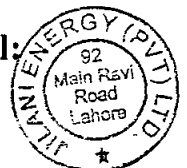
For / or on behalf M/s Jilani Energy (Pvt) Ltd.

Signature:

Name: Aamir Javaid Malik

Designation: General Manager

Company Seal:



Head Office: Jilani Centre, 92-Ravi Road, Lahore.

Factory: 17-KM Sheikhpura Road, Lahore.

UAN: 042-111-200-600

Fax: 042-37701140

## **PROSPECTUS PURSUANT TO REGULATION 3(5)(I)**

### **1. BRIEF INTRODUCTION OF THE APPLICANT:**

Jilani Energy (Pvt.) Ltd. has been incorporated as a Special Purpose Vehicle for the project. Jilani Energy (Pvt.) Ltd. is wholly owned associated company by the directors of Javaid International (Pvt.) Ltd. and Jilani Poly Industries (Pvt.) Ltd.

- **Jilani Group**

Jilani Plastic is a group of companies established in 1970 and has been operating as a leading plastic packaging products manufacturer in Pakistan. Over time, Jilani Plastic has become a powerful brand and a market leader. We have also had the honor of sustaining stable growth for almost five decades now.

We are a reputed organization that is engaged in the manufacturing, supply, and export of packaging products ranging from polyethylene and polypropylene to shrink films, carry bags, agricultural films etc. We have a modern, integrated unit setup to manufacture high quality plastic packaging products. Building on a wealth of expertise and knowledge, we have evolved to serve the needs of a variety of customers and industries.

- **Javaid International (Pvt.) Ltd.**

Javaid International (Pvt.) Ltd. was incorporated as a private limited company in 1990 with a vision to become a world class manufacturer of polyethylene bags and sheets. Since our inception, we have strived towards achieving excellence in the packaging industry and are now an industry leader in polyethylene packaging, catering to all types of industrial, retail, and commercial applications.

Today, we operate from a 30,000 square-yard facility, equipped with modern, state-of-the-art manufacturing plant. We apply the latest techniques and strict quality control, dispatching approximately 150 tons of products every day.

- **Product Portfolio:**

Our product line consists of a variety of items which are as follows:

- Polyethylene Rolls & Sheets
- Shrink Films
- Agricultural Films
- Carry Bags
- Polyethylene Bags

- **Production Facilities**

Technology is an integral part of our success. By keeping abreast with the rapid technological advancement in plastics manufacturing, we are equipped to meet specific requirements of the industry while staying ahead of the competition. Our production facilities include:

- Modern Extrusion Machines
- Environment Friendly In-House Recycling Facility
- Internal Edge Trim Recycling System
- Fully Automatic Material Feeding System

- **Logistics Network:**

Our transportation and logistics network uses the most efficient and effective means to distribute our products to our customers. Our job is to get the right product to the right place, at the right time. We continue to optimize transportation costs while improving quality and striving to exceed the expectation of our customers. To facilitate our customers, we have various warehouses at different locations throughout the country which are connected to our production facilities through a strong supply chain network.

- **Jilani Poly Industries (Pvt.) Ltd.**

Incorporated in 2010, Jilani Poly Industries (Pvt.) Ltd. is one of the fastest growing manufacturers, suppliers and exporters of printed and non-printed Polypropylene Woven Sacks and Fabric. The application of our product line is diverse and is optimized for fertilizers and packaging of sugar, polymers and chemicals. Textile and mining industries are also two of our biggest customers.

We strive to become one of the top organizations engaged in manufacturing, supply and export of woven bags and packaging material. Our business strategy and ethics enable us to meet the requirements of our clients in a better way and also help in providing customized solutions as per their needs.

Our production facility expands over 37000 square-yard area. With a high-tech production line our production capacity is around 18,000 metric tons per annum, producing 60 tons per day.

We have experienced workforce having years of experience in their respective domains.

- **Product Portfolio:**

We have a wide range of products catering to a broad spectrum of industries.

They include:

- Polypropylene Woven Bags And Sacks
- Hdpe Inner Liner
- Polypropylene Woven Fabrics
- Multi-Colored Printed Polypropylene Woven Bags and Sacks

- **Printing**

Jilani Printing department stands Self-importantly at top leading level in Pakistan. Jilani is using modern and advance Flexo-Printing Technology and have ability to print six colors printing. A Huge production capacity 180 to 190 tons per month with best and fine printing Quality currently.

We offer a wide range of printing services to our both commercial and individual customers for use in the Garment Industry, beverages Industry, Food industry, Textile Industry, Sugar industry, Foam Industry, Shoe Industry, Tire Industry, fertilizer, chemicals, rice and many more.

Our production facility is well-equipped with the resources to handle the requirements of our clients and provide them with reliable service. We have our in-house design department for developing excellent designs for the complete satisfaction of our valued customers.

- **Quality Assurance:**

Being a quality driven organization, our goal is to maintain the highest standard for our products. We provide a comprehensive range of polypropylene packaging bags that meet the strict international quality standards. To maintain quality in our products, we follow stringent quality control processes at our state-of-the-art lab from the procurement of raw material to packaging. Our team of quality control experts monitors the processing methods and supervises all the areas efficiently to maintain a high quality product.

The details CVs and Contractor Profile has been provided as Annexure E & F of the application

2. **SAILENT FEATURES OF THE FACILITY OR THE SYSTEM IN RESPECT OF WHICH THE LICENSE IS SOUGHT:**

- **Regulation No. 3(5)-A(i) - Certificate of Incorporation:**  
Provided as Annexure-A of the submitted application
- **Regulation No. 3(5)-A(ii) – Memorandum of Articles of Association:**
  - Provided as Annexure-B of the submitted application

- **Regulation No. 3(5)-A(iii) – Latest financial statement:**

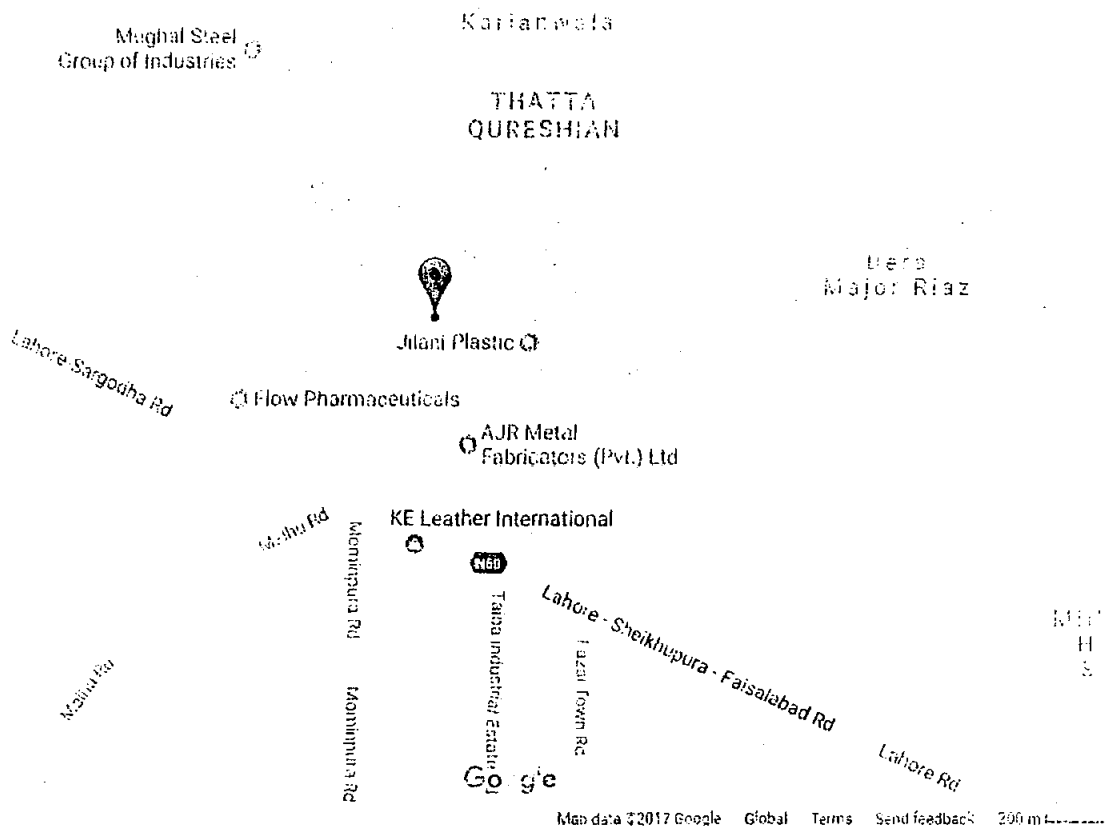
Jilani Energy (Pvt.) Ltd. has recently be incorporated as a Special Purpose Vehicle for the project. Jilani Energy (Pvt.) Ltd. is wholly owned company by the directors of Javaid International (Pvt.) Ltd. and Jilani Poly Industries (Pvt.) Ltd. therefore, the annual financial statements of 2014-2015 of the sister-concerned company is submitted along with the wealth statement of directors of the company. Financial statements and wealth statement are attached as Annexure-C of the Application.

- **Regulation No. 3(5)-A(iv) and Schedule III-Regulation 3(6)A-(a)-1– Location (location map, site map):**

The project is located at 17-km, Lahore-Sheikupura road near Jilani Plastic. The Coordinates of the area are: 31.647534, 74.185070

The location is accessible from Islamabad through Islamabad Motorway (M2). The distances are:

Islamabad Motorway to Kot Abdul Malik Motorway Exchange	332 km
Kot Abdul Malik Toll Plaza to Jilani Energy	7.4 km



- **Regulation No. 3(5)-A(v) and Schedule III-Regulation 3(6)A-(a)-2 – Type of Technology:**

- Production capacity of the power plant electricity output from Generator: 1 \* 6.5 MW.
- Boiler: 1 \* 35t/h Coal Fired Boiler; Steam Pressure: 6.5MPa; Steam Temperature: 480 Celsius Steam Turbine: 1 \* 6.5MW condensing, 6.5MPa, 470 Celsius.
- Generator: 1 \* 6.5 MW generator, 1500rpm, 11kV, Static excitation.
- Circulating Cooling Water: Fresh water circulating water system (Mechanical draft cooling system).
- Electric System: Medium voltage (11kV) electricity from generator outgoing feeder panel; low voltage (400V) system from supply electricity to power plant itself only.

The power plant adopts to both local and imported coal as fuel, whichever is more economical.

Feasibility Study Report along with the civil drawings, Soil Investigation Report, Plant layout and topographic Survey is attached as Annexure-H of the application.

- **Regulation No. 3(5)-A(vi) – Number of Units (No.)/Size (MW):**

One unit will be installed with the plant capacity of 6.5 MW

- **Regulation No. 3(5)-A(vii) – Year Make/Model, Operation Date and expected remaining life:**

Boiler Xing Fu Boilers China, 35 t/h CFB turbine Dresser RAND PBH T156065.

Year Make: April 2009. FRAM-12-Steam Turbine

Remaining Life: 20 years

- **Regulation No. 3(5)-A(viii) – Installed Capacity, de-rated capacity, Auxiliary Consumption, Net Capacity:**

- Installed Capacity : 6.5 MW
- Auxiliary Consumption: 950 KW
- Net Capacity: 5.55 MW

- **Regulation No. 3(5)-A(ix) and Schedule III-Regulation 3(6)(a)-3 – Fuel: type, imported/indigenous, supplier, logistics, pipelines etc.**

- Jilani Energy (Pvt.) Ltd. will use Coal as its fuel. It will use both imported and indigenous coal at the rate of 4981 Calorific Value/kg. Coal consumption for power generation is 622g/kWh.

- There are number of local and international suppliers that are already providing coal.
- Daily consumption of plant is expected to be around 97.03 tons.
- Pipelines are not applicable.
- **Regulation No. 3(5)-A(x) – Supply Voltage (11kV/132 kV), in case of 132 kV voltage distance and name of nearest grid (Signle Line Diagram):**  
 Medium voltage (11kV) electricity from generator outgoing feeder panel; low voltage (400V) system from supply electricity to power plant itself only.
- **Regulation No. 3(5)-A(xi) and Schedule III-Regulation 3(6)(a)-13– Plant Characteristics: Generation voltage, frequency, power factor, automatic generation control, ramping rate, alternative fuel, time(s) required to synchronize to grid:**
  - Generation voltage: 11 kV
  - Frequency: 50 Hz
  - Power Factor: 0.8
  - Automatic Generation Control: Yes
  - Ramping Rate: 3 hours on cold / 30 minutes on hot.
  - Alternative Fuel: Not applicable
- Time(s) required to synchronize to grid: Not applicable
- **Regulation No. 3(5)-A(xli) and Schedule III-Regulation 3(6)(a)-14– Provision of Metering, Instrumentation, Protection and Control arrangement:**  
 Control, Metering, Instrumentation and protection will be in accordance with ISA (The International Society of Automation) standards. Detail Interconnection study has been provided in the Annexure-F "Interconnection Study Report" of the application.

### **3. PROPOSED INVESTMENT:**

The total project cost has been estimated at USD 3,940,560/-. The project company shall inject all the cost as the equity. No debt is required from the bank to setup the project.

Head	Amount (PKR'000)	Amount (USD'000)
<b>EPC Cost:</b>		
Building & Steel Structure	75,000	714.29
Plant & Machinery:		
Turbine	16,500	157.14
Boiler Parts incld. insurance cost	63,664	606.32
Other Parts	25,735	245.10
Local Material	23,320	222.10
Services	20,000	190.48
Electric Installation	55,000	523.81
Transportation, Custom Duty, GST	41,389	394.18
<b>Total EPC-Cost:</b>	<b>320,608</b>	<b>3053.42</b>
<b>Non-EPC Cost:</b>		
Land	18,000	171.43
Owner Admin	17,500	166.67
EPC Design	19,236	183.20
Owner Engineer	6,412	61.07
Office Equipment	2,000	19.05
Consultancy	25,000	238.10
Registration (Pre-Operating Cost)	5,000	47.62
<b>Total Non-EPC Cost</b>	<b>93,148</b>	<b>887.14</b>
<b>Total Capital Cost</b>	<b>413,756</b>	<b>3940.56</b>

Detail estimation and analysis has been provided in the Feasibility Study Report in Annexure-H of the Application.

#### **4. THE SOCIAL AND ENVIRONMENTAL IMPACT OF THE PROPOSED FACILITY**

No adverse impacts have been observed with respect to the Plant. The baseline monitoring data has been measured. The detail environmental study has been conducted and submitted to EPA Punjab for approval. The submitted study has been attached as Annexure-K of the application submitted.



**EFFICIENCY PARAMETERS UNDER REGULATION 3(6) SCHEDULE-III PART A(a)**

- a) Designed Efficiency of the Plant: 24.1%
- b) Gross Efficiency of Power Plant at mean site conditions: 23.87%
- c) Net Efficiency of Plant at mean site conditions: 20.46%

A008532



SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

COMPANY REGISTRATION OFFICE, LAHORE

**CERTIFICATE OF INCORPORATION**

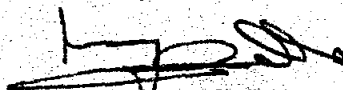
[Under section 32 of the Companies Ordinance, 1984 (XLVII of 1984)]

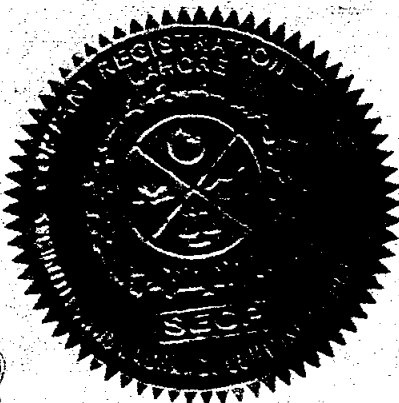
Corporate Universal Identification No. 0098287

I hereby certify that **JILANI ENERGY (PRIVATE) LIMITED**  
is this day incorporated under the Companies Ordinance, 1984 (XLVII of 1984) and that  
the company is **Limited by Shares**.

Given under my hand at **Lahore** this **Eleventh** day of **March**, Two  
**Thousand and Sixteen**.

Fee Rs. 1,522,000/-

  
(LIAQAT ALI DOLLA)  
Additional Registrar



No. ARL/ 23206 DATED: 11-03-2016

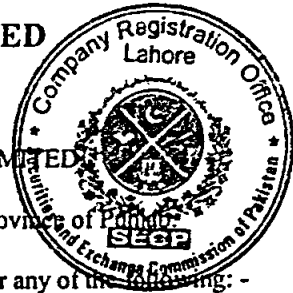
THE COMPANIES ORDINANCE, 1984

(COMPANY LIMITED BY SHARES)

MEMORANDUM OF ASSOCIATION

OF

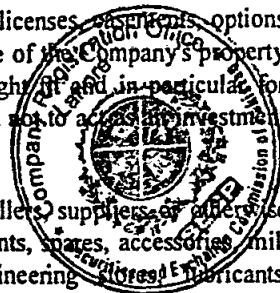
JILANI ENERGY (PRIVATE) LIMITED



- I. The name of the Company is JILANI ENERGY (PRIVATE) LIMITED.
- II. The Registered Office of the Company will be situated in the Province of Punjab.
- III. The objects for which the Company is established are to do all or any of the following: -
  1. To design, insure, build, establish, own, operate, maintain, manage electric power generating plants for the generation through coal, natural gas, liquid natural gas, furnace oil, bio fuel, wind power, solar panels or other fuels, supply & transmission of electric power and in relation thereto, to establish, fix, carry out and maintain without limitation, any ancillary works, cables, wires, meter, lines, interconnect facilities, grid stations, transmission facilities, civil, electrical and mechanical works subject to any permission required from NEPRA or any other relevant authorities.
  2. To carry out a feasibility study for and to carry on the business of power generation through coal, natural gas, liquid natural gas, furnace oil, bio fuel, wind power, solar panels or other fuels and in relation thereto, to generate, accumulate, transmit, distribute and sell electric power to the public sector, including the Water and Power Development Authority, National Transmission and Dispatch Company, Government and Government bodies, and the private sector subject to any permission required from NEPRA or any other relevant authorities.
  3. To manufacture, purchase, import or otherwise acquire, construct, own, process, operate and maintain buildings, apparatus, fixtures, fittings, plants, machinery, materials, and things as may be necessary, incidental to or convenient in connection with power generating plant for the generation of electric power and or in connection with supply, transmission and distribution of electric power subject to any permission required from NEPRA or any other relevant authorities.
  4. To buy, sell, manufacture, repair, alter, improve, exchange or let out, import, export and deal in all works, plant, machinery, engines, tanks, cylinders, valves, regulators, testing equipment, tools, utensils, appliances, cookers, stoves, heaters, apparatus, products, materials, substances, raw materials, chemicals, liquid natural gas, natural gas, liquefied

petroleum gas, fuel oil, coal, lubricants, articles and things and to manufacture, experiment with, render marketable and deal in all products, incidental to or obtained in the business carried on by the Company.

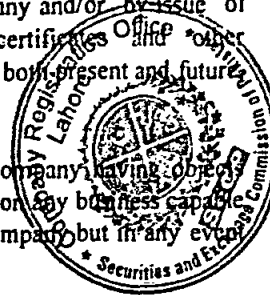
5. To purchase, take on lease or tenancy or in exchange, hire, take options over or otherwise acquire for any estate or interest whatsoever and to hold, develop, work, cultivate, deal with and turn to account concessions, grants, decrees, licenses, privileges, claims, options, leases, property, real or personal or rights or powers of any kind which may appear to be necessary or convenient for the business of the Company but not to act as a leasing company or property developer.
6. To sell, exchange, mortgage, let on royalty or tribute, grant licenses, easements, options and other rights over and in any manner deal with or dispose of the Company's property or any part thereof for such consideration as may be thought fit and in particular for stocks, shares or securities of any company but in any event not to act as an investment company or leasing company.
7. To deal in and carry on business as importer, exporters, sellers, suppliers or otherwise dealers in all sorts of machinery, plant, apparatus, implements, spares, accessories, mill stores, foundry products, implements, accessories, engineering stores, lubricants, chemicals, raw material, yarn and other articles, goods and materials required in the mills and factories.
8. To carry on and undertake trading business and to act as retailers, indentors, importers, exporters, buyers, sellers traders, suppliers, manufacturers and commission agents of general item products and materials in any form or shape manufactured or supplied by any company, firm, association of persons, body, whether incorporated or not, individuals, Government, Semi-Government or any local authority.
9. To act as agents or representatives of foreign and local manufacturers, consultants of plants, machinery, materials or other articles for sale to any Government, local authorities, firm, companies, associations of persons or individuals and also to import and export such items (except managing agency), and any other item permissible under the law.
10. To establish laboratories and to employ and promote scientific research and invention, patronize such invention and enter into manufacture in collaboration with outside parties for transfer of technology from abroad and to promote transfer of technology from Pakistan abroad, and to carry on business in all other allied fields permissible by law.
11. To invest and deal with any surplus moneys of the Company not immediately for the time being required for any of the purposes of the Company in such investments as may be thought proper and to hold, sell or otherwise deal with such investments but in any event not to act as an investment company.
12. For the purposes of the business of the Company only, to advance money upon such terms as the Company may approve, and to guarantee the obligations and contracts of customers and others but not to act as a banking company.



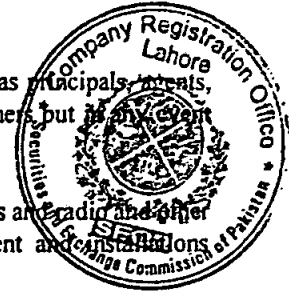
13. To apply for, purchase or otherwise acquire and protect, prolong and renew whether in Pakistan or elsewhere any patents, patent rights, brevets d'invention, trademarks, design licenses, protections, concessions and the like conferring any exclusive or non-exclusive or limited right to use any secret or other information as to any invention, process or privilege which may seem capable of being used for any of the purposes of the Company or the acquisition of which may seem calculated directly or indirectly to benefit the Company and to use, exercise, develop, manufacture under grant, licenses, privileges in respect of, or otherwise turn to account the property, rights and information so acquired and to carry on any business in any way connected therewith.
14. To get insured against losses, damages, risks, accidents and liabilities of all kinds which may affect the company whether in respect of its contracts, agreements, advances or securities or in respect of servants or employees or directors of the company, or in respect of property belonging to or leased to or hired by the company, either by setting apart funds of the company or by effecting such insurance and in later case to pay the premium thereon.
15. To train personnel and workers, in Pakistan and for abroad to obtain technical proficiency in various specialties connected with the business of the Company.
16. To undertake and execute any project the undertaking whereof may be technical, artistic, scientific or otherwise, either gratuitously or otherwise.
17. To procure the Company to be registered or recognized in any foreign country or place.
18. To acquire and undertake all or any part of the business, property, goodwill and liabilities of any person or company carrying on any business which the Company is authorized to carry on or possessed of property suitable for the purposes of the Company.
19. To adopt such means of making known the business and/or services of the Company as may seem expedient and in particular by advertising in the press, or in the other media or by way of participation in exhibitions.
20. For the purposes of the Company, to purchase, manage, acquire by lease, mortgage, dispose of, sell, exchange, turn to account any part of the property and rights of the Company.
21. To employ or appoint any persons, experts, consultants, advisers, contractors (including O&M contractors), brokers in connection with the business of the Company.
22. To pay for any property or rights acquired by the Company, either in cash or fully paid shares or by the issue of securities, or partly in one mode and partly in another and generally on such terms as may be determined.



23. In connection with the business of the Company only, to give guarantees and indemnities for the payment of money or the performance of contracts or obligations by this Company but in any event not to act as an investment banking or finance company.
24. In connection with the business of the Company only, to borrow and where required, to secure the payment of money in such manner as the Company shall think fit and in particular by the creation of mortgages and charges over the (present and future) property, assets and/or undertaking of the Company and/or by issue of debentures, participation term certificates, term - finance certificates and other securities charged upon all or any of the Company's property both present and future and to purchase, redeem and pay off any such securities.
25. To take, or otherwise acquire, and hold shares in any other company having objects altogether or in part similar to those of this Company or carrying on any business capable of being conducted so as directly or indirectly to benefit this Company but in any event not to act as an investment company.
26. To enter into partnership or into any agreement or agreements for sharing profits, union of interests, cooperation, joint venture, reciprocal concession and/ or facilities with any person or company whether or not having objects similar to those of this Company but in any event not to act as managing agents.
27. To enter into any agreement or agreements with any government or other authority, supreme, municipal, local or otherwise, that may seem conducive to all or any of the objects of the Company and/or to obtain from such government or authority including the State Bank of Pakistan or National Electric Power Regulatory Authority (NEPRA) any rights, concessions or privileges, licenses which the Company may think desirable to obtain and to carry out, exercise and comply with any such arrangements, rights, privileges, concessions and licenses.
28. To pay all or any costs charges and expenses preliminary and incidental to the promotion, formation, establishment and registration of the Company and to pay any development costs incurred (whether before or after the incorporation of the Company) by the sponsors of the Company in connection with any project of the Company.
29. To guarantee the performance of contract and obligation of any associated/holding/subsidiary/sister concern company only and to give any guarantee in relation to the payment of any loan, debenture, debenture-stock, bonds, obligations and securities issued by or in favor of such an associated/holding/subsidiary/sister concern /company and in this respect create mortgage/ or charge over whole or any part of the properties, assets and stocks of the Company, both present & future, fixed and current or by special assignment or to transfer or convey the same absolutely or in trust may seems expedient and to purchase, redeem or pay of any such securities.
30. To invest and deal with surplus money or funds of the company in any bank, financial institutions, public or private companies or associated undertakings at arm's length basis and in such manner as may deem appropriate from time to time by the company.



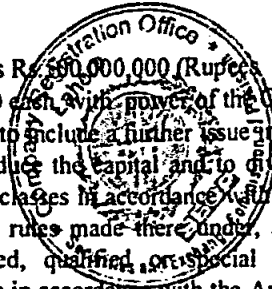
31. To pay brokerage or commission to any person or persons in consideration of his/their subscribing, or agreeing to subscribe, whether absolutely or conditionally, for any shares or debentures of the Company, or for procuring or agreeing to procure subscriptions whether absolute or conditional for the same which brokerage or commission may be paid either in cash or shares of the Company, credited as fully paid up.
32. To distribute any of the Company's property among the members in specie in the event of winding up of the Company.
33. To amalgamate, consolidate, or merge, either in whole or in part, with or into any other companies, associations, firms or persons carrying on any trade or business of a similar nature to that which this Company is authorized to carry on.
34. To do all or any of the things herein in any part of the world either as principals, agents, contractors or otherwise, and either alone or in conjunction with others but ~~not to act as managing agents.~~
35. To provide engineering, construction, consultancy and design services and ~~radio and other communication systems and services, and any facilities, equipment and installations~~ whether related to such services and systems or otherwise.
36. To carry on any other business whether manufacturing or otherwise that may seem to the Company capable of being conveniently carried on in connection with the above objects or calculated directly or indirectly to enhance the value of or render profitable any of the Company's property or rights or which it may be advisable to undertake with a view to improving, developing, rendering or furnishing to account any property real or personal belonging to the Company or in which the Company may be interested and to do all or any of the above things either as principals, agents, contractors or otherwise, and either alone or in conjunction with others and either by or through agents, sub-contractors, trustees or otherwise, and to do all such things as are incidental or conducive to the attainment of the above objects but in any event not to act as managing agents.
37. To do all and everything necessary, suitable or proper or incidental or conducive to the accomplishment of any of the purposes or the attainment of any of the objects or the furtherance of any of the powers hereinbefore set forth, either alone or in association with other corporate bodies, firms or individuals or with any Government authority or public or quasi-public authority or any other authority, and to do every other act or thing incidental or appertinent to or arising out of or connected with the business or powers of the Company or part thereof, provided the same be lawful.
38. It is declared that notwithstanding anything contained in the foregoing object clauses of this Memorandum of Association nothing contained therein shall be construed as empowering the Company to undertake or to indulge in business of banking company, banking, leasing, investment, managing agency or insurance business directly or indirectly as restricted under the law or any unlawful operation.



39. It is further declared that notwithstanding anything stated in any object clause, the Company shall obtain such other approval or license from the competent authority, as may be required under any law for the time being in force, to undertake a particular business.

