

7447

Application for Grant of Generation License

1.67 MWp Solar Power Plant
At Shifa International Hospital, Islamabad,
Islamabad.

By Omar M. Malik
Chief Executive Officer, SPPL



Ref.: SPPL/GL-A/0004

April 14st, 2021.

The Registrar,
National Electric Power Regulatory Authority

Subject: Application for Grant of Generation License for 1.67 MWp Solar Power Plant
at Shifa International Hospital, Islamabad

I, Omar M. Malik, Chief Executive Officer, being the duly authorized representative of Shams Power (Private) Limited by virtue of Board Resolution dated 6th April 2021, hereby apply to the National Electric Power Regulatory Authority for the grant of Generation License to the Shams Power (Private) Limited, pursuant to section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

I certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provisions of the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, and undertake to abide by the terms and provisions 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 belief.

A Bank Draft in the sum of Rupees one hundred eighty-six thousand nine hundred forty-four Rupees only (Rs. 186,944), being the non-refundable license application fee calculated in accordance with Schedule II to the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, is also attached herewith.

Omar M. Malik
Chief Executive Officer

Shams Power (Private) Limited

2nd Floor, Al Maalik, 19 Davis Road, Lahore, Pakistan

Phone +92 42 36313235 & 36

Fax +92 42 36312959

RESOLUTION OF BOARD OF DIRECTORS SHAMS POWER (PRIVATE) LIMITED

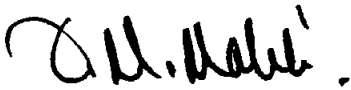
Board of Directors of Shams Power (Private) Limited, passed the following resolution in meeting held on dated 6th of April 2021 at registered address of the Company, as under:

Resolved, that the Company shall proceed with all acts necessary to comply with the legal and Regulatory requirements in relation to its business objectives and activities, inter alia, of the sale of electricity through the Generation Facilities to be provided by the Company at site(s) of Buyer(s).

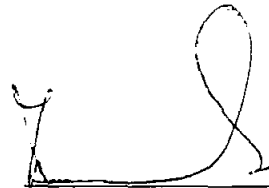
Further Resolved, that in order to apply for the Generation License for Solar Power Plant at Shifa International Hospital, Islamabad, the Chief Executive Officer of the Company (Omar M. Malik) shall be authorized to submit the application and / or to seek or submit any details, documents, evidence, clarification, or request as well as to represent the Company for the purposes of soliciting the grant of the aforementioned Generation License for the following site, either before NEPRA or any other appropriate forum and to do all or any other act that a man of ordinary prudence will do for the purposes mentioned above, including appearance before any department or forum or body, whether judicial or quasi-judicial, and to obtain the permission or no objection certificate where and when required.

It is also resolved that Omar M. Malik, the Chief Executive Officer named above, may further delegate the powers so vested in him, in writing to one or more persons to the extent of the purposes as shall be mentioned in the deed of delegation.

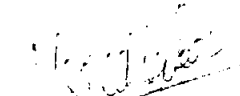
Moreover, it is resolved that Omar M. Malik, the Chief Executive Officer named above, is authorized and empowered for and on behalf of the Company to sign, execute and file the Petition for the grant of Generation License to NEPRA/other appropriate forum along with the documents essential to be filed.



Mr. Omar Mohyuddin Malik
Chief Executive Officer/ Director)



Mr. Zain Ul Abidin
Director



Mr. Choudhry Usaed Hafeez
Director



Mr. Usman Hamid Malik
Director

Shams Power (Private) Limited

2nd Floor, Al Maalik, 19 Davis Road, Lahore, Pakistan

Phone +92 42 36313235 & 36

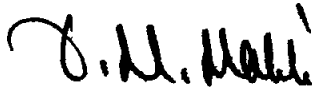
Fax +92 42 36312959

RESOLUTION OF BOARD OF DIRECTORS SHAMS POWER (PRIVATE) LIMITED

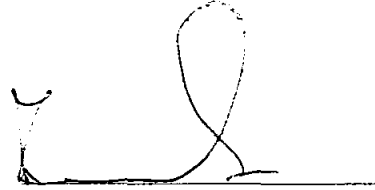
Board of Directors of Shams Power (Private) Limited, passed the following resolution in the meeting held on dated 6th of April 2021 at registered address of the Company, as under:

“BE AND HEREBY RESOLVED THAT Shams Power (Pvt.) Limited (the “**Company**”) hereby settles and compromises, Constitutional Petition No.D-3591 of 2019 filed by K-Electric Limited versus NEPRA and others (pending before the Sindh High Court, Karachi), in terms of which the Company warrants and represents, not to sell, supply or distribute, electricity, within KE Service Area, including Karachi, to any consumer, including without limitation, Metro Cash and Carry at Manghopir Road, Karachi, Metro Cash and Carry near Stargate, Karachi, Metro Cash and Carry near Safari Park, Karachi till 23 July 2023.

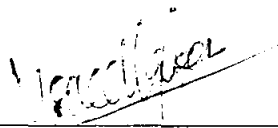
BE AND HEREBY FURTHER RESOLVED THAT Waqas Khatri son of Muhammad Ilyas, resident of Flat Nos.7 and 8, Kashana Ismail Building, Madani Road, Lyari, Karachi, CNIC No.42301-0964136-5, is our authorized representative, in relation to Constitutional Petition No.D-3591 of 2019 filed by K-Electric Limited versus NEPRA and others before the Sindh High Court, Karachi and is hereby authorized and empowered to institute, file, instruct, sign, swear and or verify any and all applications, affidavits, or any other document(s) that may be required to be filed on behalf of the Company to give effect to the compromise between K-Electric Limited and the Company; to instruct and engage legal counsel(s) and sign their Vakalatnama(s) and GENERALLY TO DO and perform all such acts and deeds as may be necessary.”



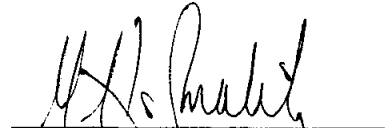
Mr. Omar Mohyuddin Malik
Chief Executive Officer/ Director)



Mr. Zain Ul Abidin
Director



Mr. Choudhry Usaed Hafeez
Director



Mr. Usman Hamid Malik
Director

Shams Power (Private) Limited

2nd Floor, Al Maalik, 19 Davis Road, Lahore, Pakistan

Phone +92 42 36313235 & 36

Fax +92 42 36312959

Application Details

Subject: Application for Grant of Generation License

1.0 Background:

1.1 Shams Power Private Limited (SPPL) was incorporated on January 15, 2015 under Section-32 of the companies' ordinance, 1984, with corporate universal identification No. 0091515. The business office of the company is at 2nd Floor, AL-Maalik building, 19-Davis Road Lahore (Detailed Company Profile is presented in Section 2 of this document)

1.2 It is a joint venture of three of Pakistan's leading energy companies (Saba Power Limited, PITCO Private Limited and Orient Operating Company Limited), involved in setting up power projects in Pakistan since 1996.

1.3 Shams Power aims to pioneer solving the Pakistan's energy problems by accelerating the adoption of distributed solar energy. Our team is committed to excellence in every aspect of solar design, construction, and operations and maintenance.

1.4 Shams Power offers a complete range of solar energy services to commercial and industrial sector customers across the Pakistan. Backed by more than 20 years of industry experience and a dedicated technical team, SPPL handle every aspect of solar power installation—including financing, technology evaluation, engineering and design, construction, monitoring, and ongoing maintenance and support—to ensure the most efficient and reliable solution.

2.0 Project Rationale

2.1 In 1987, the Hospital was incorporated as a Private Limited Company and then later converted into a Public Limited Company as the only hospital listed on Pakistan Stock Exchange. Shifa was officially opened in 1993, with 8 OPD Clinics & 36 beds. Shifa International Hospital, Islamabad's primary objective is to Their objective was to provide international standard medical care to the people of Pakistan.

2.2 Current Electricity demand at Shifa International Hospital, Islamabad Plant is met by a mix of different sources that includes 11kV Commercial feeder connection with sanctioned load of 0.495 MW and Gas Generators.

2.3 Shams Power Private Limited is a Clean Energy Solution Provider which provides turnkey solutions to its customers, and takes care of CAPEX & OPEX (for time period agreed in PPA) making it the most feasible financial model, for customers, to switch to cleaner energy without upfront capital investment.

2.4 Shifa International Hospital, Islamabad's management is looking for affordable and environment friendly energy sources to add to their energy mix. They have ample, unutilized space available at their plant site which can be used for PV plant installation.

2.5 SPPL has proposed and designed 1.36MW AC (1.67 MWp DC) Solar Power Plant to be installed at roof top and vacant ground space available at Shif International Hospital, Islamabad. A total of 3,374 Trina Solar Mono-Perc PV Modules (500W TSM-DE18M(II)),

Shams Power (Private) Limited

2nd Floor, Al Maalik, 19 Davis Road, Lahore, Pakistan

Phone +92 42 36313235 & 36

Fax +92 42 36312959



ShamsPower

2.4 Shifa International Hospital, Islamabad's management is looking for affordable and environment friendly energy sources to add to their energy mix. They have ample, unutilized space available at their plant site which can be used for PV plant installation.

2.5 SPPL has proposed and designed 1.36MW AC (1.67 MWp DC) Solar Power Plant to be installed at roof top and vacant ground space available at Shif International Hospital, Islamabad. A total of 3,374 Trina Solar Mono-Perc PV Modules (500W TSM-DE18M(II)), of 500 Watt each, will be connected to 13 nos. of Huawei SUN2000-100KTL-M1 & 01 no. of Huawei SUN2000-60KTL-M0 inverters (Inverters having Power rating of 100 & 60 KWac) to attain the above-mentioned DC and AC peak capacity. The plant is estimated to produce around 2,170 MWh of Energy (in its first year of operation) which translates to Net Capacity Factor of 14.83% (w.r.t DC size) and 18.21% (w.r.t AC size) and will result in offsetting approximately 1,153.4 tons of carbon dioxide annually. This is BOOT (Built Own Operate and Transfer) arrangement and Shams Power will provide electricity to Shifa International Hospital, Islamabad under 10 years Power Purchase Agreement.

2.6 After thorough financial & technical analysis and detailed discussions & negotiations, finally both parties have come to an agreement. Signing ceremony was held on 31st of March 2021. According to the Agreement, SPPL will be installing 1.67 MWp Solar power plants in Shifa International Hospital, Islamabad's Plant and will sell electricity to Shifa International Hospital, Islamabad at an agreed (kWh) unit rate for 10 Years.

2.7 Shams Power will install the PV plant within the premises of Shifa International Hospital, Islamabad and interconnection point is on LT system of the Plant. All the electricity will be consumed internally by the Hospital. Since this is business to business (B2B) arrangement and does not involve sale of electricity to CPPA-G, NTDC or any DISCO it will not have any impact on the Tariff.

3 Project Commencement and Completion

3.1 The project will be completed in a period of 07 Months. Breakup of time taken by Major Activities of project is as under:

Detailed Engineering Design will be completed in 3 to 4 weeks

Procurement/Import of Material will take 6 to 8 weeks

Construction activity will be completed in 10 to 13 weeks

Testing and Commissioning will take another 3 to 4 weeks

4 Environmental Benefit

4.1 Every energy generation and transmission method affect the environment. Conventional generating options can damage air, climate, water, land and wildlife, landscape as well as raise the levels of harmful radiation.

Shams Power (Private) Limited

2nd Floor, Al Maalik, 19 Davis Road, Lahore, Pakistan

Phone +92 42 36313235 & 36

Fax +92 42 36312959

ShamsPower

4.2 PV technology is substantially safer offering a solution to many environmental and social problems associated with fossil and nuclear fuels. Solar PV energy technology provides obvious environmental advantages in comparison to the conventional energy sources thus contributing to the sustainable development of human activities.

4.3 There are no global warming emissions associated with generating electricity from solar energy. Similarly, Solar PV Cells do not use water and other natural resources for production of Electricity. Water is only used during plant maintenance and it can be optimised to minimize the usage. The use of solar power has additional positive implications such as:

- Reduction of the emissions of the greenhouse gases (mainly CO₂, NO_x) and prevention of toxic gas emissions (SO₂, particulates)
- Reduction of the required transmission lines of the electricity grids

4.4 The proposed 1.67 MW Solar Power Plant at SHIFA INTERNATIONAL HOSPITAL, ISLAMABAD will have an overall positive impact on the environment and it will result in offsetting approximately 1,153.4 tons of carbon dioxide annually.

5 Prayer

SPPL has performed an in-depth technical and financial analysis for 1.67 MWp Solar Power Plant at Shifa International Hospital, Islamabad. Findings from these analyses suggest that the proposed site is suitable for installation of PV based power plant.

Technical details of the site along with feasibility report have been attached as Section 3 and Section 4 (Schedule I and Schedule II) to this application.

As considerable amount of effort and attention to minute details have been put into PV plant designing and proposal preparation, SPPL is confident that, if it is allowed to construct these plants, it will be able to achieve the required results without any problem.

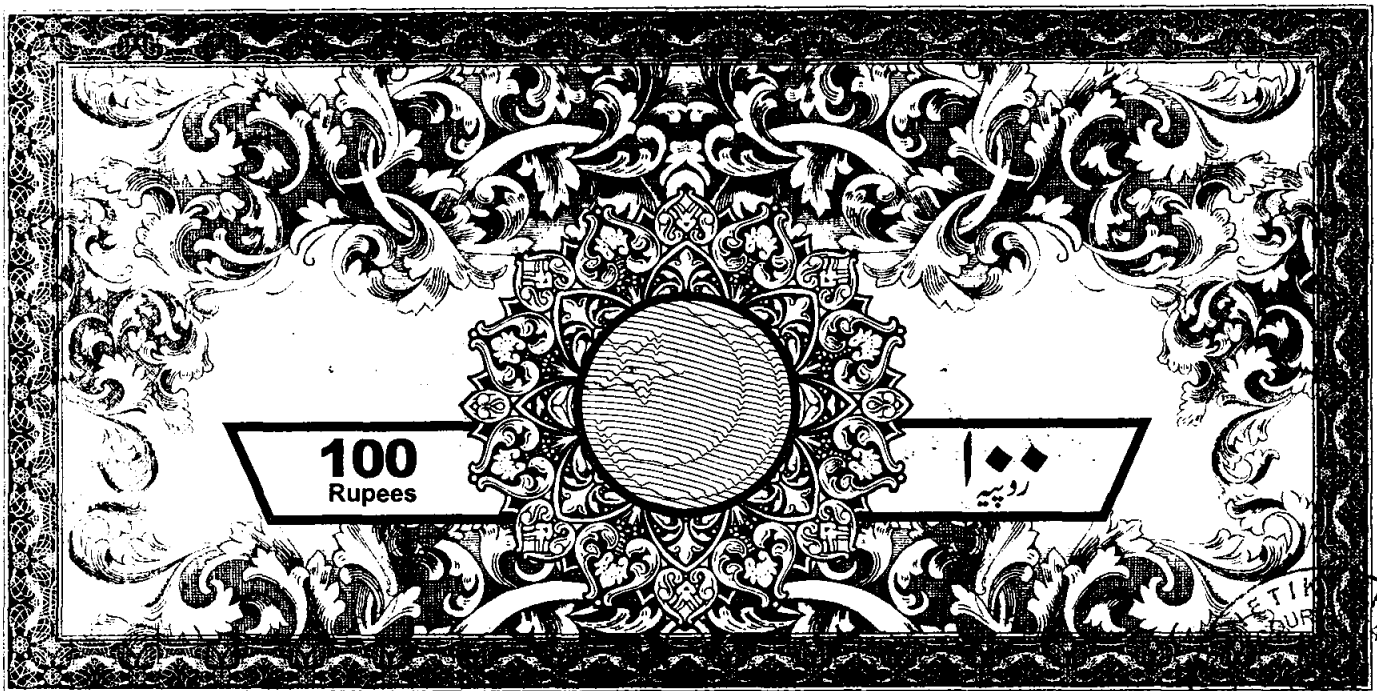
Therefore, SPPL request the authority to kindly Grant the Generation License for 1.67 MW Solar Power Plant at Shifa International Hospital, Islamabad.

Shams Power (Private) Limited

2nd Floor, Al Maalik, 19 Davis Road, Lahore, Pakistan

Phone +92 42 36313235 & 36

Fax +92 42 36312959



BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

AFFIDAVIT

I, Omar Mohyudin Malik S/O Dr. Saleem Hamid Malik, Chief Executive Officer of Shams Power (Private) Limited, Al-Maalik, 2nd Floor, Davis Road, Lahore, the duly authorized representative of the Applicant Company deposes on oath that the contents of the accompanying Application for Grant of Generation License and the supporting documents thereto are true and correct to the best of my knowledge and belief.

O. M. Malik

Deponent

Verification

The Affidavit is verified on this 9th day of April, 2021 at Lahore that the contents of the Affidavit are true and correct to the best of my knowledge and belief and that nothing, material and relevant, has been kept concealed by design.

O. M. Malik

Deponent

ATTESTED
 SYED IFTIKHAR HAIDER
 PRIVATE HIGH COURT &
 CIVIL COMMISSIONER LAHORE

Shams Power Profile

Shams Power (Private) Limited

A Brief Introduction to Shams Power

Shams Power (Private) Limited is a private limited company, incorporated under the laws of Pakistan on 15 Jan 2015 vide registration number 0091515.

In order to provide the supplementary services in the power sector, and to contribute in the national growth by provision of a cheaper source of electricity, Shams Power has been formed as a Joint Venture for the purposes as detailed in the Memorandum of Association.

The affairs of Applicant are governed pursuant to its Articles of Association. The Applicant has 4 Directors, who are nominees of the following Joint Venture Partners:

1. **Orient Operating Company (Private) Limited**, a company existing under the laws of Pakistan, having an office at 10 Ali Block, New Garden Town, Lahore, Pakistan. Orient provides, inter alia, operation and maintenance services to power generation companies in Pakistan.
2. **PITCO (Private) Limited**, a company existing under the laws of Pakistan, having an office at 2nd Floor, Al-Maalik Building, 19 Davis Road, Lahore, Pakistan. PITCO is carrying on the business of engineering consulting services in the areas of power generation, transmission and distribution in Pakistan.

The Joint Venture Partners have extensive experience and exposure, both in the power sector, and the commercial oriented business, which is evidenced by the following brief introduction:

Orient Operating's Profile and Role

Orient Operating Company (Pvt). Ltd. (hereafter: Orient) was established in 2007. Having its office in Lahore, The Company primarily undertakes the operations and maintenance of power plants. Orient is responsible for running and servicing generating equipment and providing services that maintain the lifetime productivity of the customer's investment. It undertakes the complete operations of large scale (thermal) power plants, including the hiring, training and development of O&M Personnel, and the development and preparation of training manuals for staff engaged in plant operations. Performance Monitoring, and Plant Performance and Efficiency Enhancements are also provided by Orient.

The Company is providing services to various power plants in Pakistan working under an IPP (Independent Power Producer) mode dispatching power to the national grid. It is also responsible for preparing, implementing and maintaining health and safety procedures, and preparing, implementing and maintaining site operating procedures for these plants. It also undertakes complete stores and inventory management, as well as budget preparation. Orient currently employs 75 people.

By using its expertise and experience in the field of operation and maintenance services of power generation units, Orient will, inter alia, focus more towards these services, including developing the business of The Applicant Company.

Orient Operating is represented in the Applicant Company by Director Choudary Usaed Hafeez and Zain ul Abideen.

PITCO's Profile and Role

PITCO (Pvt) Limited (hereafter: PITCO) is one of Pakistan's leading energy, engineering and environmental consulting companies. PITCO provides services in a broad variety of fields, including energy sector reforms, utility performance improvement, conventional power generation, renewable and alternative energy, sustainable production and consumption, energy efficiency and resource recovery, engineering & plant design and carbon emissions trading. Based in Lahore, it is working with Pakistans' power sector regulatory authorities, electricity utilities and distribution companies, industries and industrial associations, and service sector organisations in both the public and private sectors.