IV. The liability of the Members is limited.

V. The authorized capital of the Company is Rs. 500,000,000 (Rupees five hundred million) divided into 5,000,000 shares of Rs. 100 each, with power of the Company, specifically, to increase the authorized share capital to include a further issue including of preference shares and generally, to increase or reduce the capital and to divide the shares in the capital for the time being into several classes in accordance with the provisions of the Companies Ordinance, 1984 and any rules made there under, and to attach thereto respectively such preferential, deferred, qualified, or special rights, privileges or conditions as may be determined by or in accordance with the Articles of Association of the Company for the time being, and to vary, modify or abrogate any such rights, privileges or conditions in such manners as may for the time being provided by the Articles of Association of the Company in accordance with Law.





M-7

We, the several persons, whose names and addresses are subscribed below, are desirous of being formed into a Company, in pursuance of this Memorandum of Association, and we respectively agree to take the number of shares in the capital of the Company as set opposite to our respective names.

Name and Surname (present & former) in full (in Block Letters) and C.N.I.C.#	Father's/ Husband's Name in full	Nationality with any former Nationality	Occupation	Residential address (in Full)	Number of shares taken by each subscriber	Signatures
Ahsan Ashraf 35202-3282655-9	S/O Sheikh Muhammad Ashraf	PAKISTANI	Business Man	Jilani Centre Plot No. 1, 92- Main Ravi Road, Near Allied Bank, Lahore	50,000 FIFTY THOUSAND ONLY	
Sheikh Shahzeb Jilani C.N.I.C.# 35202-7162510-5	S/O Sheikh Muhammad Jilani	PAKISTANI	Business Man	Jilani Centre Plot No. 1, 92- Main Ravi Road, Near Allied Bank, Lahore	50,000 FIFTY THOUSAND ONLY	
				TOTAL NUMBER OF SHARES TAKEN BY THE SUBSCRIBERS	100,000 ONE HUNDRED THOUSAND ONLY.	

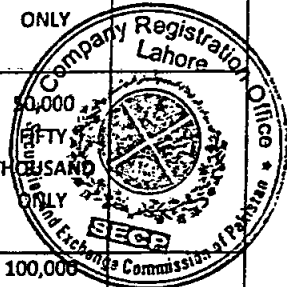
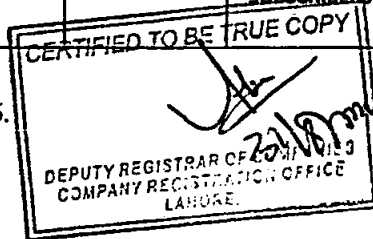
Dated this 22<sup>nd</sup> day of February, 2016.

Witness:

Witness to the above signatures:

National Institutional Facilitation Technologies (Pvt.) Ltd.

5<sup>th</sup> Floor AWT Plaza I. I. Chundrigar Road, Karachi



A-1

THE COMPANIES ORDINANCE, 1984

(COMPANY LIMITED BY SHARES)

ARTICLES OF ASSOCIATION

OF

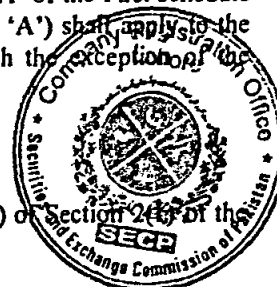
JILANI ENERGY (PRIVATE) LIMITED

PRELIMINARY

1. Subject as hereinafter provided, the Regulations contained in Table 'A' of the First schedule to the Companies Ordinance, 1984, (hereinafter referred to as Table 'A') shall apply to the company so far as those are applicable to Private Companies, with the exception of the Regulations which are modified, altered or added hereunder.

PRIVATE COMPANY

2. The Company is Private Company within the meaning of Clause (28) of Section 2 of the Companies Ordinance, 1984 and accordingly: -
  - a) No invitation shall be issued to the public to subscribe for any shares, debentures or debenture-stock of the Company.
  - b) The number of members of the Company (exclusive of persons in the employment of the Company) shall be limited to fifty provided that for the purpose of this provisions when two or more persons hold one or more shares in the company jointly they shall for the purpose of this clause be treated as a single member; and
  - c) The right to transfer shares in the Company is restricted in the manner and to the extent hereinafter appearing.



BUSINESS

3. The Company is entitled to commence business from the date of its incorporation.
4. The business of the Company shall include all or any of the objects enumerated in Memorandum of Association.
5. The business of the Company shall be carried out at such place or places in the whole of Pakistan or elsewhere as the Directors may deem proper or advisable from time to time.

## CAPITAL

6. The Authorized Capital of the Company is Rs. 500,000,000/- (Rupees Five Hundred Million Only) divided into 5,000,000 (Five Million) ordinary shares of Rs.100/- (Rupees One Hundred Only) each with powers to increase, reduce, consolidate, sub-divide or otherwise re-organize the share capital of the Company.
7. The shares shall be under the control of the Board of Directors who may allot or otherwise dispose of the same to such persons, firms, corporation or corporations on such terms and conditions and at any such time as may be thought fit.
8. The shares in the Capital of the Company may be allotted or issued in consideration of any property, land, machinery or goods supplied or any services rendered to the Company, or promotion or formation of the Company or conduct of its business and any shares so allotted may be issued as fully paid shares.

## SHARES, TRANSFER AND TRANSMISSION

9. Every person, whose name is entered, as a member in the Register of Members shall, without payment, be entitled to a certificate under the Common Seal of the Company specifying the shares held by several persons. The Company shall not be bound to issue more than one certificate and delivery of a share certificate to any one of several joint holders shall be sufficient delivery to all.
10. The Directors may decline to register any transfer of share to transferee of whom they do not approve and shall be bound to show any reasons for exercising their discretion subject to the provisions of Sections 77 and 78 of the Companies Ordinance, 1984.
11. No share can be mortgaged, pledged, sold, hypothecated, transferred or disposed-off by any member to a non-member without the previous sanction of the Directors.
12. The legal heirs, executors or administrators of a deceased holder shall be the only persons to be recognized by the Directors as having title to the shares. In case of shares registered in the name of two or more holders the survivors and the executors of the deceased shall be the only persons to be recognized by the Company as having any title to the shares.

## GENERAL MEETING

13. The first Annual General Meeting, shall be held within 18 months from the date of incorporation of the Company in accordance with the provisions of Section 158 and thereafter once at least in every year and within a period of four months following the close of its financial year and not more than fifteen months after the holding of its last preceding Annual General Meeting as may be determined by the Directors. The Directors may, whenever they think fit, call an Extra Ordinary General Meeting of the shareholders in terms of Section 159 of Companies Ordinance, 1984.

## PROCEEDINGS AT GENERAL MEETING

14. Twenty-one days' notice at least specifying the place, day and hour of the General Meeting and in case of special business the general nature of such business, shall be given to the members in the manner provided in Table 'A' but accidental omission to give such notice to or non-receipt of such notice by the member shall not invalidate the proceedings of the General Meeting.
15. The Chief Executive, with the consent of a meeting at which quorum is present and shall if so directed by the meeting may adjourn the meeting from time to time and from place to place, but no business shall be transacting at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place.

## QUORUM

16. No business shall be transacted at any General Meeting unless a quorum of members is present at the time when the meeting proceeds to the business. Two members present in person, representing not less than 25% of the total voting power either in person or as proxies, shall form a quorum for a General Meeting.



## VOTES OF MEMBERS

17. At any General Meeting a resolution put to the vote of the General Meeting decided on a show of hands, unless a pole is demanded in accordance with the provisions of section 167 of the Companies Ordinance, 1984.
18. On a show of hands every member present shall have one vote and on a poll, every member present in person or by proxy shall have one vote in respect of each share held by him.
19. The instrument appointing a proxy and the power of attorney or other authority under which it is signed or notarially certified copy of that power of attorney or authority shall be deposited at the Registered Office of the Company not less than forty-eight hours before the time for holding the meeting at which the person named in the instrument proposes to vote and in default, the instrument of proxy will not be treated as valid.

## CHAIRMAN

20. The Directors may from time to time appoint one of their members to be the Chairman of the Company for a period not exceeding three years on such terms and conditions as they deem fit. The Chairman shall preside over the meetings of the Board of Directors and members of the Company. In his absence, the Directors may elect one of them to preside over Board's/General Meetings. The questions arising at the meeting of the Directors shall be decided by a majority of votes. In the case of equality of votes, the Chairman or the Director presiding over the meeting, as the case may be, shall have a casting vote.

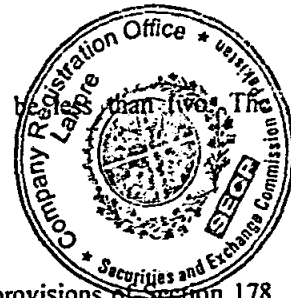
### CHIEF EXECUTIVE

21. The first Chief Executive of the Company will be appointed by the Board of Directors within fifteen days from the date of incorporation of the Company who shall hold office till the first Annual General Meeting subsequently within fourteen days from the date of election of the directors.

### DIRECTORS

22. Unless otherwise determined, the number of Directors shall not be more than five. The following are the first Directors of the Company.

1. Mr. SHAHZEB JILANI
2. Mr. AHSAN ASHRAF



23. The election of the Directors shall be held in accordance with the provisions of Section 178 of the Companies Ordinance, 1984.
24. The first Directors including the Chief Executive shall hold office up to the first Annual General Meeting in accordance with the provisions of the Companies Ordinance, 1984, unless any one of them resigns earlier or becomes disqualified for being Directors or otherwise ceases to hold office.
25. A resolution for removing a Director shall not be deemed to have been passed if the number of votes against him is equal to, or less than the number of votes that would have been necessary for the election of Directors at the immediately preceding annual election of Directors in the manner aforesaid, but as provided under section 181 of the Companies Ordinance, 1984.
26. The remuneration of Directors except regularly paid Chief Executive and full time working Directors shall, from time to time, be determined by the Board of Directors but it shall not exceed Rs.500/- per meeting at which the Directors are present.
27. The Directors may sanction the payment of such additional sums as they may think fit to any director for any special service he may render to the Company or be though capable of rendering either fixed sum or in any other form as may be determined by the Directors subject to the provisions of the Companies Ordinance, 1984.
28. The Director who resides out of station shall also be entitled to be paid such traveling and other expenses for attending the meeting for the Company as may be fixed by the Directors from time to time according to the provisions of the Companies Ordinance, 1984.
29. Any casual vacancy occurring on the Board of Directors shall be filled in by a resolution of the Board of Directors, and the persons so appointed shall hold office for the remainder of the term of the Directors in whose place he is appointed.

30. No director shall be disqualified from his office by contracting with the Company either as vender, purchaser or otherwise nor shall any Director be liable to account for any profit realized from any such contract or arrangement or the fiduciary relation thereby established, but the nature of his interest must be disclosed by him at the first meeting of the Directors after acquisition of his interest.

#### NOMINEE DIRECTOR

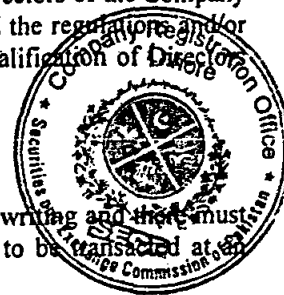
31. In addition to the elected Directors, the financial institutions shall be entitled, during the currency of their respective loan(s) to the Company to appoint one person on the Board of Directors of the Company to be called Nominee Director and to recall and/or replace such person from time to time. Such Nominee Director on the Board of Directors of the Company will not be the holders of share(s) in the Capital of the Company and the regulations and/or rules pertaining to the election, retirement, qualification and/or disqualification of Directors shall not apply to him.

#### NOTICES

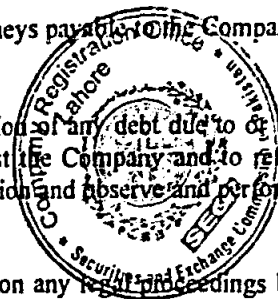
32. Notices for every meeting of the Board of Directors will be given in writing and there must be given a reasonable time in advance. The nature of the business to be transacted at an intended Board meeting will be specified in the notice.

#### MANAGEMENT

33. The whole business and affairs of the Company shall, subject to the control and supervision of the Board of Directors, be managed and controlled by the Chief Executive.
34. Subject to the limit fixed by the Directors, the Chief Executive may from time to time raise or borrow any sums of money for and on behalf of the Company from other companies, banks or financial institutions on such terms as may be approved by the Board of Directors from time to time.
35. Without prejudice to the powers conferred by these Articles, the Board of Directors shall have the following powers: -
- a) To take on lease, purchase, erect or otherwise acquire for the Company any assets, stocks, lands, buildings, property, rights or privileges which the Company is authorized to acquire at such price and generally on such terms and conditions as they think fit.
  - b) To let, mortgage, sell, exchange or otherwise dispose of absolutely or conditionally all or any part of the assets, stocks, raw materials, properties, privileges and undertakings of the Company upon such terms and conditions and for such consideration as they think fit.



- c) To appoint any person or persons to be attorney or attorneys of the Company for such purposes and with such powers, authorities and discretions and for such period and subject to such conditions as they may, from time to time, think fit.
- d) To enter into, carry out, rescind or vary all financial arrangements with any bank, person, company, firm or corporation or in connection with such arrangements to deposit, pledge or hypothecate property of the company or the documents representing or relating to the same.
- e) To make and give receipts, release and discharge all moneys payable to the Company and for the claims and demands of the Company.
- f) To compound or allow time to the payment or satisfaction of any debt due to or by the Company and any claim and demands by or against the Company and to refer claims or demands by or against the Company to arbitration and observe and perform the awards.
- g) To institute, prosecute, compromise, withdraw or abandon any legal proceedings by or against the company or its affairs or otherwise concerning the affairs of the company.
- h) To raise and borrow money from time to time for the purposes of the Company, on the mortgage of its property or any part thereof and/or on any bond or debenture payable to bearer otherwise on interest and repayable in such a manner and generally upon such terms as they think fit.
- i) To open, operate and maintain bank/banks account(s) individually or jointly as the Board may authorize or to any other person on its behalf.



#### **BORROWING POWERS**

- 36. The Directors may from time to time raise, borrow or secure the payment of any sums for the purposes of the Company in such manner and upon such terms and conditions as they think fit and in particular by the issue of the debentures, debenture-stock or other securities charged upon all or any part of the property of the Company present or future.
- 37. Debentures, debenture-stock or other securities may be issued with any special privileges as to redemption, surrender, allotment of shares, attending and appointment of Directors or other privileges subject to any permission required by law.

#### **THE SEAL**

- 38. The Company shall have a common seal and Directors shall provide for the safe custody of the same. The seal shall not be applied on any instrument except by the authority of the Board of Directors and in the presence of at least two Directors who shall sign every instrument to which the seal shall be affixed in their presence. Such signatures shall be conclusive evidence of the fact that the seal has been properly affixed.

## ACCOUNTS

39. The Directors shall cause to keep proper books of accounts as required under Section 230 of the Companies Ordinance, 1984.
40. The books of account shall be kept at the registered office of the Company or at such other place as the Director shall think fit subject to the provisions of Section 230 of the Companies Ordinance, 1984.

## AUDIT

41. Once at least in every year the accounts of the Company shall be audited and correctness of the balance sheet be ascertained by one or more Auditors. The Auditors shall be appointed and their duties regulated in accordance with the provisions of section 252 to 255 of the Companies Ordinance, 1984.

## INDEMNITY

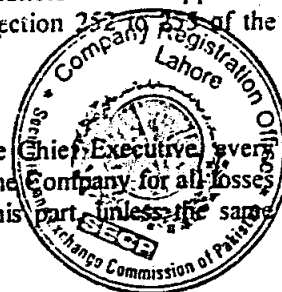
42. In connection with carrying on the business of the Company, the Chief Executive, every Director, or other officer of the Company shall be indemnified by the Company for all losses and expenses occasioned by error or judgment or oversight on his part, unless the same happens through his own dishonesty or willful act and defaults.

## SECURITY

43. No member shall be entitled to visit and inspect the books of the Company subject to the provisions of the companies ordinance, 1984 without the permission of the Chief Executive or one of the Directors or to require discovery of any information regarding any detail of the Company's business or any matter which is or may be in the nature of trade secret, or secret process which may relate to the conduct of the Company's business and which is in the opinion of the Directors, will not be in the interest of the members of the Company to communicate to the Public.

## ARBITRATION

44. Whenever any difference arises between the Company on the one hand and the members, their executors, administrators or assignee on the other hand, touching the true intent or construction or the incident or consequence of these present or of the statutes or touching anything thereafter done, executed, omitted or suffered in pursuance of these presents or otherwise relating to these presents or to any statutes affecting the Company, every such difference shall be referred for the decision of the arbitrator who will be qualified in Islamic law.
45. The cost incidental to any such reference and award shall be at the discretion of the arbitrator or umpire respectively who may determine the amount thereof and direct the same to be shared between the attorney and client or otherwise and may award by whom and in what manner the same shall be born and paid.
46. In the event that a dispute, claim or controversy arises between the company, its management and its shareholders, or between the shareholders inter-se, or the directors inter-se, all steps may be taken to settle the dispute and resolve the issue through mediation by an accredited mediator before taking recourse to formal dispute resolution such as arbitration or litigation.





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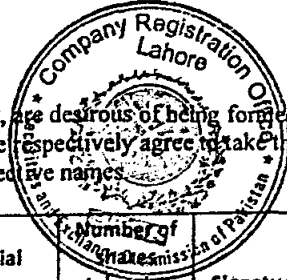
**WINDING UP**

47. If the Company is wound up whether voluntarily or otherwise the liquidator may with the sanction of a special resolution, divide among the contributories in specie any part of the assets and liabilities of the Company, subject to section 471 and other provisions of the Companies Ordinance, 1984 as may be applicable.



A-9

We, the several persons, whose names and addresses are subscribed below, are desirous of being formed into a Company, in pursuance of this Memorandum of Association, and we respectively agree to take the number of shares in the capital of the Company as set opposite to our respective names.



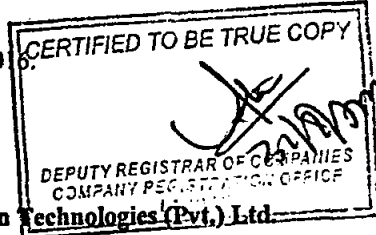
Name and Surname (present & former) in full (in Block Letters) and C.N.I.C.#	Father's/ Husband's Name in full	Nationality with any former Nationality	Occupation	Residential address (in Full)	Number of shares taken by each subscriber	Signatures
Ahsan Ashraf 35202-3282655-9	S/O Sheikh Muhammad Ashraf	PAKISTANI	Business Man	Jilani Centre Plot No. 1, 92- Main Ravi Road, Near Allied Bank, Lahore	50,000 FIFTY THOUSAND ONLY	
Sheikh Shahzeb Jilani C.N.I.C # 35202-7162510-5	S/O Sheikh Muhammad Jilani	PAKISTANI	Business Man	Jilani Centre Plot No. 1, 92- Main Ravi Road, Near Allied Bank, Lahore	50,000 FIFTY THOUSAND ONLY	
				<b>TOTAL NUMBER OF SHARES TAKEN BY THE SUBSCRIBERS</b>	<b>100,000 ONE HUNDRED THOUSAND ONLY.</b>	

Dated this 22<sup>nd</sup> day of February, 2016.

Witness:

Witness to the above signatures:

National Institutional Facilitation Technologies (Pvt.) Ltd.  
5<sup>th</sup> Floor AWT Plaza I. I. Chundrigar Road, Karachi



**JILANI ENERGY (PRIVATE) LIMITED**

**FOR THE YEAR ENDED JUNE 30, 2022**

**INDEPENDENT AUDITOR'S REPORT****To the Members of Jilani Energy (Private) Limited****Report on the Audit of the Financial Statements****Opinion**

We have audited the annexed financial statements of Jilani Energy (Private) Limited (the Company), which comprise the statement of financial position as at June 30, 2022, and the statement of profit or loss and other comprehensive income, the statement of cash flows, the statement of changes in equity, for the year then ended, and notes to the financial statements, including a summary of significant accounting policies and other explanatory information, and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of the audit.

In our opinion and to the best of our information and according to the explanations given to us, the statement of financial position, statement of profit or loss and other comprehensive income, and the statement of changes in equity together with the notes forming part thereof conform with the accounting and reporting standards as applicable in Pakistan and give the information required by the Companies Act, 2017 (XIX of 2017), in the manner so required and respectively give a true and fair view of the state of the Company's affairs as at June 30, 2022 and of profit and other comprehensive loss, and the changes in equity for the year then ended.

**Basis for Opinion**

We conducted our audit in accordance with International Standards on Auditing (ISAs) as applicable in Pakistan. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Company in accordance with the International Ethics Standards Board for Accountants' Code of Ethics for Professional Accountants as adopted by the Institute of Chartered Accountants of Pakistan and we have fulfilled our other ethical responsibilities in accordance with the Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

**Other Matter**

The financial statements of the Company for the year ended 30 June 2021 were audited by Grant Thornton Anjum Rahman Chartered Accountants who expressed an unmodified opinion on those financial statements on December 24, 2021.

**Responsibilities of Management and Board of Directors for the Financial Statements**

Management is responsible for the preparation and fair presentation of the financial statements in accordance with the accounting and reporting standards as applicable in Pakistan and the requirements of Companies Act, 2017 (XIX of 2017) and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the

going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Boards of directors are responsible for overseeing the Company's financial reporting process.


#### **Auditor's Responsibilities for the Audit of the Financial Statements**

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs as applicable in Pakistan will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with ISAs as applicable in Pakistan, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the board of directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.



We also provide the board of directors with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

**Report on Other Legal and Regulatory Requirements**

Based on our audit, we further report that in our opinion:

- a) Proper books of account have been kept by the Company as required by the Companies Act, 2017 (XIX of 2017);
- b) the statement of financial position, the statement of profit or loss and other comprehensive income, the statement of cash flows and the statement of changes in equity together with the notes thereon have been drawn up in conformity with the Companies Act, 2017 (XIX of 2017) and are in agreement with the books of account and returns;
- c) Investments made, expenditure incurred and guarantees extended during the year were for the purpose of the Company's business; and
- d) In our opinion no Zakat was deductible at source under the Zakat and Usher Ordinance, 1980.



Riaz & Co.

UDIN: AR202210558gnbeGTAPa

Chartered Accountants

Engagement Person: Riaz Ahmad

Date: October 05, 2022

LAHORE

JILANI ENERGY (PRIVATE) LIMITED  
STATEMENT OF FINANCIAL POSITION  
AS AT JUNE 30, 2022

	Note	2022 Rupees	Restated 2021 Rupees
<b>Assets</b>			
<b>NON CURRENT ASSETS</b>			
Property, plant and equipment	6	301,132,244	310,280,702
<b>CURRENT ASSETS</b>			
Stock in trade	7	39,484,136	22,623,944
Trade debts	8	672,220,846	212,093,429
Advances, deposits and prepayments	9	8,997,541	4,507,812
Taxes refundable - net	10	11,323,475	12,742,999
Cash and bank balances	11	5,630,485	114,188,745
		737,656,483	366,156,929
<b>TOTAL ASSETS</b>		<b>1,038,788,727</b>	<b>676,437,631</b>
<b>EQUITY AND LIABILITIES</b>			
<b>SHARE CAPITAL AND RESERVES</b>			
Authorized share capital			
5,000,000 (2021: 5,000,000) ordinary shares of Rs. 100 each		500,000,000	500,000,000
Issued share capital	12	446,800,000	396,800,000
Accumulated profit		199,207,577	149,160,822
Share deposit money	13	-	50,000,000
<b>TOTAL EQUITY</b>		<b>646,007,577</b>	<b>595,960,822</b>
<b>NON CURRENT LIABILITIES</b>			
Deferred liabilities	14	12,259,172	7,686,266
<b>CURRENT LIABILITIES</b>			
Short term bank borrowings	15	63,872,626	
Trade and other payables	16	316,126,353	72,409,798
Accrued mark up	17	522,999	380,746
Contingencies and commitments	18		
		380,521,978	72,790,544
<b>TOTAL EQUITY AND LIABILITIES</b>		<b>1,038,788,727</b>	<b>676,437,632</b>

The annexed notes 1 to 29 form an integral part of these financial statements.

  
CHIEF EXECUTIVE OFFICER

  
DIRECTOR

**JILANI ENERGY (PRIVATE) LIMITED**  
**STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME**  
**FOR THE YEAR END 30 JUNE 2022**

	Note	2022 Rupees	Restated 2021 Rupees
Sales	19	723,290,549	561,018,724
Cost of sales	20	(644,624,117)	(499,060,143)
Gross profit		78,666,432	61,958,581
Administrative expenses	21	(22,518,617)	(11,395,079)
Other expenses	22	(3,775,499)	(2,966,850)
		(26,294,116)	(14,361,929)
Operating profit		52,372,316	47,596,652
Finance cost	23	(1,430,432)	(1,013,343)
Profit before tax		50,941,884	46,583,309
Taxation	24	-	-
Profit after tax		50,941,884	46,583,309
Other comprehensive income			
Remeasurement of post employment benefit obligation - actuarial (loss)	14.2	(895,129)	(18,343)
Total comprehensive income for the year		50,046,755	46,564,966
Earnings per share			
- Basic		12.60	11.74
- Diluted		11.20	10.42

The annexed notes 1 to 29 form an integral part of these financial statements.

  
**CHIEF EXECUTIVE OFFICER**

  
**DIRECTOR**

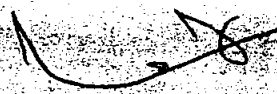


**JILANI ENERGY (PRIVATE) LIMITED**  
**STATEMENT OF CASH FLOWS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

	Note	2022 Rupees	Restated 2021 Rupees
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>			
Profit before tax		50,941,884	46,583,309
<i>Adjustment for non cash charges:</i>			
Depreciation		30,754,691	32,953,242
Provision for gratuity		3,677,777	2,749,278
Finance cost		1,430,432	1,013,343
		35,862,900	36,715,863
<b>CASH FLOW BEFORE WORKING CAPITAL CHANGES</b>		<b>86,804,784</b>	<b>83,299,172</b>
(Increase) / decrease in current assets:			
Stock-in-trade		(16,860,192)	21,258,144
Trade debts		(460,127,417)	(8,552,587)
Advances, deposits and prepayments		(4,489,729)	(593,016)
Income tax refundable		1,419,524	16,912,880
<i>Increase / (decrease) in current liabilities:</i>			
Trade and other payables		243,716,556	(137,776,035)
		(236,341,258)	(108,750,614)
Cash used in operations		(149,536,474)	(25,451,441)
Finance cost paid		(1,288,179)	(821,445)
Gratuity paid		-	(613,930)
		(1,288,179)	(1,435,375)
<b>NET CASH OUT FLOW FROM INVESTING ACTIVITIES</b>		<b>(150,824,653)</b>	<b>(26,886,816)</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>			
Purchase of fixed assets		(21,606,233)	
<b>NET CASH OUT FLOW FROM INVESTING ACTIVITIES</b>		<b>(21,606,233)</b>	
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>			
Increase in short term bank borrowings		63,872,626	
<b>NET CASH INFLOW/(OUT FLOW) FROM FINANCING ACTIVITIES</b>		<b>63,872,626</b>	
Net decrease in cash and cash equivalents		(108,558,260)	(26,886,817)
Cash and cash equivalents at beginning of year		114,188,745	141,075,562
<b>CASH AND CASH EQUIVALENTS AT END OF THE YEAR</b>		<b>5,630,485</b>	<b>114,188,745</b>

The annexed notes 1 to 29 form an integral part of these financial statements.

  
**CHIEF EXECUTIVE**

  
**DIRECTOR**

**JILANI ENERGY (PRIVATE) LIMITED**  
**STATEMENT OF CHANGES IN EQUITY**  
**FOR THE YEAR ENDED JUNE 30, 2022**

	Share capital	Share deposit money	Un-appropriated profit	Total equity
	Rupees			
Balance as at July 01, 2020	396,800,000	50,000,000	102,595,856	549,395,856
Profit for the year	-	-	46,444,927	46,444,927
Prior period adjustment	-	-	138,382	138,382
Other comprehensive (loss) for the year	-	-	(18,343)	(18,343)
			46,564,966	46,564,966
Balance as at June 30, 2021 - Restated	396,800,000	50,000,000	149,160,822	595,960,822
Profit for the year	-	-	50,941,884	50,941,884
Other comprehensive income for the year	-	-	(895,129)	(895,129)
			50,046,755	50,046,755
Balance as at June 30, 2022	396,800,000	50,000,000	199,207,577	646,007,577

The annexed notes 1 to 29 form an integral part of these financial statements.