PITCO has undertaken several large projects in Pakistan on behalf of USAID, the European Commission, ADB, the World Bank, and other international organizations. These include the US\$220 million USAID Power Distribution Program, the \$38 million USAID Energy Efficiency and Capacity Program, the € 4 million EU funded Trade Related Technical Assistance Program, and several others. Private sector players include Fichtner GmbH, International Resources Group Inc. (IRG), First Climate AG Switzerland, Multan Electric Power Company, Shakarganj Mills, DG Khan Cement Company Ltd, PEPCO (Pakistan Electric Power Company) and many more.

PITCO was established in 2003 and currently employs 180 people. The Applicant Company is owned and managed by the two Directors Mr. Usman H. Malik (Director) and Mr. Omar M. Malik (Director),.

By using its expertise and experience of working with small captive power generation scenarios and advising them about reductions in their energy costs and carbon footprints, PITCO will, inter alia, handle sales and business development and build the image of the Company by providing innovative solutions to the power market in the country.

PITCO is represented in the Applicant Company by Directors **Usman H. Malik** and **Omar M. Malik**. Additionally, Omar M. Malik serves as the Chief Executive Officer of The Applicant Company

Company's Solar Profile

Sham Power Private Limited was conferred with following Generation Licenses by the Authority (NEPRA):

- i. License No: SPGL/18/2017, dated 09-01-2017 (0.079 MWp).
- ii. Modified License No: SPGL/18/2017, dated 22-04-2019 (3.557 MWp).
- iii. License No: SGC/134/2020, dated 28-05-2020 (1.897 MWp).
- iv. License No: SGC/135/2020, dated 01-09-2020 (0.474 MWp).

Senior Management and Technical Staff

The list of senior management, key technical and professional staff of the Applicant Company is provided as under: -

Name	Designation
Omar M. Malik	Chief Executive Officer
Usman H. Malik	Director Technical
Irtiza Ubaid	Head of Business Development
Aijaz Butt	Chief Operating Officer
Usaed Hafeez	Director Finance
Zain Ul Abideen	Director Projects
Manzar Ameer Ali	Sr. Manager (Engineering)
Osama Ahmed	Sr. Electrical Engineer

Brief introduction of the above named personal is as follows:

Omar M. Malik

Omar has been the CEO and Director of Shams Power since its founding, and serves on the Board of Directors. Omar is responsible for the overall strategy, customer and stakeholder relationships and solar investments at various companies and sectors. Under Omar's leadership, we have developed a portfolio of projects across various C&I sector. Omar is also a Director at PITCO, a leading energy & engineering firm, and a Director at yieldWerx Semiconductor, a provider of semiconductor data analytics software to fabless semiconductor firms in the US, Europe, and Asia. Omar has a Bachelors in Finance from Georgetown University (USA), and an MBA from INSEAD in France.

Usman H. Malik:

Usman Malik serves as Director Technical at Shams Power, where he oversees the technical design and technology. He is also the CEO and Director of PITCO, where he has spearheaded the engineering, design, and construction of over 4,000 MW of new IPPs in Pakistan. Usman has a Bachelors and Masters in Electrical and Electronic Engineering from the University of Cambridge (UK).

Irteza Ubaid

Irteza has been Head of Business Development since its founding, brought multi-fold scale up to business. He is responsible for overall sales and marketing, including new client origination, PPA negotiations, and contracting. He has successfully closed 10+MW of rooftop PPAs, 120MW of Wheeling PPAs. Irteza has a bachelor degree in Electronics Engineering from NUST and an MBA from LUMS.

Aijaz Butt

Aijaz has been the COO at Shams Power since its founding. He manages the supply chain sourcing of equipment, as well as the EPC and O&M operations of Shams Projects. Aijaz spent 32 years at Fauji Fertilizer Company (FFC) and 6 years with USAID undertaking large scale industrial,

municipal, and agriculture Energy Efficiency Programs. Aijaz Butt holds an MBA from Preston University.

Usaed Hafeez

Usaed serves as Director Finance and CFO at Shams Power, and member of the Board of Directors. He is responsible for the management of overall financial control and project financing. He has over 20 years of experience in executive management, finance, audit, risk management, corporate governance, stakeholder engagement and regulatory compliances in a multinational environment, and has added marked value to various organizations in the United Kingdom and Pakistan. He also serves as the CEO & CFO at associated Group Companies SABA Power Company (Private) Limited (134 MW power plant), CEO & CFO Orient Operating Company (Private) Limited, Director in Oursun Pakistan Limited (50 MW solar power plant). He is a qualified Chartered Accountant from ICAEW (UK), Chartered Certified Accountant from ACCA (UK) and Chartered Public Finance Accountant from CIPFA (UK).

Zain ul Abideen

Zain serves as Director Projects at Shams Power, and member of the Board of Directors. He has to his credit the project development and COD of several IPPs including the OurSun 50MW Solar Power Project, where he also serves as CEO. He has formerly been the CFO of Japan Power (135MW IPP), El Paso (previously Coastal Power) projects in Pakistan (Habibullah Coastal, Saba Power, Fauji Kabirwala), and prior to that at KAPCO. Zain is a qualified chartered accountant and has served at AF Ferguson (PWC).

Manzar Ameer Ali

Manzar has been a senior member of Shams Power's technical team since its founding. He is responsible for design, simulations and preparation of technical feasibilities of the Solar PV plants, vendor management, installation, commissioning and supervision, technology selection and performance analysis of the existing PV plants. Manzar has a Bachelor's degree in Electrical Engineering from UET Taxila.

Osama Ahmed

Osama Ahmed has over 10 years of experience in designing, testing & installation of energy and power projects with expertise in Medium and High Voltage substation equipment. Osama's role in Shams Power is to prepare technical proposals, conducting FAT / SAT of equipment, liaising with NEPRA and other Government institutions for Generation Licenses and other correspondence. Osama has a Bachelors in Electrical Engineering from University of Central Punjab, Lahore.

As can be seen from company's own portfolio, experience of SPPL's profile of its senior Management and Technical Officials, SPPL has enough experience in electricity industry to successfully install 1.67 MWp power plant at Shifa International Hospital, Islamabad.

Subcontractor Profile

Subcontractor Details

Not Applicable: SPPL would like to inform the Authority that it does not intend to engage a subcontractor for this project. All engineering, procurement, and construction activities will be undertaken by Shams Power itself, and our teams have adequate experience and expertise to do so.

THE COMPANIES ACT, 2017
THE COMPANIES (GENERAL PROVISIONS AND FORMS) REGULATIONS, 2018
[Section 187 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) 0091515
 1.2 Name of Company SHAMS POWER (PVT.) LIMITED
 1.3 Fee Payment Details
 1.3.1 Challan Number E-2020-286367 1.3.2 Amount 2500.0

PART-II

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)
OMAR MOHY-UDDIN MALIK	35202- 4257987-7	SALEEM HAMID MALIK	Al-Maalik Building, 2nd Floor, 19-Davis Road Lahore	Chief Executive	Pakistan		22/07/2019	Appointed	
HASSAN FAROOQ AND CO			7/3 G. MUSHTAQ AHMAD GURMANI ROAD, GULBERG II, LAHORE	Auditor	Pakistan		28/10/2020	Re-Appointment	

2.2. Ceasing 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)	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)

* 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

PART-III

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 OMAR MOHY-UDDIN MALIK Chief Executive

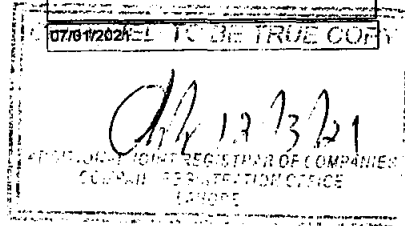
3.2 Name of Authorized Officer with designation/ Authorized Intermediary OMAR MOHY-UDDIN MALIK Chief Executive

3.3 Signature

Electronically signed by OMAR MOHY-UDDI

3.4 Registration No of Authorized Intermediary, if applicable

3.5 Date (DD/MM/YYYY)



LIST OF ANNEXURES

ANNEXURE I

CERTIFICATE OF INCORPORATION.

ANNEXURE II

MEMORANDUM/ARTICLES OF ASSOCIATION.

ANNEXURE III

LAST FILED ANNUAL RETURNS.

ANNEXURE IV

CV OF SENIOR MANAGEMENT AND TECHNICAL STAFF

ANNEXURE V

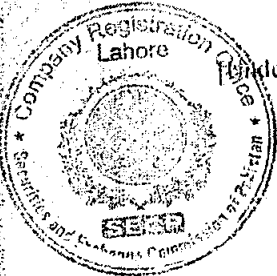
PROJECT MOU.

A005199



SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN
COMPANY REGISTRATION OFFICE, LAHORE

CERTIFICATE OF INCORPORATION



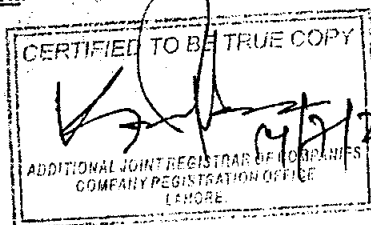
Under section 32 of the Companies Ordinance, 1984 (XLVII of 1984)

Corporate Universal Identification No. 0091515

I hereby certify that SHAMS POWER (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 Fifteenth day of January, Two
Thousand and Fifteen.

Fee Rs. 54,000/-



(LIAQAT ALI DOLLA)
Additional Registrar



No. AR/L 15/1/2015

DATED: 15/1/2015

ANNEXURE II
MEMORANDUM/ARTICLES OF ASSOCIATION

THE COMPANIES ORDINANCE, 1984

(COMP ANY LIMITED BY SHARES)

MEMORANDUM OF ASSOCIATION

OF

SHAMS POWER (PRIVATE) LIMITED

I. NAME

The name of the Company is Shams Power (Private) Limited.

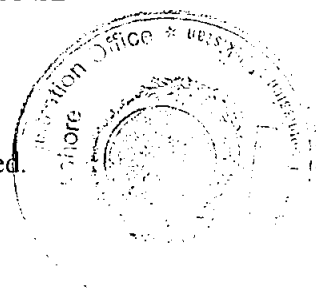
II. REGISTERED OFFICE

The registered office of the Company will be situated in the Province of Punjab.

III. OBJECT

The objects for which the Company is established are:

1. To develop, design, construct, complete, own, possess, manage, operate and maintain solar electric power generation plant(s) in Pakistan at such location(s) as the applicable Jaws/policies permit, and in connection therewith to engage in the business of rental or sale of solar and other power generation equipment, generation, transmission, sale, supply and distribution of electricity within Pakistan and to do all and everything necessary, suitable, proper, incidental or conducive to the accomplishment of this object and to do every other act or thing incidental or appurtenant to or arising out of or connected with this object subject to the permission (if any) of the relevant authorities.
2. To carry on and undertake the business of construction and development of solar power plants in all its forms and perspectives and for that purpose to take on lease, own or acquire all types of land, building and requisite facilities and to do all such acts, deeds or things as would be required for the effective discharge of this object.
3. To acquire or purchase machinery, plant, equipment, spare parts, raw materials, supplies and related goods and services necessary and/or incidental to the development, ownership, construction, management, operation and maintenance of solar power plant (s).
4. To establish and maintain housing, transportation, communication and utility lines and other requisite logistic facilities for the construction, operation and maintenance of power plant(s).



5. To secure, subject to applicable laws, foreign equity and technical collaboration for the development, ownership, construction, operation and management of power plant(s).
6. To obtain loans, credit and financial facilities in local and/or foreign currency from banks and other financial institutions operating in Pakistan, and subject to necessary approvals under the applicable laws/policies, financing from international sources, proceeds of which can be used for the objects of the Company including for the development, ownership, construction, operation and maintenance of power plant(s).
7. To mortgage, hypothecate, create charges and other encumbrances on the properties and assets of the Company in such manner and on such terms and conditions as the Company may determine.
8. To enter into any arrangement or agreement with purchasers of power from the power plant(s).
9. To enter into contracts for the purchases of fuel for the power plant(s), for construction of the power plant(s), for operation and maintenance of the same and other agreements as may be necessary in the conduct and furtherance of business of the company and to take all actions before competent forums for the enforcement of such agreements and contracts.
10. To take out any insurance that the Company deems necessary or appropriate in connection with its business, including the ownership, construction, operation and maintenance of power plant(s), and to pay the premium thereof.
11. To enter into any arrangement with, obtain consents and approvals of, secure interim and final orders from the Government of Pakistan, and any other governmental agency or body and to undertake efforts to promote or modify laws, regulations and policies, and where required, to seek like dispensation from any government or public authority or any corporation or private persons, or any foreign government, authority or person for the business of the Company, including the development, ownership, construction, management, operation or maintenance of power plant(s), and to oppose by legal means within or outside Pakistan any actions or measures as are taken by any-governmental or other authority which the Company considers likely to adversely affect its business, including the development, ownership, construction, management, operation or maintenance of power plant(s), and to obtain or endeavor to obtain from any governmental or other public authority any charters, contracts, rights, grants, loans, subsidies, privileges, concessions, indemnities, sanctions or consents as the Company may think proper for its business, including the development, ownership, construction, operation or maintenance of power plant(s).
12. To guarantee the performance of contracts and obligations (including payment of loans) of any person providing goods or services in connection with the business of the Company,

including construction, operation or maintenance of power plant(s) or purchasing electricity generated by power plant(s), but not in any event to carry on the business of banking.

13. To operate, maintain and manage power generation facilities, power stations, power houses and grid stations together with all machinery, equipment and works ancillary thereto and plan, survey, design, supply equipment and to do all such acts, deeds and things, without limitation whatsoever, as may be necessary or desirable in furtherance of this object.
14. To carry on the business as engineers, designers, architects, operators, concessionaries, surveyors, builders, masonry and general construction contractors, erectors and to establish, operate, manage, maintain, equip, construct, repair, renovate, improve, work on, industrial, commercial and residential buildings, parks, clubs, roads, motorways, highways, playlands, stadiums, gymnasiums, railways, roadways, airports, runways, docks, harbors, wharves, canals, water courses, reservoirs, embankments, irrigations, reclamations, sewerages, drainage and other sanitary works and systems, water, gas, electric and other supply works, godowns, mills, factories, installation and related or other works of all kinds and description and to equip the same or any part thereof with all or any conveniences and utilities which include, but are not limited to, electricity, gas, telephone, internet, drainage and sewage facilities and to do all such acts, deeds or things as would be required for effective discharge of these objects.
15. To carry on the business of estimation, drawing up of specifications and contracts, quantity surveying, supervision and execution of construction works and all installation and maintenance thereof.
16. To equip and furnish any property for the purpose of letting or hiring the same to visitors as guests whether in single or double rooms, suites, chalets, cottages or otherwise.
17. To carry on and undertake trading business of all sorts and to act as indentors, importers, exporters, traders, suppliers and commission agents of products, - commodities and materials in any form or shape manufactured or supplied by any company, firm, association of person body, whether incorporated or not, individuals, government, semi-government or any local authority.
18. To apply for, tender, offer, accept, purchase or otherwise acquire any contracts and concessions for or in relation to the projection, execution, carryout, improvements, management, administrations or control of works and conveniences and to undertake, execute, carry out, dispose of or otherwise turn to account the same.
19. To carry on all or any of the business as manufacturers, buyers, sellers, indentors, importers, exporters, distributors, agents, factors, stockists, commission agents and dealers of engineering goods, machine tools, hand tools, small tools, metals, alloys, iron pipe fittings, nuts and bolts, bicycles and accessories, automobile parts, steel and stainless steel and iron products, cutleries, ores, and scraps.

20. To carry on agency business (except managing agency) and to acquire and hold selling agencies and to act as general agents, selling agents, mercantile agents, commission agents, carrier's agents, shipping agents, clearing and forwarding agents, indenting agents, managers, advertisers, stockists, manufacturers' representative and distributing agents of and for the distribution of all kinds of local and foreign merchandise, goods, commodities, products, materials, substances, articles and things whether finished, semi-finished, raw, under process, refined, treated or otherwise pertaining to trade and commerce and for that purpose to remunerate them and to open and maintain depots and branches.
21. To purchase, take on lease or in exchange, hire, apply for or otherwise acquire and hold for any interest, any rights, privileges, lands, building, easements, trade marks, patent rights, copyrights, licenses, machinery, plants, stock-in-trade and any moveable and immovable property of any kind necessary or convenient for the purpose of or in connection with the Company's business or any branch or department thereof and to use, exercise, develop, grant licenses in respect of or otherwise turn to account any property, rights and information so acquired, subject to any permission required under the law.
22. To build construct, alter, maintain, enlarge, pull down, remove or replace; to work, and control; to develop any property acquired, purchased or owned by the company or any other company including buildings, offices, mills, ware-houses, shops, stores, machineries, roads, railways, bridges, reservoirs, watercourses, wharves, electric works, industrial and commercial concerns and other works and conveniences in furtherance of its objects and to perform professional engineering work or enter into agreements with the companies performing professional. Engineering work.
23. To act as representatives, for any local or foreign person, firm or company and to undertake and perform sub-contracts, and also act in the business of the Company through or by means of agents, sub-contractors and to do all or any of the things mentioned herein in any part of the world and either alone or in collaboration with others and by or through agents, sub-contractors or otherwise.
24. To enter into agreement(s) with any government or authority (foreign, supreme, municipal, local or otherwise) or any corporation, company or persons that may seem conducive to the Company's objects or any of them and to obtain from any such government, authority, corporation, company or person any charters, contracts, rights, privileges and commission which the Company may think desirable and to carry on exercise and comply with any such charters, contracts, decrees, rights, privileges and concessions.
25. To apply for and obtain necessary consents, permissions and licenses, rights, privileges and concessions from any local or foreign Government, State, Municipal, Local and other authorities or persons for enabling the Company to carry on its objects and to oppose any proceedings or application which may seem calculated directly or indirectly to prejudice the interests of the Company.

26. To, subject to the approval of the competent authority, make, amend and modify Articles of Association and rules and regulations not inconsistent with this Memorandum of Association to provide for all matters for which provision is necessary or expedient for the purpose of giving effect to the provisions of this Memorandum of Association and the efficient conduct of its objects.
27. To adopt such means of making known the Company as may seem expedient and in particular by advertising in the media, by circulars, by purchase and exhibition of works of art or interests, by publication of books and periodicals and by granting prizes, rewards and donations.
28. To appoint agents, sub-agents, attorneys, consultants, and contractors or to act as agent, sub-agent, attorney, consultants and contractors in connection with the objects of the Company but not to act as managing agents.
29. To open close and operate bank account of the Company with any bank or banks, financial institutions or cooperatives societies and to draw, make, accept, endorse, discount, execute and issue promissory notes, bills of exchange, bills of lading, warrants, debentures and other negotiable or transferable instruments, but not to act as a finance or banking company.
30. To borrow or raise money in such manner as the Company shall think fit in pursuance of its objects, and in particular by the issue of debentures, or debenture stock (perpetual or otherwise), Modaraba Certificates, Participation Term Certificates (PTCs), Term Finance Certificates (TFCs) or otherwise and by issue of all securities including securities not based on interest for raising redeemable capital, resource funds from banks or financial institutions and by issue of shares in lieu of outstanding balance of any loan and by issue of securities as required by the rules and regulations of the banks, financial institutions and loan giving agencies and, to secure the repayment of any money borrowed, raised or owing by mortgage, charge or lien upon all or any of the property or assets of the Company (both present and future).
31. To sell, improve, manage, develop, exchange, mortgage, enfranchise, dispose of or otherwise deal with, all or any part of the property, assets or undertaking of the Company for such consideration as the Company may think fit and to distribute among the members in specie any property of the Company, or any proceeds of sale or disposal of any property of the Company, but so that no distribution amounting to a reduction in capital may be made without the sanction of the Court, if required; in the event of winding up of the Company.
32. Subject to the applicable laws, give any guarantee or provide any security (including but not limited to charge, lien or mortgage) in order to secure the repayment of any loan, finance or advance.
33. To accept or give security, including but not limited to promissory notes, indemnity bonds, guarantees, assignments, receipts, bailments, pledges, hypothecations, liens,

mortgages and charges, against the credit extended or moneys borrowed in connection with its objects.

34. To employ and remunerate managers and other officers, employees and servants of the Company or any person or firm or company rendering services to the Company upon such terms as the Company may determine.
35. To establish and maintain or procure the establishment and maintenance of any contributory or non-contributory pension, superannuation funds for the benefit of, and give or procure the giving of donations, gratuities, pensions, allowances or emoluments to any person who are or were at any time in the employment or service of the Company, or who are or were at any time directors or officers of the Company and the wives, widows, families and dependents of any such persons, and also to establish subsidies and subscribe to any institutions, associations, clubs or funds calculate to be for the benefit of or to advance the interest and well-being of the Company.
36. To enter into joint venture or a partnership or cooperation with any person or company or other legal entity, local or foreign, or otherwise assist any such person or company or legal entity in furtherance of its objects.
37. To pay out of the funds of the Company all expenses of and incidental to the formation, registration, advertisement of the Company and the issue and subscription of the share or loan capital or placing or guaranteeing the placing of shares or any debentures, debenture-stock and other securities of this Company and also all expenses relating to the issue of any circular or notice and the printing, stamping, circulating of proxies and forms to be filled up by the members of the Company.
38. To insure the property, assets, and employees of the Company in any manner deemed fit by the Company, and to create any reserve funds, sinking fund, insurance fund or any other special fund whether for depreciation or for repairing, insuring, improving, extending or maintaining any of the property of the Company or for any other purpose conducive to its objects but not to act as an insurance company.
39. To subscribe for, take or otherwise acquire and hold shares, debentures or securities of 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 and to invest the moneys not immediately required for the business of the Company in, and to hold, sell and deal with the stocks, shares, bonds, debentures, debenture stocks, PTCs, TFCs, mutual fund certificates, NIT units, Modaraba certificates or certificates of investment obligations, notes and securities of any Government, Province, company, Corporation, Municipal or Local or other Body or Authority and to deal with the monies of the Company for such purposes conducive to the interest of the Company and to vary investments from time to time but not to act as an investment company.
40. To receive, declare and distribute profits and to capitalize such portion of the profits of the Company as are not distributed among shareholders of the Company in the form of dividends,

and as the Directors of the Company may think fit, and to issue bonus shares, as fully paid up, in favour of the shareholders of the Company.

41. To subscribe or contribute or otherwise to assist or to guarantee money to charitable, benevolent, religious, literary, scientific, technical, national, public or any other institutions or for any exhibition or purpose.
42. To file or register any document required to be filed or registered under law, and to pay any fees, charges, expenses, rents, taxes, duties and other dues payable in connection with its objects.
43. To settle dispute by negotiation, reconciliation, arbitration, litigation or other means and to enter into compromise with creditors, members and any other persons in respect of any difference.
44. To establish laboratories, research and development centres to perform such research and development as the Company may deem advisable or feasible, and to expend money experimenting upon and testing and improving or securing any process, or processes, patent or protecting any invention or inventions which the company may acquire or propose to acquire or deal with in furtherance of its objects.
45. To develop and/or transfer technology and to acquire or pass on technical know-how incidental or conducive to the attainment of its objects.
46. To train personnel and workers, both in Pakistan and abroad to obtain technical proficiency in various specialties connected with its objects.
47. To undertake and execute any trust or trusts which the Company may deem to be desirable, expedient or necessary and to act as trustees of any deeds constituting or securing any debentures, debenture stock, or other securities or obligations and to undertake and execute any other trust and also to undertake the office of executor or administrator and to keep for any company, Government, authority or body, any register relating to any stocks, funds, shares or securities, to undertake any duties in relation to the registration of transfers, the issue of certificates or otherwise.
48. To do all such other things as may be deemed incidental or conducive to the attainment of the main objects or any of them in any part of the world, and as principals, agents, contractors, trustees or otherwise, and by or through trustees, agents or otherwise and" either alone or in conjunction with others.
49. It is hereby declared that:
 - a) The Company shall have full authority, power and competence to do any and all other things and acts to further the activities specified in sub-Clauses 1 to 48 in support of and

in relation to (directly or indirectly) of the objects of the Company.

- b) Notwithstanding anything contained in the foregoing Object Clause of this Memorandum of Association, nothing contained therein shall be construed as empowering the Company to undertake or indulge in the business of banking company to undertake or indulge in the business of banking company, banking, leasing, investment, managing agency or insurance business indirectly as restricted under law or in any lawful operation.
- c) The company would not indulge in any short of real estate business, housing colonies/purchase and sale of plots and developments of land and housing finance company business as required by the applicable laws.
- d) The Company undertakes that the Company shall not, by advertisement, pamphlets, or by any other means or through negotiation offer for sale or take advance money for further sale of plots, houses, flats etc. to the general public or individuals unless such plots, houses flats etc are owned and/or have been developed by the Company.
- e) Notwithstanding any thing stated in the foregoing Object Clause of this Memorandum of Association, the Company shall obtain such other approval or license from competent authority, as may be required under any law for the time being in force, to undertake a particular business.

IV. LIABILITY

The liability of the members is limited.

V. SHARE CAPITAL

The authorized capital of the company is Rs. 50,000,000/- (Rupees Fifty Million Only) divided into 5,000,000 (five million only) ordinary shares of Rs. 10 (Rupees ten only) each with the rights, privileges and conditions attaching thereto as are provided by the regulations of the company for the time being, with power to increase or reduce the capital and to divide the share in the capital for the time being into several kinds and classes and to attach thereto respectively such special rights, privileges or conditions as may be determined by or in accordance with the regulations of the Company, and to vary, modify or abrogate any such rights, privileges or conditions in such manner as may for the time being be provided by the regulations of the company in accordance with law provided, however, that rights as between various classes of ordinary shares, if any, as to profits, votes and other benefits shall be strictly proportionate to the paid up value of shares.

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

S. No.	Name and Surname (present & former) in full (in Block Letters)	NIC No. (in case of foreigner, Passport No.)	Father's/ Husband's Name in full	Nationality(ies) with any former Nationality	Occupation	Residential address in full	Number of shares taken by each subscriber	Signatures
1	ZAIN-UL-ABDIN	42201-0622607-1	Fazal Hussain Amin	Pakistani	Business Executive	House No. 573 Street No. 11 Sector A Township, Lahore	One (1)	
2	OMAR MOHYUDDIN MALIK	35202-4257987-7	Saleem Hamid Malik	Pakistani	Business Executive	House No. 15-A Denpur Road GOR I, Lahore	One (1)	
3	USMAN HAMID MALIK	35202-9452021-3	Saleem Hamid Malik	Pakistani	Business Executive	House No. 15-A Denpur Road GOR I, Lahore	One (1)	
4	FAISAL ISLAM	35201-6640002-1	Muhammad Islam	Pakistani	Business Executive	97/16-B, Nisalr Colony, Lahore Cantt.	One (1)	
Total number of shares to be taken							Four (4)	

Dated the 6th day of January 2015

Witness to the above signatures	
Signature	
Full Name	Saleem Akhtar
CNIC No.	32204-1586952-1
Father's Name	Ghulam Qasim
Full Address	115/7A, Sarwar Road, Lahore Cantt.
Occupation	Advocate High Court

THE COMPANIES ORDINANCE, 1984

(COMPANY LIMITED BY SHARES)

ARTICLES OF ASSOCIATION

OF

SHAMS POWER (PRIVATE) LIMITED

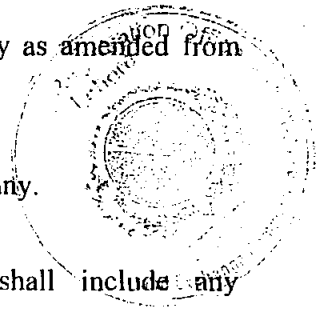


1. The regulations of table "A" contained in First Schedule to the Companies Ordinance, 1984, as amended, shall not apply to the Company, except so far as the same are repeated or contained or deemed to be contained in these Articles.

INTERPRETATION

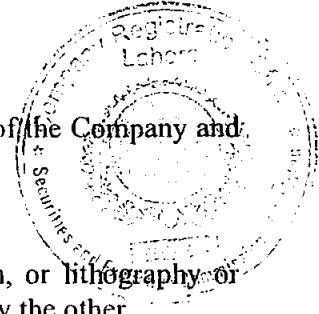
2. In the interpretation of These Presents, unless contrary to the context, words signifying the singular number shall include the plural, and vice versa, and words signifying the masculine shall include the feminine, and the following words and expression shall have the following meanings unless excluded by the subject or context, namely:-
 - a) "Board" means a meeting of Directors duly called and constituted or as the case may be the Directors assembled at a meeting.
 - b) "Capital", "Shares" and "debentures" mean respectively the capital (including authorized capital), shares into which the capital is divided and the interest corresponding to such shares and debentures from time to time of the Company. "Shares" include stock and "debentures" include debenture stock, bonds, participation term certificates, term financing certificates and other securities, other than a share, whether constituting a charge on the assets of the Company or not.
 - c) "Commission" means the Securities and Exchange Commission of Pakistan established under Section 3 of the Securities and Exchange Commission of Pakistan Act, 1997.
 - d) "Company" when used with reference to the Company means Shams Power (Private) Limited.

- e) "Directors" means the Directors for the time being of the Company and the Alternate Directors appointed by them, or as the case may be the Directors assembled at a Board.
- f) "Dividend" includes a bonus.
- g) "General Meeting" means an ordinary general meeting or extraordinary general meeting.
- h) "MOA" means the Memorandum of Association of the company as amended from time to time.
- i) "Office" mean the registered office for the time being of the company.
- j) "Ordinance" means the Companies Ordinance, 1984 and shall include any amendments, modifications or reenactments thereof
- k) "Ordinary Meeting" and "Extraordinary Meeting" means respectively an ordinary general meeting or an extraordinary general meeting of the Company duly called and constituted or any adjournment thereof.
- l) "Person" includes a corporation or a company.
- m) "Proxy" means an instrument in writing whereby a person as defined herein authorizes another to vote for him at a meeting or meetings and includes Attorney duly constituted under a power of attorney.
- n) "Register" means the register of the members of the Company kept at the registered office of the Company pursuant to Section 147 of the Ordinance and under Article 107.
- o) "Secretary" means the Secretary of the Company for the time being or any duly authorized person acting in the place of such Secretary (if any).
- p) "Section" means a Section of the Ordinance and all amendments thereof.
- q) "Share Warrants" means warrants issued in respect of shares or stock of the Company



in pursuance of the Statutes and These Presents.

- r) "Shareholder" or "Member" means the registered holder of any share, scrip or other security which gives him voting rights in the Company.
- s) "Special Resolution" shall have the same meaning as in the Ordinance.
- t) "Statutes" include the Ordinance and any and every other Act or Ordinance from time to time in force, as may be applicable to it.
- u) "Stock" means stock into which any moneys of the Company may have been converted.
- v) "These presents" means and includes the Articles of Association of the Company and the regulations of the Company from time to time in force.
- w) "Writing" includes printing, typewriting, electronic, transmission, or lithography or any other mechanical or electronic process, or partly one and partly the other.
- x) "Years" means a calendar year, and "month" mean a calendar month according to English Calendar.



Unless the context otherwise requires, words or expressions contained in these Articles shall bear the same meaning as in the Ordinance.

CAPITAL

- 3. The Capital of the Company shall be as per Clause V of the MOA as may be altered from time to time divided into Shares of the nominal value of Rs. 10 (Rupees ten) each, unless the Shares are issued at a discount or a premium subject to the applicable laws.
- 4. Save as provided by Section 95 and Section 95A, no part of the funds of the Company shall, directly or indirectly be employed in the purchase or in loans on the security of shares in the Company or of any company of which it is a subsidiary company or in loans to any company of which it is a subsidiary company.

5. Subject to the provisions of the Ordinance and these Articles, the shares of the Company shall be under the control of the directors, who may allot or otherwise dispose of the same to such persons, on such terms and conditions, and at such times and for such consideration as the directors think fit.
6. No shares shall be offered to the public for subscription except upon the term that the amount payable on application shall be the full amount of the nominal amount of the share.
7. No share shall be issued at a discount except in accordance with the provisions of the Ordinance, in particular, Section 84. The directors shall, as regards any allotment of shares, duly comply with such of the provisions of Sections 67 to 73, as may be applicable to the Company.

SHARES

8. All the shares in the Company shall be numbered in a regular series.
9. The Directors may allot and issue shares in the Capital of the Company in payment or part payment for any property sold or transferred, goods or machinery supplied, or for service rendered to the Company in the conduct of its business or in lieu of outstanding balance of loans subject to Section 87 of the Ordinance, as fully paid-up shares, and if so issued, such shares shall be deemed to be fully paid-up.
10. Any application signed by or on behalf of the applicant followed by an allotment of any shares thereon shall be an acceptance of shares within the meanings of these Articles, and every person who thus or otherwise accepts any share and whose name is thus or otherwise placed on the Register shall be a shareholder.
11. When two or more persons are registered as the holders of any share they shall be deemed to hold the same as joint tenants with benefits of survivorship subject to be the following and other provisions contained in these articles:
 - a) The company shall be entitled to decline or register more than four (4) persons as holders of any share.
 - b) On the death of any such Joint-holder, the survivor or survivors shall be the only person or persons recognized by the Company as having any title to the shares but the Directors may require such evidence of death as they may deem fit and nothing herein contained shall be taken to release the estate of a deceased joint-holder from any liability of shares held by him jointly with any other person.

- c) Any one of such joint-holders may give effectual receipt of any dividends or other moneys payable in respect of such share.
 - d) Only the person whose name stands first in the Register as one of the joint-holders of any share shall be entitled to delivery of the certificate relating to such share or to receive - notice (which expression shall be deemed to include all documents) from the Company and any notice given to such person shall be deemed notice to all the joint-holders.
 - e) Any one of two or more joint-holders may vote at any meeting either personally or by an agent duly authorized under a power of attorney or by proxy in respect of such share as if he is solely entitled thereto and if more than one of such joint-holders be present at any meeting personally or by proxy or by attorney that one of such persons so present whose name stands first or higher (as the case may be) on the Register in respect of such share shall alone be entitled to vote in respect thereof. Provided always that a joint-holder present in person shall have priority over a person present by an agent duly authorized under power of attorney or by proxy although the name of such person present by an agent or proxy stands first or higher in the Register in respect of such shares.
 - f) Several executors or administrators of a deceased member in whose (deceased member's) sole name any share stands shall for the purpose of this sub-clause be deemed joint-holders.
12. Every member shall name a place to be registered as his address and such address shall for all purposes be deemed his place of residence.
13. Any shareholder who shall change his name or place of abode, or who being a female, shall marry, and the husband of any such last mentioned shareholder, respectively shall not be entitled to recover any dividend or to vote until notice of change of name, or abode, or marriage be given to the Company in order that the same may be registered.
14. subject to the provisions of the ordinance, in particular, Section 82 and 85, shares shall be issued on such terms conditions, and with such rights and privileges attached thereto, as a General Meeting may determined, provided that the Company may, resolution direct that the shares shall be issued by the Directors on such terms and conditions with such rights and privileges attached thereto as the Directors may determined.
15. Rights attached to shares may be modified, affected or abrogated but only in accordance with the Ordinance.
16. Subject to the provisions of the Ordinance, any preference share may with the sanction of a Special Resolution, be issued on the terms that it is, or at the opinion of the

Company is, liable to be redeemed as provided in Section 85 of the Ordinance.

17. The Company may at any time pay a commission to any person for subscribing or agreeing to subscribe (whether absolutely or conditionally) for any shares in the Company, or procuring or agreeing to procure subscriptions (whether absolute or conditional) for any shares in the Company, and any such commission may be paid or agreed to be paid out of capital or out of profits, whether current or standing to reserve or carried forward, or out of both capital and profits, but so that the commission shall not exceed as required by the applicable law on the shares in each case subscribed or to be subscribed, and statutory conditions and requirements, with particular reference to Section 82 of the Ordinance, shall be observed and complied with in respect thereof. Any such commission shall be calculated on the price on which the shares are issued, and may be satisfied in whole or in part in fully paid up shares in the company, provided that no such commission nor any portion thereof shall be paid in shares without the sanction of the Company in General Meeting first having been obtained.
18. Save as herein otherwise provided, the Company shall be entitled to treat the registered holder of any shares as the absolute owner thereof, and accordingly shall not be bound (except as ordered by a court of competent jurisdiction, or as required by Statute) to recognize any equitable or other claim to or interest in such share on the part of any other person.

CERTIFICATES

19. Subject to Section 74 of the Ordinance, the certificates of title to shares shall be issued under the authority of the Directors, or of a local committee or board when authorised thereto by the Directors in such manner and form as the directors may from time to time prescribe, and shall bear the autographic signature of two or more Directors or one Director and of the Secretary or of some other person appointed for the purpose by the Directors.
20. Every member shall be entitled to one certificate for the shares registered in his name, or to several certificates each for a part of such shares. Every certificate of shares shall specify the number and distinctive numbers of the shares in respect of which it is issued and the amount paid up thereon. Every member shall be entitled to one certificate of shares gratis, but for every subsequent certificate issued, the Directors shall be at liberty to make such charge, not exceeding Rupees one (Rs. 1), as they may from time to time see fit.
21. Subject to section 75 of the ordinance, if any certificate be worn and or defaced then, upon production thereof to Directors, they may order the same to be cancelled and may issue a new Certificate in lieu thereof, and if any certificate be lost or destroyed then,

upon proof thereof to the satisfaction of the Directors, and on such indemnity being given and after such advertisement (if any) of the loss or destruction as the Directors deem adequate, at the expense of the party claiming the new certificate, a new certificate in lieu thereof may be given to the party entitled to such lost or destroyed certificate. In case of loss or destruction the members to whom the new certificate is given shall repay to the Company all expenses incidental to the investigation by the Company of the evidence of such destruction or loss and to such indemnity.

22. where any shares under the powers in that behalf herein contained are sold by the Directors and the certificate thereof has not been upto the Company by the former holder of the said shares, the Directors may issue new Certificate for such shares distinguished it in such manner as they may think fit from the certificate not so delivered up.
23. Every endorsement upon the certificate of any share in favour of any transferee thereof shall be signed by the person for the time being duly authorized by the Directors in that behalf. In case, any holder or transferee of shares applies for a new certificate in lieu of the old or existing certificate or applies for the splitting up of the existing certificates on payment by him in addition to the transfer fee such sum as the Directors may determine, and upon his delivering up every old or existing certificate which is to be cancelled. In event of a certificate being filled up with endorsements and a further transfer of shares to which it refers being made or required, a new certificate shall be issued on payment of a fee to be fixed from time to time by the Directors.
24. The certificate of shares registered in the names of two or more persons shall be delivered to the person first named in the Register in respect thereof, or to his authorised agent, and in case of the death of any one or more of the joint registered holders of any shares the survivor then first named in the Register shall be the only person recognized by the Company as being entitled to such certificate or any new certificate which may be issued in place thereof.

TRANSFER AND TRANSMISSION

25. The Directors shall not refuse to transfer any fully paid shares unless the transfer deed is defective or invalid. The Directors may decline to recognize any instrument of transfer unless:
 - a) a fee not exceeding Rupees two (Rs. 2) as may be determined by the Directors is paid to the Company in respect thereof; and
 - b) the duly stamped instrument of transfer is accompanied by the certificate of the shares to which it relates, and such other evidence as the Directors may reasonably require to show the right of the transferor to make the transfer.

If the Directors refuse to register a transfer of shares, they shall within one (1) month, or when the transferee is a central depository, within five (5) days, after the date on which the transfer deed was lodged with the Company send to the transferee and the transferor notice of the refusal indicating the defect or invalidity to the transferee, who shall, after removal of such defect or invalidity be entitled to re-lodge the transfer deed with the Company.