  
**CHIEF EXECUTIVE OFFICER**

  
**DIRECTOR**

**JILANI ENERGY (PRIVATE) LIMITED**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

**1 CORPORATE AND GENERAL INFORMATION**

Jilani Energy (Private) Limited ('the Company') is a private company incorporated in Pakistan on March 11, 2016 under the Companies Ordinance, 1984 (Repealed with the enactment of Company Act, 2017). Registered Office of the Company is situated at 92 Main Ravi Road, Lahore and its plant is situated at 17 - KM Sheikhpura Road, Lahore in the province of Punjab. Principal business of the Company is generation of electricity. The Company has obtained electricity generation license from NEPRA as on 10 September 2018 which is valid upto 29 September 2038 i.e 20 years. The Company is licensed to sale the electricity to the specified related parties only. During the year 2019, the Company has started generating and selling electricity.

**2 STATEMENT OF COMPLIANCE**

These financial statements have been prepared in accordance with approved accounting standards as applicable in Pakistan. Approved accounting standards comprise of such International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board as are notified under the Companies Act 2017, provisions of and directives issued under the Companies Act, 2017. In case requirements differ, the provisions or directives of the Companies Act, 2017 shall prevail.

**3 NEW STANDARDS, AMENDMENTS TO APPROVED ACCOUNTING STANDARDS AND NEW INTERPRETATIONS**

**3.1 Standards, amendments or interpretations that became effective during the year**

There are certain amendments and interpretations to approved accounting and reporting standards which were mandatory for the Company's annual accounting period which began on July 1, 2021.

However, there is no significant implication of new standards or amendments adopted during the year.

**4 BASIS OF PREPARATION**

**4.1 Basis of preparation**

These financial statements have been prepared under the historical cost convention.

**4.2 Significant accounting judgments, estimates and assumptions**

The preparation of financial statements in conformity with approved accounting standards requires the use of certain critical accounting estimates. It also requires the management to exercise its judgment in the process of applying the Company's accounting policies. Estimates and judgments are continually evaluated and are based on historical experience, including expectation of future events that are believed to be reasonable under the circumstances. The areas where various assumptions and estimates are significant to the Company's financial statements or where judgments were exercised in application of accounting policies are discussed below:

- recoverable amount, residual values and useful lives of property, plant and equipment;
- impairment for trade debts, loans, advances, trade deposits and other receivables;
- disclosure and assessment of provision for contingencies.

**5 SIGNIFICANT ACCOUNTING POLICIES**

**5.1 Property, plant and equipment**

Property, plant and equipment is measured initially at cost.

Property, plant and equipment except land are stated using cost model at cost less subsequent accumulated depreciation and impairment, if any.

Depreciation is charged to statement of profit or loss using reducing balance method, so as to write off the depreciable amount of assets over their estimated useful lives at the rates given in fixed asset schedule. Depreciation on additions is charged from the month in which the asset is available for use and on disposals up to the preceding month of disposal.

Gain / loss on disposals of property, plant and equipment is reflected in the statement of profit or loss during the period in which they are disposed.

Normal repairs and maintenance are charged to income as and when incurred. Major renewals and improvements are capitalized.

The assets' residual values and estimated useful lives are reviewed as required, but at least annually whether or not the asset is revalued, and adjusted, if impact on depreciation is significant.

**JILANI ENERGY (PRIVATE) LIMITED**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

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**5.2 Capital work-in-progress**

Capital work-in-progress is stated at cost less impairment. All expenditures connected with specific assets incurred during installation and construction period are carried under capital work-in-progress. These are transferred to operating fixed assets as and when they are available for use.

**5.3 Stores, spare parts and loose tools**

These are stated at lower of Net Realizable Value (NRV) and cost using moving average method except goods in transit which are stated at invoice value plus other charges incurred thereon.

**5.4 Stock in trade**

These are valued at the lower of cost and net realizable value. Cost is determined on the basis of moving weighted average cost method.

Raw material in transit is stated at invoice price plus other charges paid thereon up to the reporting date.

Net Realizable Value signifies the estimated selling price in ordinary course of business less cost necessary to be incurred in order to make the sale.

**5.5 Trade debts, loans, advances, trade deposits and other receivables**

Trade debts, loans, advances, trade deposits and other receivables are recognized at the amount of consideration received or receivable i.e. unconditional, unless they contain significant financing component in which case these are recognised at fair value.

**5.6 Loan from directors**

Loan from director is accounted for using Technical Release-32 "Accounting Directors Loan" (TR 32) issued by the Institute of Chartered Accountant of Pakistan (ICAP):

- Director's loan that is interest free and payable at the discretion of the Company is to be recorded as equity at face value and is not to be subsequently remeasured; and
- Director's loan that is interest free and payable on demand of directors is to be recorded under current liabilities.

**5.7 Taxation**

**Current taxation**

Profits and gains derived by the Company from electric power generation project are exempt from tax under clause 132 of the Part I of the Second Schedule to the Income Tax Ordinance, 2001 subject to the conditions and limitations provided therein. Under clause (11A) of Part IV of the Second Schedule to the Income Tax Ordinance, 2001, the Company is also exempt from levy of minimum tax on 'turnover' under section 113 of the Income Tax Ordinance, 2001. However, provision is made on income from sources not covered under the above clauses at current rates of taxation after taking into account, tax credits and rebates available, if any.

**Deferred taxation**

Deferred tax is provided using the balance sheet liability method for all temporary differences at the reporting date between tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates that have been enacted or substantively enacted at the reporting date. Deferred tax is charged or credited to the statement of profit or loss, except in the case of items credited or charged to equity or statement of comprehensive income in which case it is included in equity or statement of comprehensive income.

**5.8 Borrowing costs**

Loans and borrowings are initially recorded at proceeds received which is considered to be equal to its fair value. Financial charges are accounted for on accrual basis and are disclosed as a separate line item in the statement of financial position to the extent of the amount remaining unpaid.

Borrowing costs directly attributable to the acquisition, construction or production of qualifying asset, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, till such time as the assets are substantially ready for their intended use or sale. Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying asset is deducted from the borrowing costs eligible for capitalization. All other borrowing costs are recognized in statement of profit or loss in the period in which they are incurred.

**5.9 Provisions**

Provisions are made in the statement of financial position when the Company has legal or constructive obligation as a result of past event, and it is probable that outflow of economic resources will be required to settle the obligation. However, provisions are provided at each reporting date and adjusted to reflect current best estimate.

JILANI ENERGY (PRIVATE) LIMITED  
NOTES TO THE FINANCIAL STATEMENTS  
FOR THE YEAR ENDED JUNE 30, 2022

**5.10 Foreign currency transactions**

Transactions in foreign currency are recorded in Pak Rupee at the rate of exchange prevailing on the transaction date. All the monetary assets and liabilities in foreign currencies are translated at exchange rates prevailing on the reporting date.

Gains and losses arising on translation are included in profit or loss for the period.

**5.11 Functional and presentation currency**

These financial statements are presented in Pakistan Rupee, which is Company's functional and presentation currency.

**5.12 Cash and cash equivalents**

Cash and cash equivalents comprise of cash in hand and bank balances and other short term highly liquid investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of change in value.

**5.13 Trade and other payables**

Liabilities for trade and other amounts payable are measured at fair value of the consideration paid or payable in future for goods and services. Subsequently, these are measured at amortised cost.

**5.14 Revenue recognition**

Revenue is recognized when or as performance obligations are satisfied by transferring control of a promised goods or services to a customer, and control either transfers over time at point in time. Revenue is measured at fair value of the consideration received or receivable, excluding discounts, rebates and government levies (Revenue from sale of electricity is recognized at a point of time, when electricity is transferred to the customers).

**5.15 Financial instruments**

**Financial Assets**

Financial assets are recognized when the Company becomes a party to the contractual provisions of the financial instrument and are measured initially at fair value adjusted by transaction costs.

For the purpose of subsequent measurement, financial assets of the Company are classified into the followings:

**Financial Assets at amortized cost**

Assets that are held for collection of contractual cash flows where those cash flow represents solely payments of principal and interest are measured at amortized cost. Interest income from these financial assets, impairment losses, foreign exchange gains and losses, and gain or loss arising on derecognition are recognised directly in profit or loss.

**Financial assets at fair value through other comprehensive income**

Financial assets at fair value through other comprehensive income are held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets and the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Equity instrument financial assets are measured at fair value at and subsequent to initial recognition. Changes in fair value of these financial assets are normally recognised in profit or loss. Dividends from such investments continue to be recognised in profit or loss when the Company's right to receive payment is established. Where an election is made to present fair value gains and losses on equity instruments in other comprehensive income there is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment.

Financial assets and liabilities are initially measured at fair value of the consideration given and received respectively. These financial assets and liabilities are subsequently remeasured to fair value or amortized cost as the case may be. Any gain or loss on the recognition and de-recognition of the financial assets and liabilities is included in the profit or loss for the period in which it arises.

Financial assets are derecognized when the Company loses control of the contractual rights that comprise the financial asset. Assets or liabilities that are not contractual in nature and that are created as a result of statutory requirements imposed by the Government are not the financial instruments of the Company.

**5.16 Financial liabilities**

Financial liabilities are recognised at the time when the Company becomes a party to the contractual provisions of the instrument. Financial liabilities at amortised cost are initially measured at fair value less transaction costs. Financial liabilities at fair value through profit or loss are initially recognised at fair value and transaction costs are expensed to profit or loss.

Financial liabilities, other than those at fair value through profit or loss, are subsequently measured at amortised cost using the effective yield method.

A financial liability is derecognised when the obligation under the liability is discharged, cancelled or expired. Where an existing financial liability is replaced by another from the same lender or substantially different terms, or the terms of an existing liability are substantially modified, such an exchange and modification is treated as a derecognition of the original liability and the recognition of a new liability, and the difference in respective carrying amounts is recognised in profit or loss.

**5.17 Impairment of financial assets**

The Company assesses on a forward looking basis the expected credit losses associated with its financial assets. The Company applies the simplified approach to recognise lifetime expected credit losses for trade debts, due from customers and contract assets. Individually significant financial assets are tested for impairment on an individual basis. The remaining financial assets are assessed collectively in groups that share similar credit risk characteristics. The Company recognises in profit or loss, as an impairment gain or loss, the amount of expected credit losses (or reversal) that is required to adjust the loss allowance at the reporting date. SECP through SRO 985(I)/2019 dated September 02, 2019 has notified that, in respect of companies holding financial assets due from the Government of Pakistan, the requirements contained in IFRS 9 with respect to application of Expected Credit Losses method shall not be applicable till June 30, 2022 and that such companies shall follow the relevant requirements of IAS 39 in respect of above referred financial assets during the exemption period.

**5.18 Offsetting of financial assets and financial liabilities**

A financial asset and financial liability is offset and the net amount is reported in the statement of financial position if the Company has a legally enforceable right to set off the transaction and also intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

**5.19 Impairment of non financial assets**


The carrying amounts of non-financial assets are assessed at each reporting date to ascertain whether there is any indication of impairment. If such an indication exists, the asset's recoverable amount is estimated to determine the extent of impairment loss, if any. An impairment loss is recognized as an expense in the profit or loss. The recoverable amount is the higher of an asset's fair value less cost of disposal and value-in-use. Value-in-use is ascertained through discounting of the estimated future cash flows using a discount rate that reflects current market assessments of the time value of money and the risk specific to the assets. For the purpose of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash-generating units).

An impairment loss is reversed if there is a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

**5.20 Employee Benefits**

**Defined benefit plan**

The Company operates a funded gratuity scheme for its confirmed employees who have completed the minimum qualifying period of service as defined under the scheme. The Company's obligation under the scheme is determined through actuarial valuation carried out at each year end under the Projected Unit Credit Method. The most recent valuation of the scheme was carried out as at 30 June 2022. Remeasurement changes which comprise actuarial gains and losses are recognized immediately in the statement of other comprehensive income.



**JILANI ENERGY (PRIVATE) LIMITED**  
**SCHEDULE OF FIXED ASSETS**  
**AS ON JUNE 30, 2022**

**6 PROPERTY, PLANT AND EQUIPMENT**

JUNE 30, 2022										
Cost					Accumulated Depreciation					
Balance as on 01 July 2021	Addition	Disposal	Balance as on 30 June 2022	Rate	Balance as on 01 July 2021	Charge for the year	Disposal	Balance as on 30 June 2022	WDV on 30 June 2022	
Land	18,201,000	-	18,201,000	-	-	-	-	-	18,201,000	
Buildings	24,267,311	-	24,267,311	10%	6,723,865	1,754,345	-	8,478,210	15,789,101	
Plant & machinery	344,208,495	17,000,093	361,208,588	10%	87,465,926	26,477,175	-	113,943,101	247,265,487	
Electric installations	18,469,283	-	18,469,283	10%	6,463,846	1,200,544	-	7,664,389	10,804,894	
Vehicles	6,718,900	4,606,140	11,325,040	20%	3,119,320	1,103,761	-	4,223,081	7,101,959	
Office equipment	3,267,462	-	3,267,462	10%	1,078,792	218,867	-	1,297,659	1,969,803	
<b>415,132,451</b>	<b>21,606,233</b>	<b>-</b>	<b>436,738,684</b>		<b>1,04,851,749</b>	<b>30,754,691</b>	<b>-</b>	<b>135,606,440</b>	<b>301,132,244</b>	

JUNE 30, 2021										
Cost					Accumulated Depreciation					
Balance as on 01 July 2020	Addition	Disposal	Balance as on 30 June 2021	Rate	Balance as on 01 July 2020	Charge for the year	Disposal	Balance as on 30 June 2021	WDV on 30 June 2021	
Land	18,201,000	-	18,201,000	0%	-	-	-	-	18,201,000	
Buildings	24,267,311	-	24,267,311	10%	4,774,594	1,949,272	-	6,723,865	17,543,446	
Plant & machinery	344,208,495	-	344,208,495	10%	58,938,974	28,526,952	-	87,465,926	256,742,569	
Electric installations	18,469,283	-	18,469,283	10%	5,129,908	1,333,937	-	6,463,846	12,005,437	
Vehicles	6,718,900	-	6,718,900	20%	2,219,425	899,895	-	3,119,320	3,599,580	
Office equipment	3,267,462	-	3,267,462	10%	835,606	243,186	-	1,078,792	2,188,670	
<b>415,132,451</b>	<b>-</b>	<b>-</b>	<b>415,132,451</b>		<b>71,898,507</b>	<b>32,953,242</b>	<b>-</b>	<b>104,851,749</b>	<b>310,280,702</b>	

6.1 Depreciation for the year has been allocated as under:

	2022	2021
	Rupees	Rupees
Cost of sales	29,432,063	31,810,161
Administrative expenses	1,322,628	1,143,081
	<b>30,754,691</b>	<b>32,953,242</b>



JILANI ENERGY (PRIVATE) LIMITED  
NOTES TO THE FINANCIAL STATEMENTS  
FOR THE YEAR ENDED JUNE 30, 2022

	NOTE	2022 RUPEES	2021 RUPEES
<b>7 STOCK IN TRADE</b>			
Raw material		39,484,136	22,623,944
		<u>39,484,136</u>	<u>22,623,944</u>
<b>8 TRADE DEBTORS</b>			
Local - unsecured but considered good	26	672,220,846	212,093,429
		<u>672,220,846</u>	<u>212,093,429</u>
<b>9 ADVANCES, DEPOSITS &amp; PREPAYMENTS</b>			
Advances to staff - unsecured & considered good		342,375	95,000
Margin against letters of credit(s)		6,777,406	2,241,893
Prepayments		<u>1,877,760</u>	<u>2,170,919</u>
		<u>8,997,541</u>	<u>4,507,812</u>
<b>10 TAXES REFUNDABLE</b>			
Income tax refundable - net		10,771,134	12,325,141
Sales tax refundable - net		<u>552,341</u>	<u>417,858</u>
		<u>11,323,475</u>	<u>12,742,999</u>
<b>11 CASH AND BANK BALANCES</b>			
Cash in hand		580,540	1,098,452
Cash at bank - current accounts		<u>5,049,945</u>	<u>113,090,293</u>
		<u>5,630,485</u>	<u>114,188,745</u>
<b>12 ISSUED, SUBSCRIBED AND PAID-UP CAPITAL</b>			
4,468,000 (2021: 3,968,000) Ordinary share of Rs.100/- each fully paid in cash		<u>446,800,000</u>	<u>396,800,000</u>
<b>13 SHARE DEPOSIT MONEY</b>			
Jilani Poly Industries (Private) Limited - Associated Undertaking			<u>50,000,000</u>
<b>14 DEFERRED LIABILITIES</b>			
Staff retirement benefits - gratuity	14.1	<u>12,259,172</u>	<u>7,686,266</u>
<b>14.1 Opening balance</b>		<u>7,686,266</u>	<u>5,532,575</u>
Provision for the year	14.1.1	<u>5,677,777</u>	<u>2,749,278</u>
Payments made during the year			(613,930)
Remeasurement (gain) / loss		<u>895,129</u>	<u>18,343</u>
Closing balance		<u>12,259,172</u>	<u>7,686,266</u>
<b>14.1.1 Charge to profit or loss for the year</b>			
Service cost		2,909,150	2,305,101
Net interest on liability		<u>768,627</u>	<u>444,177</u>
		<u>3,677,777</u>	<u>2,749,278</u>
<b>14.2 Remeasurement of Net Defined Benefit Liability</b>			
Actuarial (gains)/losses due to experience adjustments		<u>895,129</u>	<u>18,343</u>
Amount chargeable to other comprehensive income (OCI)		<u>895,129</u>	<u>18,343</u>
<b>14.3 Average expected remaining working lifetime of members</b>		<u>9 Years</u>	<u>9 Years</u>
Average Duration of Liability		<u>9 Years</u>	<u>9 Years</u>
Discount rate		<u>13.25%</u>	<u>10.00%</u>



JILANI ENERGY (PRIVATE) LIMITED  
NOTES TO THE FINANCIAL STATEMENTS  
FOR THE YEAR ENDED JUNE 30, 2022

	NOTE	2022 RUPEES	2021 RUPEES								
14.4 Sensitivity analysis 30-06-2022											
Present Value of Defined Benefit Obligations	<table> <tr> <th>Discount Rate +1%(Rupees)</th><th>Discount Rate -1%(Rupees)</th><th>Salary Increase +1%(Rupees)</th><th>Salary Increase -1%(Rupees)</th></tr> <tr> <td>11,208,911</td><td>13,407,511</td><td>13,407,841</td><td>11,209,049</td></tr> </table>	Discount Rate +1%(Rupees)	Discount Rate -1%(Rupees)	Salary Increase +1%(Rupees)	Salary Increase -1%(Rupees)	11,208,911	13,407,511	13,407,841	11,209,049		
Discount Rate +1%(Rupees)	Discount Rate -1%(Rupees)	Salary Increase +1%(Rupees)	Salary Increase -1%(Rupees)								
11,208,911	13,407,511	13,407,841	11,209,049								
Sensitivity analysis 30-06-2021											
Present Value of Defined Benefit Obligations	<table> <tr> <th>Discount Rate +1%(Rupees)</th><th>Discount Rate -1%(Rupees)</th><th>Salary Increase +1%(Rupees)</th><th>Salary Increase -1%(Rupees)</th></tr> <tr> <td>7,027,773</td><td>8,406,253</td><td>8,406,459</td><td>7,027,859</td></tr> </table>	Discount Rate +1%(Rupees)	Discount Rate -1%(Rupees)	Salary Increase +1%(Rupees)	Salary Increase -1%(Rupees)	7,027,773	8,406,253	8,406,459	7,027,859		
Discount Rate +1%(Rupees)	Discount Rate -1%(Rupees)	Salary Increase +1%(Rupees)	Salary Increase -1%(Rupees)								
7,027,773	8,406,253	8,406,459	7,027,859								
15 SHORT TERM BANK BORROWINGS											
Habib Metropolitan Bank Limited	15.1	63,872,626	-								
		<u>63,872,626</u>	<u>-</u>								
15.1 This facility has been obtained from Habib Metropolitan Bank Limited vide its facility offer letter dated 24 September 2021. Sanctioned limit of the facility is Rs. 50 million with the flexibility to increase utilization on request. Mark up is charged at the rate of 3 months KIBOR plus 0.65% on quarterly basis. Purpose of the facility is to finance working capital requirements. Under this agreement, other sub-facilities (i.e. DALC/UPAD-CP, RF/FATR/UPAD & LG) are also available subject to different limits, margin, periods and markup rates.											
• This facility has been secured against 1st charge on the fixed assets of the Company amounting to Rs. 50 million and 1st charge on the current assets of the Company amounting to Rs. 67 million.											
16 CREDITORS, ACCRUED & OTHER LIABILITIES											
Trade creditors		279,374,403	53,829,195								
Letters of credit payable		10,606,378	2,282,710								
Accrued expenses		7,467,923	7,891,018								
Sales tax payable - net		10,525,886	2,292,880								
Withholding tax payable		1,297,815	867,150								
Payable to Workers' Profit Participation Fund (WPPF)	16.1	3,047,908	2,480,434								
Payable to Workers' Welfare Fund (WWF)	16.2	3,806,041	2,766,411								
		<u>318,126,353</u>	<u>72,409,798</u>								
17 FINANCE COST											
Mark-up on short term bank borrowings		522,999	380,746								
		<u>522,999</u>	<u>380,746</u>								

**JILANI ENERGY (PRIVATE) LIMITED**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

	NOTE	2022 RUPEES	2021 RUPEES
<b>18 CONTINGENCIES &amp; COMMITMENTS</b>			
Contingencies			
There are no contingencies as on the reporting date. (2021: Nil).			
Commitments			
There are no commitments as on the reporting date. (2021: Nil).			
<b>19 SALES</b>			
Gross sales		847,330,229	657,345,640
Less: Sales tax		(124,039,680)	(96,326,916)
		<u>723,290,549</u>	<u>561,018,724</u>
<b>20 COST OF GOODS SOLD</b>			
Raw material consumed	20.1	563,386,060	416,076,571
Wages, salaries and benefits	20.2	43,748,100	38,627,296
Fuel and power		3,846,019	1,251,709
Repairs and maintenance		2,284,215	7,593,319
Insurance		1,843,461	2,232,107
Electricity charges		84,199	858,980
Depreciation	6.1	29,432,063	31,810,161
		<u>644,624,117</u>	<u>499,060,143</u>
<b>20.1 Raw material Consumed</b>			
Opening balance		22,623,944	43,882,088
Purchases		580,246,252	394,818,427
Material available for consumption		602,870,196	438,700,515
Less: Closing balance		(39,484,136)	(22,623,944)
Raw material consumed		<u>563,386,060</u>	<u>416,076,571</u>
<b>20.2</b>	This includes employment benefits on account of gratuity amounting to Rs. 3,677,777 (2021: Rs. 2,749,278).		
<b>21 ADMINISTRATIVE EXPENSES</b>			
Fee and subscription		3,278,033	3,161,649
Depreciation	6.1	1,322,628	1,143,081
Vehicle running expenses		265,332	239,893
Entertainment		1,249,320	197,534
Printing and stationery		213,340	336,340
Insurance		853,401	696,392
Legal and professional charges		120,000	120,000
Auditors' remuneration	21.1	950,000	567,000
Others		12,113	10,954
Penalties		15,254,441	4,922,236
		<u>22,518,617</u>	<u>11,395,079</u>
<b>21.1 Auditor's remuneration</b>			
Audit fee		750,000	500,000
Tax services		150,000	62,000
Out of pocket		50,000	5,000
		<u>950,000</u>	<u>567,000</u>

**JILANI ENERGY (PRIVATE) LIMITED**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

	NOTE	2022 RUPEES	2021 RUPEES
22	<b>OTHER EXPENSES</b>		
	Provision for Workers' Profit Participation Fund	2,735,869	2,149,891
	Provision for Workers' Welfare Fund	1,039,630	816,959
		<u>3,775,499</u>	<u>2,966,850</u>

23	<b>FINANCE COST</b>		
	Mark-up on short term borrowings	1,095,313	674,693
	Interest on WPPF	312,039	330,543
	Bank charges	23,080	8,107
		<u>1,430,432</u>	<u>1,013,343</u>

24 **TAXATION**

**Current tax**

Profit and gains derived by the Company from electric power generation project are exempt from income tax. Provision for taxation has not been made in these financial statements as total income of the Company is exempt under clause 132 of Part I of the Second Schedule to the Income Tax Ordinance, 2001 subject to the conditions and limitations provided therein. Under clause (11A) of Part IV of Second Schedule to the Income Tax Ordinance, 2001, the Company is also exempt from levy of minimum tax on turnover under section 113 of the Income Tax Ordinance, 2001.

**Deferred tax**

Deferred tax has not been presented in the financial statements as income of the Company is exempt from tax.

**JILANI ENERGY (PRIVATE) LIMITED**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

**25 REMUNERATION OF CHIEF EXECUTIVE AND EXECUTIVE DIRECTOR**

The aggregate amount charged in these financial statements in respect of remuneration, including all benefits to the Chief Executive and Executive directors of the Company are as follows:

	2022			2021		
	Chief Executive	Executive Director	Other Executives	Chief Executive	Executive Director	Other Executives
Managerial remuneration	-	-	9,611,592	-	-	9,431,592
Other allowances and benefits	-	-	-	-	-	-
	-	-	9,611,592	-	-	9,431,592
Number of persons	1	1	5	1	1	5

**26 RELATED PARTY TRANSACTIONS**

Parties are considered to be related if one party has the ability to control the other party or exercise significant influence over the other party in making financial or operational decisions and include directors and associated undertakings. All transactions with such parties are called related party transactions.

During the year Company entered into transactions with "Associated Undertakings", as well as with directors of the Company.

Detail of related party transactions, excluding those under employment contracts and outstanding balances at the year end are as follows:

Sr. #	Name of Related Parties	Relationship	Nature of Transaction	Ref. Note	Opening balance	Transaction (s) during the year	Closing Balance Due to / (Due From)
1	Javaid International (pvt) Limited	Associated Company	Sale of electricity	8	19,247,388	50,916,845	70,164,233
2	Jilani Poly Industries (pvt) Limited	Associated Company	Sale of electricity	8	192,845,041	409,210,572	602,056,613
					<u>212,093,429</u>	<u>460,127,417</u>	<u>672,220,846</u>

**27 FINANCIAL INSTRUMENTS AND RELATED DISCLOSURES**

The Company has exposure to the following risks from its use of financial instruments:

- Credit risk
- Liquidity risk
- Market risk

The Board of Directors has overall responsibility for the establishment and review of Company's risk management framework. The Board is also responsible for developing and monitoring the Company's risk management policies.

**27.1 Credit risk and concentration of credit risk**

Credit risk represents the accounting loss that would be recognized at the reporting date if counter parties fail completely to perform as contracted.

Credit risk arises principally from loans and advances, trade debts, deposits, other receivables and bank balances. Out of total financial assets of Rs. 686,268,332 (2021: Rs. 329,691,534), the financial assets that are subject to credit risk amounted to Rs. 684,390,572 (2021: Rs. 327,520,64).

**27.2 Exposure to credit risk**

Trade debts	672,220,846	212,093,429
Trade deposits and other receivables	8,997,541	4,507,812
Bank balances	5,049,945	113,090,293
	<u>686,268,332</u>	<u>329,691,534</u>

Due to the Company's long standing relationships with these counterparties and after giving due consideration to their strong financial standing, management does not expect non performance by these counterparties on their obligations to the Company. Accordingly, the credit risk and concentration of credit risk is minimal.

**JILANI ENERGY (PRIVATE) LIMITED**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

**27.3 Liquidity risk**

Liquidity risk is the risk that the Company will not be able to meet its financial obligations as they fall due. The Company's approach to managing liquidity is to ensure as far as possible to always have sufficient liquidity to meet its liabilities when due. The Company's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its obligations when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Company's reputation. The Company uses different methods which assists it in monitoring cash flow requirements. Typically the Company ensures that it has sufficient cash on demand to meet expected operational expenses for a reasonable period, including the servicing of financial obligation.

The following are contractual maturities of financial liabilities as at 30 June 2022:

	Carrying amount Rupees	Contractual cashflows Rupees	Less than one year Rupees	One to five years Rupees	More than five years Rupees
Short term bank borrowings	63,872,626	63,872,626	63,872,626	-	-
Accrued markup	522,999	522,999	522,999	-	-
<b>Total</b>	<b>64,395,625</b>	<b>64,395,625</b>	<b>64,395,625</b>	<b>-</b>	<b>-</b>

The following are contractual maturities of financial liabilities as at 30 June 2021:

	Carrying amount Rupees	Contractual cashflows Rupees	Less than one year Rupees	One to five years Rupees	More than five years Rupees
Short term bank borrowings	380,746	380,746	380,746	-	-
Accrued markup	380,746	380,746	380,746	-	-
<b>Total</b>	<b>380,746</b>	<b>380,746</b>	<b>380,746</b>	<b>-</b>	<b>-</b>

**27.4 Market risk**

Market risk is the risk that changes in market price, such as foreign exchange rates, interest / markup rates and equity prices, will affect the Company's income or the value of its holdings of financial instruments.

**27.4.1 Currency risk**

Foreign currency risk arises mainly where receivables and payables exist due to transactions in foreign currency. The Company has exposure to currency risk as it has liabilities in foreign currencies.

The Company is exposed to currency risk on import of raw materials, stores, spares, machinery and export of goods mainly denominated in US dollars. The Company's exposure to foreign currency risk is as follows:

The following significant exchange rates have been applied:	2022	2021
Rupees per USD		
Average rate	181.20	159.57
Reporting date rate	204.85	157.54

**27.4.2 Interest / markup rate risk**

Mark-up / Interest rate risk is the risk that the value of a financial instrument will fluctuate due to changes in market mark-up / interest rates.

At the reporting date, the variable markup rate profile of the Company's significant interest bearing financial instruments was as follows:

Variable rate instruments	Effective markup rate %		Carrying value in Rupees	
	2022	2021	2022	2021
Financial liabilities				
Short term financing	8.1% to 12.6%	11.64% to 14.55%	63,872,626	-
<b>Total</b>			<b>63,872,626</b>	<b>-</b>

JILANI ENERGY (PRIVATE) LIMITED  
NOTES TO THE FINANCIAL STATEMENTS  
FOR THE YEAR ENDED JUNE 30, 2022

27.4.3 Markup rate sensitivity

The following table demonstrates the sensitivity to a reasonably possible change in interest / markup rates on profit before tax. The analysis excludes the impact of movement in market variables on the carrying values of employees retirement obligation. Further, interest rate sensitivity does not have an asymmetric impact on the Company's result.

	Profit and loss 100 bps	
	Increase	Decrease
As at June 30, 2022		
Sensitivity -variable rate profitability	(638,726)	638,726
As at June 30, 2021		
Sensitivity -variable rate profitability		

The sensitivity analysis prepared is not necessarily indicative of the effects on profit for the year of the Company.

27.4.4 Price risk

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices (other than those arising from interest rate risk or currency risk). The Company as is exposed to equity risk as it holds investment in associate.

27.4.5 Financial instruments by categories

	2022		
	Others	Amortised cost	Total
Financial assets			
Trade debts	-	672,220,846	672,220,846
Trade deposits and other receivables	-	8,997,541	8,997,541
Cash and bank balances	-	5,630,485	5,630,485
	-	686,848,872	686,848,872
	2021		
	Others	Amortised cost	Total
Financial assets			
Trade debts	-	212,093,429	212,093,429
Trade deposits and other receivables	-	4,507,812	4,507,812
Cash and bank balances	-	114,188,745	114,188,745
	-	330,789,986	330,789,986
	Amortised cost		
	2022	2021	
Financial liabilities			
Short term bank borrowings	63,872,626		
Trade and other payables	316,126,353	72,409,798	
Mark-up accrued on loans	522,999	380,746	
	380,521,978	72,790,544	

27.4.6 Capital risk management

The primary objective of the Company's capital management is to ensure that it maintains healthy capital ratios in order to support its business, sustain future development of the business and maximize shareholders value. The Company closely monitors the return on capital along with the level of distributions to ordinary shareholders. No changes were made in the objectives, policies or processes during the year ended June 30, 2022.

The Company manages its capital structure and makes adjustment to it in the light of changes in economic conditions. To maintain or adjust the capital structure, the Company may adjust the dividend payment to shareholders or issue new shares.

The Company monitors capital using a debt equity ratio, which is net debt divided by total capital plus net debt. Equity comprises share capital, capital and revenue reserves.

The Company finances its operations through equity and borrowings with a view to maintain an appropriate mix between various sources of finance to minimize risk.

**JILANI ENERGY (PRIVATE) LIMITED**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE YEAR ENDED JUNE 30, 2022**

**27.4.7 Fair value analysis**

Fair value is the amount that would be received on sale of an asset or paid on transfer of a liability in an orderly transaction between market participants at the measurement date. Consequently, differences can arise between carrying values and fair value estimates. Underlying the definition of fair value is the presumption that the Company is a going concern without any intention requirement to curtail materially the scale of its operations or to undertake a transaction on adverse terms.

IFRS 13, 'Fair value Measurements' requires the Company to classify fair value measurements using fair value hierarchy that reflects the significance of the inputs used in making the measurements. The fair value hierarchy has the following levels:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities;  
 Level 2: inputs other than quoted prices included within Level 1 that are observable for the assets or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and  
 Level 3: "Inputs for the assets or liability that are not based on observable market data (unobservable inputs).

The following table show the categories as well as carrying amounts and fair values of financial assets according to there respective category, including their levels in the fair value hierarchy for financial instruments measured at fair value. It does not include fair value information for financial assets not measured at fair value if the carrying amount is reasonable approximation of fair value.

Particulars	Amortised cost	Fair value through OCI	Total	Fair value			
				Level 1	Level 1	Level 1	Total

**Financial assets measured at fair value - 2022**

**Financial assets not measured at fair value - 2022**

Trade debts	672,220,846	-	672,220,846	-	-	-	-
Trade deposits	8,997,541	-	8,997,541	-	-	-	-
Cash and bank	5,630,485	-	5,630,485	-	-	-	-
<b>Total</b>	<b>686,848,872</b>	<b>-</b>	<b>686,848,872</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Particulars	Amortised cost	Fair value through OCI	Total	Fair value			
				Level 1	Level 1	Level 1	Total

**Financial assets measured at fair value - 2021**

**Financial assets not measured at fair value - 2021**

Trade debts	212,093,429	-	212,093,429	-	-	-	-
Trade deposits	4,507,812	-	4,507,812	-	-	-	-
Cash and bank	114,188,745	-	114,188,745	-	-	-	-
<b>Total</b>	<b>330,789,986</b>	<b>-</b>	<b>330,789,986</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**28 Production capacity and utilization**

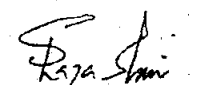
	2022	2021
	MWH	MWH
Installed capacity	56,150	56,150
Capacity utilized	48,626	46,015
Capacity utilization ratio	87%	82%

**29 GENERAL**

- a. Figures have been rounded off to the nearest rupee.  
 b. The average number of employees during the year has been 58 (2021 : 55 ) and as on year end 63 (2021 : 53).  
 c. Corresponding figures have been re-arranged wherever necessary for the purpose of comparison.

05 DEC 2022

- d. These financial statements have been authorized for issue on \_\_\_\_\_ by the Board of Directors of the Company.

  
 CHIEF EXECUTIVE

  
 DIRECTOR

Form A  
THE COMPANIES ACT, 2017  
THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018  
[Section 139(1) and Regulation 4]  
ANNUAL RETURN OF COMPANY HAVING SHARE CAPITAL

## PART-I

(Please complete in typescript or in bold block capitals)

1.1 CUN (Registration Number) **0094287**

1.2 Name of the Company **JLANI ENERGY (PVT.) LIMITED**

1.3 Fee payment details  
1.3.1 Chalan No **E-2023-1348921** 1.3.2 Amount **1320.0**

1.4 Form A made upto **27/10/2022**

1.5 Date of AGM **27/10/2022**

**Section A**

2.1 Registered Office Address **JLANI Centre Plot No. 1-92 Main Ravi Road, Near Ashed Bank, Lahore Punjab 54000**

2.2 Email Address **info@jlanielectric.com**

2.3 Office Tel No **11-299-800**

2.4 Office Fax No **11-299-800**

2.5 Principle line of business **POWER GENERATION - ALLIED (OTHER)**

2.6 Mobile No. of Authorized officer (Chief Executive Director/ Company Secretary/ Chief Financial Officer) **03008410720**

## 2.7 Authorized Share Capital

Classes and kinds of Shares	No. of Shares	Amount	Face Value
Ordinary Shares		500,000,000.00	

## 2.8 Paid up Share Capital

Classes and kinds of Shares	No. of Shares	Amount	Face Value
Ordinary Shares		448,900,000.00	

## 2.9 Particulars of the holding subsidiary company, if any

Name of Company	Holding/Subsidiary	% Shares Held

## 2.10 Chief Executive

Name **Sheikh Shafiqul Jilani**

Address **House No 212, Basm Park Upper Mall, Lahore**

MIC No **3520271825105**



**2.11 Chief Financial Officer**

Name Tahir Iqbal

Address House No. 5 Abid Colony, Hanjwal, Muzan Road, Lahore

NIC No 3520225644795

**2.12 Secretary**

Name Ahsan Ashraf

Address House No. 373, St. No. 5, Y Block Phase 3 DHA, Lahore Cantt, District Lahore.

NIC No 3520232826559

**2.13 Legal Advisor**

Name Ajmal Hayat and Co.

Address 18-A, E-Block, PIA, Shalimar, Lahore

NIC No

**2.14 Particulars of Auditors**

Name Riaz and Co

Address 105-B, Gulberg II, Lahore

**2.15 Particulars of Shares Registrar (If applicable)**

Name

Address

Email

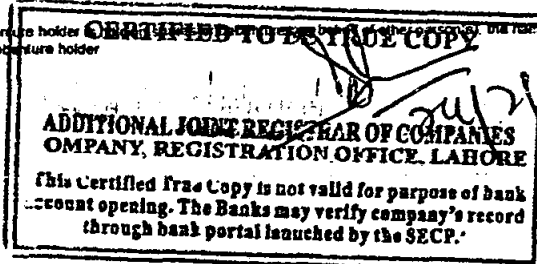
**Section-B****2.16 List of Directors on the date Annual return is made**

Sr	Name of Director	Residential Address	Nationality	NIC (Passport No. if foreigner)	Date of appointment / election	Name of Member/Creditors nominating/appointing
1	Ahsan Ashraf	House No. 373, St. No 5, Y Block Phase 3 DHA, Lahore Cantt, District Lahore	Pakistan	3520232826559	27/10/2022	
2	Shahn Shahzeb Jilani	House No 212, Bawa Park Upper Mall, Lahore	Pakistan	3520271625105	27/10/2022	

## 2.17 List of members &amp; debenture holders on the date upto which this Form is made

S#	Folio#	Name *	Address	Nationality	No of shares	Percentage	NIC No(Passport if foreigner)
<b>Members</b>							
1	2	Sheikh Shahzeb Jilani	House No 212, Bawa Park, Upper Mall, Lahore	Pakistan	300000		3520271825105
2	3	Javed International PVT Ltd.	Jilani Centre Plot No. 1, 92-Main Ravi Road,	Pakistan	2150000		3520271825108
3	4	Jam Poly Industries Pvt. Ltd.	Jilani Centre Plot No. 1, 92-Main Ravi Road,	Pakistan	1808000		3520271825109
4	1	Ansan Ashraf	House No. 373, St. No 5, Y Block Phase 3 C	Pakistan	210000		3522232826559
<b>Debenture Holders</b>							

\* In case the member or debenture holder is a company, the name of the company shall be mentioned in parentheses along with the name of the member or debenture holder



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## 2.18 Transfer of shares (debentures) since last Form A was made

S#	Name of Transferor	Name of Transferee	No of Shares Transferred	Date of Registration of transfer
Members				
Debenture Holders				

## PART-3

## 3.1 Declaration:

I do hereby solemnly, and sincerely declare that the information provided in the form is:

- (i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed; and  
 (ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable.

## 3.2 Name of Authorized Officer with designation/ Authorized Intermediary

Sheikh Shahzeb Jilani	Chief Executive
-----------------------	-----------------

## 3.3 Signatures

Electronically signed by Sheikh Shahzeb Jilani
--

## 3.4 Registration No of Authorized Intermediary, if applicable

Day	Month	Year
-----	-------	------

## 3.5 Date

02/02/2023
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[Next Page](#)

**THE COMPANIES ACT, 2017**  
**THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018**  
 [Section 197 and Regulations 4 and 20]  
**PARTICULARS OF DIRECTORS AND OFFICERS, INCLUDING THE CHIEF EXECUTIVE,**  
**SECRETARY, CHIEF FINANCIAL OFFICER, AUDITORS AND LEGAL ADVISER OR OF**  
**ANY CHANGE THEREIN**

FORM 29

## PART-I

1.1 CUIN (Incorporation Number) C098287

1.2 Name of Company JILANI ENERGY (PVT.) LIMITED

1.3 Fee Payment Details

1.3.1 Chalan Number E-2023-1349921 1.3.2 Amount 13200

## 2. Particulars:

## 2.1 New Appointment/Election

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation** * (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointment / change / any other remarks (i)	Nature of directorship (nominee/indepe ndent/additional/ other) (j)
Riaz and Co			105-B, Gulberg II, Lahore	Auditor	Pakistan		27/10/2022	Re-Appointment /	
Ahsan Ashraf	3520232826559	Sheikh Muhammad Ashraf	House No. 373, St. No. 5, Y Block Phase 3 DHA, Lahore Cantt, District Lahore.	Director	Pakistan		27/10/2022	Re-Elected /	
Sheikh Shahzeb Jilani	3520271625106	Sheikh Muhammad Jilani	House No 212, Bawa Park Upper Mall, Lahore	Director	Pakistan		27/10/2022	Re-Elected /	
Sheikh Shahzeb Jilani	3520271625106	Sheikh Muhammad Jilani	House No 212, Bawa Park Upper Mall, Lahore	Chief Executive	Pakistan		27/10/2022	Re-Appointment /	
Ahsan Ashraf	3520232826559	Sheikh Muhammad Ashraf	House No. 373, St. No. 5 Y Block Phase 3 DHA, Lahore Cantt, District Lahore	Secretary	Pakistan		27/10/2022	Appointed /	
Tahir Iqbal	3520225644796	Fateh Muhammad	House No. 5 Abid Colony, Manjarwal, Multan Road, Lahore	Chief Accountant/IC FO	Pakistan		27/10/2022	Appointed /	

## 2.2 Cessing of Officer/Retirement/Resignation

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation** * (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointment / change / any other remarks (i)	Nature of directorship (nominee/indepe ndent/additional/ other) (j)

2.3 Any other change in particulars relating to columns (a) to (g) above

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Full Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation* (g)	Date of Present Appointment or Change (h)	Made of Appointment / change / any other remarks (i)	Nature of directorship (nominee/independ- ent/additional/dh- er) (j)
Agnel Hayat and Co			12-A, E-Block, P/A Society Lahore.	Legal Adviser	Pakistan		17/03/2015	Other Change /	

\* In the case of a firm, the full name, address and above mentioned particulars of each partner, and the date on which each became a partner.

\*\* In case the nationality is not the nationality of origin, provide the nationality of origin as well.

\*\*\* Also provide particulars of other directorships or offices held, if any.

\*\*\*\* In case of resignation of a director, the resignation letter and in case of removal of a director, member's resolution be attached

\*\*\*\*\* In case of a director nominated by a member or creditor the name of such nominating or appointing body shall also be mentioned in column (j), and a copy of resolution from the nominating or appointing body be attached.

## 3.1 Declaration:

## PART-III

I do hereby solemnly, and sincerely declare that the information provided in the form is:

(i) true and correct to the best of my knowledge, in consonance with the record as maintained by the Company and nothing has been concealed and

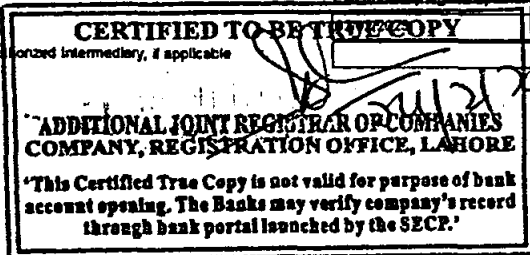
(ii) hereby reported after complying with and fulfilling all requirements under the relevant provisions of law, rules, regulations, directives, circulars and notifications whichever is applicable.

3.2 Name of Authorized Officer with designation/ Authorized Intermediary Sheikh Shahzeb Jilani Chief Executive

3.3 Signature Electronically signed by Sheikh Shahzeb Jilani

3.4 Date (DD/MM/YYYY)

3.5 Registration No of Authorized Intermediary, if applicable





JILANI ENERGY (PVT) LTD

## **PROFILE OF CEO**

Mr. Shahzeb Jilani  
CEO / Director

### **OTHER ENGAGEMENTS**

Director  
Javaid International (Pvt) Ltd.  
Jilani Poly Industries (Pvt) Ltd.

Mr. Shahzeb Jilani is Chief Executive of M/s Jilani Energy (Pvt) Ltd., He secured his MBA Degree from Pak Aims Institute of Management Sciences and joined Jilani Group, he is enjoying the position of Director Production & R&D. Jilani Group is engaged in the production of Plastic Packing products and marketing with the brand name "Jilani Plastic".

Mr. Shahzeb Jilani has fully involved in the setting up & running of 6.5 MW power plant in the name of Jilani Energy (Pvt) Ltd.

Head Office: Jilani Centre, 92-Ravi Road, Lahore.  
Factory: 17-KM Sheikhpura Road, Lahore.  
UAN: 042-111-200-600  
Fax: 042-37701140

## **SENIOR MANAGEMENT**

**Employee Name:** Aamir Javaid Malik

**Job Title:** General Manager

**Total Experience:** 30+

**Qualification:** BSc Electrical Engineering

# **FEASIBILITY STUDY REPORT**

**OF**

## **6.5 MW COAL FIRED POWER PROJECT**

**JILANI ENERGY (PVT.) LTD.**

17 Km Sheikhupura Road, Sowa Messon Kaller, Lahore



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## **1. PLANT CHARACTERISTICS**

### **1.1 Project Introduction**

Electrical Power is essential for running machinery in factories and industrial units. There has been an enormous increase in the demand of Electrical energy in the last two decades due to industrial development, but sadly, there has been no significant increase in energy production. Therefore, supply of energy is far less than the actual demand; consequently, a huge energy crisis is looming over Pakistan.

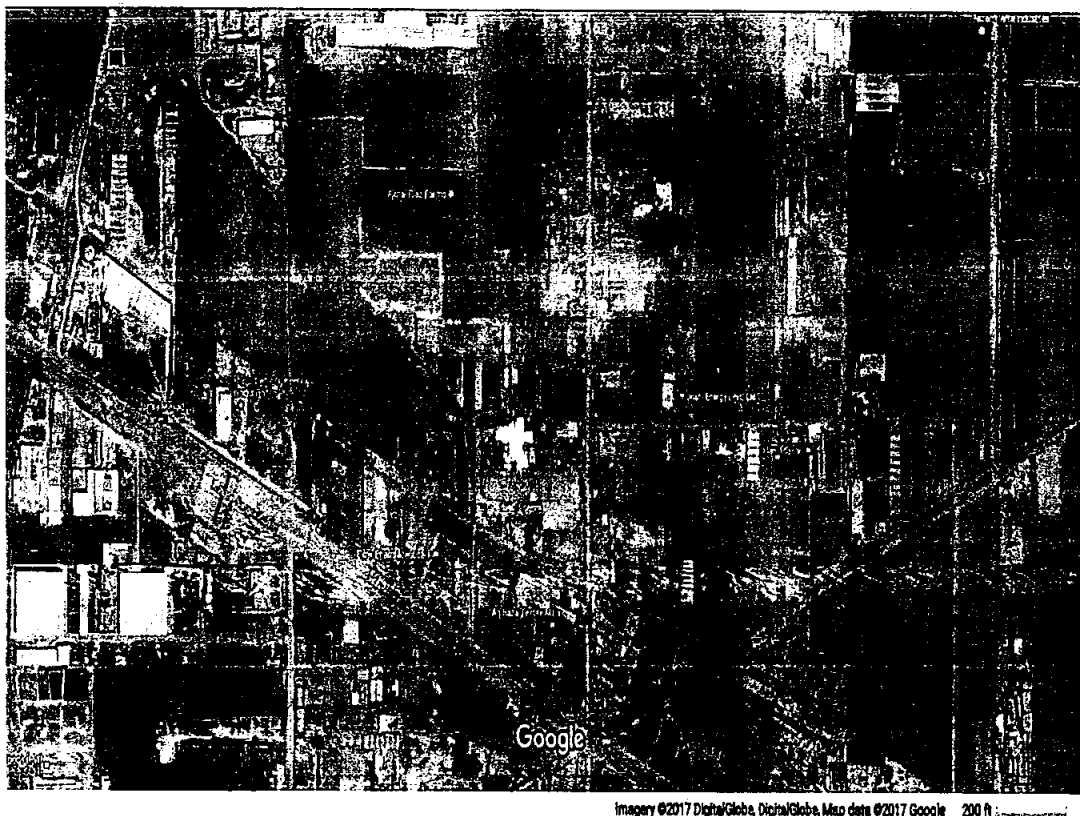
Keeping in view the severe energy crisis, Jilani Group has decided to set-up a Coal based power project which will be sufficient enough to fulfill the energy requirements of the Jilani Group Companies and may distribute the extra energy to nearby bulk users as well. Coal based Power is economical and viable option in comparison to other sources like fuel based which are more expensive.

The project cost of Jilani Energy (Pvt) Ltd., is envisioned as Rs. 413.7 Million, fully owned by Directors / Sponsors of the company.

Jilani Energy (Pvt) Ltd., is an associated company of Jilani Group, projected to be a 6.5MW coal-fired power plant to provide power to processing units, and to meet the energy requirement of production. The proposed power plant is located near the processing units, with main configuration of 1 x 6.5MW condensing type turbine equipped with 1 x 6.5 MW brushless excitation generator, and 1 x 35 t/h CFB boiler, with high temperature (470°C) and sub-high pressure (6.6MPa) parameter. Annual operation hours are set as >8000 hours. Outgoing feeder voltage of generator is 11 kV which is synchronized to the grid of processing plant. Supply power is 6.5MW. The power plant adopts Pakistan local coal or Imported coal (which one is more economical) as fuel.

### **1.2 Project Location and Accessibility**

The project is located at Lahore-Sheikupura road near Jilani Plastic. The google map of the project area shows the exact location:



The Coordinates of the area are: 31.647534, 74.185070

The location is accessible from Islamabad through Islamabad Motorway (M2). The distances are:

Islamabad Motorway to Kot Abdul Malik Motorway Exchange	332 km
Kot Abdul Malik Toll to Jilani Energy	7.4 km

### 1.3 Design Scale and Scope

#### ■ Design Scale

Design capacity of the power plant is 6.5MW, with 1 set of 35 t/h high temperature, high pressure CFB boiler, 1 set of 6.5MW condensing steam turbine equipped with 1 set of 6.5MW brushless excitation generator.

■ **Design Scope**

- Boiler System
- Turbine System
- Generator System
- Fuel Conveying System
- Limestone Injection into the Boiler
- Ash & Slag Handling System
- Chemical Water Treatment System
- Water Supply & Drainage System of Power Plant
- Firefighting System of Power Plant
- Electrical System
- Control & Instrumentation System
- Ventilation and Air Conditioning System
- Other Civil Works Matched with The Above System

**1.4 Introduction to Plant Address**

■ **Natural Conditions of Plant Area**

The proposed power plant is located near the Jilani group's Processing plants, with convenient transportation and smooth landform. The power plant takes approx. 2 - Acres as shown in fig 01.

■ **Water Source of Power Plant**

Underground water is adopted as process water, which is provided by the processing plant via digging deep wells. Tap water is adopted as domestic water, which is provided by the processing plant.

■ **Fuel Supply**

Fuel source of power plant is local/imported coal of Pakistan with annual consumption of approx. 32,000 tons. Coal is transported to dry coal shed by trucks.

■ **Desulfurizer Supply**

Fuel source of power plant is local/imported coal of Pakistan with annual consumption of approx. 32,000 tons. Coal is transported to dry coal shed by trucks.

## ■ **General Layout of Power Plant**

General layout of power plant shall be designed according to the construction scale of 1 boiler and 1 STG.

From west to east, the whole power plant is successively arranged with water treatment area, circulating cooling water area; main power building, coal conveying trestle, coal crusher house, coal storage area, ash & slag discharging area.

## **1.5 Power Supply Load**

Outgoing feeder voltage level of the generator is 11 kV, which is synchronized to the grid of Jilani poly and plastic processing plant. After put into operation, it can supply 6.5 MW (deducting the auxiliary load) electricity to the grid of processing plant.

## **1.6 Main Design Principle**

1 set of High temperature and high pressure 35 TPH CFB boiler is set for this project during this phase, together with 1 set of 6.5MW extraction condensing STG unit. Turbine is manufactured by Peter brotherhood (Rated power is 6.5 MW. Main steam inlet pressure is 6.6 MPa. Main steam inlet temperature is 470°C); Generator is supplied in matching model, Rated power is 6.5MW. Outgoing feeder voltage level is 11 kV. 1 set of CFB (circulating fluidization bed) boilers model has Rated capacity is 35 TPH. Steam pressure is 6.6 MPa. Steam temperature is 470°C.) Semi open layout is adopted.

## ■ **Fuel Conveying System**

The power plant is equipped with a set of dry coal shed with span of 30 m, and length of 60 m. Total area of dry coal shed is 1800 m<sup>2</sup>, which can store up to 1000 tons, meeting 10-day coal demand of the power plant .Coal in dry coal shed is transported to coal belt conveyor by coal feeder below underground coal hopper and then sent back to raw coal bunker of main power building by belt conveyor after crushing. Single loop belt conveyor with belt width of 650 mm shall be used to transport coal of 4 Tons/hr to boiler.

In accordance with the requirements of environmental protection, multi-cyclones is used for flue gas dust removal, whose dust removal efficiency is

85%. Internal limestone desulfurization system is adopted for the boiler. When calcium sulfur molar ratio is 2.5, the desulfurization efficiency can reach 85%.

- **Ash & Slag Disposal System**

Ash and slag of boiler is utilized completely and comprehensively as raw material for brick and tile plant. Total annual ash & slag discharge of power plant is about 4800 tons.

Boiler slag is discharged to cooling slag remover and cooled dry slag is transferred to slag silo through large-inclination belt conveyor, then transported to cement plant or brick & tile plant by vehicles for comprehensive utilization.

- **Chemical Water Treatment System**

Makeup water of boiler is handled by 2-pass RO plus demineralization plant according to main equipment type, parameter and makeup water quality requirements.

- **Circulating Cooling Water System**

Open cycle circulating system of GRP mechanical draft cooling tower is used for circulating cooling water system.

- **Main Electrical Wiring System**

1 set of 6.5 MW generator is set for power plant during this phase. Outgoing feeder voltage level is 11 KV. A section of 11 kV bus is set in this main power building and generator is directly connected to the bus via the switch. Bus adopts single-bus wiring scheme. 11 KV bus provides power to Jilani Poly and Plastic Industry, connected to substation via an 11KV tie-in line.

- **Thermodynamic System**

Main steam system adopts unit system scheme. Live steam from boiler outlet is respectively connected to motorized isolation valve and then to main stop valve of turbine, finally to speed governing valve and drive the turbine to work.

### ■ **Combustion System**

Raw coal is sent from raw coal bunker into boiler for combustion by coal supply air and sowing air by 3 sets of coal feeders. Heated flue gas ignition is used by oil gun under CFB for boiler ignition. Combustion air is divided into primary air and secondary air for segmented air supply. Flue gas enters into cyclone separator from furnace outlet and that after separation by cyclone separator enters into back-pass duct of boiler. It will be pressurized by ID fan after de-dusted by bag filter. Most of materials will be separated from cyclone separator during boiler operation. They will be sent back to combustion house by loop seal air. De-sulfurization system adopts limestone powder de-sulfurization system inside furnace.

### ■ **Layout of Main Power Building**

Main power building has 4 column spaces with 1 space of 7.5m and 4 spaces of 6m. Total length is 31.5 m. Main power building is set in 3 columns, i.e. turbine house, deaeration coal bunker room and boiler house, with span of 18m, 9.5m and 23 m respectively.

### ■ **Thermal Automation Plant**

Industrial computer, LED large-screen display and a special key are used as main measures for indoor control process system of thermal automation control room so as to control operation process of the entire power plant. DCS control system of this project proposes to consist of data acquisition system (DAS), analog quantity control system (MCS), sequence control system (SCS) and electrical control system (ECS). Thermal automation control room is set on operating floor of deaeration coal bunker 7m deck.

## **1.7 Energy Conservation and Raw Material**

After put into operation, the power plant can supply 6.5 x 8400 kWh power annually. Coal consumption for power generation is 622 gm/KWh, (based on client's supplied SGS coal analysis report, the GCV of coal is 5500 Kcal/kg, NCV of Pakistan local coal is 3500 Kcal/kg coal).