26. Application for the registration of the transfer of a share may be made enter by the transferor or the transferee.
27. The Directors shall not incur any liability for registering or acting upon a transfer of shares apparently made by sufficient parties, although the same may by reason of any fraud or other cause not known to the Directors, be legally inoperative or insufficient to pass the property in the shares proposed or professed. to be transferred'. and although the transfer may as between the transferor and transferee be liable to be set aside, and notwithstanding that the Directors may have notice that such instrument of transfer was signed or executed and delivered by the transferor in blank as to the name of the transferee or the particulars of the share transferred, or otherwise in defective manner.
28. Instrument of transfer of Shares:
 - a) The instrument of transfer of any Share shall be in writing in the usual common form.
 - b) Shares of different classes shall not be comprised in the same instrument of transfer.
29. No transfer shall be made to an infant or person of unsound mind.
30. Every instrument of transfer shall be left at the office for registration, accompanied by the certificate of the share to be transferred, and such other evidence as the Directors may require to prove the title of the transferor or his right to transfer the shares, and upon payment of the proper fee, the transferee shall (subject to the Directors' right to decline to register hereinbefore mentioned) be registered as a member in respect of such shares. The Directors may waive the production of any certificate upon evidence satisfactory to them of its loss or destruction. The transferor shall be deemed to remain the holder of the shares until the name of the transferee is entered in the Register in respect thereof.
31. All instruments of transfer which shall be registered shall be retained by the Company.
32. A fee not exceeding Rupees two (Rs. 2) may be charged for each transfer, and shall, if required by the Directors, be paid before the registration thereof. This shall also be paid to the Company in respect of the registration of any Probate, Letters of Administration, Certificate of Marriage or Death, Power of Attorney or other documents relating to or

affecting the title of any shares or for making any entry in the Register affecting the title of any shares such fee not exceeding Rupees two (Rs. 2) as the Directors may from time to time require or prescribe.

33. On giving seven (7) days previous notice by a newspaper circulating in the province in which the Company is situated and by a newspaper circulating in the province in which the Stock Exchange on which the Company is listed is situated, the Transfer Books and Register may be closed during such *time* as the Directors, think fit, not exceeding in the whole forty-five (45) days in each year, but not exceeding thirty (30) days at a time.
34. The executors, administrators or nominees under section 80 of the Ordinance of a deceased member (not being one of several joint-holders) shall be the only persons recognized by the Company as having any title to the shares registered in the name of such member, and in case of the death of any one or more of the joint-holders of any registered share the survivors shall be the only persons recognized by the Company as having any title to or interest in such shares, but nothing herein contained shall be taken to release the estate of a recognized any executor or administrator the Director as may require him to obtain a Grant of probate or Letters of Administration or other legal representation as the case may be from some Competent Court, having effect in Lahore: Provided nevertheless that in case where the Board in their absolute discretion think fit it shall be lawful for the Directors to dispense with the production of probate or Letter of Administration or such other legal representation upon such terms as to indemnity or otherwise as the Directors, in their absolute discretion, may consider necessary.
35. Any committee or guardian of a lunatic or infant member or any person be-Coming entitled to or to transfer shares in consequence of the death or bankruptcy or insolvency of any members, upon producing such evidence that he sustains the character in respect of which he proposes to act under this Article, or of his title as the Directors think sufficient, may with the consent of the Directors (which they shall not be under any obligation to give), be registered as a member in respect of such shares, or may subject to the regulations as to transfer hereinbefore contained, transfer such shares. This Article is hereinafter referred to as "the Transmission Article".
36. A person so becoming entitled shall have the right to receive and give a discharge for any dividends or other moneys payable or other advantages arising in respect of the share, but, he shall have no right to receive notice of or to attend or vote at meetings of the Company, or (save as aforesaid) to any one of the rights or privileges of members in respect of the share, unless and until he shall be registered as the holder thereof.

INCREASE AND REDUCTION OF CAPITAL

37. The Company may, from time to time by Ordinary resolution, increase the capital of the

Company by the creation of new shares of such amount as may be deemed expedient.

38. All further issue of share capital shall first be subject to such of the provisions of Section 86 as are applicable to the Company. Thereafter, the Directors may dispose of the same in such manner as they think most beneficial to the Company.
39. Except in so far as otherwise provided by the Ordinance or by the conditions of issue or by These Presents, any capital raised by the creation of new shares shall be considered part of the original capital, and shall be subject to the provisions herein contained with reference to transfer and transmission or otherwise.
40. The Company may from time to time, by Special resolution, but subject to the provisions of section 96 to 106 of the Ordinance, reduce its share capital in any way, and in particular, without prejudice to the generality of the powers hereby conferred may, without extinguishing or reducing liability on any of its shares capital not paid up, or either with or without extinguishing or reducing liability on any of its shares, cancel any paid up share capital which is lost, or unrepresented by available assets, or either with or without extinguishing or reducing the liability on any of its shares, pay off any paid up share capital which is in excess of the wants of the Company.
41. The Company in General Meeting may, subject to section 92 (1) (d) of the Ordinance, cancel shares which, at the date of the passing of the resolution in that behalf, have not been taken or agreed to be taken by any person, and diminish the amount of its share capital by the amount of the shares so cancelled.

CONSOLIDATION AND SUBDIVISION OF SHARES

42. In accordance with the provisions of Sections 92 (1) (d), 92 (3) and 93 of the Ordinance, the Company may, by Ordinary resolution:
 - (a) consolidate and divide its share capital into shares of larger amount than its existing shares;
 - (b) sub-divide its existing shares or any of them into shares of smaller amount than is fixed by the Company's Memorandum of Association;
 - (c) cancel any shares which, at the date of the passing of the resolution, have not been taken or agreed to be taken by any person.
43. Subject to the prior approval of the Government, debentures, debenture stock, and other

securities may be made assignable free from any equities between the Company and the person to whom the same may be issued.

44. Subject to the provisions of the Ordinance, particularly Section 114, any debentures, debenture-stock, bonds or other securities may be issued at a discount, premium or otherwise with any special privileges as to redemption, surrender, drawings, allotment of shares, attending and voting at General Meetings of the Company, appointment of Directors and otherwise.
45. Holders of debentures shall have the same right to receive and inspect the Balance Sheet of the Company and the Report of the auditors and other reports as are possessed by members of the Company.

MODIFYING RIGHTS

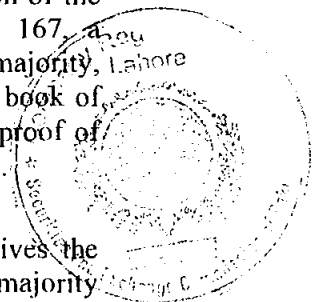
46. If at any time the capital is divided into different classes of shares, all or any of the rights and privileges attached to each class may be varied by agreement between the Company and any person purporting to contract on behalf of that class, provided such agreement is either (a) ratified in writing by holders of at least three fourth (3/4) of the nominal amount of the issued shares of that class, or is (b) confirmed by a resolution passed at a separate Extraordinary Meeting of the holders of shares of that class, and all the provisions hereinafter contained as to General Meeting shall mutatis mutandis, apply to every such Meeting that the quorum thereof shall be members holding or representing by proxy one-third of the nominal amount of the issued shares of that class. This clause is not by implication to curtail the power of modification which the Company would have if the clause were omitted.

BORROWING POWERS

47. Without prejudice to the General Powers conferred on the Board by these Presents, the Directors shall have power from time to time at their discretion to raise, borrowing or secure the payment of any sum or sums of money for the purposes of the Company. The payment or repayment of such moneys may be raised or secured in such manner and upon such terms and conditions as the Directors may think fit and to mortgage or charge its undertaking, property and assets (both present and future) and to issue debentures, debenture stock and other securities, including but not limited to, participation term certificates, term finance certificates, Modaraba certificates and other modes of financing whether on mark-up basis or otherwise and whether outright or as collateral security for any debt, liability or obligation of the Company or of any third party.
48. The Directors shall, in accordance with the Statutes, particularly Section 135 of the Ordinance, cause a proper register to be kept of all mortgages and charges specifically affecting the property of the Company.

GENERAL MEETINGS

49. A General Meeting, shall be held within eighteen (18) months from the date of incorporation of the Company and thereafter once at least in every calendar year, within a period of four (4) months from the close of its financial year and not more than fifteen (15) months after the holding of the last preceding General Meeting, at such place and at such time as the Directors place be not available, to such other place as the Directors may appoint, but should such day be a public holiday, then it shall be adjourned to the first business day next following such public holiday, at the same time, and if at such adjourned meeting a quorum is not present, the meeting shall be dissolved.
58. At any General Meeting a resolution put to the vote of the meeting shall unless a poll is demanded be decided, in the first instance, by a show of hands, and in the case of an equality of votes the Chairperson shall, both on the show of hands and at the poll, have a casting vote in addition to the vote or votes to which he may be entitled as a member.
59. At any General Meeting, unless a poll is demanded (before or on the declaration of the result of the show of hands) in accordance with the provision of Section 167, a declaration by the Chairperson that a resolution has been carried by a particular majority, or lost or not carried by a particular majority, and an entry to that effect in the book of proceedings of the Company, shall be conclusive evidence of the fact without proof of number or proportion of the votes recorded in favour of or against such resolution.
60. No resolution shall be carried as being passed unless the said resolution receives the affirmative voter of a majority on a show of hands, or if a poll is demanded a majority vote of shares outstanding and entitled to vote on the resolution at the time it is taken.
61. If a poll is demanded as aforesaid, it shall be taken in accordance with the provisions of Section 168 and the result of the poll shall be deemed to be the resolution of the meeting at which the poll was demanded.
62. The Chairperson of a General Meeting may, with the consent of the Meeting, adjourn the same from time to time and from place to place, but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place.
63. The demand of a poll shall not prevent the continuance of a meeting for the transaction of any business other than the question on which a poll has been demanded.
64. Any minutes of resolutions and proceedings at General Meeting made in the Minute Book of the Company, to be maintained and made available for inspection in accordance with Section 173 of the Ordinance, if signed by any person purporting to be the Chairperson of the meeting to which it relates, or by any person present there at and appointed by the Directors to sign the same in his place, or by the Chairperson of the



next succeeding meeting, shall be receivable as evidence of the facts therein stated without further proof.

VOTES OF MEMBERS

65. Subject to Section 178 and any special terms as to voting upon which any share may be issued, on a show of hands every member present in person shall have one vote, and upon a poll every member present in person or by attorney or proxy shall have one vote for every share held by him. A corporation (whether a company within the meaning of the Act or not) who is0020 may from time to time determine, in accordance with Section 158 of the Ordinance or other relevant statutory provisions for the time being in force.
50. The above mentioned General Meetings shall be called "Ordinary Meeting", and all other meetings of the Company shall be called "Extraordinary Meeting".
51. The Directors, may whenever they think fit, convene an Extraordinary Meeting, and the Directors shall forthwith proceed to convene an Extraordinary Meeting if and when required so to do in accordance with the provisions of Section 159 or other statutory provisions for the time being in force relating to requisitions for Extraordinary Meetings by members.
52. Twenty one (21) clear days notice at least shall be given to the members of all meetings, but an Extraordinary Meeting may be held on shorter notice in accordance with the provisions of Section 159 of the Ordinance. The notice shall specify the place, day and hour of meeting, and, in the case of special business, the general nature of such business.
53. The accidental omission to give any such notice to any of the members, or the non-receipts of such notice by any member shall not invalidate any resolution passed at any such meeting.

PROCEEDINGS AT GENERAL MEETIN

54. The business of Ordinary Meeting shall be to receive and consider the profit and loss account, the balance sheet, the report of the Directors and of the Auditors, to elect Directors, Auditors and other officers in the place of those retiring or otherwise, to declare dividends, fix the remuneration of the Auditors, and to transact any other business which, under These Presents, ought to be transacted at an Ordinary Meeting, and any business, which is brought under consideration by the report of the Directors laid before such meeting.
55. Two (2) members of the Company present in person who represent not less than twenty

five percent (25%) of the total voting powers, either of their own account or by proxy shall be a quorum for a General Meeting and no business shall be transacted by a General Meeting unless the quorum requisite be present at the commencement of the business. A company being a member of this Company and present by a representative duly appointed in pursuance of Section 162 shall be deemed to be a member personally present for the purpose of this Article.

56. The Chairperson of the Directors shall be entitled to take the chair at every General Meeting, or if there be no Chairperson, or if at any meeting he shall not be present within fifteen (15) minutes of the time appointed for holding such meeting, or if he shall have notified his inability to be present at the meeting, the members personally present, shall choose another Director as Chairperson; and if no Director be present, or if all the Directors present decline to take the chair, then the members personally present shall choose one of their number to be Chairperson.
57. If within half an hour from the time appointed for the meeting a quorum is not present, the meeting, if convened upon such requisition as aforesaid, shall be dissolved, but in any other case it shall stand adjourned to the same day in the next week at the same time and place, or if such represented in accordance with Section 162 or by proxy or attorney shall be deemed to be member present in person for the purpose of this Article.
66. Any person entitled under the Transmission Article to transfer shares may vote, at General Meetings in respect thereof in the same manner as if he were the registered holder of such shares, provided that at least forty-eight (48) hours before the time of holding the meeting at which he proposes to vote he shall satisfy the Directors of his right to transfer such shares, unless the Directors shall have previously admitted his right to vote at such meeting in respect thereof.
67. No member who is not personally present shall be entitled to vote on a show of hands, unless such member is a corporation present by a proxy or a company present by a representative duly authorised under Section 162 in which case such proxy or representative may vote on the show of hands as if he were a member of the Company.
68. When there are joint registered holders of shares, any one of such persons may vote at any meeting, either personally or by proxy, in respect of such shares, as if he were solely entitled thereto; but if more than one of such joint holders be present at any meeting, personally or by proxy, that one of the said persons whose name stands first in the Register in respect of such shares shall alone be entitled to vote respect in thereof. Several executors or administrators of a deceased member, in whose name any shares stand, shall, for the purpose of this article, be deemed joint holder thereof.
70. Where a corporation, whether incorporated in Pakistan or not, or a local body or any other official or semi-official institution is a member of the company a person duly appointed to represent such corporation, local body or institution at a meeting of the

Company in accordance with the provisions of Section 162 shall be deemed to be a proxy and the production at the meeting of a copy of a resolution or a letter of authority duly signed by a Director, Secretary or an officer of such Corporation or local body or institution be accepted by the Company as sufficient evidence of the validity of his appointment and such representative shall be entitled to vote as if he were a shareholder of the Company including voting on a show of hands.

71. The instrument appointing a proxy and the power of attorney or other authority (if any) under which it is signed shall be deposited at the office not less than forty eight (48) hours before the time for holding the meeting or adjourned meeting (as the case may be) at which the person named in such instrument proposes to vote, but no instrument appointing a proxy shall be valid after the expiration of twelve (12) months from the date of its execution unless specifically so stated on the proxy itself. An instrument appointing a proxy may be cancelled at any time by the appointer or by his attorney duly authorized in writing and a new proxy issued in the name of the same appointee or a new appointee, otherwise the proxy shall be valid until cancelled or modified by the appointer, subject to the above expiration period of twelve (12) months.
72. A vote given in accordance with the terms of an instrument of proxy shall be valid, notwithstanding the previous death of the principal, or revocation of the proxy, or transfer of the shares in respect of which the vote was given, unless an intimation in writing of the death, revocation or transfer shall have been received at the office of the Company before the meeting.
73. The instrument appointing a proxy shall be either (a) Special Proxy to vote at particular Annual or Extraordinary General Meeting or (b) General Proxy to vote at every Annual or Extraordinary General Meeting during a certain period. A member shall not be entitled to appoint more than one (1) proxy to attend any one (1) meeting. If a member appoints more than one (1) proxy and such instruments of proxy are deposited with the Company all such instruments of proxy shall be deemed invalid.
74. All instruments of proxy if in the form distinguished by the letter (a) mentioned in the last preceding clause shall remain in the custody of the Company permanently or for such time as the Director may determine, or if in the form distinguished by the letter (b) shall be duly registered and returned after the business of the meeting at which it is used is over to the person by whom they are delivered. A vote given in accordance with the terms of an instrument of proxy shall be valid notwithstanding the previous death of the principal or revocation of the proxy or transfer of the share in respect of which the voter was given, provided no intimation in writing of the death, revocation or transfer shall have been received at the Office of the Company before the meeting.
75. Every instrument of proxy, whether for a specified meeting or otherwise, shall, as nearly as circumstances will admit, be in the form or to the effect following:

"I _____ being a member of the Shams Power (Private) Limited
_____ and entitled to _____ votes, do hereby appoint
_____ of _____ failing him
_____ of _____
_____ as my proxy to vote for me and on
my behalf, at the Ordinary or Extraordinary, (as the case may be) General
Meeting of the Company to be held on the _____ day of
_____ 20__ and at any adjournment thereof.

Singed by me this _____ day of _____ 20 or in such other
form as the Directors shall from time to time approve."

76. No member shall be entitled to be present or to vote on any question either personally
or by proxy, or as proxy for another member, at any General Meeting, or upon a poll, or
to be reckoned in a quorum, whilst any sum shall be due and payable to the Company in
respect of any of the shares of such member.

77. No objections shall be made to the validity of any vote except at the meeting or poll at
which such vote shall be rendered, and every vote whether given personally or by proxy
and not disallowed at such meeting or poll. shall be deemed valid for all purposes of
such meeting or poll whatsoever.

CHIEF EXECUTIVE OFFICER AND OTHER PRINCIPAL OFFICERS OF THE COMPANY

78. The Directors shall elect a Chief Executive Officer from amongst their body or from
outside it and give such Chief Executive Officer the designation of Managing Director
or such other designation as the Directors may determine from time to time. The Chief
Executive Officer shall be appointed for a period of three (3) years, extendable by the
Directors. The Directors shall vest in the Chief Executive Officer, such powers and
functions as they deem fit in relation to the management and administration of the affairs
of the Company subject to their general supervision and control. If the Chief Executive
Officer is not already a Director he shall be deemed to be a Director of the Company and
be entitled to all the rights and privileges and subject to *all* the liabilities of that office.

81. The Directors may appoint other principal officers of the Company including the chief
financial officer (by whatever designation called) and the Secretary on such terms and
conditions and with such responsibilities as they may determine.

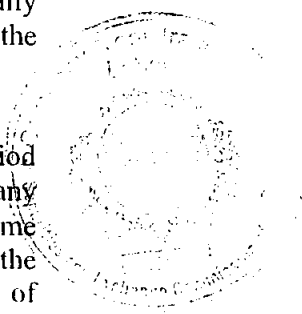
DIRECTORS

82. Directors' number and powers:

- a) Until otherwise determined by the Board of Directors, the number of directors shall be not less than three (3) including Debenture/Creditor Directors.
- b) The Directors shall have the power at any time and from time to time to appoint any other qualified person or persons as officer(s) of the Company for a period and terms as may be determined by the Board.
83. Save as provided by Section 187 or otherwise required by law or determined by the Directors, Directors need not have any qualification shares. When the Directors are required as aforesaid to hold any qualification shares, they shall do so within the time presented by law. In the case of Directors representing interest holding shares of the requisite value, no such share qualification shall be required provided intimation in writing as to such representation is lodged with the Company within two (2) months of the appointment of such directors.
84. Each Director including alternate or substitute Directors but excluding regularly paid Chief Executive Officer and full time working Directors shall be paid out of the funds of the Company a fee, as may be determined and approved by the Directors, for every meeting of the Board attended by him.
above fixed, the Directors shall not, except for the purpose of filling vacancies, act so long as the number remains below the minimum.
92. The Directors may elect one of their number as the Chairperson of the Board and vest in him such powers and functions as they may deem fit in relation to the management and administration of the affairs of the Company subject to their general supervision and control.
93. The Company may enter into a contract of service with the Chief Executive Officer (Managing Director) for such period and on such terms and conditions as the Directors consider appropriate in the interest of the Company.
94. If so required under law, the remuneration of the Chief Executive Officer (Managing Director) shall, from time to time, be fixed by the Directors and may be by way of salary or commission or participation in profits or by any or all of these modes or otherwise.
95. The Directors may, from time to time, entrust to and confer upon the Chief Executive Officer (Managing Director) for the time being such of the powers exercisable under These Presents by the Directors, as they may think fit, and may confer such powers for such time and to be exercised for such objects and purposes and upon such terms and conditions and with such restrictions as they think expedient, and they may confer such powers either collaterally with or to the exclusion of and in substitution for all or any of the powers of the Director.

96. A Director of this Company may be, or become a director of any company promoted by this Company or in which it may be interested as a vendor, shareholder or otherwise provided written notice has been given to the Board and no such Director shall be accountable for any benefits as a director or member of such company.