CFB boiler has high combustion efficiency (89%) and large load regulation scope. It still can burn stably without oil injection which can support combustion so as to save oil under 40% of low load. Limestone powder is added as desulfurization agent during operation of CFB boiler.



Due to the combustion conditions of low-temperature and segmented air supply in this furnace, the NO<sub>x</sub> generation is remarkably decreased.

Station auxiliary transformer of low losses is selected for this project to save energy consumption. Sufficient high-precision surveying instruments is furnished for electrical and steam-water systems according to regulations. Operation indicators is surveyed and checked reasonably to control economic operation of power plant effectively.

Recycle and circulate drainage of industrial cooling water of main power building to save water consumption.

## **1.8 Environmental Protection**

- Influence of power plant to surrounding environment is introduced as followings after project

### **Construction:**

As internal desulfurization system is adopted, comprehensive de-sulfurization efficiency can reach 85%, and SO<sub>2</sub> at stack outlet is < 400 mg/Nm<sup>3</sup>.

As low-temperature combustion is adopted ( 850°C~ 900 °C), NO<sub>x</sub> content is largely decreased to 300 mg/Nm<sup>3</sup>.

Open cycle circulating cooling system is used for power plant without external drainage or thermal pollution. Industrial wastewater and living sewage of power plant shall be drained after treatment without environment pollution.

Plant tone is far away from resident's concentrated zone.

The project adopts wet ash removing method, with hydraulic ash removing system properly arranged; which has little effect on environment, and can make comprehensive utilization of ash and slag.

## **1.9 Labor Safety and Industrial Sanitation**

According to relevant regulations and standard, take feasible and effective measures to avoid fire, explosion, lightning stroke, chemical damage, mechanical damage or noise, improve operation conditions and guarantee health of operators.

## **1.10 Operation Organization and Design of Fixed Manpower**

### **■ Organization**

Organization of power plant is managed by three levels, namely, plant, workshop and shift. Plant consists of office, Production Technology Office, Financial Department and Administration Office. Production workshop consists of operation workshop, repair workshop and fuel workshop.

### **■ Design of Fixed Person**

There are 78 fixed workers (namely, operators, overhaul, management personnel and other persons) in this plant.

## **2. GENERAL LAYOUT AND TRANSPORTATION**

### **2.1 Layout Principal**

Power plant is located near processing plants. General layout principle is to set various production workshops, buildings, structures and equipment according to existing position and area and production processes of the power plant to aim at reasonable and beautiful layout and meet safe, stable and continuous production requirements of the power plant and gap between various production workshops, buildings and structures shall meet relevant current Chinese design specifications.

### **2.2 General Layout**

Total layout of power plant shall be arranged and designed according to 1 set of boiler and 1 set of steam turbo-generator. From west to east, the whole power plant is successively arranged with water treatment area, circulating cooling water area; main power building, coal conveying trestle, coal crusher house, coal storage area, ash & slag discharging area.

### **2.3 Traffic and Transportation in the Plant**

Roads in the plant are basically circular and every functional zone is circled by roads and width of main roads in the plant is 6m and that of secondary roads is 4m. Width of roads in functional zone and approach roads shall be 2m and bending radius shall be 6m and 4m respectively according to demand with and concrete structure for road surface structure. "Three connections and one leveling" must be ensured that a construction site is connected to water and electric power supplies and roads, and that the ground is leveled before the project kick-starts and site elevation and slope should be decided according to the general drawings and traffic transportation requirements before construction in the plant.

### **2.4 Vertical Layout of the Plant Area**

Ground elevation inside the plant should be settled based on the following principles is: for one thing, it cannot submerge the plant area at highest level of tidewater, for another thing, ground water and drain pipe water can be discharged easily, and try to maintain the field at same level. Therefore, earthwork balance should be done before construction.

### 3. THERMAL MECHANICAL PART

#### 3.1 Main Design Principle

The project is arranged with 1 set of Peter Brotherhood condensing steam turbine, equipped with 1 set of Peter brotherhood generator (Rated power is 6.5 MW); and 1 set of 35 t/h CFB boiler.

#### 3.2 Specification of Main Equipment:

##### ■ Boiler

Rated output	35 TPH
Design thermal efficiency	89%
Main steam temperature	470°C
Main steam pressure	6.6 MPa
Feed water temperature	105°C
Design Coal	Local coal
Coal consumption at BMCR	4043 Kg/h
flue gas exhaust temperature	155°C
Boiler blow down rate	2%

##### ■ Turbine

Rated power	6.5 MW
Rated rotation speed	8250 RPM
Rotation direction	Clockwise direction
Steam inlet pressure	6.6 MPa
Steam inlet temperature	470°C
Rated steam volume	4.2 Kg/KWh
Rated heat rate	8483 KJ/KWh
Circulating cooling water inlet temperature	33°C
Rated steam exhaust pressure	0.08 bara
Unit vibration value	< 0.03mm
Noise (measured in distance which is 1m away from cover shell)	< 85db(A)
Regulation mode	DEH (Digital Electrohydraulic)

### ■ Generator

Rated power	6.5MW
Rated voltage	11 KV
Rated rotation speed	1500 RPM
Rated frequency	50Hz
Power factor	0.8
Excitation mode	AC brushless excitation
Efficiency	97%
Cooling mode	air-cooled
Rotation direction	Clockwise direction
Insulation level (of stator or rotor)	F
Overload ability	10%

### ■ Design Scope

Design of turbine, boiler, piping system inside main power building, and selection & arrangement of equipment. Maintenance and auxiliary equipment associated with turbine, generator and boiler.

## 3.3 Fuel

### ■ Fuel Source

The project adopts Pakistan local/imported coal. Coal is transported to dry coal shed by trucks.

### ■ Fuel Analysis Data

Pakistan local coal analysis

Net calorific value	3500 Kcal/Kg
Volatile matter	40.36%
Total Moisture	15.49%
Ash content	22.55%
Fixed Carbon	33.11%
Hydrogen	4.29%
Oxygen	13.70%
Nitrogen	1.73%
Sulfur	8.03%

### ■ Ignition Fuel

Ignition system of boiler adopts light diesel or natural gas. Light diesel is locally supplied, which is transported to power plant by tank car. Natural gas is locally supplied which is transported to power plant by piping.

## 3.4 Combustion System

### ■ Coal Consumption of Boiler

Calculation principle of coal consumption of boiler is as followings:

Annual operation time of boiler	8400 Hrs
Average daily operation hours of boiler	24 Hrs
Combustion efficiency of boiler	89%
Continuous blow-down rate of boiler	2%
Net calorific value of coal	3500
Hourly coal consumption	4.043 TPH
Daily coal consumption	97 Tons/day
Annual coal consumption	34000 Tons/Year

### ■ Combustion System

Raw Coal is sent from raw coal bunker to furnace for combustion by coal supply air and sowing air by 3 stokehold coal feeders. Hot flue gas ignition is used by oil gun under CFB for boiler ignition. Combustion air is divided into primary air and secondary air for segmented air supply. Primary air is sent to furnace through distribution air plate in air chamber after preheating and it accounts for about 50%, and after secondary heating, it will be sent into furnace through front and rear furnace wall, which also accounts for 50%.

Flue gas enters into cyclone separation in furnace outlet and that separated by cyclone separator enters into horizontal flue duct on the top of furnace and tail shaft flue duct. It is sent to stack by ID fan after dust collection by venturi scrubber to atmospheric emission. Most of materials will be separated from cyclone separator during boiler operation. They will be sent to combustion room by loop seal air. Desulfurization adopts limestone powder desulfurization system inside furnace as shown in fig 05.

There are 02 raw coal bunker of collective capacity of 75 Tons for operation of boiler for 24 hours.

### 3.5 Thermodynamic System

For the power plant, 1 boiler and 1 STG set and main part of steam & water system adopts unit system scheme.

- **Main Steam System**

Main steam system adopts unit system scheme. Live steam from boiler outlet is respectively connected to motorized isolation valve and then to main stop valve of turbine, finally to speed governing valve and drive the turbine to work.

- **Demin Water System**

After entering into demin water pipe in main power building, part of the demin water is sent to slag cooler & discharger for slag cooling, and then is sent to turbine condenser respectively together with the other part of demin water, as make up water of the boiler.

- **Condensate System**

Condensate of turbine is sent to condensate pipe after pressurization by condensate pump and heating by steam sealing heater. Condensate system also provides de-superheated water for gland seal PRDS, and sealing water for water sealing valve.

- **Boiler feed water system**

Boiler feed water system is fitted with 2 boiler feed water pumps. Feed water system is equipped with 2 motorized feed water pumps. 1 in operation and 1 standby.

- **Vacuum System of Condenser**

Vacuum system of condenser consists of, water jet air ejector, water ejection tank, pipeline and valve. Steam and air mixture of uncondensed water in condenser is pumped by water jet air ejector to maintain vacuum in condenser.

- **Industrial Water System**

Open cycle system is used for industrial cooling water without industrial water tank. Industrial cooling water system is to provide cooling water for primary fan, secondary fan, ID fan, motorized feed water pump and steam-water sampling cooler, etc. In order to save water, 1 set of Boiler house is arranged

with 10m<sup>3</sup> low elevation water tank and 2 sets of low elevation water pump, with 1 set in operation and 1 set standby.

### 3.6 Layout of Main Power Building

#### ■ General

Main power building has column space of 6m and 7.5m, with configuration of 1 boiler and 1 STG unit. Main power building has 5 column spaces, with total length of 31.5m (in which the length of boiler house is 25.5m).

Main power building is set in 3 rows. From south to north, turbine house, de-aeration coal bunker house, boiler house, bag filter, ID fan, desulfurization tower and stack are set in outer side of boiler house in sequence.

#### ■ Turbine house

Span of turbine house is 16m. Column space is 7.5m and 6m, and there are totally 4 column spaces and total length is 24 m. Turbine is set longitudinally and machine head faces toward fixed end. Central line of STG set is 8m away from that of Row A of columns.

Motorized feed water pump is set near B row of column on bottom level of turbine house with 1

Longitudinal operation maintenance & repair access way. Heater platform is set at the turbine head side with gland sealing heater, LP heater, HP heater, oil tank, etc. on it. Stairs are connected to bottom level of turbine house and 7m operating floor. Elevation of heater platform is 3.4m. Hoisting holes are reserved on generator end. Bottom level is maintenance site. 1 overhead crane of 20/5t is set in consideration of installation, repair & positioning demand of STG set and heater. Rail top elevation is 14m. Lower chord of turbine house rack is 16.5m. Elevation of operating floor is 7 m.

#### ■ De-aeration Coal Bunker House

Span of de-aeration coal bunker house is 9.5m. Column space is 7.5m and 6m. There are totally 5 column spaces in 5-level arrangement and total length is 31.5m. Plant power distribution room is on the bottom floor. Steam & water pipeline and cable levels are on 4m level. Elevation of operating floor is 7m. Elevation of de-aerator level is 13m. Elevation of coal conveying belt level is 25m. 7m operating floor is arranged with centralized control room of



turbine, boiler and electrical system and main steam headers. Raw coal bunker is arranged below 25m floor, and staircase is set at fixed end.

■ **Boiler House**

Boiler adopts semi-open arrangement, with span of 23m, column space of 7.5m and 6m. There are totally 4 column spaces in 2-level arrangement and total length is 25.5m. PA fan, SA fan are set on bottom floor. Utility equipment such as drainage tank, drainage pump, low elevation water tank and low elevation water pump, etc. are set near fixed end. Elevation of boiler operation floor is 7. Steam-water sampling and dosing room is set at fixed end. ESP is set in outer side of boiler house.

■ **ID Fan**

ID fan and venturi scrubber are set in open area. Stack has a height of 30m and outlet diameter of 2 m, of concrete structure.

■ **Protection Measures of Open Layout of Equipment**

- A small enclosed chamber is set on the top of boiler. Chamber is fitted with accessories and instruments in boiler drum side, to prevent frost damage.
- Take thermal insulation measures for pipeline, equipment, valve and accessories in chamber on the top of furnace to reduce radiation losses and avoid super-high temperature of chamber.
- Take protection measures accordingly, to prevent frost damage to pipeline, valve, and fittings in open air, and prevent leakage of rain.
- ID fan is protected by thermal insulation and outer galvanized iron sheets. Use an outdoor
- Electromotor.
- In winter, emergency shutdown period is quite long, so water in the boiler shall be totally discharged. Drying method shall be taken if necessary.
- for maintenance in winter, after hydro testing, ignites the boiler immediately; if not, discharge the water inside boiler completely; if water is not totally discharged, then take drying method.

### ■ Maintenance & Hoisting Facilities

1 turbine house is fitted with a motorized double-beam double-hook overhead traveling crane of 20/5t for unit maintenance. Auto crane is used for maintenance of ID fan.

### 3.7 Auxiliary Facility

**Boiler ignition oil system** Boiler ignition adopts light diesel oil or natural gas. Light diesel system is equipped with 2 sets of ignition oil pumps (1 working and 1 standby) for startup ignition of boiler. 2 sets of ignition pumps are arranged inside fuel oil pump house.

### ■ Air Compressor Station

An air compressor station is built in this power plant. It is fitted with 2 screw type air compressors with parameters of 3 m<sup>3</sup>/min and 0.8MPa. 1 unit is in operation and 1 standby. Air compressor station provides compressed air for operation of limestone desulfurization system, dust collection and ash & slag removal system. It also provides compressed air for boiler and turbine maintenance.

### 3.8 Thermal Insulation of Pipes and Facilities

Main thermal insulation materials of steam-water pipes and auxiliaries whose temperature exceeds 350 °C shall be made of aluminum silicate fiber.

Properties of aluminum silicate fiber products are as follows:

Thermal conductivity:	X = 0.072W/m.k (500q)
Bulk density	<160 kg/m <sup>3</sup>
The maximum usage temperature	350

Adopt galvanized steel plates of 0.5mm for protective layer.

- Painting of pipes and equipment's
- Painting of non-thermal insulation pipes and equipment's
- In general, it is required to brush two layers of anti-corrosion paint then brush ready-mixed paint once for pipes and equipment's.
- In general, it is required to brush anti-corrosion paint once then brush asphalt paint twice for directly buried pipes or those in the trench.
- Painting of pipes and equipment's with thermal insulation

- Brush anti-corrosion paint on metallic surface of pipes and equipment's for two layers when medium temperature is no more than 120 °C.
- In general, there is no need to brush anti-corrosion paint on the metallic surface of pipes and equipment's when medium temperature exceeds 120 °C.
- In general, it is required to brush anti-corrosion paint on supports and hangers which are
- Manufactured on the site twice then brush ready-mixed paint which matches color of supports and hangers supplied by the factory once.
- Brush paint with same or coordinated color once if paint is damaged or color is inconsistent for equipment's, supports and hangers which are supplied by the factory.
- In general, it is required to brush anti-corrosion paint twice for platform ladder then brush the ready mixed paint once and color of ready-mixed paint shall be the same to that of platform of boiler body or building structure.

■ **Internal de-sulfurization by limestone powder injection limestone**

- Limestone conveyor cyclone
- Dust remover Auxiliary fan
- Limestone bunker
- Elevator conveyor Elevator
- Finished product
- Coarse powder
- Main fan
- Unloading hopper
- Column mill
- Measuring conveyor
- Finished product bunker

Due to high sulfur content (5%-6%) of Pakistan local coal, so CFB boiler is selected. CFB boiler adopts internal desulfurization system by limestone powder injection. CFB boiler has the following characteristics rather than conventional coal-fired boilers (like pulverized coal fired boiler and stoker fired boiler): low combustion temperature (850°C~ 900°C); long dwelling time of fuel; strong turbulent mixing in combustion chamber. Based on these features, if limestone powder is directly put into the furnace during combustion process, due to the combustion temperature from 850 H — 900 H is the best reaction temperature range for desulfurization between quick lime (CaO) and SO<sub>2</sub>, therefore, according to the sulfur content in coal, put proper amount of limestone powder (equivalent ratio of calcium and sulfur being 2.5) into the CFB boiler furnace, and the desulfurization efficiency of 85% can be achieved.

Therefore, CFB boiler is economical, efficient, and environmental protection.

The technological process of de-sulfurization by dosing limestone powder to furnace system: limestone preparation system → limestone powder conveying pipe → limestone powder silo → compressed air → interlock continuous pump -motorized feeder ---> limestone powder conveying pipe → boiler furnace.

**Limestone Composition Analysis Table**

SiO <sub>2</sub>	% 1.2-2.1
Al <sub>2</sub> O <sub>3</sub>	% 0.15-0.33
Fe <sub>2</sub> O <sub>3</sub>	% 0.37-0.62
CaO	% 53-54
MgO	% 1.52-1.72
Loss on ignition	% 40.4
Particle size	<1mm
Hourly Limestone consumption	1 t/h
Daily limestone consumption	24 t/h
Annual limestone consumption	8400 t/h

**Waste Water Analysis Report**

PH	11.39
Temperature	45 °C
BOD	580 mg/lit
COD	1,146 mg/lit
TSS	412 mg/lit
IDS	4,148 mg/lit
Chromium	mg/lit ND
Copper	mg/lit ND
Oil & grease 54 mg/lit	54 mg/lit

- **Technical index of de-sulfurization system**

- Guaranteed de-sulfurization efficiency > 94 %
- Operational flexibility 50~110%
- Outlet SO<sub>2</sub> concentration < 400 mg/Nm<sup>3</sup>
- Flue gas discharge temperature > 155°C
- Pressure drop of flue gas through de-sulfurization system < 1200Pa
- Lime consumption of de-sulfurization system < 1 Ton

- **Technical process flow and process flow characteristics**

- Main economics & technical index

FGD inlet gas temperature	155°C
De-sulfurization efficiency	94%
De-sulfurization system pressure drop	< 1200Pa
Annual operation hours	8400 Hrs
Emission concentration of inlet SO <sub>2</sub>	< 400mg/Nm <sup>3</sup>

## 4. ASH AND SLAG REMOVAL SYSTEM

### 4.1 Slag Quantity of Power Plant

Boiler Ash volume	0.5 m <sup>3</sup> /h
FGD inlet gas temperature	155°C
De-sulfurization efficiency	94%
De-sulfurization system pressure drop	<1200Pa
Annual operation hours	8400 Hrs
Emission concentration of inlet	SO <sub>2</sub> <400mg/Nm <sup>3</sup>

### 4.2 Ash Removal System

Positive-pressure dense phase silo pump conveying system is used for ash removal system. The project is arranged with 1 set of bag filter, and a set of air compressor station with 2 x1.0m<sup>3</sup> air compressor installed inside, with 1 in operation and 1 standby. 6 ash hoppers are arranged below each bag filter.

1x1.0 m<sup>3</sup> dense phase pneumatic delivery pump is installed below each ash hopper. Ash inside silo pump is in suspension form.

Under the effect of compressed air, dry ash is delivered into ash silo through delivery pipe.

Ash inside dry ash silo is transported outside after discharged by ash unloading device, for comprehensive utilization of cement plant or brick & tile plant. Ash inside dry ash silo can be discharged directly, or humidified into wet ash to be discharged. Power plant is arranged with a set of 400m<sup>3</sup> ash bunker, which can store 18-day ash discharging quantity of the system.

Process flow of ash removal system is as followings:

Ash hopper of bag filter → diverter damper → silo pump → ash silo → double-shaft blender → transported away

### 4.3 Slag Removal System

Boiler slag is discharged into cooling slag discharger and cooled dry slag is transferred to slag silo through large-inclination slope-protected belt conveyor and transported away.

Volume of slag silo is 100m<sup>3</sup> to store 2-day slag discharging quantity of the system.

Process flow of slag removal system is as followings:

Boiler slag discharging pipe → diverter damper →slag cooler & discharger  
→large-inclination slope-protected belt conveyor silo →slag silo→ bulk machine  
→transported away.

## 5. CHEMICAL WATER TREATMENT SYSTEM

### 5.1 Introduction

The power plant is equipped with 1 set of 35 t/h CFB boiler, and 1 set of 6.5 MW extraction condensing STG unit, with high temperature (470°C) and high pressure (6.6 MPa) parameter. Max. steam supply volume is 35 TPH. Boiler make up water is supplied by water treatment workshop. Based on water analysis report, water treatment system for boiler make up water is set as Pass 1 2 section RO plus mixed bed demin system. Water quality is as following:

PH	7.61
Conductivity	7311 $\mu\text{S}/\text{m}$
TDS	1014mg/l
Total hardness ( $\text{CaCO}_3$ )	163.2mg/l
Ca	27.7mg/l
Mg	22.89mg/l
Ca hardness (Ca)	69.36mg/l
Mg hardness(Mg)	93.84mg/l
Alkalinity ( $\text{CaCO}_3$ )	470.25mg/l
Oxygen	$\leq 7 \mu\text{g}/\text{L}$
Fe	$\leq 30 \mu\text{g}/\text{L}$
Cu	$\leq 5 \mu\text{g}/\text{L}$

### 5.2 Boiler Feed Water Treatment System

Makeup water treatment system of boiler adopts Pass 1 2-section RO device plus mixed bed system, with demin rate of > 97%. Demin water recycle rate of 2-Pass RO device is 75%.

System process is as followings:

Raw water tank → clean water pump → active carbon filter → multi-media filter → security guard filter of 5 $\mu\text{m}$  → HP pump → (Pass 1 2-section) RO device → carbon remover → intermediate water tank → intermediate water pump → mixed bed → demin water tank → demin water pump → de-aerator

Demin water quality is as follows after system treatment:



Hardness	0 mg/Ltr
Silica	<0.02 mg/Ltr
Conductivity	<0.2 $\mu$ S/cm

The demin system adopts parallel header scheme, operated by manual valves. Chemical meters measurement of system, and parameters such as flow and liquid level etc are monitored in control room.

### 5.3 Make up Water Treatment System of Circulating Cooling Water

Makeup water treatment system of circulating cooling water adopts Pass 1 2-section RO device plus mixed bed system, with demin rate of > 90%. Demin water recycle rate of Pass 1 2-section RO device is 90%.

System process is as follows:

Raw water tank → clean water pump → active carbon filter → multi-media filter → cartridge filter of Sum → HP pump → (Pass 1 2-section) RO device → carbon remover → purified water tank → make up water pump → cooling tower.

## 6. CIVIL ENGINEERING

### 6.1 Geology of the Project

Soil and Geological Investigations has been conducted and the results are presented in the report attached.

### 6.2 Meteorological Conditions

Ambient Air Temperature (Max./Mean/Min.)	48 / 25 / 2°C
Relative Humidity (Max., Mean, Min.)	90 / 60 / 24 %
Dry Bulb Temperature (Design)	50°C
Wet Bulb Temperature (Design)	32°C
Relative Humidity (Design)	60 %
Absolute Atmosphere Pressure (Max/Mean/Min.)	992 / 980 / 973 mbar
Temperature difference between day and night (Mean, Max.)	10 / 17
Rainfall — Average annual (Max/Mean/Min.)	78 / 25 / 6.8 mm
Rainfall — Heaviest fall in 24 Hours	332 mm

#### ■ Construction and Structure of Turbine

Adopt reinforced concrete structure for the main power building and column space can be 6m respectively Span of turbine house, deaerator room, coal bunker room and boiler house shall be 16m, 4.7 m and 27m respectively.

There are 4 column spaces for turbine house and total length is 24 m. Adopt light steel roof truss with color coated steel sandwich board roof. Set a hook bridge type crane of 10/5t. There are 4 column spaces in deaeration coal bunker room and total length is 27m. Adopt reinforced concrete flooring and roof and roof elevation is 24 m. Total length of boiler room is 27m and it is required to adopt reinforced concrete slabs for boiler platform whose elevation is 7.0m.

The main power building belongs to Category D and Class II fireproof buildings and fireproof wall and door shall be set according to fireproof specifications. Adopt plastic-steel windows for lighting windows and adopt side-hung or push-pull windows near the ground and others are fixed or side-hung windows. Brush white coating on inner wall and brush masonry mortar,

mixed mortar and coating for outer wall and execute specifications and standards for residual interior decoration.

■ **Auxiliary System Buildings and Structures**

Reinforced concrete structure is used for chemical water room, with equipment room of 60x12m + 6x21m span, steel column and beam, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. VFD room adopts 7.5x14m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. Compressed air station adopts 7.5x12m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof.

Screen and crusher building adopts 15x15m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. Ignition oil pump house adopts 4x9m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. Circulating water pump house adopts 9.5x43.5m steel structure, concrete floor, and color steel plate water resistant roof. Dry coal shed adopts 30x60m steel structure, concrete floor, retaining wall, and color steel plate water-resistant.

## **7. HEATING, VENTILATION AND AIR CONDITIONING PART**

### **7.1 Design Basic**

"Code of Design on Heating, Ventilation and Air Conditioning" (GBJ19-87 of version 2001)

"Design Regulations of Labor Safety and Industrial Sanitation of Cogeneration Power Plants" (DL5053-1996 )

Design requirements provided by various specialties

## **8. LIVING WATER SUPPLY**

Cement plant shall provide living water to meet living drinking water standard.

### **8.1 Drainage in Plane Zone**

Shunt drainage system of rainwater and living sewage shall be used for drainage of power plant. Of little living sewage discharge, there is no living quarter in power plant and living sewage should discharge into anaerobic tank for drainage after treatment. Industrial water is recycled for secondary use. Small amount of industrial water which meets discharge standards can directly discharge. Acid/alkali wastewater of water treatment room can discharge after neutralization treatment in neutral reservoir and reaching the discharge standard. Blow-down water of cooling tower can directly discharge after meeting the discharge standards.

## **9. FIRE PREVENTION SYSTEM**

### **9.1 Fire Separation Distance**

Fire separation distance and the minimum gap between various buildings (or structures) of power plant shall be in accordance with "Code of Fire Control of Building Design" (GBJ16-87) of version 2001, "Code of Design on Fire Control of Cogeneration

- Power Plants and Transformer Substation" (GB50229-96) and "Code of Design on Small Cogeneration Power Plants" (GB50049-201).

## **9.2 Fire Fighting Access**

Firefighting access is set around various buildings (or structures) in the plant zone. Width of main road is double lanes of 7m and secondary road is single lane of 4m. It is connected to roads out of this plant.

## **9.3 Fire Control of Main Building**

Fire hazard of main building is Class IV and fire resistance rating of building is Grade II. Solid wall of which fire resistance rating is not less than 4h shall be used as fire wall below Row B of operating floor. Fire resistance rating of partition wall above operating floor is not less than 1.0 hour. Door of Station auxiliary transformer room is Class B fireproof door and that of outgoing wire chamber of generator is Class C fireproof door. All fireproof doors shall be opened toward evacuation direction.

## 10. COST ESTIMATION AND FINANCIAL ANALYSIS

The cost estimation and financial analysis is the most crucial part of a project as it determines that the project is able to provide cost-efficient and economical energy in comparison to the electricity purchased from DISCO and gives a reasonable return to investor. It gives the expenditure and saving stream for the project. The saving stream thus calculates financial rate of return of the project. Accordingly, in this chapter of the report, details of all type of costs and savings derived along with internal financial rate of return (IFRR) has been discussed. However, it should be kept in mind that most of the cost numbers are estimates and can change based on actual expenditure. The regulator also allows us the estimated cost in the feasibility study could be adjusted on award of EPC contract and thereafter at the time of start of commercial operation. Thereafter it will be seized for entire concession period. However, it is also necessary that estimates should be as closed as actual. Accordingly, the estimations have been made on logical justification.

For a power plant major portion of the cost estimates goes to EPC cost. In this report the EPC cost is based on some supplier's budgetary price as manufacturer are hesitant to provide firm cost at this stage of the project as they are not sure that they will be getting the contract or not. The sponsor's approach towards the EPC contract will be to award the contract in most transparent manner and on competitive basis. Accordingly, it is expected the total cost of the project might change to some extent.

Based on the above philosophy the financial analysis is conducted. In the subsequent section of this report total estimated cost of the project along with it technical and financial assumptions and rationale in each assumption has been discussed in detail.

### 10.1 Cost Estimate

The estimated total investment of the plant is presented in the Table 1-1. PKR/USD exchange rate of 105 has been assumed.

The EPC contract covers the supply and transportation of all electrical and mechanical components of the power plant together with all the necessary auxiliary machinery, equipment and systems including the erection, testing and commissioning of these equipment and Civil works. The EPC price of the power plant is based on a budgetary turn-key proposal.

Table 10-1: Project Capital Cost

Head	Amount (PKR'000)	Amount (USD'000)
<b>EPC Cost:</b>		
Building & Steel Structure	75,000	714.29
Plant & Machinery:		
Turbine	16,500	157.14
Boiler Parts incld. insurance cost	63,664	606.32
Other Parts	25,735	245.10
Local Material	23,320	222.10
Services	20,000	190.48
Electric Installation	55,000	523.81
Transportation, Custom Duty, GST	41,389	394.18
<b>Total EPC-Cost:</b>	<b>320,608</b>	<b>3053.42</b>
<b>Non-EPC Cost:</b>		
Land	18,000	171.43
Owner Admin	17,500	166.67
EPC Design	19,236	183.20
Owner Engineer	6,412	61.07
Office Equipment	2,000	19.05
Consultancy	25,000	238.10
Registration (Pre-Operating Cost)	5,000	47.62
<b>Total Non-EPC Cost</b>	<b>93,148</b>	<b>887.14</b>
<b>Total Capital Cost</b>	<b>413,756</b>	<b>3940.56</b>

## 10.2 Brief of Costs Estimated

### ■ EPC COST

Budgetary EPC cost has been obtained from various EPC contractors. However, the EPC cost may need to be adjusted after final negotiations with EPC contractor and award of contract.

The cost covers the following:

#### • Electro Mechanical Equipment:

US\$ 1.945 million cost have been estimated for E & M, the cost component of power plant includes Turbine, Boiler parts, Local Material, Generator, Control and Protection equipment and substation

for transformation of power to the transmission line.

- **Building and Steel Structure:**

Building and steel structure comprises of building for the plant and warehouse to store coal and spare parts with all utilities access road, clearing and grubbing, stripping, mobilization and demobilization costs, which is estimated at US\$ 0.714 million.

- **Transportation, Port Clearances, Custom Duty & GST:**

All of the electro-mechanical equipment including turbine, boiler and generators are to be imported. These materials are to be shipped from the country of its manufacturer and special arrangements for its inland transportation are to be made. The cost of freight, shipment and insurance etc. from the country of manufacturer has been at US\$ 0.394 million. The cost also includes the Custom Duty and General Sales Tax applicable in Pakistan.

- **Project Development Cost:**

- **Land Acquisition and Environment Mitigation Cost**

Land purchase cost covers the payment of the cost of land to the owner of the land/property as well as the cost of fill to level the site for construction purposes. Major bases of environment mitigation cost are for the measures taken at pre-construction and construction stages. The cost under this head is estimated about US\$ 0.171 million.

- **Project Engineering, Supervision & Consultancy.**

The cost of Engineering & Supervision includes cost of Owner's Engineer was reasonably estimated about US\$ 0.061 million. The Sponsor also understand that Engineering design cost component is essential and will be borne by the Project for which US\$ 0.183 million has been estimated. Further, the sponsor estimated US\$ 0.238 million in the account of consultancy services required to be paid for the environmental services, environmental management and mitigation plan, right of way, acquiring generation license from NEPRA etc.

- **Owner Administration & Overhead**



The Owner's administration cost includes salaries, wages, utilities, vehicles, travel and conveyance, office supplies, rent and rates, medical, insurance, depreciation, Auditor's remunerations, amortization, lease rentals, inventory, computer software, site office expenses for the owner as well as lenders. The estimate cost worked out is about US\$ 0.186 million. The cost also includes the equipment required to setup the office.

- **Legal Fee, Charges & Taxes**

This estimated cost is US\$ 0.048 million which includes the government licensing fee for the generation license as per NEPRA standards, procedures, EPA fee for the approval of IEE and company registration fee. The cost also includes cost related to the stamp duties for land acquisition.

### 10.3 Technical Assumptions

The plant operation is guaranteed round the clock for 365 days a year. Annual energy output is computed based on these figures.

Gross Capacity	MW	6.50
Auxiliary Load	KW	950.00
Load Factor		100%
Force Shutdowns	Days	15
Operational Hours in an Year	Hrs	8,400
Net Capacity	MW	5.55
Gross Annual Energy	GWh	54.6
	KWh	54,600,000

Auxiliary Load	GWh	7.98
	KWh	7,980,000
Net Electrical Output	GWh	46.62
	KWh	46,620,000

#### 10.4 Financial Assumptions

Following are the assumption made to compute the cost estimation and analysis of the project:

Exchange Rate (PKR to USD)	105
Financing: Equity	100%
Plant Life (Years)	20
Average Inflation Rate ( <a href="http://www.tradingeconomics.com/pakistan/core-inflation-rate">http://www.tradingeconomics.com/pakistan/core-inflation-rate</a> )	5.30%

##### ■ Coal Consumption:

Coal Consumption Per kWh	gram	622
Total Coal Consumption	tons	33,961
Energy in a day	KWh	156,000
Coal Consumption per day	tons	97.03

##### ■ Coal Cost:

Coal Cost	PKR Per GCV	2.3
GCV	GCV	4,800
Cost exclusive of Tax	PKR Per Ton	11,040
	PKR Per Kg	11.04
Transportation Cost	PKR Per Ton	3,000
	PKR Per Kg	3.00
Cost of Coal including Transportation	PKR Per Ton	14,040
	PKR Per Kg	14.04
GST	%age	17%
Cost inclusive of Tax incld. Transportation	PKR Per Ton	15,916
	PKR Per Kg	15.92
Total Cost of Coal including Transportation	PKR Per annum	563,720,212

### ■ Coal Inventory

Coal Required Per Day	tons	97.03
Coal Storage	days	30.00
Coal Storage for 30 days	ton	2,910.96
Total Coal Cost for 30 days	PKR	46,333,168

### ■ Salaries

Salaries:	Quantity	Amount (Per Month)	Total Salary (Per Month)
<b>General Staff:</b>			
Chief Engineer	1	120,000	120,000
Office Asstt.	1	15,000	15,000
Boiler Engineer	1	50,000	50,000
Boiler Foreman	1	40,000	40,000
Boiler House Fitter.	1	25,000	25,000
Turbine Engineer	1	50,000	50,000
Turbine Foreman General Shift	1	40,000	40,000
Turbine Fitter General Shift	1	25,000	25,000
Electrical Engineer	1	50,000	50,000
Electrical Foreman	1	40,000	40,000
Electrical Supervisor	1	25,000	25,000
<b>Boiler Operation:</b>			
Boiler Supervisor.	3	25,000	75,000
Fire Man	6	20,000	120,000
Water Man	6	18,000	108,000
Auxiliary operator.	6	15,000	90,000
Boiler Coolies	6	13,000	78,000
<b>Turbine Operation:</b>			
Turbine operator	3	25,000	75,000
Auxiliary Plant operator	3	20,000	60,000
Trainee	3	15,000	45,000
<b>Generator Operator:</b>			
Switch Board Operator	3	25,000	75,000
Trainee	3	15,000	45,000
<b>Admin &amp; Account Staff:</b>			
Accounts Manager	1	75,000	75,000
Accounts Asstt	3	20,000	60,000
Admin Manager	1	40,000	40,000
Admin Assistant	2	20,000	40,000
<b>Store:</b>			

Manager	1	40,000	40,000
Assistant	3	20,000	60,000
<b>Work Shop / Maintenance Staff:</b>			
Supervisor	1	40,000	40,000
Workers	4	15,000	60,000
<b>Security Staff:</b>			
Supervisor	1	25,000	25,000
Workers	8	15,000	120,000
<b>Total Salaries (Per Month)</b>			<b>1,811,000</b>
<b>Total Salaries (Per Annum)</b>			<b>21,732,000</b>

■ **Admin Cost**

Head	Amount (PKR) Per Month	Amount (PKR) Per Annum
Stationery & Printing	15,000	180,000
Meal & Entertainment	35,000	420,000
Fuel	75,000	900,000
Miscellaneous	20,000	240,000
<b>Total</b>	<b>145,000</b>	<b>1,740,000</b>

■ **Operation and Management Cost**

Store & Spare	Rs./KWh	0.100
General & Workshop	Rs./KWh	0.050
Annual Maintenance Cost	Rs./KWh	0.250
<b>Cost Per Unit</b>	<b>Rs./KWh</b>	<b>0.400</b>

## 10.5 Cost Per Unit

The per unit cost of Items are calculated below:

Coal Cost	Kg	12.916
Transportation Cost	kg	3.000
<b>Unit Coal Cost</b>	<b>kg</b>	<b>15.917</b>
Coal Consumption	kg/KWh	0.622
<b>Unit Coal Cost</b>	<b>Per KWh</b>	<b>9.900</b>
Salaries	Rs./KWh	0.398
Capital Cost	Rs./KWh	0.379
admin	Rs./KWh	0.032
O&M Cost	Rs./KWh	0.400
Insurance	Rs./KWh	0.050

## 10.6 Capital Structure

The project is to be financed by the equity from its stake holders

<b>Equity</b>	<b>US\$ (M)</b>	<b>3.941</b>
<b>Total Project Cost</b>	<b>US \$ (M)</b>	<b>3.941</b>

## 10.7 CAPEX Disbursement

The CAPEX disbursement is based on the assumption of 12 months construction period. The percentage disbursement of different components of CAPEX will change as per EPC contracts. All expenditure is met through equity disbursement.

## 10.8 Operating Costs

Operating costs include O&M Cost which includes cost of store & spare, General workshop, Annual Maintenance cost and the Coal cost. Per unit costs (Rs/kWh) have been computed based on dependable capacity – the maximum possible energy the plant can deliver per annum.

<b>Item</b>	<b>Unit</b>	<b>Value</b>
Plant Capacity net	MW	5.5
Hours/Day		24
Days		365
Force Shutdown	Days	15
Net Electrical Output	GWh	46.62
O&M Cost	Rs/kWh	0.400
Coal Cost	Rs/kWh	9.900

## 10.9 Savings

Savings in producing the electricity as a captive power plant has been computed. Analysis have been conducted in comparing the electricity purchase from LESCO VS the electricity generated from the captive unit. The analysis enables to identify the profit/loss in setting up the project.

### ■ Auxiliary Consumption

The plant will consume some power generated in house that includes power house own consumption in lighting and other facilities that includes various pumps, overhead crane etc. Out of this load in power house, major load will be of crane. Though the crane will not be operated in normal case but it will be counted in connected load. It is estimated that about 0.5 MW will be consumed in the plant and residential colony.

### Detailed Savings

<u>Years</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Units Produced Gross (KWh)	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000
<b><u>Cost of Purchasing the Produced Units:</u></b>										
LESCO Average Cost of Unit (KWh)	14.93	15.72	16.55	17.43	18.36	19.33	20.35	21.43	22.57	23.76
Purchase Price	696,048,831	732,939,419	771,785,208	812,689,824	855,762,385	901,117,791	948,877,034	999,167,517	1,052,123,395	1,107,885,935
<b><u>Cost of Generation Per Unit:</u></b>										
Coal Cost	9.900	10.425	10.977	11.559	12.172	12.817	13.496	14.212	14.965	15.758
Salaries	0.398	0.438	0.482	0.530	0.583	0.641	0.705	0.776	0.853	0.939
Capital Cost	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379
O&M Cost	0.400	0.421	0.444	0.467	0.492	0.518	0.545	0.574	0.605	0.637
Admin	0.032	0.034	0.035	0.037	0.039	0.041	0.043	0.046	0.048	0.051
Insurance Cost	0.050	0.053	0.055	0.058	0.061	0.065	0.068	0.072	0.076	0.080
<b><u>Total Cost of Generation:</u></b>										
Per Unit	11.159	11.749	12.372	13.031	13.726	14.461	15.237	16.058	16.925	17.842
Total	520,234,339	547,742,677	576,796,169	607,485,429	639,906,747	674,162,475	710,361,443	748,619,412	789,059,556	831,812,979
<b><u>Savings Per Unit:</u></b>										
Per Unit	3.77	3.97	4.18	4.40	4.63	4.87	5.12	5.37	5.64	5.92
Total	175,814,492	185,196,742	194,989,039	205,204,395	215,855,637	226,955,316	238,515,591	250,548,104	263,063,839	276,072,956

## **10.10 Financial Analysis**

Financial analysis is done to evaluate the internal financial rate of return, payback period. Following assumptions has been for financial analysis:

- The project cost portion includes all costs that comprises of Coal cost, insurance cost, salaries, O&M cost etc.
- The net benefit is the difference of cost and revenue.

Results of financial analysis shows that the project carries IFRR of 55%. Detailed calculation is presented below:

### Financial Analysis

Year	Coal	Salaries	Capital Cost	O&M Cost	Admin	Insurance	Free Cash	Free Cash	Net Cash Flow
-1									(137,919,000)
0									(275,838,000)
1	9.900	0.398	0.379	0.400	0.032	0.050	3.771	205,908,864	205,908,864
2	10.425	0.438	0.379	0.421	0.034	0.053	3.972	216,897,085	216,897,085
3	10.977	0.482	0.379	0.444	0.035	0.055	4.183	228,365,541	228,365,541
4	11.559	0.530	0.379	0.467	0.037	0.058	4.402	240,329,471	240,329,471
5	12.172	0.583	0.379	0.492	0.039	0.061	4.630	252,803,900	252,803,900
6	12.817	0.641	0.379	0.518	0.041	0.065	4.868	265,803,524	265,803,524
7	13.496	0.705	0.379	0.545	0.043	0.068	5.116	279,342,584	279,342,584
8	14.212	0.776	0.379	0.574	0.046	0.072	5.374	293,434,717	293,434,717
9	14.965	0.853	0.379	0.605	0.048	0.076	5.643	308,092,784	308,092,784
10	15.758	0.939	0.379	0.637	0.051	0.080	5.922	323,328,687	323,328,687
11	16.593	1.032	0.379	0.670	0.053	0.084	6.212	339,153,145	339,153,145
12	17.473	1.136	0.379	0.706	0.056	0.088	6.512	355,575,458	355,575,458
13	18.399	1.249	0.379	0.743	0.059	0.093	6.824	372,603,228	372,603,228
14	19.374	1.374	0.379	0.783	0.062	0.098	7.147	390,242,051	390,242,051
15	20.401	1.511	0.379	0.824	0.066	0.103	7.482	408,495,171	408,495,171
Project IRR									47.88%
Payback Period									2 years 3 months



## **E-STAMP**



ID : PB-SKP-F736D28E21395907  
Type : Low Denomination  
Amount : Rs 100/-

6022  
15-03-23



Scan for online verification

Description : AGREEMENT OR MEMORANDUM OF AN AGREEMENT - 5(ccc)  
Applicant : Jilani Energy Pvt Ltd [35200-0000000-0]  
Representative From : Jilani Energy Pvt Ltd  
Agent : Muhammad Umar Maqsood [35202-3524904-1]  
Address : Lhr  
Issue Date : 15-Mar-2023 2:55:24 PM  
Delisted On/Validity : 22-Mar-2023  
Amount in Words : One Hundred Rupees Only  
Reason : Agreement in favor of FVG NEPRA  
Vendor Information : Asif Mehmood | PB-SKP-43 | Head Quater Ferozwala

ASIF MEHMOOD  
STAMP VENDOR - Lic#43  
Tehsil Ferozwala  
District Sheikhupura

نوٹ: یہ ٹرانزیکشن تاریخ اجرا سے سات دنوں تک کے لیے قابل استعمال ہے، ای اسٹامپ کی تصدیق بذریعہ ویب سائٹ، مکیو آر کوڈ یا ایس ایم ایس سے کی جا سکتی ہے۔

**BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY**

**“Application for seeking Electric Power Supply Licence”**

**ON BEHALF OF**

**Jilani Energy (Pvt) Ltd.**

### **AFFIDAVIT**

I, Aamir Javaid Malik S/o Muhammad Nawaz Malik, holding CNIC No. 35202-2460120-7, Designation General Manager of M/s Jilani Energy (Pvt) Ltd., hereby solemnly affirm and declare that M/s Jilani Energy (Pvt) Ltd., has not been refused grant of licence under the Act by NEPRA.

**DEPONENT**

**Aamir Javaid Malik**  
**Designation: General Manager**  
**Jilani Energy (Pvt) Ltd.**  
**Date:**



JILANI ENERGY (PVT) LTD

**CERTIFIED TRUE COPY OF RESOLUTION PASSED BY THE BOARD OF DIRECTORS IN A MEETING HELD ON 20<sup>TH</sup> FEBRUARY 2023 AT COMPANY'S HEAD OFFICE 92-RAVI ROAD, LAHORE.**

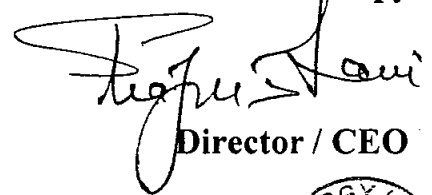
**Resolved that** Mr.Aamir Javaid Malik, General Manager of the company is authorized representative on behalf of the Company to file an application for the grant of electric power supply licence to the Company with NEPRA, execute, sign severally the application, negotiate, deposit fees and submit documents with NEPRA and any documentation ancillary thereto, in the matter of supplying electricity to Bulk Power Customers (BPCs). The details are given hereunder:

- i. Jilani Poly Industries (Pvt) Ltd. (Unit-I)
- ii. Jilani Poly Industries (Pvt) Ltd. (Unit-II)
- iii. Javaid International (Pvt) Ltd.

**Resolved further that** any and all actions of the authorized representative in pursuant to, or in furtherance of the intent and purposes of the foregoing resolution are hereby in all respects adopted, approved, confirmed and ratified as the valid and subsisting acts of the company.

This Board Resolution shall remain in full force and effect until an amending resolution be / is passed by the Board of Directors.

**Certified to be true copy**

  
**Director / CEO**



## E-STAMP



ID : PB-SKP-0E4F9E14D45B5F1D  
Type : Low Denomination  
Amount : Rs 100/-

6023  
15-03-23



Scan for online verification

Description : AGREEMENT OR MEMORANDUM OF AN AGREEMENT - 5(ccc)  
Applicant : Jilani Energy Pvt Ltd [35200-0000000-0]  
Representative From : Jilani Energy Pvt Ltd  
Agent : Muhammad Umar Maqsood [35202-3524904-1]  
Address : Lhr  
Issue Date : 15-Mar-2023 2:55:24 PM  
Delisted On/Validity : 22-Mar-2023  
Amount in Words : One Hundred Rupees Only  
Reason : Agreement in favor of FVG NEPRA  
Vendor Information : Asif Mehmood | PB-SKP-43 | Head Quater Ferozwala

ASIF MEHMOOD  
STAMP VEN. CAT Lic#43  
Ferozwala  
District Sheikhupura

نوٹ: یہ ٹرانزیکشن تاریخ اجرا سے سات دنوں تک کے لیے قابل استعمال ہے، ای اسٹامپ کی تصدیق بٹریہ ویب سائٹ، کیو آر کوڈ یا ایس ایم ایس سے کی جا سکتی ہے۔

**BEFORE THE NATIONAL ELECTRIC POWER REGULATORY**  
**AUTHORITY**

**“Application for seeking Electric Power Supply Licence”**

**ON BEHALF OF**

**Jilani Energy (Pvt) Ltd.**

### **AFFIDAVIT**

I, Aamir Javaid Malik S/o Muhammad Nawaz Malik, holding CNIC No. 35202-2460120-7, Designation General Manager of M/s Jilani Energy (Pvt) Ltd., hereby solemnly affirm and declare that the contents of the accompanying Application for supply Licence (the “Licence”) is true and correct to the best of my knowledge and belief and the nothing material has been concealed there from. I also affirm that all future documentation and information to be provided by me in connection with the accompanying application for Suoolier Licence will also be true to the best of my knowledge and belief.

**DEPONENT**

**Aamir Javaid Malik**  
**Designation: General Manager**  
**Jilani Energy (Pvt) Ltd.**



JILANI ENERGY (PVT) LTD

With reference to the requirement as per clause, Schedule-III 3(4)(a)(D)1. It is to be informed that total 6.5 MW load to following 03-BPCs through 03 feeders and single line diagram is attached.

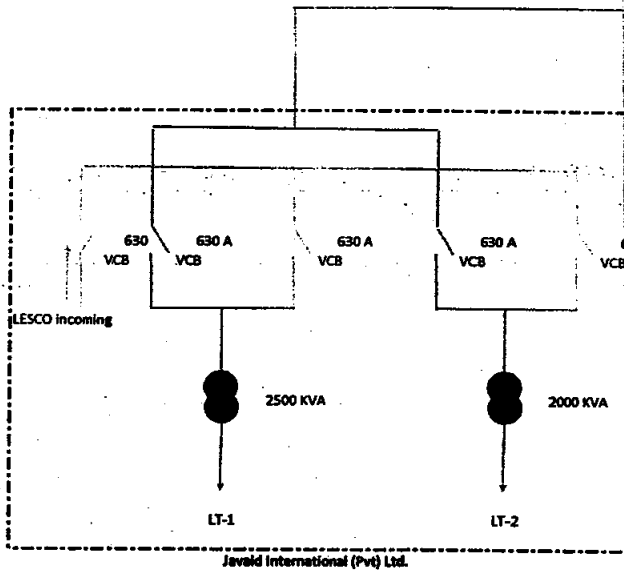
1. **Jilani Poly Industries (Pvt) Ltd. (Unit-I)**
2. **Jilani Poly Industries (Pvt) Ltd. (Unit-II)**
3. **Javaid International (Pvt) Ltd.**

Head Office: Jilani Centre, 92-Ravi Road, Lahore.

Factory: 17-KM Sheikhpura Road, Lahore.

UAN: 042-111-200-600

Fax: 042-37701140





JILANI ENERGY (PVT) LTD

With reference to the requirement as per clause, "Schedule III (Regulation 3(4)(a)(D) 2. Consumer class/category, sub-category on the basis of sanctioned load and voltage level" it is to inform that Jilani Energy (Pvt) Ltd., is supply electricity to its Three Bulk Power Consumers (BPCs) its associated companies with voltage level 11 KV.

Head Office: Jilani Centre, 92-Ravi Road, Lahore.

Factory: 17-KM Sheikhpura Road, Lahore.

UAN: 042-111-200-600

Fax: 042-37701140



## JILANI ENERGY (PVT) LTD

With reference to the requirement as per clause, Schedule III (Regulation. 3(4)(a)(D)4.\* Demand and consumption pattern on different time periods. The Average demand and consumption pattern of Load in KWH of 03-Bulk Power Consumers are given in below table from January to December 2022.

Month	Demand				Supply
	Javaid International	Jilani Foly (Unit-I)	Jilani Poly (Unit-II)	Total	Jilani Energy Total Supply
Jan-22	1,494,825	2,920,770	377,913	4,793,508	3,878,148
Feb-22	1,277,264	2,361,863	454,710	4,093,837	3,276,397
Mar-22	1,629,436	2,594,611	558,335	4,782,382	3,649,262
Apr-22	1,488,575	2,456,774	945,717	4,891,066	3,689,266
May-22	1,351,480	1,710,028	630,184	3,691,692	2,844,732
Jun-22	1,462,389	2,321,312	929,998	4,713,699	3,644,339
Jul-22	1,333,939	1,863,666	904,544	4,102,149	3,162,069
Aug-22	1,287,395	2,186,187	931,041	4,404,623	3,518,383
Sep-22	1,640,409	2,417,413	1,014,557	5,072,379	3,438,499
Oct-22	1,888,307	2,627,339	1,211,185	5,726,831	3,842,431
Nov-22	1,854,330	2,565,535	1,126,068	5,545,933	3,481,493
Dec-22	1,302,054	2,451,243	882,549	4,635,846	3,756,006

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JILANI ENERGY (PVT) LTD

With reference to the requirement as per clause, "Schedule III (Regulation 3(4)(a)(D)5.\*Procurement Plan for meeting expected loads from based on the annual load requirements Jilani Energy (Pvt) Ltd., supply up to 42,181 MW to its Bulk Power Consumers . It is not applicable to Jilani Energy (Pvt) Ltd., as power from LESCO is purchased by Bulk Power Consumers not Jilani Energy (Pvt) Ltd.

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## JILANI ENERGY (PVT) LTD

With reference to the requirement as per clause, "Schedule III (Regulation 3(4)(a)(D)6.\* 12-month projections on expected load, number of consumers and expected sale of units for each consumer category ". It is already informed in above provisions that Jilani Energy (Pvt) Ltd., has Three BPCs namely M/s Javaid Intl. (Pvt) Ltd., Jilani Poly Industries (Pvt) Ltd., (Unit-I) and Jilani Poly Industries (Pvt) Ltd., (Unit-I). Jilani Energy (Pvt) Ltd will annually supply 44,400,000 KWh and 3,700,000 KWh monthly to its BPCs. Monthly and year to date load detail is given in below table;

Month	Demand				KWh
	Javaid International	Jilani Poly (Unit-I)	Jilani Poly (Unit-II)	Total	To be Supplied by Jilani Energy
	KWh	KWh	KWh	KWh	KWh
Mar-23	1,500,000	3,000,000	375,000	4,875,000	3,700,000
Apr-23	1,300,000	2,500,000	450,000	4,250,000	3,700,000
May-23	1,600,000	2,500,000	600,000	4,700,000	3,700,000
Jun-23	1,500,000	2,500,000	1,000,000	5,000,000	3,700,000
Jul-23	1,500,000	2,000,000	1,000,000	4,500,000	3,700,000
Aug-23	1,500,000	2,000,000	1,000,000	4,500,000	3,700,000
Sep-23	1,500,000	2,000,000	1,000,000	4,500,000	3,700,000
Oct-23	1,500,000	2,000,000	1,000,000	4,500,000	3,700,000
Nov-23	1,650,000	2,500,000	1,000,000	5,150,000	3,700,000
Dec-23	2,000,000	2,500,000	1,000,000	5,500,000	3,700,000
Jan-24	2,000,000	2,500,000	1,000,000	5,500,000	3,700,000
Feb-24	1,500,000	2,300,000	800,000	4,600,000	3,700,000

Head Office: Jilani Centre, 92-Ravi Road, Lahore.

Factory: 17-KM Sheikhpura Road, Lahore.

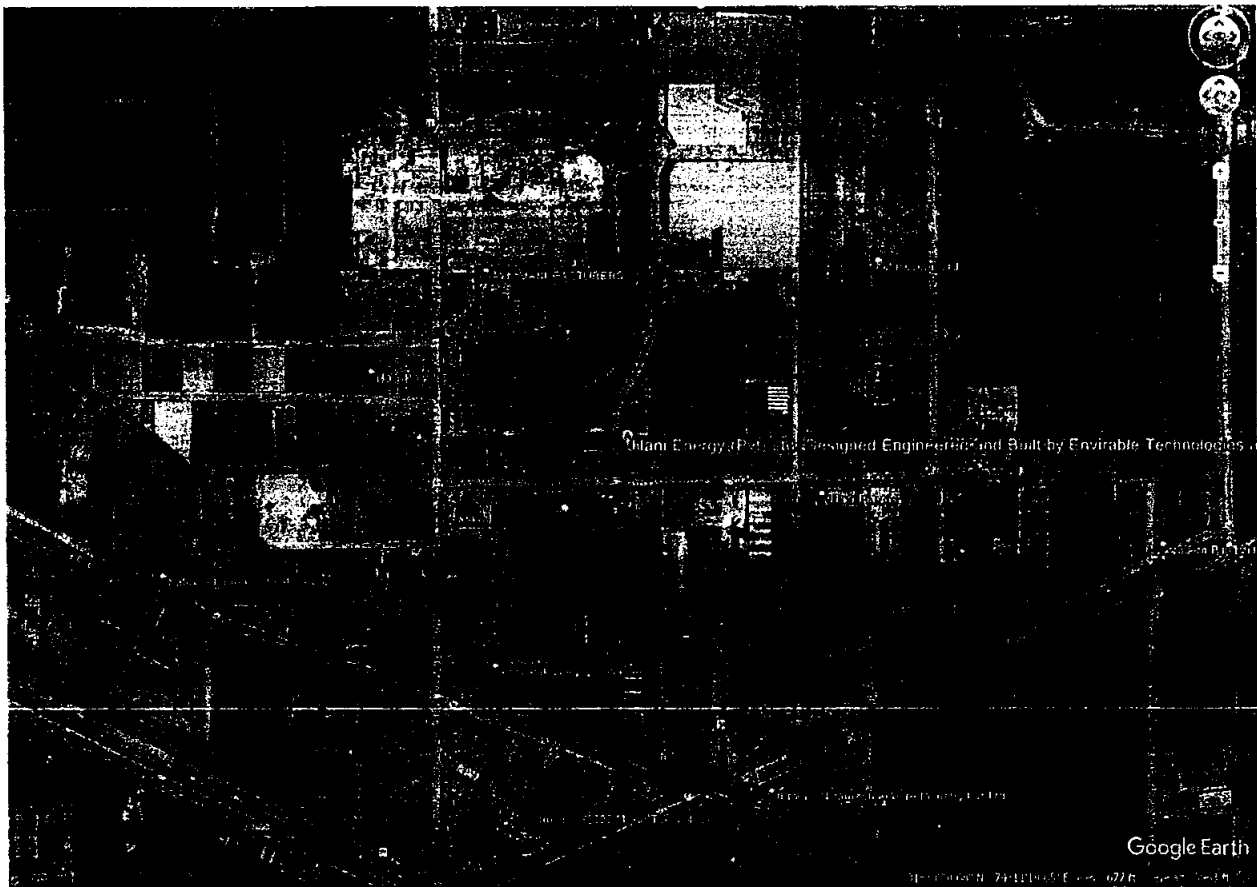
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## JILANI ENERGY (PVT) LTD

With reference to the requirement as per clause, 'Schedule III (Regulation 3(4)(a)(D) 10' Proposed service territory has been indicated in the google earth map below:



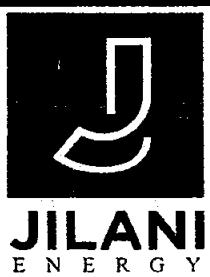
Head Office: Jilani Centre, 92-Ravi Road, Lahore.  
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UAN: 042-111-200-600  
Fax: 042-37701140



JILANI ENERGY (PVT) LTD

With reference to the requirement as per clause, "Schedule III (Regulation 3(4)(a)(D)10(ii) \*Billing and collection procedures (including provisions for remote metering)"

Dedicated meters have been installed at the site of BPCs for recording of the units being supplied and based on the consumption of the each BPCs as indicated through the meters is then charged to these BPCs on mutually agreed rates and terms and conditions as allowed by the Authority.