PROCEEDINGS OF DIRECTORS

97. The Directors may meet for the dispatch of business and may adjourn and otherwise regulate their meetings and proceedings as they think fit, subject to such minimum meetings as may be provided by law. The quorum for such meetings shall be two (2) Directors. A Director may at any time, and the Secretary upon the request of a Director, shall convene a meeting of the Directors. A Director who is not within Pakistan shall not be entitled to notice of any such meeting, but notice shall be given to all duly appointed alternate Directors who may at the time be within Pakistan. Questions arising at any meeting shall be decided by majority of votes except in cases especially provided for in These Presents and in case of an equality of votes, the Chairperson shall have a second or casting vote.
98. The Directors may elect a Chairperson of their meetings and determine the period for which he is to hold office, but if no such Chairperson is elected, or if at any meeting the Chairperson is not present within ten (10) minutes after the time appointed for holding the same or is unwilling to act as Chairperson, the Directors present shall choose some one of their number to be Chairperson of such meeting.
85. The Directors may pay to any Director who for the time being is resident out of the place at which any Meeting of the Directors may be held and who shall come to that place for the purpose of attending such Meeting such sum as the Directors may consider fair and reasonable for his expenses and loss of time in connection with his attending at the Meeting in addition to his remuneration as above specified.
86. If any Director is called upon to perform extra services or to make special exertions for any of the purposes of the Company, or to give any special attendance to the business of the Company, the Directors may remunerate the Directors so doing, which remuneration, if required by law, shall be subject to the approval of the Company in General Meeting, and/or the prior approval of the Controller of Capital Issues.
87. The continuing Directors may act, notwithstanding any vacancy in their body, but if their number falls below the minimum fixed the remaining Directors shall fill up such vacancy and except for the purpose of filling such vacancy or of calling a General Meeting the continuing Directors shall not act so long as their number is below the
- 

minimum.

88. No person shall become a Director of the Company if he suffers from any of the disabilities or disqualifications mentioned in Section 187 and, if already a Director, shall cease to hold such office from the date he so becomes disqualified or disabled or:

- (a) if removed by a resolution of members as hereinafter provided;
- (b) if by notice in writing given to the Company he resigns his office; or
- (c) if he fails to acquire his qualification shares within two (2) months

Provided, however, that no Director shall vacate his office by reason only of his being a member of any company which has entered into contracts with, or done any work for, the Company but such Director shall not vote in respect of any such contract or work, and if he does so vote, his vote shall not be counted and nor shall his presence count for forming a quorum at the time of any such vote.

89. In accordance with Section 205 of the Ordinance, the Company shall keep at the Office a register, containing the names, addresses and occupations of its Directors and officers, and shall send to the Registrar of Companies a copy of such register, and shall notify to him any change that takes place in such Director or officer within fourteen (14) days of such change taking place.

90. A Director may be removed by passing a resolution at a General Meeting in accordance with Section 181.

91. Any casual vacancy occurring among the Directors may be filled up by the Directors provided that any person so chosen shall remain in office so long as the vacating Director would have retained the same if no vacancy had occurred. The continuing Directors may act notwithstanding any vacancy in their body, but so that if the number falls below the minimum

99. A meeting of the Directors at which a quorum is present shall be competent to exercise all or any of the authorities, powers and discretions by or under These Presents or regulations of the Company for the time being vested in or exercisable by the Directors generally.

100. Subject to Section 196 and in addition to the powers which may be delegated by the Directors, the Directors may delegate any of their powers, other than the powers to

borrow, to a committee consisting of such member or members of their body as they think fit, and they may from time to time revoke and discharge any such committees, so formed which shall, in the exercise of the power so delegated conform to any regulations that may from time to time be imposed on it by the Directors. All acts done by any such committee in conformity with such regulations and in fulfillment of the purposes of their appointment but not otherwise shall have the like force and effect as if done by the Board. The Board may from time to time fix the remuneration to be paid to any member or members of their body constituting a committee appointed by the Board in terms of these Articles, and may pay the same.

101. A resolution in writing, signed by Directors for the time being entitled to receive notice of a meeting of Directors, shall be as valid and effectual as if it had been passed at a meeting of the directors duly called and constituted provided that where a Director is not so present in Pakistan but has an alternate who is so present, then such resolution must also be signed by such alternate.

102. The meetings and proceedings of any such committee consisting of two (2) or more members, shall be governed by the provisions herein contained for regulating the meetings and proceedings of the Directors, so far as the same are applicable thereto, and are not superceded by any regulations made by the Directors under these Articles.

103. Any Director who serves on any special Committee, or who devote special attention to the business of the Company, or who otherwise performs services which, in the opinion of the Directors, are outside the scope of the ordinary duties of a Director, remuneration (in addition to the remuneration he may be entitled to as a Director) by way of salary, percentage of profits, or otherwise as the Directors may determine.

104. All acts done at any meeting of the Directors or of a special committee of the Directors, or by any person acting as a Director shall, notwithstanding that it shall afterwards be discovered that there was some defect in the appointment of the Directors or persons acting as aforesaid, or that they or any of them were disqualified, be as valid as if every such person had been duly appointed and was qualified to be a Director.

105. Subject to the provisions of Section 191, a Director may be employed by or hold any office of profit under the Company in conjunction with the office of Director other than of an Auditor of the Company, and on such terms as to remuneration and otherwise as the Directors may arrange.

MINUTES

106. The Directors shall cause minutes to be duly entered in books provided for the purposes

- (a) of all appointments of officers made by the Directors.
- (b) of the name of Directors present at each meeting of the Directors and of any committee of Directors.
- (c) of all resolutions and proceedings of General Meetings, and of meeting of the Directors and committee and resolution made in accordance with the provisions of Article 101 hereof.

Any such minutes of any meetings of the Directors, or any committee, or of the Company, or of a resolution in pursuance of these Articles, and any extract therefrom if purporting to be signed by the Chairperson of such meeting or by some person present there at and appointed by the Directors to sign the same in his place, or by the Chairperson of the next succeeding meeting, shall be receivable as evidence of the matters stated in such minutes or extracts.

REGISTER OF MEMBERS

- 107. The Directors shall cause to be kept, in one or more books, a Register of Members, in accordance with Section 147.
- 108. The Register shall be kept at the office of the Company, and except when under the provisions of these Articles, shall be open to the inspection of the members during business hours, subject to any reasonable restriction from time to time imposed by the company in General Meeting. No notice of any trust shall be entered in the Register.

REGISTER OF DIRECTORS' INTERESTS

- 109. In accordance with Section 219 of the Ordinance, the Company shall maintain at its office a register in which shall be entered separately particulars of all contracts, arrangements or appointments in which Directors are interested, such register shall be open to inspection in the same manner and on payment of the same fee as specified for the Register of Members.

REGISTER OF DIRECTORS' SHAREHOLDINGS

- 110. In accordance with Section 220 of the Ordinance, the Company shall maintain at its office a register of the Directors, Chief Executive, Chief Financial Officer (Chief Accountant), Secretary or Auditor who is or has been the beneficial owner of listed securities and every person who is directly or indirectly the beneficial owner of not less than ten percent (10%) of the beneficial interest in the Company. This register shall be open to inspection during business hours subject to Sections 220 (5) (6) and (7) of the Ordinance.

ALTERNATE DIRECTORS

111. A Director who is out of Pakistan or about to go out of Pakistan for a period of not less than three (3) months may with the approval of the Directors appoint a person to act as alternate Director in his place, and at his discretion remove such alternate Director and appoint another in his stead, and on such appointment being made and approved the alternate Director shall in all respects be subject to the terms and conditions existing with reference to the other Directors of Company, save and except that he shall not be required to hold any share qualification. Such alternate Director shall be entitled to act at all meetings and in all proceedings in which, and on all occasions when the Director who appointed him shall not act himself. An alternate Director shall look for his remuneration to the Director appointing him, and shall have no claim against the Company for such remuneration.
112. An alternate Director, whilst acting in the place of the Director who appointed him, shall exercise and discharge all the duties and functions of the Director he represents. The appointment of an alternate Director shall be cancelled and the alternate Director shall cease to hold office whenever the Director who appointed him shall return to Pakistan he shall give notice in writing to the Secretary that the alternate Director representing him shall have ceased to do so.

POWERS OF DIRECTORS

113. The management of the business and the control of the Company shall be vested in the Directors, who in addition to the powers and authorities by These Presents expressly conferred upon them, may exercise all such powers, and do all such acts and things as may be exercised or done by the Company, and are not hereby or by the Statutes expressly directed or required to be exercised or done by the Company in meetings, but subject, never the less to such management not being inconsistent with These Presents nor with any resolution members in accordance therewith; but no resolution passed by the company in meeting shall invalidate any prior act of the Directors which would have been valid if such resolution had not been passed. The general powers given by this Article shall not be limited or restricted by any special authority or powers given to the Directors by any other Article. It is hereby declared that although the Directors shall have power to enter into provisional contract for the sale or alienation of all or the major portion of the property and assets of the Company and the rights belonging thereto or connected therewith, such provisional contract shall only become binding on the Company in the event of the same being ratified and confirmed by a majority of the votes of the members present in person or by proxy at an Extraordinary Meeting convened for that purpose. All the provisions of These Presents as to General Meetings shall apply mutatis mutandis to meetings convened under this Article.
114. The Directors may at any time and from time to time, by power of attorney, appoint any person or persons to be the attorney or attorneys of the Company for such

purposes and with such powers, authorities and discretions (not exceeding those vested in or exercisable by the Directors under These Presents), and for such period and subject to such conditions as the Directors may from time to time think fit, and any such appointments may, if the Directors think fit, be made in favour of any company, or the members, directors, nominees or managers of any company or firm, or otherwise in favour of any fluctuating body of persons, whether nominated directly or indirectly by the Directors, and any such power whether nominated directly or indirectly by the Directors, and any such power of attorney may contain such provisions for the protection or convenience of persons dealing with such attorneys as the Directors may think fit.

115. Subject to such limitations as may be imposed by Section 196 of the Ordinance or by the shareholders in General Meetings, all powers shall vest with the Directors.

ELECTION OF DIRECTORS

116. The number of Directors determined by the Board pursuant to Article 82 hereof shall be elected to office by the members in General Meeting in the following manner:

- (a) A member shall have such number of votes as is equal to the product of the number of voting shares held by him and the number of Directors to be elected.
 - (b) A member may give all his votes to a single candidate or divide them between more than one of the candidates in such manner as he may choose.
 - (c) The candidate who gets the highest number of votes shall be declared elected as Director and then the candidates who get the next highest number of votes shall be so declared and so on until the total number of Directors to be elected has been so elected.
117. A retiring Director shall be eligible for re-election.
118. Any person who seeks to contest an election to the office of Directors shall, whether he is a retiring Director or otherwise, file with the Company, not later than fourteen (14) days before the date of the meeting at which elections are to be held, a notice of his intention to offer himself for election as a Director; provided that any such person may, at any time before the holding of elections, withdraw such notice.
119. A Director elected in accordance with these Articles shall hold office for a term of three (3) years unless he earlier resigns, becomes disqualified from becoming a Director or otherwise ceases to hold office.

SEALS

120. The Directors shall provide a common Seal of the Company which shall not be affixed to any instrument except by the authority of a resolution of the Board or by a committee of Directors authorised in that behalf by the Directors, and two (2) Directors or one (1) Director and the Secretary of the Company or such other person as the Directors may appoint for the purpose shall sign every instrument to which the common Seal is affixed.
121. The Directors may provide for the use in any territory, district or place not situated in Pakistan, of an official Seal which shall be a facsimile of the common Seal of the Company, with the addition on its face of the name of every territory, district or place where it is to be used. The provisions of Section 213 shall apply to the use of the official Seal.

DIVIDENDS

122. The Company in General Meeting or the Directors may, from time to time, declare a dividend, such dividend to be paid to the members within forty five (45) days of its declaration, in proportion to the number of their shares and the amount paid up thereon.
123. No larger dividend shall be declared by the Company in General Meeting than is recommended by Directors, but the Company in General Meeting may declare a smaller dividend.
124. No dividend shall be payable except out of the profits of the Company of the year, or any - other undistributed profits and no dividend shall carry interest as against the Company. Dividends may be declared either free of or subject to the deduction of Zakat, income tax and any other tax or duty in respect of which the Company may be chargeable. All unclaimed dividends may be invested or otherwise made use of by the Directors for the benefit of the Company until claimed.
125. The declaration of the Directors as to the amount of the profits of the Company shall be conclusive.
126. The Directors, may from time to time, pay to the members on account of the next forthcoming dividend such interim dividends as in their judgment the person of the Company justifies.
127. In case several persons are registered as the joint holders of any share, any one of such persons may give effectual receipts for all dividends and payments on account of dividends to respect of such share.

128. Each dividend may be paid by cheque, warrants, coupon, or otherwise, as the Directors may from time to time determine, and may if paid otherwise than by coupon, be sent by post to the last registered address of the member entitled thereto, or any other address requested by him or in the case of joint registered holders to that one of them first named in the register in respect of such joint holdings, and the payment of such cheque or warrant in purporting to be duly endorsed, or the surrender of any coupon shall be a good discharge to the Company in respect thereof.
129. The Company shall not be responsible for the loss in transmission of any cheque, warrant or other document sent through the post to the registered address of any member, whether or not at his request.
130. No dividend shall bear interest against the Company.
131. The Directors may retain the dividends payable upon shares in respect of which any person is under the transmission clauses entitled to become a member or when any person under the clause is entitled to transfer until such person shall become a member in respect thereof or shall duly transfer the same.
132. All dividends unclaimed for one (1) year after having been declared may be invested or otherwise made use of by the Directors for the benefit of the Company until claimed and all dividends unclaimed for three (3) years after having been declared may be forfeited by the Directors for the benefit of the Company.

CAPITALISATION

133. The Company in General Meeting may at any time and from time to time pass a resolution that it is expedient to capitalize any sum forming part of the undivided profits standing to the credit of the Company's reserve or reserve fund or in the hands of the Company and available for dividend, or any sum received by way of premium on the issue of any shares, debentures or debenture stock of the Company, and that any such sum or sums be set free for distribution and be appropriated to and amongst the members, either with or without deduction for income tax rateably, according to their shareholding, in such manner as the resolution may direct, provided that no such distribution shall be made unless recommended by the Directors and the Directors shall in accordance with such resolution apply such sum or sums in paying up shares, debentures, or debenture stock of the Company, and appropriate such shares, debentures, the same amongst the holders of such shares rateably according to their shareholding thereof respectively as aforesaid, or otherwise deal with such sums as directed by such resolution. Where any difficulty arises in respect of such distribution, the Directors may settle the same as they think expedient, and in particular they may issue fractional certificates, fix the value for distribution of any fully held shares, debentures, or debenture stock, make cash payment to any holders of shares on the

footing of the value so fixed in order to adjust rights, and may seem just or assets in trusts for the persons entitled in the appropriation or distribution and expedient to the Directors. When deemed requisite a contract shall be with Section 73 and the Directors may appoint any person to sign such contract on behalf of the persons entitled in the appropriation or distribution, and such appointment shall be effective, and the contract may provide for the acceptance by such holders of the shares to be allotted to them respectively in satisfaction of their claims in respect of the sum so capitalized.

RESERVES

134. The Directors may, before recommending any dividends, whether preferential or otherwise, carry to reserve out of the profits of the Company such sums as they think proper, and may also carry to reserve any premiums received upon the issue of shares, securities, or obligations of the Company. All sums standing to reserve may be applied from time to time in the discretion of the Directors for meeting depreciation or contingencies or for special dividends or bonuses or for equalizing dividends or for repairing improving or maintaining any of the property of the Company or for such other purposes as the Directors may think conducive to the objects of the Company or any of them, and pending such application may at the like discretion either be employed in the business of the Company or be invested in such investments as the Directors think fit. The Directors may divide the reserve into such special funds or any parts of any special funds into which the reserve may have been divided as they think fit. The Directors may also, without placing the same to reserve, carry over any profits which they may think it not prudent to divide.
135. The reserve or reserve fund shall, at the discretion of the Directors, be applicable for the equalization of dividends or for making provision for exceptional losses, expenses or contingencies or the extension or development of the Company's business or for writing down the value of any of the assets of the Company, or for repairing, improving and maintaining any buildings, plants, machinery or works connected with the business of the Company or to cover the loss by wear and tear or other depreciation in value of any property of the Company, or for any of the objects of the Company as defined by the Company's Memorandum of Association or for any other purpose to which the profit of the Company may be properly applied, and the Directors may at any time divide among the members by way of bonus or special dividends any part of the reserve funds which they in their discretion may determine not to be required for the purposes aforesaid.
136. All moneys carried to the Reserve Fund and the Depreciation Fund respectively shall nevertheless remain and be profits of the Company applicable, subject to due provisions being made for actual loss or depreciation, for the payment of dividends and such moneys and all the other moneys of the Company not immediately required for the purposes of the Company may be invested by the Directors in or upon such investments or securities as they may select or may be used as working capital or may be kept at any bank on deposit or otherwise as the Directors may from time to time

think proper.

137. The Directors shall cause to be kept such books of account as are prescribed by section 230. The books of account shall be kept at the office of the Company places as the Directors think fit, and shall always be open to the inspection of Directors.
138. The Directors shall, from time to time determine whether and to what extent, and at what extent, and at what times and places and under what conditions or regulations the accounts and books of the Company, or any of them, shall be open to the inspection of members, and no member (not being a Director) shall have any right of inspecting any account or book or document of the Company, except as conferred by Statute or authorised by the Directors, or by a resolution of the Company in General Meeting.
139. The Directors shall from time to time in accordance with Section 233, 234 and 236 cause to be prepared and to be laid before the Company in General Meeting such profit and loss account, balance sheet and reports as are referred to in these Sections and in accordance with Section 242, within thirty (30) days of such meeting the Directors shall file with the Registrar at least three (3) duly authenticated copies thereof.
140. Every such balance sheet shall be accompanied by a report of the Directors as to the state and condition of the Company, and as to the amount (if any) which has been paid, or which they recommend to be paid, out of the profits by way of dividend to the members, and the amount (if any) which they have carried, or propose to carry, to reserve according to the provisions in that behalf hereinbefore contained; and the report and balance sheet shall be signed by the Chief Executive and one other Director. When the Chief Executive is for the time being not in Pakistan, the report and balance sheet shall be signed by two (2) Directors in accordance with Section 241. The balance sheet and accounts which are to be laid before the Company in General meeting shall contain the particulars prescribed by the Statute.
141. The Company shall within one (1) month of the close of the first, second and third quarter of its year of account, prepare and transmit to its members and any Stock Exchange on which the Company may choose to be listed, a profit and loss account for, and balance sheet as at the end of that quarter, whether audited or otherwise, and simultaneously file with the Registrar and the Commission at least three (3) copies thereof.
142. Once at least in every year the accounts of the Company shall be examined and the correctness of the profit and loss account balance sheet ascertained by one or more auditor or auditors. The auditors shall be appointed at each annual general meeting and hold office from the conclusion of the meeting until the conclusion of next Annual General Meeting.

143. The duly appointed auditor(s) of the Company shall, subject to the provisions of the statutes, particularly Section 252 of the Ordinance, hold office until another appointment or other appointments to the office shall be made in accordance with the statutes, proposed to be made or made of an auditor(s) of the Company. The remuneration of the auditor(s) shall be fixed by the Company at Annual General Meeting.

144. An auditor may not be a member of the Company but no person shall be eligible as auditor who is interested otherwise than as a member, in any transaction of the Company, in accordance with Section 254 (3) of the Ordinance no person who is, or at any time during the preceding three years, was a Director, Manager, Secretary, employee or other officer of the Company shall be eligible for the post of auditor.

145. Any casual vacancy occurring in the office of auditor may be filled up by the Directors, and any person so appointed shall continue in office until the Ordinary Meeting next after his appointment, but while any such vacancy continues the surviving and continuing auditor(s) (if any) may continue to act.

146. The auditor(s) shall be supplied with copies of the balance sheet and profit and loss account intended to be laid before the Company in General Meeting. The auditor(s) shall make a report to the members upon the balance sheet, profit and loss account or income and expenditure account in terms of the Statutes, with particular reference to Section 255 of the Ordinance. The auditor(s) shall at all reasonable times have access to the books and accounts of the Company, and they may, in relation thereto, examine the Directors' or other officers of the Company.