With reference to the requirement as per clause, "Schedule III (Regulation 3(4)(a)(D)10 iii. \* Ability to access consumer metering systems and other services/equipment".

- a) For the purposes of determining the accurate amounts of Energy, a Metering System is required to be installed at the Generation Facility and the Power Purchaser's premises prior to the Supply Date;
- b) On or before the Supply Date, the Company and the Power Purchaser shall, at their own cost and expense, procure and install the Metering System at the Interconnection Point and the Power Purchaser's premises, as the case may be for taking accurate readings of Energy;
- c) Either party may request a recalibration of the Metering System during the term of the Agreement and the Party requesting such recalibration shall bear the costs of such recalibration;
- d) The readings of the Metering System shall initially be taken/read on or before the Supply Date and thereafter on a monthly basis by a committee comprising authorized representatives of the Company and the Power Purchaser.
- e) If after the Supply Date the Metering System fails to register an accurate reading of Energy, or if the measurement made by the Metering System during a subsequent test varies by more than + 0.5% from the accurate measurements made after the installation of the Metering System, then the Metering System shall be recalibrated until the Metering System provides an accurate reading of Energy.
- f) Both Parties shall ensure that neither they nor their employees, contractors or subcontractors of any tier tamper with the Metering System. Should either Party breach the foregoing covenant, the Party in breach shall:
  - (i) develop a security system acceptable to the other Party; and
  - (ii) refund the benefit received by the breaching party as a result of such tempering.



**JILANI**  
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With reference to the requirement as per clause, "Schedule III (Regulation 3(4)(a)(D)10 IV. \* Emergency provisions and protocols.

In order to meet any emergency situation prudent industry standards and protocols relating to any situation arising will be followed in letter and spirit to safeguard all the assets including generation facility, the feeders Supplying to the BPCs and the manpower employed there.

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**FEASIBILITY STUDY REPORT**

**OF**

**6.5 MW COAL FIRED POWER PROJECT**

**JILANI ENERGY (PVT.) LTD.**

17 Km Sheikhpura Road, Sowa Messon Kaller, Lahore

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## **1. PLANT CHARACTERISTICS**

### **1.1 Project Introduction**

Electrical Power is essential for running machinery in factories and industrial units. There has been an enormous increase in the demand of Electrical energy in the last two decades due to industrial development, but sadly, there has been no significant increase in energy production. Therefore, supply of energy is far less than the actual demand; consequently, a huge energy crisis is looming over Pakistan.

Keeping in view the severe energy crisis, Jilani Group has decided to set-up a Coal based power project which will be sufficient enough to fulfill the energy requirements of the Jilani Group Companies and may distribute the extra energy to nearby bulk users as well. Coal based Power is economical and viable option in comparison to other sources like fuel based which are more expensive.

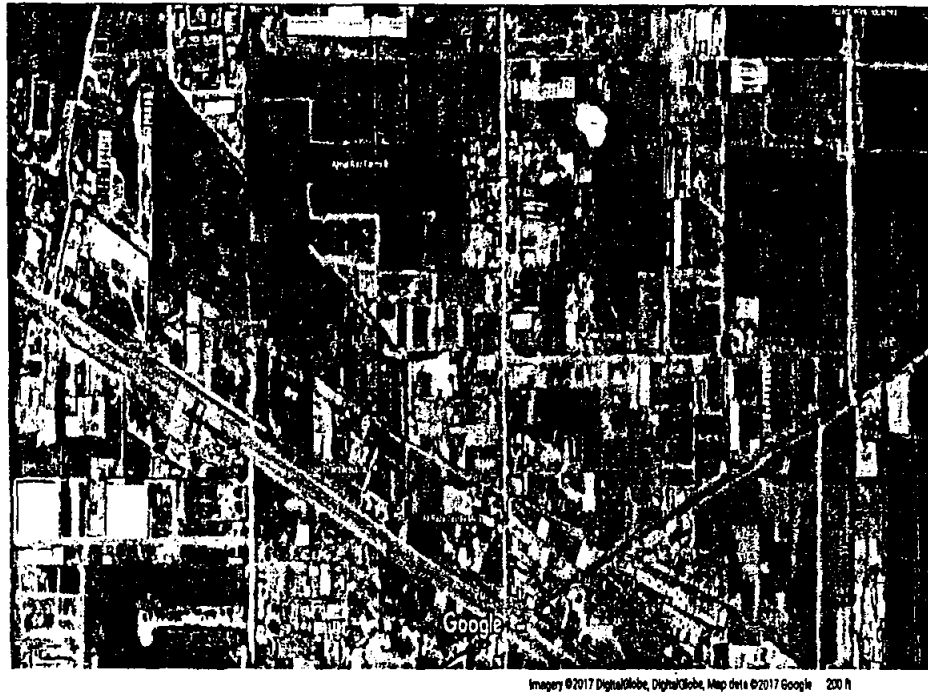
The project cost of Jilani Energy (Pvt) Ltd., is envisioned as Rs. 413.7 Million, fully owned by Directors / Sponsors of the company.

Jilani Energy (Pvt) Ltd., is an associated company of Jilani Group, projected to be a 6.5MW coal-fired power plant to provide power to processing units, and to meet the energy requirement of production. The proposed power plant is located near the processing units, with main configuration of 1 x 6.5MW condensing type turbine equipped with 1 x 6.5 MW brushless excitation generator, and 1 x 35 t/h CFB boiler, with high temperature (470°C) and sub-high pressure (6.6MPa) parameter. Annual operation hours are set as >8000 hours. Outgoing feeder voltage of generator is 11 kV which is synchronized to the grid of processing plant. Supply power is 6.5MW. The power plant adopts Pakistan local coal or Imported coal (which one is more economical) as fuel.

### **1.2 Project Location and Accessibility**

The project is located at Lahore-Sheikupura road near Jilani Plastic. The google map of the project area shows the exact location:

## 6.5 MW COAL FIRED POWER PLANT



The Coordinates of the area are: 31.647534, 74.185070

The location is accessible from Islamabad through Islamabad Motorway (M2). The distances are:

Islamabad Motorway to Kot Abdul Malik Motorway Exchange	332 km
Kot Abdul Malik Toll to Jilani Energy	7.4 km

### 1.3 Design Scale and Scope

#### ■ Design Scale

Design capacity of the power plant is 6.5MW, with 1 set of 35 t/h high temperature, high pressure CFB boiler, 1 set of 6.5MW condensing steam turbine equipped with 1 set of 6.5MW brushless excitation generator.

■ **Design Scope**

- Boiler System
- Turbine System
- Generator System
- Fuel Conveying System
- Limestone Injection into the Boiler
- Ash & Slag Handling System
- Chemical Water Treatment System
- Water Supply & Drainage System of Power Plant
- Firefighting System of Power Plant
- Electrical System
- Control & Instrumentation System
- Ventilation and Air Conditioning System
- Other Civil Works Matched with The Above System

**1.4 Introduction to Plant Address**

■ **Natural Conditions of Plant Area**

The proposed power plant is located near the Jilani group's Processing plants, with convenient transportation and smooth landform. The power plant takes approx. 2 - Acres as shown in fig 01.

■ **Water Source of Power Plant**

Underground water is adopted as process water, which is provided by the processing plant via digging deep wells. Tap water is adopted as domestic water, which is provided by the processing plant.

■ **Fuel Supply**

Fuel source of power plant is local/imported coal of Pakistan with annual consumption of approx. 32,000 tons. Coal is transported to dry coal shed by trucks.

■ **Desulfurizer Supply**

Fuel source of power plant is local/imported coal of Pakistan with annual consumption of approx. 32,000 tons. Coal is transported to dry coal shed by trucks.

■ **General Layout of Power Plant**

General layout of power plant shall be designed according to the construction scale of 1 boiler and 1 STG.

From west to east, the whole power plant is successively arranged with water treatment area, circulating cooling water area; main power building, coal conveying trestle, coal crusher house, coal storage area, ash & slag discharging area.

**1.5 Power Supply Load**

Outgoing feeder voltage level of the generator is 11 kV, which is synchronized to the grid of Jilani poly and plastic processing plant. After put into operation, it can supply 6.5 MW (deducting the auxiliary load) electricity to the grid of processing plant.

**1.6 Main Design Principle**

1 set of High temperature and high pressure 35 TPH CFB boiler is set for this project during this phase, together with 1 set of 6.5MW extraction condensing STG unit. Turbine is manufactured by Peter brotherhood (Rated power is 6.5 MW. Main steam inlet pressure is 6.6 MPa. Main steam inlet temperature is 470°C); Generator is supplied in matching model, Rated power is 6.5MW. Outgoing feeder voltage level is 11 kV. 1 set of CFB (circulating fluidization bed) boilers model has Rated capacity is 35 TPH. Steam pressure is 6.6 MPa. Steam temperature is 470°C.) Semi open layout is adopted.

■ **Fuel Conveying System**

The power plant is equipped with a set of dry coal shed with span of 30 m, and length of 60 m. Total area of dry coal shed is 1800 m<sup>2</sup>, which can store up to 1000 tons, meeting 10-day coal demand of the power plant .Coal in dry coal shed is transported to coal belt conveyor by coal feeder below underground coal hopper and then sent back to raw coal bunker of main power building by belt conveyor after crushing. Single loop belt conveyor with belt width of 650 mm shall be used to transport coal of 4 Tons/hr to boiler.

In accordance with the requirements of environmental protection, multi-cyclones is used for flue gas dust removal, whose dust removal efficiency is

#### 6.5 MW COAL FIRED POWER PLANT

85%. Internal limestone desulfurization system is adopted for the boiler. When calcium sulfur molar ratio is 2.5, the desulfurization efficiency can reach 85%.

- **Ash & Slag Disposal System**

Ash and slag of boiler is utilized completely and comprehensively as raw material for brick and tile plant. Total annual ash & slag discharge of power plant is about 4800 tons.

Boiler slag is discharged to cooling slag remover and cooled dry slag is transferred to slag silo through large-inclination belt conveyor, then transported to cement plant or brick & tile plant by vehicles for comprehensive utilization.

- **Chemical Water Treatment System**

Makeup water of boiler is handled by 2-pass RO plus demineralization plant according to main equipment type, parameter and makeup water quality requirements.

- **Circulating Cooling Water System**

Open cycle circulating system of GRP mechanical draft cooling tower is used for circulating cooling water system.

- **Main Electrical Wiring System**

1 set of 6.5 MW generator is set for power plant during this phase. Outgoing feeder voltage level is 11 KV. A section of 11 kV bus is set in this main power building and generator is directly connected to the bus via the switch. Bus adopts single-bus wiring scheme. 11 KV bus provides power to Jilani Poly and Plastic Industry, connected to substation via an 11KV tie-in line.

- **Thermodynamic System**

Main steam system adopts unit system scheme. Live steam from boiler outlet is respectively connected to motorized isolation valve and then to main stop valve of turbine, finally to speed governing valve and drive the turbine to work.

■ **Combustion System**

Raw coal is sent from raw coal bunker into boiler for combustion by coal supply air and sowing air by 3 sets of coal feeders. Heated flue gas ignition is used by oil gun under CFB for boiler ignition. Combustion air is divided into primary air and secondary air for segmented air supply. Flue gas enters into cyclone separator from furnace outlet and that after separation by cyclone separator enters into back-pass duct of boiler. It will be pressurized by ID fan after de-dusted by bag filter. Most of materials will be separated from cyclone separator during boiler operation. They will be sent back to combustion house by loop seal air. De-sulfurization system adopts limestone powder de-sulfurization system inside furnace.

■ **Layout of Main Power Building**

Main power building has 4 column spaces with 1 space of 7.5m and 4 spaces of 6m. Total length is 31.5 m. Main power building is set in 3 columns, i.e. turbine house, deaeration coal bunker room and boiler house, with span of 18m, 9.5m and 23 m respectively.

■ **Thermal Automation Plant**

Industrial computer, LED large-screen display and a special key are used as main measures for indoor control process system of thermal automation control room so as to control operation process of the entire power plant. DCS control system of this project proposes to consist of data acquisition system (DAS), analog quantify control system (MCS), sequence control system (SCS) and electrical control system (ECS). Thermal automation control room is set on operating floor of deaeration coal bunker 7m deck.

**1.7 Energy Conservation and Raw Material**

After put into operation, the power plant can supply 6.5 x 8400 kWh power annually. Coal consumption for power generation is 622 gm/KWh, (based on client's supplied SGS coal analysis report, the GCV of coal is 5500 Kcal/kg, NCV of Pakistan local coal is 3500 Kcal/kg coal.

CFB boiler has high combustion efficiency (89%) and large load regulation scope. It still can burn stably without oil injection which can support combustion so as to save oil under 40% of low load. Limestone powder is added as desulfurization agent during operation of CFB boiler.

#### 6.5 MW COAL FIRED POWER PLANT

Due to the combustion conditions of low-temperature and segmented air supply in this furnace, the NO<sub>x</sub> generation is remarkably decreased.

Station auxiliary transformer of low losses is selected for this project to save energy consumption. Sufficient high-precision surveying instruments is furnished for electrical and steam-water systems according to regulations. Operation indicators is surveyed and checked reasonably to control economic operation of power plant effectively.

Recycle and circulate drainage of industrial cooling water of main power building to save water consumption.

### **1.8 Environmental Protection**

Influence of power plant to surrounding environment is introduced as followings after project

#### **Construction:**

As internal desulfurization system is adopted, comprehensive de-sulfurization efficiency can reach 85%, and SO<sub>2</sub> at stack outlet is < 400 mg/Nm<sup>3</sup>.

As low-temperature combustion is adopted ( 850°C~ 900 °C), NO<sub>x</sub> content is largely decreased to 300 mg/Nm<sup>3</sup>.

Open cycle circulating cooling system is used for power plant without external drainage or thermal pollution. Industrial wastewater and living sewage of power plant shall be drained after treatment without environment pollution.

Plant tone is far away from resident's concentrated zone.

The project adopts wet ash removing method, with hydraulic ash removing system properly arranged, which has little effect on environment, and can make comprehensive utilization of ash and slag.

### **1.9 Labor Safety and Industrial Sanitation**

According to relevant regulations and standard, take feasible and effective measures to avoid fire, explosion, lightning stroke, chemical damage, mechanical damage or noise, improve operation conditions and guarantee health of operators.

#### **1.10 Operation Organization and Design of Fixed Manpower**

- **Organization**

Organization of power plant is managed by three levels, namely, plant, workshop and shift. Plant consists of office, Production Technology Office, Financial Department and Administration Office. Production workshop consists of operation workshop, repair workshop and fuel workshop.

- **Design of Fixed Person**

There are 78 fixed workers (namely, operators, overhaul, management personnel and other persons) in this plant.



## **2. GENERAL LAYOUT AND TRANSPORTATION**

### **2.1 Layout Principal**

Power plant is located near processing plants. General layout principle is to set various production workshops, buildings, structures and equipment according to existing position and area and production processes of the power plant to aim at reasonable and beautiful layout and meet safe, stable and continuous production requirements of the power plant and gap between various production workshops, buildings and structures shall meet relevant current Chinese design specifications.

### **2.2 General Layout**

Total layout of power plant shall be arranged and designed according to 1 set of boiler and 1 set of steam turbo-generator. From west to east, the whole power plant is successively arranged with water treatment area, circulating cooling water area, main power building, coal conveying trestle, coal crusher house, coal storage area, ash & slag discharging area.

### **2.3 Traffic and Transportation in the Plant**

Roads in the plant are basically circular and every functional zone is circled by roads and width of main roads in the plant is 6m and that of secondary roads is 4m. Width of roads in functional zone and approach roads shall be 2m and bending radius shall be 6m and 4m respectively according to demand with and concrete structure for road surface structure. "Three connections and one leveling" must be ensured that a construction site is connected to water and electric power supplies and roads, and that the ground is leveled before the project kick-starts and site elevation and slope should be decided according to the general drawings and traffic transportation requirements before construction in the plant.

### **2.4 Vertical Layout of the Plant Area**

Ground elevation inside the plant should be settled based on the following principles is: for one thing, it cannot submerge the plant area at highest level of tidewater, for another thing, ground water and drain pipe water can be discharged easily, and try to maintain the field at same level. Therefore, earthwork balance should be done before construction.

### 3. THERMAL MECHANICAL PART

#### 3.1 Main Design Principle

The project is arranged with 1 set of Peter Brotherhood condensing steam turbine, equipped with 1 set of Peter brotherhood generator (Rated power is 6.5 MW); and 1 set of 35 t/h CFB boiler.

#### 3.2 Specification of Main Equipment:

##### ■ Boiler

Rated output	35 TPH
Design thermal efficiency	89%
Main steam temperature	470°C
Main steam pressure	6.6 MPa
Feed water temperature	105°C
Design Coal	Local coal
Coal consumption at BMCR	4043 Kg/h
flue gas exhaust temperature	155°C
Boiler blow down rate	2%

##### ■ Turbine

Rated power	6.5 MW
Rated rotation speed	8250 RPM
Rotation direction	Clockwise direction
Steam inlet pressure	6.6 MPa
Steam inlet temperature	470°C
Rated steam volume	4.2 Kg/KWh
Rated heat rate	8483 KJ/KWh
Circulating cooling water inlet temperature	33°C
Rated steam exhaust pressure	0.08 bara
Unit vibration value	< 0.03mm
Noise (measured in distance which is 1m away from cover shell)	< 85db(A)
Regulation mode	DEH (Digital Electrohydraulic)

### ■ Generator

Rated power	6.5MW
Rated voltage	11 KV
Rated rotation speed	1500 RPM
Rated frequency	50Hz
Power factor	0.8
Excitation mode	AC brushless excitation
Efficiency	97%
Cooling mode	air-cooled
Rotation direction	Clockwise direction
Insulation level (of stator or rotor)	F
Overload ability	10%

### ■ Design Scope

Design of turbine, boiler, piping system inside main power building, and selection & arrangement of equipment. Maintenance and auxiliary equipment associated with turbine, generator and boiler.

## 3.3 Fuel

### ■ Fuel Source

The project adopts Pakistan local/imported coal. Coal is transported to dry coal shed by trucks.

### ■ Fuel Analysis Data

Pakistan local coal analysis

Net calorific value	3500 Kcal/Kg
Volatile matter	40.36%
Total Moisture	15.49%
Ash content	22.55%
Fixed Carbon	33.11%
Hydrogen	4.29%
Oxygen	13.70%
Nitrogen	1.73%
Sulfur	8.03%

- **Ignition Fuel**

Ignition system of boiler adopts light diesel or natural gas. Light diesel is locally supplied, which is transported to power plant by tank car. Natural gas is locally supplied which is transported to power plant by piping.

### 3.4 Combustion System

- **Coal Consumption of Boiler**

Calculation principle of coal consumption of boiler is as followings:

Annual operation time of boiler	8400 Hrs
Average daily operation hours of boiler	24 Hrs
Combustion efficiency of boiler	89%
Continuous blow-down rate of boiler	2%
Net calorific value of coal	3500
Hourly coal consumption	4.043 TPH
Daily coal consumption	97 Tons/day
Annual coal consumption	34000 Tons/Year

- **Combustion System**

Raw Coal is sent from raw coal bunker to furnace for combustion by coal supply air and sowing air by 3 stokehold coal feeders. Hot flue gas ignition is used by oil gun under CFB for boiler ignition. Combustion air is divided into primary air and secondary air for segmented air supply. Primary air is sent to furnace through distribution air plate in air chamber after preheating and it accounts for about 50%, and after secondary heating, it will be sent into furnace through front and rear furnace wall, which also accounts for 50%.

Flue gas enters into cyclone separation in furnace outlet and that separated by cyclone separator enters into horizontal flue duct on the top of furnace and tail shaft flue duct. It is sent to stack by ID fan after dust collection by venturi scrubber to atmospheric emission. Most of materials will be separated from cyclone separator during boiler operation. They will be sent to combustion room by loop seal air. Desulfurization adopts limestone powder desulfurization system inside furnace as shown in fig 05.

There are 02 raw coal bunker of collective capacity of 75 Tons for operation of boiler for 24 hours.

### **3.5 Thermodynamic System**

For the power plant, 1 boiler and 1 STG set and main part of steam & water system adopts unit system scheme.

- **Main Steam System**

Main steam system adopts unit system scheme. Live steam from boiler outlet is respectively connected to motorized isolation valve and then to main stop valve of turbine, finally to speed governing valve and drive the turbine to work.

- **Demin Water System**

After entering into demin water pipe in main power building, part of the demin water is sent to slag cooler & discharger for slag cooling, and then is sent to turbine condenser respectively together with the other part of demin water, as make up water of the boiler.

- **Condensate System**

Condensate of turbine is sent to condensate pipe after pressurization by condensate pump and heating by steam sealing heater. Condensate system also provides de-superheated water for gland seal PRDS, and sealing water for water sealing valve.

- **Boiler feed water system**

Boiler feed water system is fitted with 2 boiler feed water pumps. Feed water system is equipped with 2 motorized feed water pumps, 1 in operation and 1 standby.

- **Vacuum System of Condenser**

Vacuum system of condenser consists of, water jet air ejector, water ejection tank, pipeline and valve. Steam and air mixture of uncondensed water in condenser is pumped by water jet air ejector to maintain vacuum in condenser.

- **Industrial Water System**

Open cycle system is used for industrial cooling water without industrial water tank. Industrial cooling water system is to provide cooling water for primary fan, secondary fan, ID fan, motorized feed water pump and steam-water sampling cooler, etc. In order to save water, 1 set of Boiler house is arranged

with 10m<sup>3</sup> low elevation water tank and 2 sets of low elevation water pump, with 1 set in operation and 1 set standby.

### 3.6 Layout of Main Power Building

#### ■ General

Main power building has column space of 6m and 7.5m, with configuration of 1 boiler and 1 STG unit. Main power building has 5 column spaces, with total length of 31.5m (in which the length of boiler house is 25.5m).

Main power building is set in 3 rows. From south to north, turbine house, de-aeration coal bunker house, boiler house, bag filter, ID fan, desulfurization tower and stack are set in outer side of boiler house in sequence.

#### ■ Turbine house

Span of turbine house is 16m. Column space is 7.5m and 6m, and there are totally 4 column spaces and total length is 24 m. Turbine is set longitudinally and machine head faces toward fixed end. Central line of STG set is 8m away from that of Row A of columns.

Motorized feed water pump is set near B row of column on bottom level of turbine house with 1

Longitudinal operation maintenance & repair access way. Heater platform is set at the turbine head side with gland sealing heater, LP heater, HP heater, oil tank, etc. on it. Stairs are connected to bottom level of turbine house and 7m operating floor. Elevation of heater platform is 3.4m. Hoisting holes are reserved on generator end. Bottom level is maintenance site. 1 overhead crane of 20/5t is set in consideration of installation, repair & positioning demand of STG set and heater. Rail top elevation is 14m. Lower chord of turbine house rack is 16.5m. Elevation of operating floor is 7 m.

#### ■ De-aeration Coal Bunker House

Span of de-aeration coal bunker house is 9.5m. Column space is 7.5m and 6m. There are totally 5 column spaces in 5-level arrangement and total length is 31.5m. Plant power distribution room is on the bottom floor. Steam & water pipeline and cable levels are on 4m level. Elevation of operating floor is 7m. Elevation of de-aerator level is 13m. Elevation of coal conveying belt level is 25m. 7m operating floor is arranged with centralized control room of

#### 6.5 MW COAL FIRED POWER PLANT

turbine, boiler and electrical system and main steam headers. Raw coal bunker is arranged below 25m floor, and staircase is set at fixed end.

##### ■ **Boiler House**

Boiler adopts semi-open arrangement, with span of 23m, column space of 7.5m and 6m. There are totally 4 column spaces in 2-level arrangement and total length is 25.5m. PA fan, SA fan are set on bottom floor. Utility equipment such as drainage tank, drainage pump, low elevation water tank and low elevation water pump, etc. are set near fixed end. Elevation of boiler operation floor is 7. Steam-water sampling and dosing room is set at fixed end. ESP is set in outer side of boiler house.

##### ■ **ID Fan**

ID fan and venturi scrubber are set in open area. Stack has a height of 30m and outlet diameter of 2 m, of concrete structure.

##### ■ **Protection Measures of Open Layout of Equipment**

- A small enclosed chamber is set on the top of boiler. Chamber is fitted with accessories and instruments in boiler drum side, to prevent frost damage.
- Take thermal insulation measures for pipeline, equipment, valve and accessories in chamber on the top of furnace to reduce radiation losses and avoid super-high temperature of chamber.
- Take protection measures accordingly, to prevent frost damage to pipeline, valve, and fittings in open air, and prevent leakage of rain.
- ID fan is protected by thermal insulation and outer galvanized iron sheets. Use an outdoor
- Electromotor.
- In winter, emergency shutdown period is quite long, so water in the boiler shall be totally discharged. Drying method shall be taken if necessary.
- for maintenance in winter, after hydro testing, ignites the boiler immediately; if not, discharge the water inside boiler completely; if water is not totally discharged, then take drying method.

#### ■ Maintenance & Hoisting Facilities

1 turbine house is fitted with a motorized double-beam double-hook overhead traveling crane of 20/5t for unit maintenance. Auto crane is used for maintenance of ID fan.

### 3.7 Auxiliary Facility

Boiler ignition oil system Boiler ignition adopts light diesel oil or natural gas. Light diesel system is equipped with 2 sets of ignition oil pumps (1 working and 1 standby) for startup ignition of boiler. 2 sets of ignition pumps are arranged inside fuel oil pump house.

#### ■ Air Compressor Station

An air compressor station is built in this power plant. It is fitted with 2 screw type air compressors with parameters of 3 m<sup>3</sup>/min and 0.8MPa. 1 unit is in operation and 1 standby. Air compressor station provides compressed air for operation of limestone desulfurization system, dust collection and ash & slag removal system. It also provides compressed air for boiler and turbine maintenance.

### 3.8 Thermal Insulation of Pipes and Facilities

Main thermal insulation materials of steam-water pipes and auxiliaries whose temperature exceeds 350 °C shall be made of aluminum silicate fiber.

Properties of aluminum silicate fiber products are as follows:

Thermal conductivity:	$\lambda = 0.072\text{W/m.k (500q)}$
Bulk density	$<160\text{ kg/m}^3$
The maximum usage temperature	350

Adopt galvanized steel plates of 0.5mm for protective layer.