147. Every account of the Company, when audited and approved by an Ordinary Meeting, shall be deemed conclusively correct, and shall not be reopened, though if any error is discovered therein within three (3) months next after the approval thereof the account shall forthwith be corrected and thenceforth shall be conclusive.

NOTICE

148. A notice may be given by the Company to any member either personally or by sending it by post to his registered address or (if he has not a registered address in Pakistan) to the address if any within Pakistan supplied by him to the Company for the giving of notices to him.

149. Where a notice is sent by post, service of the notice shall be deemed to be effected by properly addressing, pre-paying and posting a letter containing the notice and unless contrary is proved to have been effected at the time at which the letter would be delivered in the ordinary course of post.

150. If a member has no registered address in Pakistan, and has not address in Pakistan, and has not supplied to the Company an within Pakistan for the giving of notice to him, a notice address to him and advertised in a newspaper circulating in the neighborhood of the Office of the Company and addition a notice published in one issue each of an English and an Urdu daily newspaper the province of its registered office or if the Company is listed where the St in which it is listed is situated, shall be deemed to be duly given to him on the day on which the advertisements appear.

151. A notice may be given by the Company to the joint-holders of a share by giving the notice to the joint-holder named first in the Register in respect of the share.

152. A notice may be given by the Company to the persons entitled to a share in consequence of the death or insolvency of a member by sending it through the post in a pre-paid letter addressed to them by name, or by the title of representative of the deceased, or assignees of the insolvent, or by any like description, at the address, if any, in Pakistan supplied for the purpose by the person claiming to be so entitled, or until such an address has been so supplied by giving the notice in any manner in which the same might have been given if the death or insolvency had not occurred.

153. Notice of every General Meeting shall be given in some manner herein before authorised to (a) every member of the Company except those members who (having no registered address within Pakistan) have not supplied to the Company an address within Pakistan for the giving of notices to them, to (b) every person entitled to a share in consequence of the death or insolvency of a member, who but for his death or insolvency would be entitled to receive notice of the meeting, and (c) to auditors of the Company for the time being.

154. Every person who by operation of law, transfer, or other means whatsoever shall become entitled to any shares, shall be bound by every notice in respect of such shares which previously to his name and address being entered on the Register shall have been duly given to the person from whom he derived his title to such shares.

155. The signature to any notice to be given by the Company may be written or printed or in the form of an advanced electronic signature as referred to in Article 2 (r).

156. If the Company is wound up, the liquidator may, with the sanction of a special Resolution of the Company and any other Sanction required by law, divide amongst the members in specie or kind the whole or any part of the assets of the Company (whether they shall consist of property of same kind or not) and may, for such purpose, set forth value as he deems fair upon any property to be divided as aforesaid and may determine how such division shall be carried out as between the members or different classes of members. The liquidator may with the like sanction, vest the whole or any part of such assets in trustees upon such trust for, the benefit of the contributories, as the liquidator

with the like sanction, shall think fit, but so that no member shall be compelled to accept any shares or other securities whereon there is any liability.

157. Subject to the provisions of the Ordinance, every Director, Manager, Secretary and other officer or servant of the Company shall be indemnified by the Company against, and it shall be the duty of the Directors, out of the funds of the Company, to pay all costs, losses and expenses which any such officer or servant may incur or become liable to by reason of any contract entered into or not or deed done by him as such officer or servant, or in any way in the discharge of his duties, including traveling expenses.

158. Subject to the provisions of the Statutes, no Director, Manager, Secretary or other officer or servant of the Company shall be liable for the acts, receipts, neglects, or defaults of any other Director or officer or servant, or for joining in any receipt or other act for conformity, or for loss or expense happening to the Company through the insufficiency or deficiency of title to any property acquired by order of the Director for or on behalf of the Company; for the insufficiency or deficiency of title to any property acquired by order of the Directors for or on behalf of the Company, for the insufficiency or deficiency of any security in or upon which any of the moneys of the Company shall be invested or for any loss or damage arising from the bankruptcy, insolvency or tortuous act of any person with whom any moneys, securities or effects shall be deposited, or for any loss or damage occasioned by any error of judgment or oversight on his part or of any other loss, damage, or misfortune whatsoever which shall happen in execution of the duties of his office or in relation thereto, unless the same happen through his own dishonesty, negligence, default, breach of duty or breach of trust.

SECREC'Y

159. Every Director, auditor, trustee, member of a committee, officer, manager, servant, agent, accountant or other persons employed in the business of the Company shall, if so required by the Directors, before entering upon his duties sign a declaration pledging himself to observe strict secrecy respecting all transactions of the Company with the customers and the state of accounts with individuals and all matters relating thereto, and by such declaration pledge himself not to reveal any of the matter which may come to his knowledge in the discharge of his duties, except when required so to do by the Directors or by a Court of Law or by the person to whom such matters relate, and that too with the permission of the Board except so far as may be necessary in order to comply with any of the provisions in These Presents contained.

160. Any Director or officer of the Company shall be entitled, if he thinks fit, to decline to answer any question concerning the business of the Company which may be put to him on the ground that the answer to such question would disclose or tend to disclose the trade interests of the Company.

161. Any officer or employee of the Company proved to the satisfaction of the Company to have been guilty of disclosing the secrets of the Company shall be liable without prejudice to any other claim of the Company against him, to instant dismissal without notice at the discretion of Directors.
162. No member or other person not being a Director or other officer of the Company shall be entitled to enter upon the property of the Company or to inspect or examine of or any require discovery of or any information respecting any detail of the Company's trading or any matter which is or may be in the nature of a trade secret, mystery or secret process which may relate to the conduct of the business of the Company, and which in the opinion of the Directors, it will be inexpedient in the interests of the members of the Company to communicate to the public.

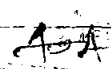
OTHER REGULATIONS

163. The Company shall (if it is listed) comply, in so far as its provisions are applicable to the Company, with the Code of Corporate Governance announced by the Commission, subject to amendment from time to time.
164. The Company shall (if it is listed) comply with the Listing Regulations of the Stocks Exchanges on which it may choose to have its shares listed from time to time.
165. The Company shall comply with the Companies (General Provisions and Forms) Rules, 1985, as may be applicable to it.

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

S. No.	Name and Surname (present & former) in full (in Block Letters)	NIC No. (in case of foreigner, Passport No.)	Father's/ Husband's Name in full	Nationality(ies) with any former Nationality	Occupation	Residential address in full	Number of shares taken by each subscriber	Signatures
	ZAIN-UL-ABDIN	42201-0622607-1	Fazal Hussain Amin	Pakistani	Business Executive	House No. 573 Street No. 11 Sector A Township, Lahore	One (1)	
	OMAR MOHYUDDIN MALIK	35202-42579877	Saleem Hamid Malik	Pakistani	Business Executive	House No. 15-A Denpur Road GOR I, Lahore	One (1)	
	USMAN HAMID MALIK	35202-9452021-3	Saleem Hamid Malik	Pakistani	Business Executive	House No. 15-A Denpur Road GOR I, Lahore	One (1)	
	FAISAL ISLAM	35201-6640002-1	Muhammad Islam	Pakistani	Business Executive	97/16-B, Nisalr Colony, Lahore Cantt.	One (1)	
Total number of shares to be taken							Four (4)	

Dated the 6th day of January 2015

Witness to the above signatures	
Signature	
Full Name	Saleem Akhtar
CNIC No.	32204-1586952-1
Father's Name	Ghulam Qasim
Full Address	115/7A, Sarwar Road, Lahore Cantt.
Occupation	Advocate High Court

Annexure IV
CVs of Senior Management and Technical Staff

OMAR M. MALIK

Chief Executive Officer

Mr. Omar Malik, MBA in Finance from INSEAD France, brings over 17 years of experience in the successful development and completion of several energy projects. He has extensive experience in the consulting, design, and implementation of renewable energy projects, demand side management (DSM), environmental and carbon emission reduction initiatives, and in the strategic energy management of Pakistan's medium and large-scale industries. He has worked at various levels to promote needs of energy efficiency, environmental protection, and resource conservation in projects implemented by PITCO. He has been extensively involved in implementing projects with USAID, the World Bank, the European Union, the Asian Development Bank, and with several industrial units in the Cement, Sugar, Paper, Fertilizer, Textile, and other sectors. He has also been involved in promoting demand side management in the Industrial, Agricultural, and Municipal Water sectors through the introduction of energy efficiency equipment, and these initiatives are credited with the saving of 42MW of peak demand from the national grid.

He also has vast experience as a specialist in development of financial models of Clean Development Mechanism (CDM) projects, energy efficiency and waste management. He has been actively involved in the implementation of USAID, European Union, World Bank, ADB, and other donor funded initiatives related to electricity distribution, energy and resource conservation; sustainable production and consumption; renewable and alternative sources of energy; institutional capacity building; and governance and administrative reforms.

Presently he is involved in the preparation of feasibility studies of biomass power generation in Punjab province. As financial expert he has contributed towards the completion of five feasibility studies at different locations of the Punjab province. Additionally, he is also involved in a European Commission funded project of preparing feasibility studies of high-pressure cogeneration for sugar sector of Pakistan. This project is expected to produce more than ten feasibility studies and Mr. Omar is contributing in preparing the financial component of these feasibility studies.

Omar is a specialist and has deep undertaking of financial aspects of different type of power generation projects. He is COO of PITCO since 1997 and has prepared financial feasibilities for different CDM projects also. Mr. Omar holds MBA in Finance from INSEAD, France.

Services:

- **Director Business Development, PITCO**

Since 2007, Omar is serving the nation through platform of PITCO

- **Director Business Development, Carbon Services (Private) Limited**

From 2006 to date, Omar is responsible for new business development, international partnerships, and the company's expansion to new markets. Since the company's inception, Omar has overseen the development of over 30 CDM projects and carbon transactions, in excess of 20 million tons of CO2. He is actively involved in commercialization of CER and VER transactions.

- **Director Business Development, Shams Power (Private) Limited**

As Director Business Development, Omar oversees Shams Power's sales and marketing of solar installations for industrial and commercial users in Pakistan.

USMAN H. MALIK

Director Technical

Mr. Malik, who did his M. Eng & BA (Hons) from University of Cambridge, has over fifteen (15) years of project management experience in implementation of development and infrastructure projects in Pakistan. He has been actively involved in the implementation of USAID, European Union, World Bank, ADB, and other donor funded initiatives related to electricity distribution, energy and re- source conservation; sustainable production and consumption; renewable and alternative sources of energy; institutional capacity building; and governance and administrative forms.

As Team Lead for the USAID Power Distribution Program, Mr. Malik lead a team of national and international energy experts to assess operational performance of state owned Electricity Distribution Companies (DISCOs) in Pakistan and to develop necessary instruments and mechanisms for improvement of overall commercial performance to levels comparable to those of well-run distribution utilities in other progressive developing countries.

Additionally, Mr. Malik has been involved in several initiatives in energy sector and has broad experience in engineering consulting services for the energy market in Pakistan. He has been involved in preparing pre-feasibility studies, leading to feasibility studies, then preparing EPC Tender documents and assisting clients in the tendering process, followed by Contract Negotiations and Award of Contract, and then in design review and construction supervision activities for these projects. These projects include run of the river hydro power projects, conventional steam power plants, combined cycle power plants, gas based co-generation power plants, waste heat recovery power plants, etc. Mr. Malik has been involved in private sector initiatives for financing and operation of infrastructure projects, including project development, development of relationships with investors and financing agencies, contracting, etc. He has also been involved in several power generation and co-generation projects in the manufacturing sector.

Mr. Malik provided insight to potential investors into the Government of Pakistan's 2002 Power Policy, and has been involved in assisting investors to negotiate IPP projects with the Government based on this policy. He is fully conversant with the local energy market, with particular reference to private sector participation in this market, and is thus fully versed with specific working requirements of the socio economic environment in Pakistan.

Services:

- **Director Energy Services, PITCO**

On this post of Director Energy Services PITCO, Mr. Malik is serving since 1999.

- **Renewable Energy Resource (Solar) Mapping, Pakistan, South Asia Region**

Mr. Malik is involved in all three phases of the project as mentioned below,

- Phase1: Project inception, preliminary modeling and implementation planning: Project inception and stakeholder engagement; preparation of an initial solar resource estimate for Pakistan based on modeling using satellite and reanalysis data; preliminary validation using existing ground-based data; preparations for the implementation of Phase 2;
- Phase2: Ground-based data collection: Implementation of a ground-based measurement campaign using high quality solar measurement devices, with real-time data transmission and reporting, for the purpose of validating and improving the initial solar resource maps and for generating reliable benchmarking data;
- Phase3: Production of validated solar resource atlas: Prepare validated solar resource maps and a Solar Atlas report that describes the final outputs, methodology and process, and includes provision of the final geographic information system (GIS) data.

- **Owner's Engineer Services for KAPCO for a 450MW CCPP, Pakistan**

Appointed as owner's engineer by KAPCO for their 450MW CCPP being setup in District Muzaffargarh. Following activities will be undertaken during the project:

- Tender Document Preparation, Evaluation of Bids, Negotiations and Signing of EPC Contract
- Design Review and Approvals
- Construction Supervision and Commissioning

- **Concept Study for Coal Fired Power Plant at Maple Leaf Cement Factory, Pakistan**

KMLG had planned to optimize their power generation facilities at their cement plant in Mianwali by setting up a 30MW Coal Fired Power Plant at their cement plant by utilizing domestic coal. Mr. Malik prepared a concept study, covering technical and financial details for the project, and evaluated the feasibility of setting up this plant.

- **Concept Study, Tendering, Evaluation and Contract Award for Waste Heat Recovery Power Plant at Maple Leaf Cement Factory, Pakistan**

KMLG planned to optimize their power generation facilities at their cement plant in Mianwali by utilizing the exhaust process gases and setting up a heat recovery system to capture this heat, and then set up a steam turbine to generate electricity from this captured heat. Recommended the most economically viable concepts to ensure that this will lead to an applicable and sufficient solution and based on this prepared the tender documents and went through a complete bidding process to find the most viable Contractor

for the project. Undertook site visits and evaluation of the proposals received, and was involved in the project up-till award of contract.

- **Detailed Design and Tender Document Preparation for Golen Gol Hydropower Project**

Appointed as Owners' Engineer by Wapda, the state utility in Pakistan, to carry out detailed design and then prepare tender documents and specifications for the 106 MW Golen Hydropower Project. This project is being financed by the Kuwait Development Fund and the Saudi Development Fund.

- **EPC Tendering and Tender Evaluation of 234MW Muridke CCPP, Sapphire Electric Company Ltd. Lahore, Pakistan**

Prepared the tender specifications for this project and during the tendering period provided assistance to the client and was responding to questions which were raised by the EPC Tenderers. Evaluated all the tenders according to technical and economic aspects, and prepared a final evaluation report for the customer.

- **Patrind Hydropower Project, Star Hydropower Ltd. Lahore, Pakistan**

Conducting feasibility studies for 135MW Patrind Hydropower Plant where services performed as the associate consultant to PES are:

- Rock Mechanics/ Underground Works
- Seism tectonic Studies
- Hydropower Planning/ Mechanical Engineering
- Electrical Engineering

- **Feasibility study for extension at KAPCO for a 500MW combined cycle power plant, Pakistan**

Kot Addu Power Company (KAPCO) is the only Public Private Partnership Company in the Power Sector in Pakistan. The company is jointly owned by the WAPDA (Government of Pakistan's State Utility) and International Power Limited (UK) with a 20% float in the stock markets in Pakistan. KAPCO was privatized under the government's initiative in the mid 90's, and IP acquired a 36% share with management control in this privatization. KAPCO has a 25 year PPA with WAPDA to supply electricity from its existing 1640MW CCPP. This puts the company in a unique position because WAPDA is both a share holder in KAPCO and also the sole buyer of electricity from KAPCO.

Prepared a bankable feasibility study on behalf of the operator, Kot Addu Power Company Limited, for extension of the Kot Addu 1600MW Combined Cycle Power Plant, with the aim of supplying a further 400-500MW to the national 220kV grid on the basis of heavy oil-fired gas turbines; this study covered: comparison of technical and economic options with combined cycle configurations, estimate of capital costs, drawing up a financing model, detailed technical description of preferred option, environmental impact assessment,

geological investigations, and network study, as well as are view of all contractual agreements under technical, economic and financial criteria

Involvement included advising KAPCO on how to leverage their public private role and benefit from the 2002 Power Policy. This involved setting up a special company for the expansion project so that they could benefit from the policy while disconnecting themselves from the parent company due to conflicts in the original privatization deal and the new policy. Also advised KAPCO on the fuel supply issues, and been engaged in negotiations with the Government to provide guarantees for fuel supply which do not currently exist in the 2002 Power Policy.

- **Owner's Engineer for a Cogeneration Power Plant during Tendering and EPC contract award for Pak Arab Fertilizer, Pakistan**

Assisted Pak Arab during the tender period and the tender evaluation to ensure the technical and commercial completeness of the EPC tender; and also to submit an evaluation report with conclusions and recommendations towards the most successful tenderer. Also assisted during the contract negotiation with the selected EPC tender and compiled the EPC contract documents ready for signature.

- **Technical Assistance for a Co-generation Power Plant Project for Pak Arab Fertilizer, Pakistan**

Pak Arab Fertilizer is planning to optimize their power generation facilities at the plant in Multan. As a first step conducted review of the existing concepts to ensure that the concepts will lead to an applicable and sufficient solution. Based on the existing concepts, suggestions were made for optimizing the existing concepts. Also provides assistance to Pak Arab in reviewing or modification of the tender specifications depending on the results of the concept optimization.

- **Feasibility study for a 150-250 MW CCPP for Engro Power Limited (25 year BOOT Project), Pakistan**

This project is being setup under the Government of Pakistan 2002 Power Policy, and the approval of the Feasibility Study involved interactions with the key stake holders related to PPP projects in the Power Sector, i.e. PPIB, NEPRA, WPPPO, etc. The activities extended to preparing tariff petitions for submission to the regulator (NEPRA) and then negotiating assisting the client in negotiating a tariff with the Power Purchaser.

Preparation of a feasibility study for the 150-250 MW combined-cycle power station on the basis of low-calorie gas including power station configuration, performance of a network study, preparation of an environmental impact study, performance of geological investigations, calculation of investment costs, economic and financial evaluation, review of the individual contractual agreements with respect to technical, economic and financial aspects.

- **Preparation of detailed bankable feasibility study for Daharki CCPP Fauji Foundation (25 year BOOT Project), Pakistan**

Preparation of a feasibility study for the combined cycle power plant, including plant configuration, network study and geotechnical investigations; topographic survey; calculation of capital, operation and maintenance cost; economic and financial evaluations; review of contractual agreements under technical, economic and financial aspects, risk analysis. This project is being setup under the Government of Pakistan 2002 Power Policy, and the approval of the Feasibility Study involved interactions with the key stake holders related to PPP projects in the Power Sector, i.e. PPIB, NEPRA, WPPO, etc. The activities extended to preparing tariff petitions for submission to the regulator (NEPRA) and then negotiating assisting the client in negotiating a tariff with the Power Purchaser.

- **Feasibility study for the Gabral-Kalam Hydropower Project, SWAT Hydro Power, Lahore, Pakistan**

Phase 1 – compilation of comprehensive data base and comparison of construction options

Phase 2 – feasibility study of best option with a planned rating of 100MW, covering geological, hydrological and topographical investigations; assessments of environmental and social impacts; design of dam, water ways, turbine house and power transmission; economic analysis

- **EPC Tendering and Tender Evaluation for 175MW Daharki CCPP Fauji Foundation (25 year BOOT Project), Pakistan**

Prepared tender documents as per the guidelines of the stakeholders while keeping in view the requirements of the public sector stake holders, like WAPDA, NEPRA, etc. and then assisted the client in sending the specifications to reputable EPC Contractors. During the tendering period provided assistance to the client and was responding to questions which might be raised by the EPC Tenderers. Evaluated the tenders according to technical and economic aspects and prepared a Bid Evaluation Report.