- Painting of pipes and equipment's
- Painting of non-thermal insulation pipes and equipment's
- In general, it is required to brush two layers of anti-corrosion paint then brush ready-mixed paint once for pipes and equipment's.
- In general, it is required to brush anti-corrosion paint once then brush asphalt paint twice for directly buried pipes or those in the trench.
- Painting of pipes and equipment's with thermal insulation



#### 6.5 MW COAL FIRED POWER PLANT

- Brush anti-corrosion paint on metallic surface of pipes and equipment's for two layers when medium temperature is no more than 120 °C.
- In general, there is no need to brush anti-corrosion paint on the metallic surface of pipes and equipment's when medium temperature exceeds 120 °C.
- In general, it is required to brush anti-corrosion paint on supports and hangers which are
- Manufactured on the site twice then brush ready-mixed paint which matches color of supports and hangers supplied by the factory once.
- Brush paint with same or coordinated color once if paint is damaged or color is inconsistent for equipment's, supports and hangers which are supplied by the factory.
- In general, it is required to brush anti-corrosion paint twice for platform ladder then brush the ready mixed paint once and color of ready-mixed paint shall be the same to that of platform of boiler body or building structure.

#### ■ **Internal de-sulfurization by limestone powder Injection limestone**

- Limestone conveyor cyclone
- Dust remover Auxiliary fan
- Limestone bunker
- Elevator conveyor Elevator
- Finished product
- Coarse powder
- Main fan
- Unloading hopper
- Column mill
- Measuring conveyor
- Finished product bunker

#### 6.5 MW COAL FIRED POWER PLANT

Due to high sulfur content (5%-6%) of Pakistan local coal, so CFB boiler is selected. CFB boiler adopts internal desulfurization system by limestone powder injection. CFB boiler has the following characteristics rather than conventional coal-fired boilers (like pulverized coal fired boiler and stoker fired boiler): low combustion temperature (850°C~ 900°C); long dwelling time of fuel; strong turbulent mixing in combustion chamber. Based on these features, if limestone powder is directly put into the furnace during combustion process, due to the combustion temperature from 850 H — 900 H is the best reaction temperature range for desulfurization between quick lime (CaO) and SO<sub>2</sub>, therefore, according to the sulfur content in coal, put proper amount of limestone powder (equivalent ratio of calcium and sulfur being 2.5) into the CFB boiler furnace, and the desulfurization efficiency of 85% can be achieved.

Therefore, CFB boiler is economical, efficient, and environmental protection.

The technological process of de-sulfurization by dosing limestone powder to furnace system: limestone preparation system → limestone powder conveying pipe → limestone powder silo → compressed air → interlock continuous pump -motorized feeder → limestone powder conveying pipe → boiler furnace.

**Limestone Composition Analysis Table**

SiO <sub>2</sub>	% 1.2-2.1
Al <sub>2</sub> O <sub>3</sub>	% 0.15-0.33
Fe <sub>2</sub> O <sub>3</sub>	% 0.37-0.62
CaO	% 53-54
MgO	% 1.52-1.72
Loss on ignition	% 40.4
Particle size	<1mm
Hourly Limestone consumption	1 t/h
Daily limestone consumption	24 t/h
Annual limestone consumption	8400 t/h

**Waste Water Analysis Report**

PH	11.39
Temperature	45 °C
BOD	580 mg/lit
COD	1,146 mg/lit
TSS	412 mg/lit
IDS	4,148 mg/lit
Chromium	mg/lit ND
Copper	mg/lit ND
Oil & grease 54 mg/lit	54 mg/lit

- **Technical Index of de-sulfurization system**

- Guaranteed de-sulfurization efficiency > 94 %
- Operational flexibility 50~110%
- Outlet SO<sub>2</sub> concentration < 400 mg/Nm<sup>3</sup>
- Flue gas discharge temperature > 155°C
- Pressure drop of flue gas through de-sulfurization system < 1200Pa
- Lime consumption of de-sulfurization system < 1 Ton

- **Technical process flow and process flow characteristics**

- Main economics & technical index

FGD inlet gas temperature	155°C
De-sulfurization efficiency	94%
De-sulfurization system pressure drop	< 1200Pa
Annual operation hours	8400 Hrs
Emission concentration of inlet SO <sub>2</sub>	< 400mg/Nm <sup>3</sup>

#### 4. ASH AND SLAG REMOVAL SYSTEM

##### 4.1 Slag Quantity of Power Plant

Boiler Ash volume	0.5 m <sup>3</sup> /h
FGD inlet gas temperature	155°C
De-sulfurization efficiency	94%
De-sulfurization system pressure drop	<1200Pa
Annual operation hours	8400 Hrs
Emission concentration of inlet	SO <sub>2</sub> <400mg/Nm <sup>3</sup>

##### 4.2 Ash Removal System

Positive-pressure dense phase silo pump conveying system is used for ash removal system. The project is arranged with 1 set of bag filter, and a set of air compressor station with 2 x1.0m<sup>3</sup> air compressor installed inside, with 1 in operation and 1 standby. 6 ash hoppers are arranged below each bag filter.

1x1.0 m<sup>3</sup> dense phase pneumatic delivery pump is installed below each ash hopper. Ash inside silo pump is in suspension form.

Under the effect of compressed air, dry ash is delivered into ash silo through delivery pipe.

Ash inside dry ash silo is transported outside after discharged by ash unloading device, for comprehensive utilization of cement plant or brick & tile plant. Ash inside dry ash silo can be discharged directly, or humidified into wet ash to be discharged. Power plant is arranged with a set of 400m<sup>3</sup> ash bunker, which can store 18-day ash discharging quantity of the system.

Process flow of ash removal system is as follows:

Ash hopper of bag filter → diverter damper → silo pump → ash silo → double-shaft blender → transported away

##### 4.3 Slag Removal System

Boiler slag is discharged into cooling slag discharger and cooled dry slag is transferred to slag silo through large-inclination slope-protected belt conveyor and transported away.

Volume of slag silo is 100m<sup>3</sup> to store 2-day slag discharging quantity of the system.

#### 6.5 MW COAL FIRED POWER PLANT

Process flow of slag removal system is as followings:

Boiler slag discharging pipe → diverter damper → slag cooler & discharger  
→ large-inclination slope-protected belt conveyor silo → slag silo → bulk machine  
→ transported away.

## 5. CHEMICAL WATER TREATMENT SYSTEM

### 5.1 Introduction

The power plant is equipped with 1 set of 35 t/h CFB boiler, and 1 set of 6.5 MW extraction condensing STG unit, with high temperature (470°C) and high pressure (6.6 MPa) parameter. Max. steam supply volume is 35 TPH. Boiler make up water is supplied by water treatment workshop. Based on water analysis report, water treatment system for boiler make up water is set as Pass 1 2 section RO plus mixed bed demin system. Water quality is as following:

PH	7.61
Conductivity	7311 $\mu\text{S}/\text{m}$
TDS	1014mg/l
Total hardness ( $\text{CaCO}_3$ )	163.2mg/l
Ca	27.7mg/l
Mg	22.89mg/l
Ca hardness (Ca)	69.36mg/l
Mg hardness(Mg)	93.84mg/l
Alkalinity ( $\text{CaCO}_3$ )	470.25mg/l
Oxygen	$\leq 7 \mu\text{g}/\text{L}$
Fe	$\leq 30 \mu\text{g}/\text{L}$
Cu	$\leq 5 \mu\text{g}/\text{L}$

### 5.2 Boiler Feed Water Treatment System

Makeup water treatment system of boiler adopts Pass 1 2-section RO device plus mixed bed system, with demin rate of > 97%. Demin water recycle rate of 2-Pass RO device is 75%.

System process is as followings:

Raw water tank → clean water pump → active carbon filter → multi-media filter → security guard filter of 5 $\mu\text{m}$  → HP pump → (Pass 1 2-section) RO device → carbon remover → intermediate water tank → intermediate water pump → mixed bed → demin water tank → demin water pump → de-aerator

Demin water quality is as follows after system treatment:

#### 6.5 MW COAL FIRED POWER PLANT

Hardness	0 mg/Ltr
Silica	<0.02 mg/Ltr
Conductivity	<0.2 $\mu$ S/cm

The demin system adopts parallel header scheme, operated by manual valves. Chemical meters measurement of system, and parameters such as flow and liquid level etc are monitored in control room.

### 5.3 Make up Water Treatment System of Circulating Cooling Water

Makeup water treatment system of circulating cooling water adopts Pass 1 2-section RO device plus mixed bed system, with demin rate of > 90%. Demin water recycle rate of Pass 1 2-section RO device is 90%.

System process is as follows:

Raw water tank → clean water pump → active carbon filter → multi-media filter → cartridge filter of Sum → HP pump → (Pass 1 2-section) RO device → carbon remover → purified water tank → make up water pump → cooling tower.

## 6. CIVIL ENGINEERING

### 6.1 Geology of the Project

Soil and Geological Investigations has been conducted and the results are presented in the report attached.

### 6.2 Meteorological Conditions

Ambient Air Temperature (Max./Mean/Min.)	48 / 25 / 2°C
Relative Humidity (Max., Mean, Min.)	90 / 60 / 24 %
Dry Bulb Temperature (Design)	50°C
Wet Bulb Temperature (Design)	32°C
Relative Humidity (Design)	60 %
Absolute Atmosphere Pressure (Max/Mean/Min.)	992 / 980 / 973 mbar
Temperature difference between day and night (Mean, Max.)	10 / 17
Rainfall — Average annual (Max/Mean/Min.)	78 / 25 / 6.8 mm
Rainfall — Heaviest fall in 24 Hours	332 mm

#### ■ Construction and Structure of Turbine

Adopt reinforced concrete structure for the main power building and column space can be 6m respectively Span of turbine house, deaerator room, coal bunker room and boiler house shall be 16m, 4.7 m and 27m respectively.

There are 4 column spaces for turbine house and total length is 24 m. Adopt light steel roof truss with color coated steel sandwich board roof. Set a hook bridge type crane of 10/5t. There are 4 column spaces in deaeration coal bunker room and total length is 27m. Adopt reinforced concrete flooring and roof and roof elevation is 24 m. Total length of boiler room is 27m and it is required to adopt reinforced concrete slabs for boiler platform whose elevation is 7.0m.

The main power building belongs to Category D and Class II fireproof buildings and fireproof wall and door shall be set according to fireproof specifications. Adopt plastic-steel windows for lighting windows and adopt side-hung or push-pull windows near the ground and others are fixed or side-hung windows. Brush white coating on inner wall and brush masonry mortar,



mixed mortar and coating for outer wall and execute specifications and standards for residual interior decoration.

■ **Auxiliary System Buildings and Structures**

Reinforced concrete structure is used for chemical water room, with equipment room of 60x12m + 6x21m span, steel column and beam, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. VFD room adopts 7.5x14m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. Compressed air station adopts 7.5x12m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof.

Screen and crusher building adopts 15x15m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. Ignition oil pump house adopts 4x9m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof. Circulating water pump house adopts 9.5x43.5m steel structure, concrete floor, and color steel plate water resistant roof. Dry coal shed adopts 30x60m steel structure, concrete floor, retaining wall, and color steel plate water-resistant.

## **7. HEATING, VENTILATION AND AIR CONDITIONING PART**

### **7.1 Design Basic**

"Code of Design on Heating, Ventilation and Air Conditioning" (GBJ19-87 of version 2001)

"Design Regulations of Labor Safety and Industrial Sanitation of Cogeneration Power Plants" (DL5053-1996 )

Design requirements provided by various specialties

## **8. LIVING WATER SUPPLY**

Cement plant shall provide living water to meet living drinking water standard.

### **8.1 Drainage in Plane Zone**

Shunt drainage system of rainwater and living sewage shall be used for drainage of power plant. Of little living sewage discharge, there is no living quarter in power plant and living sewage should discharge into anaerobic tank for drainage after treatment. Industrial water is recycled for secondary use. Small amount of industrial water which meets discharge standards can directly discharge. Acid/alkali wastewater of water treatment room can discharge after neutralization treatment in neutral reservoir and reaching the discharge standard. Blow-down water of cooling tower can directly discharge after meeting the discharge standards.

## **9. FIRE PREVENTION SYSTEM**

### **9.1 Fire Separation Distance**

Fire separation distance and the minimum gap between various buildings (or structures) of power plant shall be in accordance with "Code of Fire Control of Building Design" (GBJ16-87) of version 2001, "Code of Design on Fire Control of Cogeneration

• Power Plants and Transformer Substation" (GB50229-96) and "Code of Design on Small Cogeneration Power Plants" (GB50049-201).

## **9.2 Fire Fighting Access**

Firefighting access is set around various buildings (or structures) in the plant zone. Width of main road is double lanes of 7m and secondary road is single lane of 4m. It is connected to roads out of this plant.

## **9.3 Fire Control of Main Building**

Fire hazard of main building is Class IV and fire resistance rating of building is Grade II. Solid wall of which fire resistance rating is not less than 4h shall be used as fire wall below Row B of operating floor. Fire resistance rating of partition wall above operating floor is not less than 1.0 hour. Door of Station auxiliary transformer room is Class B fireproof door and that of outgoing wire chamber of generator is Class C fireproof door. All fireproof doors shall be opened toward evacuation direction.

## **10. COST ESTIMATION AND FINANCIAL ANALYSIS**

The cost estimation and financial analysis is the most crucial part of a project as it determines that the project is able to provide cost-efficient and economical energy in comparison to the electricity purchased from DISCO and gives a reasonable return to investor. It gives the expenditure and saving stream for the project. The saving stream thus calculates financial rate of return of the project. Accordingly, in this chapter of the report, details of all type of costs and savings derived along with internal financial rate of return (IFRR) has been discussed. However, it should be kept in mind that most of the cost numbers are estimates and can change based on actual expenditure. The regulator also allows us the estimated cost in the feasibility study could be adjusted on award of EPC contract and thereafter at the time of start of commercial operation. Thereafter it will be seized for entire concession period. However, it is also necessary that estimates should be as closed as actual. Accordingly, the estimations have been made on logical justification.

For a power plant major portion of the cost estimates goes to EPC cost. In this report the EPC cost is based on some supplier's budgetary price as manufacturer are hesitant to provide firm cost at this stage of the project as they are not sure that they will be getting the contract or not. The sponsor's approach towards the EPC contract will be to award the contract in most transparent manner and on competitive basis. Accordingly, it is expected the total cost of the project might change to some extent.

Based on the above philosophy the financial analysis is conducted. In the subsequent section of this report total estimated cost of the project along with its technical and financial assumptions and rationale in each assumption has been discussed in detail.

### **10.1 Cost Estimate**

The estimated total investment of the plant is presented in the Table 1-1. PKR/USD exchange rate of 105 has been assumed.

The EPC contract covers the supply and transportation of all electrical and mechanical components of the power plant together with all the necessary auxiliary machinery, equipment and systems including the erection, testing and commissioning of these equipment and Civil works. The EPC price of the power plant is based on a budgetary turn-key proposal.

Table 10-1: Project Capital Cost

Head	Amount (PKR'000)	Amount (USD'000)
<b>EPC Cost:</b>		
Building & Steel Structure	75,000	714.29
Plant & Machinery:		
Turbine	16,500	157.14
Boiler Parts incld. insurance cost	63,664	606.32
Other Parts	25,735	245.10
Local Material	23,320	222.10
Services	20,000	190.48
Electric Installation	55,000	523.81
Transportation, Custom Duty, GST	41,389	394.18
<b>Total EPC-Cost:</b>	<b>320,608</b>	<b>3053.42</b>
<b>Non-EPC Cost:</b>		
Land	18,000	171.43
Owner Admin	17,500	166.67
EPC Design	19,236	183.20
Owner Engineer	6,412	61.07
Office Equipment	2,000	19.05
Consultancy	25,000	238.10
Registration (Pre-Operating Cost)	5,000	47.62
<b>Total Non-EPC Cost</b>	<b>93,148</b>	<b>887.14</b>
<b>Total Capital Cost</b>	<b>413,756</b>	<b>3940.56</b>

## 10.2 Brief of Costs Estimated

### ■ EPC COST

Budgetary EPC cost has been obtained from various EPC contractors. However, the EPC cost may need to be adjusted after final negotiations with EPC contractor and award of contract.

The cost covers the following:

#### • Electro Mechanical Equipment:

US\$ 1.945 million cost have been estimated for E & M, the cost component of power plant includes Turbine, Boiler parts, Local Material, Generator, Control and Protection equipment and substation

for transformation of power to the transmission line.

- **Building and Steel Structure:**

Building and steel structure comprises of building for the plant and warehouse to store coal and spare parts with all utilities access road, clearing and grubbing, stripping, mobilization and demobilization costs, which is estimated at US\$ 0.714 million.

- **Transportation, Port Clearances, Custom Duty & GST:**

All of the electro-mechanical equipment including turbine, boiler and generators are to be imported. These materials are to be shipped from the country of its manufacturer and special arrangements for its inland transportation are to be made. The cost of freight, shipment and insurance etc. from the country of manufacturer has been at US\$ 0.394 million. The cost also includes the Custom Duty and General Sales Tax applicable in Pakistan.

- **Project Development Cost:**

- **Land Acquisition and Environment Mitigation Cost**

Land purchase cost covers the payment of the cost of land to the owner of the land/property as well as the cost of fill to level the site for construction purposes. Major bases of environment mitigation cost are for the measures taken at pre-construction and construction stages. The cost under this head is estimated about US\$ 0.171 million.

- **Project Engineering, Supervision & Consultancy.**

The cost of Engineering & Supervision includes cost of Owner's Engineer was reasonably estimated about US\$ 0.061 million. The Sponsor also understand that Engineering design cost component is essential and will be borne by the Project for which US\$ 0.183 million has been estimated. Further, the sponsor estimated US\$ 0.238 million in the account of consultancy services required to be paid for the environmental services, environmental management and mitigation plan, right of way, acquiring generation license from NEPRA etc.

- **Owner Administration & Overhead**

#### 6.5 MW COAL FIRED POWER PLANT

The Owner's administration cost includes salaries, wages, utilities, vehicles, travel and conveyance, office supplies, rent and rates, medical, insurance, depreciation, Auditor's remunerations, amortization, lease rentals, inventory, computer software, site office expenses for the owner as well as lenders. The estimate cost worked out is about US\$ 0.186 million. The cost also includes the equipment required to setup the office.

- **Legal Fee, Charges & Taxes**

This estimated cost is US\$ 0.048 million which includes the government licensing fee for the generation license as per NEPRA standards, procedures, EPA fee for the approval of IEE and company registration fee. The cost also includes cost related to the stamp duties for land acquisition.

### **10.3 Technical Assumptions**

The plant operation is guaranteed round the clock for 365 days a year. Annual energy output is computed based on these figures.

Gross Capacity	MW	6.50
Auxiliary Load	KW	950.00
Load Factor		100%
Force Shutdowns	Days	15
Operational Hours in an Year	Hrs	8,400
Net Capacity	MW	5.55
Gross Annual Energy	GWh	54.6
	KWh	54,600,000

## 6.5 MW COAL FIRED POWER PLANT

Auxiliary Load	GWh	7.98
	KWh	7,980,000
Net Electrical Output	GWh	46.62
	KWh	46,620,000

### 10.4 Financial Assumptions

Following are the assumption made to compute the cost estimation and analysis of the project:

Exchange Rate (PKR to USD)	105
Financing: Equity	100%
Plant Life (Years)	20
Average Inflation Rate ( <a href="http://www.tradingeconomics.com/pakistan/core-inflation-rate">http://www.tradingeconomics.com/pakistan/core-inflation-rate</a> )	5.30%

#### ■ Coal Consumption:

Coal Consumption Per kWh	gram	622
Total Coal Consumption	tons	33,961
Energy in a day	KWh	156,000
Coal Consumption per day	tons	97.03

#### ■ Coal Cost:

Coal Cost	PKR Per GCV	2.3
GCV	GCV	4,800
Cost exclusive of Tax	PKR Per Ton	11,040
	PKR Per Kg	11.04
Transportation Cost	PKR Per Ton	3,000
	PKR Per Kg	3.00
Cost of Coal including Transportation	PKR Per Ton	14,040
	PKR Per Kg	14.04
GST	%age	17%
Cost inclusive of Tax incld. Transportation	PKR Per Ton	15,916
	PKR Per Kg	15.92
Total Cost of Coal including Transportation	PKR Per annum	563,720,212



# 6.5 MW COAL FIRED POWER PLANT

## ■ Coal Inventory

Coal Required Per Day	tons	97.03
Coal Storage	days	30.00
Coal Storage for 30 days	ton	2,910.96
Total Coal Cost for 30 days	PKR	46,333,168

## ■ Salaries

Salaries:	Quantity	Amount (Per Month)	Total Salary (Per Month)
<b>General Staff:</b>			
Chief Engineer	1	120,000	120,000
Office Asstt.	1	15,000	15,000
Boiler Engineer	1	50,000	50,000
Boiler Foreman	1	40,000	40,000
Boiler House Fitter.	1	25,000	25,000
Turbine Engineer	1	50,000	50,000
Turbine Foreman General Shift	1	40,000	40,000
Turbine Fitter General Shift	1	25,000	25,000
Electrical Engineer	1	50,000	50,000
Electrical Foreman	1	40,000	40,000
Electrical Supervisor	1	25,000	25,000
<b>Boiler Operation:</b>			
Boiler Supervisor.	3	25,000	75,000
Fire Man	6	20,000	120,000
Water Man	6	18,000	108,000
Auxiliary operator.	6	15,000	90,000
Boiler Coolies	6	13,000	78,000
<b>Turbine Operation:</b>			
Turbine operator	3	25,000	75,000
Auxiliary Plant operator	3	20,000	60,000
Trainee	3	15,000	45,000
<b>Generator Operator:</b>			
Switch Board Operator	3	25,000	75,000
Trainee	3	15,000	45,000
<b>Admin &amp; Account Staff:</b>			
Accounts Manager	1	75,000	75,000
Accounts Asstt	3	20,000	60,000
Admin Manager	1	40,000	40,000
Admin Assistant	2	20,000	40,000

## **Store:**

6.5 MW COAL FIRED POWER PLANT

Manager	1	40,000	40,000
Assistant	3	20,000	60,000
<b>Work Shop / Maintenance Staff:</b>			
Sup - visor	1	40,000	40,000
Workers	4	15,000	60,000
<b>Security Staff:</b>			
Supervisor	1	25,000	25,000
Workers	8	15,000	120,000
<b>Total Salaries (Per Month)</b>			<b>1,811,000</b>
<b>Total Salaries (Per Annum)</b>			<b>21,732,000</b>

■ Admin Cost

Head	Amount (PKR) Per Month	Amount (PKR) Per Annum
Stationery & Printing	15,000	180,000
Meal & Entertainment	35,000	420,000
Fuel	75,000	900,000
Miscellaneous	20,000	240,000
<b>Total</b>	<b>145,000</b>	<b>1,740,000</b>

■ Operation and Management Cost

Store & Spare	Rs./KWh	0.100
General & Workshop	Rs./KWh	0.050
Annual Maintenance Cost	Rs./KWh	0.250
<b>Cost Per Unit</b>	<b>Rs./KWh</b>	<b>0.400</b>

10.5 Cost Per Unit

The per unit cost of Items are calculated below:

Coal Cost	Kg	12.916
Transportation Cost	kg	3.000
<b>Unit Coal Cost</b>	<b>kg</b>	<b>15.917</b>
Coal Consumption	kg/KWh	0.622
<b>Unit Coal Cost</b>	<b>Per KWh</b>	<b>9.900</b>
Salaries	Rs./KWh	0.398
Capital Cost	Rs./KWh	0.379
admin	Rs./KWh	0.032
O&M Cost	Rs./KWh	0.400
Insurance	Rs./KWh	0.050

## 10.6 Capital Structure

The project is to be financed by the equity from its stake holders

Equity	US\$ (M)	3.941
Total Project Cost	US \$ (M)	3.941

## 10.7 CAPEX Disbursement

The CAPEX disbursement is based on the assumption of 12 months construction period. The percentage disbursement of different components of CAPEX will change as per EPC contracts. All expenditure is met through equity disbursement.

## 10.8 Operating Costs

Operating costs include O&M Cost which includes cost of store & spare, General workshop, Annual Maintenance cost and the Coal cost. Per unit costs (Rs/kWh) have been computed based on dependable capacity – the maximum possible energy the plant can deliver per annum.

Item	Unit	Value
Plant Capacity net	MW	5.5
Hours/Day		24
Days		365
Force Shutdown	Days	15
Net Electrical Output	GWh	46.62
O&M Cost	Rs/kWh	0.400
Coal Cost	Rs/kWh	9.900

## 10.9 Savings

Savings in producing the electricity as a captive power plant has been computed. Analysis have been conducted in comparing the electricity purchase from LESCO VS the electricity generated from the captive unit. The analysis enables to identify the profit/loss in setting up the project.

### ■ Auxiliary Consumption

The plant will consume some power generated in house that includes power house own consumption in lighting and other facilities that includes various pumps, overhead crane etc. Out of this load in power house, major load will be of crane. Though the crane will not be operated in normal case but it will be counted in connected load. It is estimated that about 0.5 MW will be consumed in the plant and residential colony.

### Detailed Savings

<u>Years</u>	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Units Produced Gross (KWh)	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000	46,620,000
<b><u>Cost of Purchasing the Produced Units:</u></b>										
LESCO Average Cost of Unit (KWh)	14.93	15.72	16.55	17.43	18.36	19.33	20.35	21.43	22.57	23.76
Purchase Price	696,048,831	732,939,419	771,785,208	812,689,824	855,762,385	901,117,791	948,877,034	999,167,517	1,052,123,395	1,107,885,935
<b><u>Cost of Generation Per Unit:</u></b>										
Coal Cost	9.900	10.425	10.977	11.559	12.172	12.817	13.496	14.212	14.965	15.758
Salaries	0.398	0.438	0.482	0.530	0.583	0.641	0.705	0.776	0.853	0.939
Capital Cost	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379
O&M Cost	0.400	0.421	0.444	0.467	0.492	0.518	0.545	0.574	0.605	0.637
Admin	0.032	0.034	0.035	0.037	0.039	0.041	0.043	0.046	0.048	0.051
Insurance Cost	0.050	0.053	0.055	0.058	0.061	0.065	0.068	0.072	0.076	0.080
<b><u>Total Cost of Generation:</u></b>										
Per Unit	11.159	11.749	12.372	13.031	13.726	14.461	15.237	16.058	16.925	17.842
Total	520,234,339	547,742,677	576,796,169	607,485,429	639,906,747	674,162,475	710,361,443	748,619,412	789,059,556	831,812,979
<b><u>Savings Per Unit:</u></b>										
Per Unit	3.77	3.97	4.18	4.40	4.63	4.87	5.12	5.37	5.64	5.92
Total	175,814,492	185,196,742	194,989,039	205,204,395	215,855,637	226,955,316	238,515,591	250,548,104	263,063,839	276,072,956

#### 10.10 Financial Analysis

Financial analysis is done to evaluate the internal financial rate of return, payback period. Following assumptions has been for financial analysis:

- The project cost portion includes all costs that comprises of Coal cost, insurance cost, salaries, O&M cost etc.
- The net benefit is the difference of cost and revenue.

Results of financial analysis shows that the project carries IFRR of 55%. Detailed calculation is presented below:

### Financial Analysis

Year	Coal	Salaries	Capital Cost	O&M Cost	Admin	Insurance	Free Cash	Free Cash	Net Cash Flow
-1									(137,919,000)
0									(275,838,000)
1	9.900	0.398	0.379	0.400	0.032	0.050	3.771	205,908,864	205,908,864
2	10.425	0.438	0.379	0.421	0.034	0.053	3.972	216,897,085	216,897,085
3	10.977	0.482	0.379	0.444	0.035	0.055	4.183	228,365,541	228,365,541
4	11.559	0.530	0.379	0.467	0.037	0.058	4.402	240,329,471	240,329,471
5	12.172	0.583	0.379	0.492	0.039	0.061	4.630	252,803,900	252,803,900
6	12.817	0.641	0.379	0.518	0.041	0.065	4.868	265,803,524	265,803,524
7	13.496	0.705	0.379	0.545	0.043	0.068	5.116	279,342,584	279,342,584
8	14.212	0.776	0.379	0.574	0.046	0.072	5.374	293,434,717	293,434,717
9	14.965	0.853	0.379	0.605	0.048	0.076	5.643	308,092,784	308,092,784
10	15.758	0.939	0.379	0.637	0.051	0.080	5.922	323,328,687	323,328,687
11	16.593	1.032	0.379	0.670	0.053	0.084	6.212	339,153,145	339,153,145
12	17.473	1.136	0.379	0.706	0.056	0.088	6.512	355,575,458	355,575,458
13	18.399	1.249	0.379	0.743	0.059	0.093	6.824	372,603,228	372,603,228
14	19.374	1.374	0.379	0.783	0.062	0.098	7.147	390,242,051	390,242,051
15	20.401	1.511	0.379	0.824	0.066	0.103	7.482	408,495,171	408,495,171
Project IRR									11.88%
Payback Period									2 years 3 months