- **EPC Tendering and Tender Evaluation for 225MW CCPP Sapphire Electric Limited (25 year BOOT Project), Pakistan**

Prepared tender documents as per the guidelines of the stake holders, keeping in view the requirements of the public sector stake holders, like WAPDA, NEPRA, etc and then assisted the client in sending the specifications to reputable EPC Contractors. Provided assistance to the client during the tendering period and was responding to questions which might be raised by the EPC Tenderers. Evaluated the tenders according to technical and economic aspects and prepared a Bid Evaluation Report.

- **Preparation of detailed bankable feasibility study for 225MW CCPP Sapphire Electric Limited (25 year BOOT Project), Pakistan**

Conducted feasibility study for the power plant including consideration of its configuration; network study; environmental impact assessment; geological investigations; estimate of capital costs; economic and financial analyses; review of contractual agreements under technical, economic and financial aspects. This project is being setup under the Government of Pakistan 2002 Power Policy, and the approval of the Feasibility Study involved interactions with the key stake holders related to PPP projects in the Power Sector, i.e. PPiB, NEPRA, WPPo, etc. The activities extended to preparing tariff petitions for submission to the regulator (NEPRA) and then negotiating assisting the client in negotiating a tariff with the Power Purchase Agreement.

- **Feasibility study for a gas / steam turbine power plant in Sahiwal, Saif Group Pakistan, on behalf of Pakistan Engineering Services Ltd. Karachi, Pakistan**

Preparation of a feasibility study, with specification of power plant configuration and main components

- **Feasibility Study of Biomass Power Generation in the Punjab Province**

The services were offered to conduct feasibility study on assessing the supply of the biomass fuel, its quantity & supply chain, specifications & size of the cutting edge technology, machinery, list of best manufacturers, its installation & operation on sustainable basis. Mr. Malik was involved in identification of biomass resource potential; determination of most appropriate method for biomass preparation; evaluate and analyze complete supply chain; provision of recommendation for biomass feed stock handling and storage mechanism; assessment of technological options; preparation of business model; analysis of relevant legal laws, regulations; and risk assessment and recommendations on mitigation

- **Power Plant and Waste Heat Recovery for Cement Producer**

The purpose of the project is to assess the technical and economic viability of incorporating a 35-50MW "biomass plus coal" fired power plant, 5-7MW waste heat recovery unit and energy efficiency upgrades to mitigate or reduce dependence on unreliable grid power at a cement plant in Pakistan. He was involved in:

- Preparation of detailed technical review of existing plant power distribution system
- Conducting a detailed analysis for long term biomass fuel supply chain
- Recommending the power plant technology appropriate as per the proposed fuel mix
- Prepare land requirement, plant layout, civil, mechanical, electrical, and equipment layout at the site
- Assessing power plant connection and power export / import mechanism with existing grid station.

- Budgeting estimation of Capital costs for installation of a 35-50MW biomass-fired power generation plant
- Detailed operations and maintenance costs forecasting
- Preparing report on the availability of carbon credits and also assessing the applicability of Clean Development Mechanism (CDM) as source of financing for the envisaged projects.

- **Renewable Energy Resource (Biomass) Mapping, Pakistan, South Asia Region**

As engineering Team Leader Mr. Malik is involved in following activities,

- Acquisition of satellite imagery, pre processing, hybrid classification, and cluster analysis
- GIS data acquisition (roads, water, urban areas, etc.) to identify most appropriate supply chain mechanism
- Preparation of base line resource atlas and potential biomass energy use modeling
- Recommendation on suitable options for biomass handling and storage
- Identification of most suitable power generation technology through comparative analysis of different technology applications

- **USAID Pakistan Power Distribution Program (PDP)**

As Engineering Team Lead, Mr. Malik is leading a team of national and international experts to conduct comprehensive performance audits and to access operational performance of state owned DISCOs. The scope of work included; assessment of operational performance, performance auditing of participating DISCOs, development of comprehensive performance improvement action plan, development of action plans for MWP and NEPRA, comprehensive analysis of cost of service and tariff design, legal and policy review of DISCOs and NEPRA, review of existing performance agreements, human resource development and change management, identification of options for reduction of theft and corruption, and most importantly facilitate linkages among key player in energy sector.

Mr. Malik actively participated in operational audits at each of the nine state-owned DISCOs and development of performance improvement action plans for each individual utility. The audits covered the managerial, engineering, operational, financial, and customer service performance of each state owned DISCO and include the identification of opportunities and methodologies that can be used to reduce technical and non-technical, e.g. commercial, losses and improvement work, institutional, management and staff performance.

- **Smart Metering at Residential, Industrial, Agriculture Consumers and Distribution Transformers at 5 DISCOs, (PDP)**

As Team Lead, Mr. Malik is involved in planning, designing and implementation of a stand-alone Meter Data Collection (MDC) system, and managing it centrally for five (05) DISCOs. The MDC system is being deployed for residential,

industrial, commercial, and agricultural consumers and for energy accounting at distribution transformers. The project involves ~17,000 metering nodes spread across all participating DISCOs. Mr. Malik's main responsibilities included,

- Participation in preparation of feasibility studies, and technical due diligence
- Preparation of requirements, engineering design, and technical architecture of business solution
- Preparation of specifications and bidding documents for solution components i.e. AMR meters, MDC System, Communication Network, Co-Located Data Center, etc.
- Oversee technical evaluation of proposals and vendor short-listing
- Review and evaluation of factory acceptance tests of the material
- Oversee installation/commissioning and end to end testing of system
- Participation in technical evaluation of overall solution

- **Smart Metering at Industrial & Residential Consumers at Peshawar Electric Supply Company (PESCO), (PDP)**

Mr. Malik is leading a team of expert for implementation of smart metering initiative for 12,000 Industrial and ~42,000 residential consumers of PESCO. Mr. Malik leads preparation of bidding documents, technical specifications, evaluation of bids, tendering, and vendor short-listing. As part of project activities, he is scheduled to lead implementation team on integration of smart meters with the co-located data center based at Lahore. The project aims to lay foundation for PESCO to combine Smart Metering with demand response, intelligent control and distribution automation. The implementation of project aims to set pace for organization wide implementation of AMI technologies to meet the needs of all service territories.

- **USAID Empower Energy Efficiency & Capacity (EEC) Project**

As part of the EEC Project, Mr. Malik oversaw preparation of elaborated Power Conservation Action Plans at 4 electricity distribution utilities in Pakistan, i.e. MEPCO, HESCO, PESCO and QESCO. Detailed Power Conservation Action Plans were developed for the DISCOs, which included a comprehensive data collection exercise to collect system load profile data (with temperature sensitivity analysis), customer profile data, customer billing, collections and revenue data. Additionally, load research was carried out to prepare representative load profiles for various customer categories (Commercial, Domestic, Industrial, etc.), and temperature sensitivity analysis was carried out to understand the peak usages of the various consumer categories. Additionally, specific problem areas were identified and analyzed, which included losses in the distribution network, transformer burn out rate, theft of electricity, etc.

He lead the team of distribution system experts in development of a comprehensive DSM Program, as a result of Power Conservation Plans, to address each of the problem area identified in the Power Conservation Plans, which included analysis of each option such as benefit cost ratios, participant, utility, resources and total cost prospective. Each of the Plans included thorough

financial and technical analysis of the options, and the benefits to the utility, consumers and the upstream power players (NTDC, PEPCO, etc.). Additionally, a team of specialists were placed at each of the distribution companies to setup DSM Cells at the DISCOs' Headquarters.

- **GIS Mapping Distribution Network of 9 DISCOs across Pakistan (more than 10,600 Km of 11kV HT and 0.415 kV LT Lines)**

The objective of the project is to create geometric network for electrical distribution network for asset management and load flow analysis for planning and development. Pole to pole mapping with recording of all assets available on network e.g. distribution transformers, conductors size, pole height, pole type, pole use, conductor phase, transformer use, transformers size, make and model etc. will allow the concerned authorities to make decisions effectively. As Field Engineer Director, he was involved in overseeing,

- GIS based field survey
- Automated data creation customized application development
- Development of geo-database
- Electrical network analysis for line losses
- Data digitization and map preparation
- GIS Data conversion application development

- **GIS Based Survey of 70,000 Electric Utility Consumer**

The project aims to collect GIS and consumer data for selected sub division at MEPCO & PESCO for load flow analysis, load profiling, re-routing, load management, etc. The work included dividing the geographical area into smaller survey blocks, and sending out enumerators to follow building blocks within the individual blocks. With this approach, all buildings within the target areas were visited, and categorized as consumers of electricity. A total of 70,000 consumers were enumerated in 3 different localities, and then linked to the utilities billing system. Mr. Malik was involved in,

- Complete processed satellite imagery for the Target area
 - Preparing the map into survey blocks, and then tagging all buildings into a coding convention
 - Parcel level digitization for each consumer
 - Development of geo-database
 - Census data management application development
 - Enumerating consumers, and linking them to other physical assets (poles, transformers, etc.)
-

ZAIN-UL-ABIDIN

Director

Mr. Zain-ul-Abidin is a senior team member, with 25+ years of diversified experience in accounting, financial management, internal control and contracts management. In 1997 he stepped into the power sector. Since then he has been involved in financial and contracts management of the power companies.

Mr. Zain is B. Com and FCA. He is a member of the Institute of Chartered Accountants of Pakistan. A quick glance of his professional life shall be sufficient to talk about Zain without uttering a single word.

- **Shams Power (Private) Limited – Lahore** **May-2015 to date**

Shams Power provides electricity generation services to its customers by financing, designing, installing and operating solar power generation equipment using roof tops of the customers. He is responsible for evaluation of investment proposals for consideration by the Shams Power Board of Directors.

- **Oursun Solar Power – Lahore** **Mar-2015 to date**

Oursun is a company incorporated to undertake business of supplying electricity to its customers by providing and installing and operating solar power generation equipment using roof tops of the customers. The company has aggressive business plans to install 50 MW of distributed facilities in Pakistan. He is responsible for evaluation of investment proposals for consideration by Oursun Board.

- **Japan Power – Lahore** **Jul 2006 to Feb 2014**

JP is a quoted, public limited company, which owns and operates a plant of 135 MW near Lahore. The company was facing many problems since it started its operation in March 2000. Due to these problems, the plant did not make any profit for last 7 years. He joined the management team with a view to turnaround the company and make it a financially viable project. Here, he was made responsible for all the matter relating to accounting, financial and corporate matters. He is also involved in developing financial models for the existing and proposed expansion projects and plant improvement projects. He is also plays instrumental part when a problem related to interpretation of projects agreements is surfaced. He plays important part in dispute resolution process with WAPDA.

- **El Paso (previously Coastal) - Islamabad** **Nov 1999 to Jun 2006**

El Paso Technology Pakistan (Private) Limited (EPTP) is a wholly owned subsidiary of El Paso Corporation - USA. El Paso Corporation - USA has major stake in two independent power plants in Pakistan, one is situated in Quetta and other one is in Farooqabad, near Sheikupura. EPTP has been created to take care of operation and maintenance activities of these plants. EL Paso also has significant shareholding in a third IPP (Fauji Kabirwalla).

He joined EPTP as Contracts and Finance Manager, a senior management position. His role in EPTP was multidimensional. He was responsible for commercial function, budget preparation, monitoring and control, monthly analysis and reporting of operation, administration and monitoring of project agreements and looking after information technology services in the company.

He was successful in savings million of rupees to the project companies by rejecting power purchaser's interpretation of the PPA clauses relating to determination of capacity, invoice calculations including determination of applicable indices, LD's calculations and interest on delayed payments.

He also saved millions of rupees to the project company in bonus to the contractor by identifying wrong interpretation of O&M / LTSA clauses.

- **Kot Addu Power Company Limited (KAPCO) – Lahore** **Jan 1997 to Nov 1999**

KAPCO was incorporated to take over strategic management control of largest thermal power station from WAPDA at Kot Addu. It employs over 900 employees. I joined KAPCO as Internal Auditor, a senior management position. His job was to establish and provide high quality internal audit service as per international standards and included review of existing systems and suggest modifications and improvements.

He was also required to act as adviser to management on various issues relating to local labor laws, corporate laws, tax laws and financial rules and regulations of the country. Due to his in-depth knowledge and varied exposure, he had been a source of reference for the issues relating to interpretation of project agreements and various consents / exemptions available to the company for smooth and trouble free operations.

- **United Distributors / International Brands – Karachi** **Jan 1990 to Dec 1996**

International Brands was one of the largest imports, investment, trading & distribution Company having 11 branches and employing over 900 employees all over Pakistan. At IBL he was responsible to take care of accounting and systems functioning. While leading a team of over 20 staff members, he successfully led an effort of put up computer systems in the organization for the first time. At the time when he elected to leave the company and join power industry, he left behind an environment of computerized systems with people trained to discharge their respective duties.

- Ferguson Associates – Karachi

May 1986 to Jan 1990

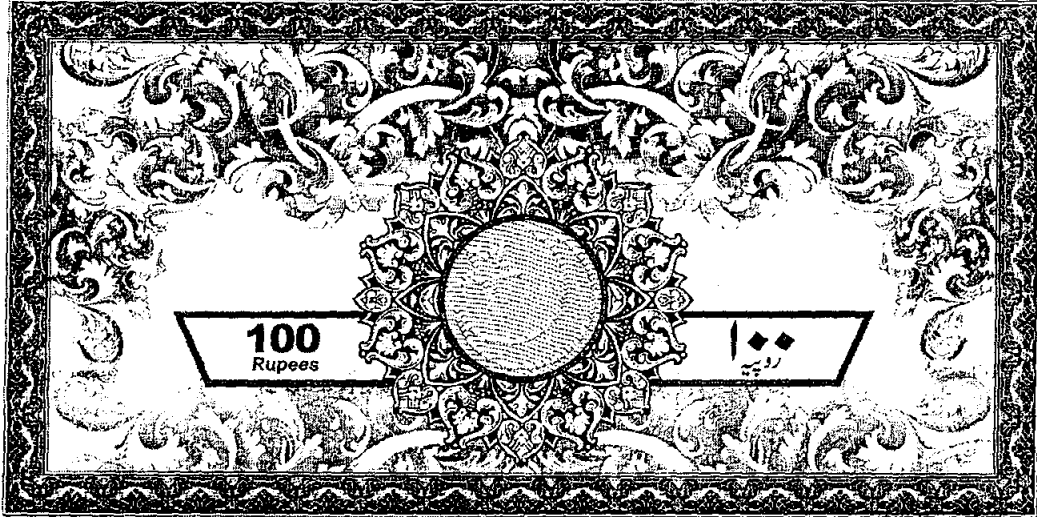
Ferguson Associates (PWC firm) was engaged in providing management consultancy services to the industry and trade. At Ferguson Associates, he had opportunity to work for both private and public sector organizations involved in various sectors of the economy, such as sugar, textile, pharmaceuticals, paper products, automotive, consumer products, water and sewerage utility, industrial and heavy machinery. While working for Ferguson Associates, he acquired skill for quick grasp of the situation and suggesting practical corrective actions.

- A. F. Ferguson & Co – Karachi

Sep 1980 to Apr 1986

Mr. Zain joined AFF (member firm of PWC) to further his education.

Annexure V
Project MOU.



MEMORANDUM OF UNDERSTANDING

TO ENTER INTO A

SOLAR POWER PURCHASE AGREEMENT

THIS Memorandum of Understanding ("MOU") is made on 31st of March 2021, by and between;

1. **Shams Power (Private) Limited**, a company incorporated and existing under the laws of Pakistan, having its registered office at 2nd Floor, Al Maalik, 19, Davis Road, Lahore, Pakistan through Omar Malik, (hereinafter referred to as the "**Seller**", which expression, where the context so, permits shall include its successors in interest and permitted assigns)

AND

2. **Shifa International Hospitals Limited**, a company incorporated under the provisions of the Companies Ordinance, 1984 (now the Companies Act, 2017), having its registered office situated at Pitras Bukhari Road, Sector H-8/4, Islamabad, Pakistan, through Brig. Abu Bakr Amin Bajwa, (hereinafter referred to as the "**Power Purchaser**", which expression, where the context so permits, shall include its successors in interest and permitted assigns).

- (1) The Seller desires to finance, install, operate maintain, and transfer a solar electric generating Facility(ies) with an Installed Capacity of 1,670 kilowatts or above (the "**Facilities**") located at the rooftop/ premises of the Power Purchaser's property located at Pitras Bukhari Road, Sector H-8/4, Islamabad, Pakistan.
- (2) The Power Purchaser desires the Seller to sell the Solar Energy produced by the Facilities to the Power Purchaser. During the operations period, the Power Purchaser shall buy from Seller all the electricity produced by the Facilities as per the rates already mutually decided between the two parties in accordance with all the terms and conditions that will be laid out in the Power Purchase Agreement ("**Agreement**").
- (3) The term of the Agreement will remain to be effective for 10 years, unless earlier terminated and the Facilities along with equipment will be transferred to the Power Purchaser for a sum total value of PKR 100 at the end of the Agreement in accordance with the terms and conditions set out in the Agreement.
- (4) The Power Purchaser shall pay the Seller for each kilowatt-hour of Solar Energy delivered by the Seller at the Delivery Point as well as, any Deemed Energy in accordance with the terms and conditions set out in the Agreement.

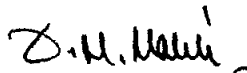
ATTESTED

BY **FTIKHAR HAIDER**
JUDGE, HIGH COURT &
JUDGE, DISTRICT COURT LAHORE

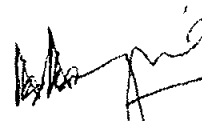
Page 1 of 2

- (5) The Power Purchaser shall be responsible for obtaining, and paying for, any and all, consents or approvals from the Capital Development Authority, which are necessary for the construction, commissioning, and operation of the Facilities at its premises.
- (6) The Seller shall further pay for and obtain all consents required for it to execute this Agreement and perform its obligations under this Agreement from its lenders, regulators and any other persons with an interest in the Facilities.
- (7) The Seller shall design, install, test, commission, operate, and maintain the Facilities and keep it in good condition and repair for the entire duration of the Agreement. Such work shall be at the Seller's sole expense.
- (8) The Seller shall be responsible for performing, or causing to be performed, all operation, maintenance and monitoring services for the Facilities during the Term of the Agreement at its own risk and cost.
- (9) The MOU shall be valid for a term of nine (09) months unless mutually extended by the Parties.

IN WITNESS WHEREOF, the parties have caused this MOU to be signed in duplicate at the place and on the date set forth above.




Omar Malik
Chief Executive Officer
for and on behalf of
Shams Power (Pvt.) Ltd




Brig. Abu Bakr Amin Bajwa
Chief Supply Chain Officer
for and on behalf of
Shifa International Hospitals Limited

Witnesses:

1. 

Name: MANZAR AMEER ALI

Address: 2nd floor, Al-Madina
building, 19-Davis Road
Lahore

2. 

Name: Kamran Amjad

Address: Shifa Int. Hosp. Bldg.

SECTION 3:
SCHEDULE - I
Technical Details

Contents

SCHEDULE-I	2
Site Location: Shifa International Hospital, Islamabad, Islamabad	3
Location of the Shifa International Hospital, Islamabad, Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL on	4
Map of Pakistan	4
Location of the Shifa International Hospital, Islamabad, Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL on	5
Map of the Capital Province	5
Access Road/Link of the S Shifa International Hospital, Islamabad , Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL on	6
Access Road	6
Location of the Shifa International Hospital, Islamabad, Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL	7
Process Flow Diagram of the Proposed Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL	8
Location Coordinates of the Generation Facility/Solar Farm/Power Plant of the Licensee/SPPL	9
Equipment and Design Details	10
Single Line Diagram of the Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL	11
Detail of Generation Facility/Solar Power Plant	12
Solar Panels-PV Modules	13
PV Array	14
Inverters	14
VI Curve of Solar Panel at STC for the Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL	17

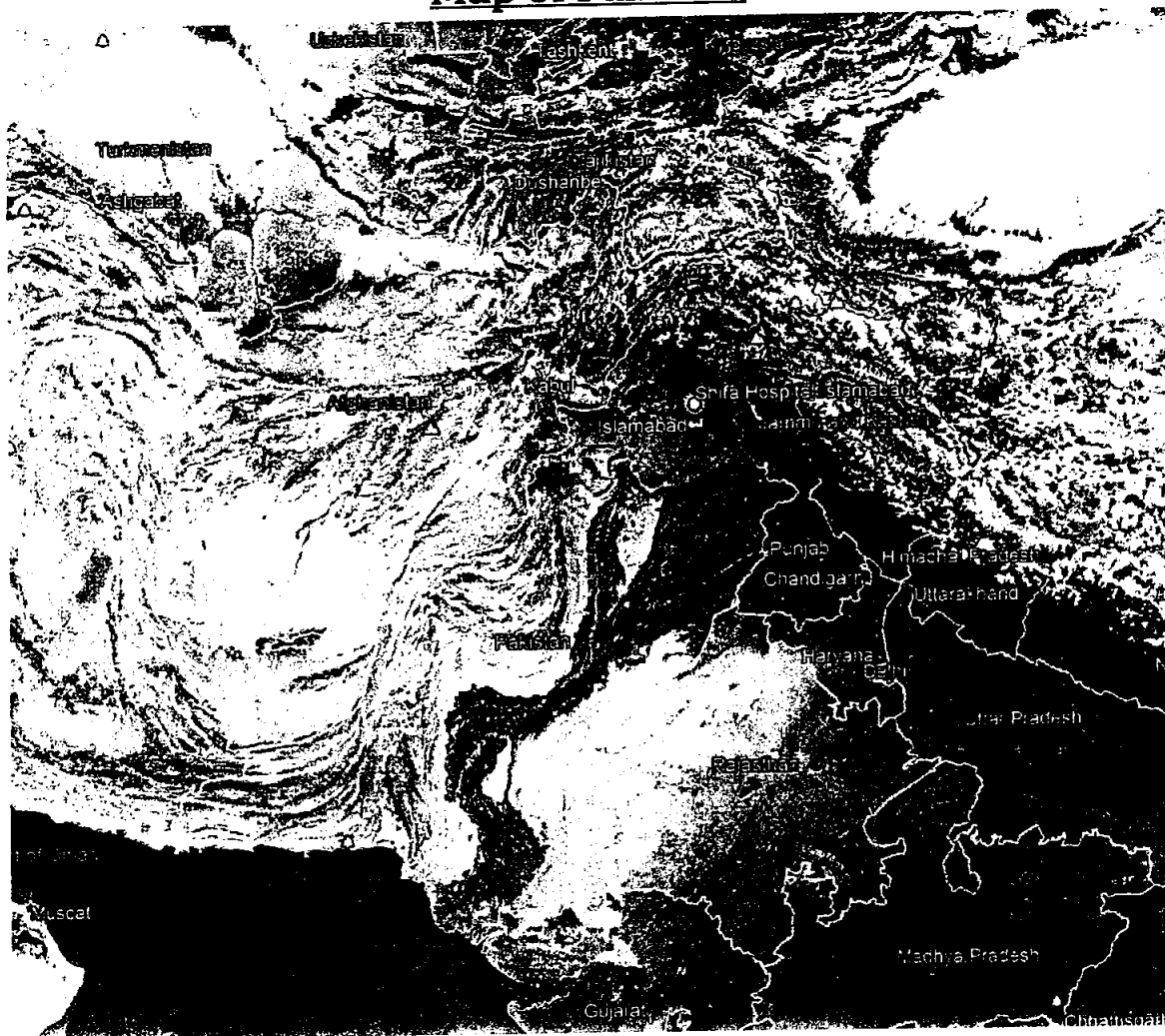
SCHEDULE-I

The Location, Size (i.e., Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule.

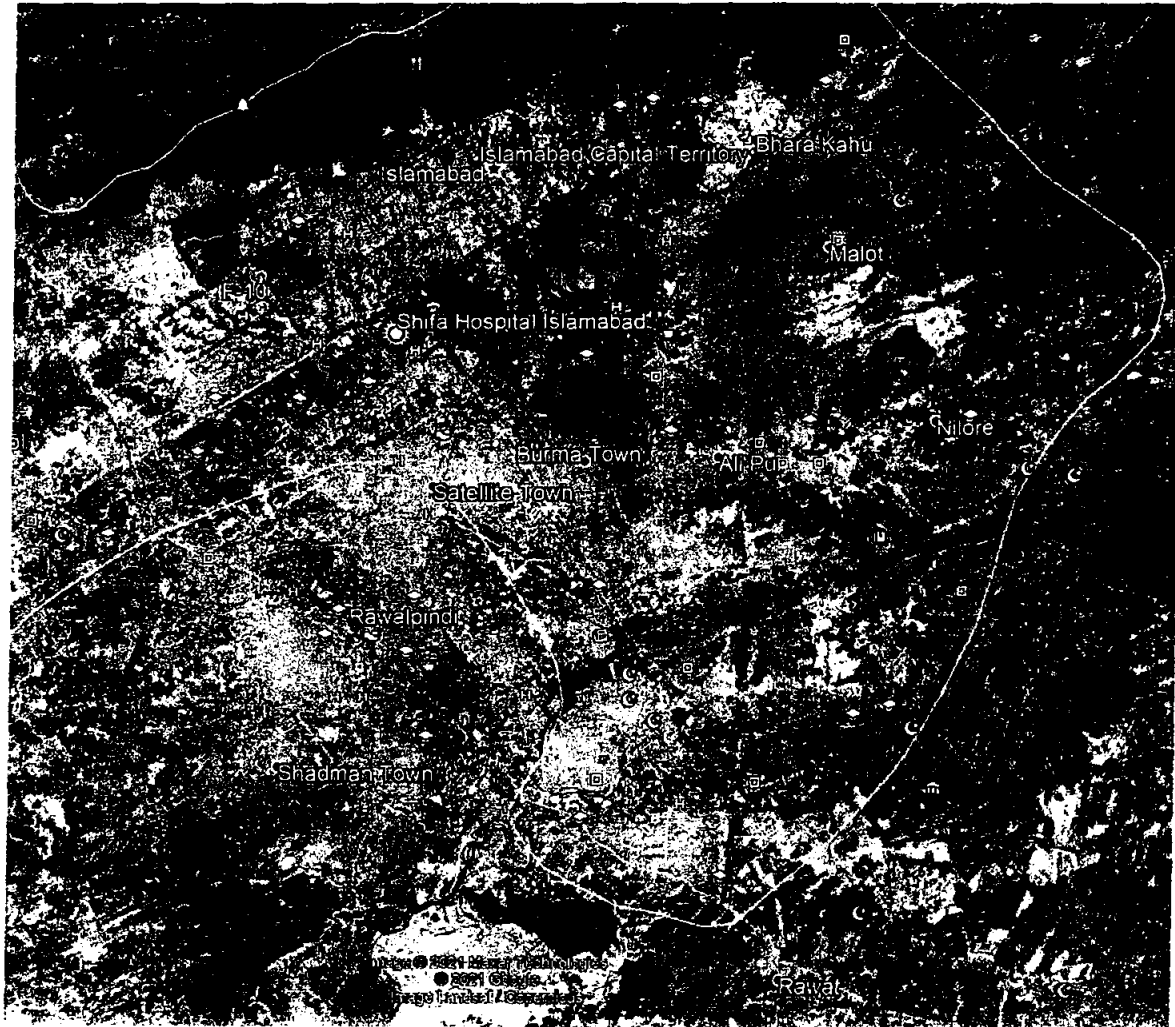
**Site Location: Shifa International Hospital,
Islamabad.**

Location of the Shifa International Hospital, Islamabad, Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL on

Map of Pakistan



Location of the Shifa International Hospital, Islamabad, Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL on
Map of the Capital of Pakistan

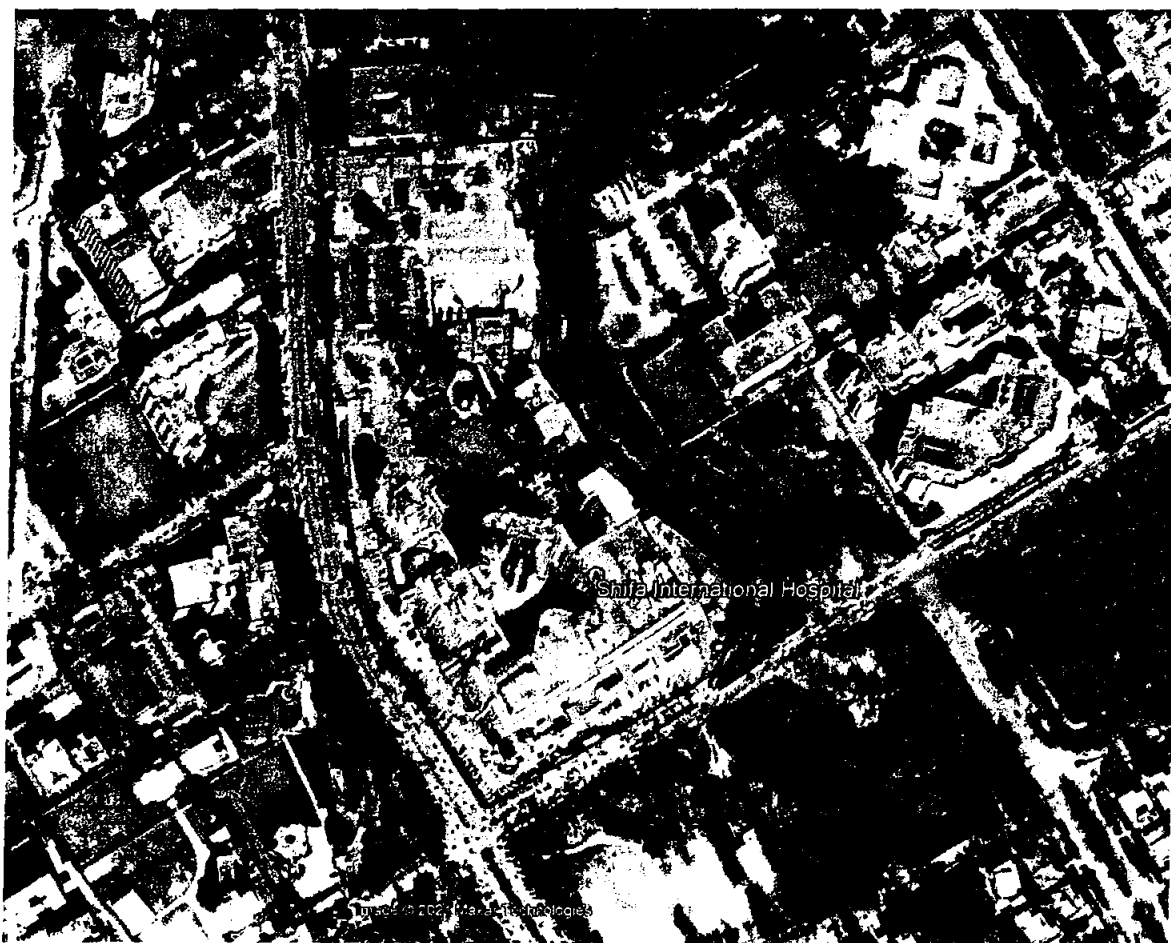


Access Road/Link of the Shifa International Hospital, Islamabad,
Islamabad, Generation Facility/Solar Farm/Solar Power Plant of the
Licensee/SPPL on

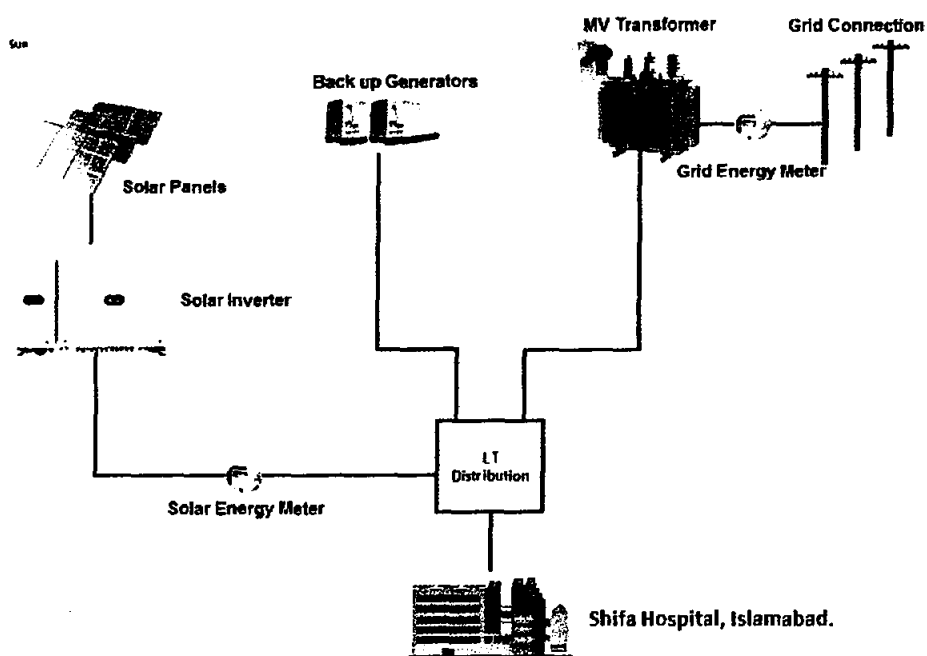
Access Road (Expressway, Islamabad)



Location of the Shifa International Hospital, Islamabad, Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL



Process Flow Diagram of the Proposed Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL

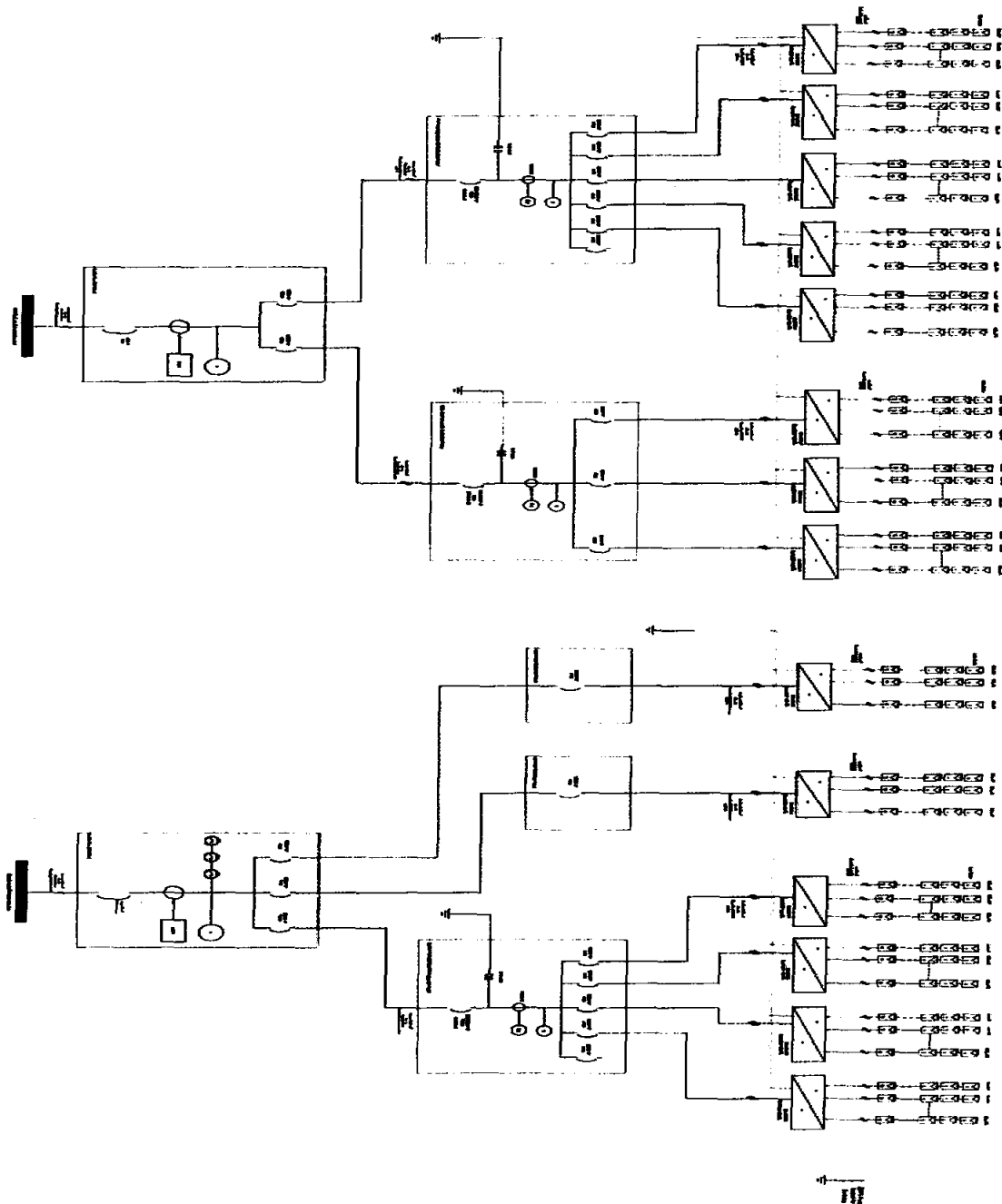


**Location Coordinates of the Generation Facility/Solar Farm/Power Plant of the
Licensee/SPPL**

Latitude (North)	Longitude (East)
33°40'34.25"N	73° 4'0.62"E

Equipment and Design Details

Single Line Diagram of the Generation Facility/Solar Farm/Solar
Power Plant of the Licensee/SPPL



Detail of Generation Facility/Solar Power Plant

(A). General Information

(i).	Name of the Company/ Licensee	Shams Power (Private) Limited
(ii).	Registered/Business Office of the Company	2 nd Floor, Al-Maalik Building 19-Davis Road Lahore
(iii).	Principal Office	2 nd Floor, Al-Maalik Building 19-Davis Road Lahore
(iv).	Plants Location	Pitras Bukhari Road, Sector H-8/4, Islamabad – Pakistan
(v).	Field Type	Fixed Tilted Plane
(vi).	Field Parameters	Tilts/Azimuths: 10°/-32°, 5°/-32°, 5°/57°, 5°/90°, 5°/-90°, 5°/90°, 5°/-90°
(vii).	Type of Generation Facility	Solar Photovoltaic (PV)

(B). Solar Power Generation Technology & Capacity

(i).	Type of Technology	Photovoltaic (PV) Cell
(ii).	Type of Cell	Mono-Perc
(ii).	Type of System	Grid Tied
(iii).	Installed Capacity of the Generation Facility (MW)	1. 67 MW _p DC

(C). Technical Details of Equipment

(a).	Solar Panels-PV Modules		
(i).	Type of Module	Mono-Perc PV Type Module TSM-500DE18M(II)	
(ii).	Surface Area of Module	2.3892 m ²	
(iii).	Dimension of each Module	2176 mm × 1098 mm × 35mm	
(iv).	Total area covered by Solar Panels-PV Modules	8061 m ²	
(v).	No. of Modules	3374	
(vi).	Frame of Module	Anodised Aluminium Alloy, Crossbar enhanced	
(vii).	Weight of one Module	26.3 kg	
(viii).	Module Output Warranty	For 1 st Year	For 2 nd Year to 25 th Year
		98 % or above	Not more than 0.55 % output reduction each year
(ix).	Number of Solar Cells in each Module	144 Cells	
(x).	Efficiency of Module	20.9 %	
(xi).	Environment Protection System	Encapsulation and sealing arrangements for protection from environment.	
(xii).	Maximum Power (P _{max})	500 W _p	
(xiii).	Power Tolerance at STC	0 ~ +5W	

(xiv).	Operating Voltage @ (P_{max})	42.8 V
(xv).	Operating Current @ (P_{max})	11.69 A
(xvi).	Open circuit voltage (V_{oc})	51.7 V
(xvii).	Short circuit current (I_{sc})	12.28 A
(xviii).	Optimum Operating Voltage at NOCT	40.4 V
(xix).	Optimum Operating Current at NOCT	9.37 A
(xx).	Open circuit voltage (V_{oc}) at NOCT	48.8 V
(xxi).	Maximum system open Circuit Voltage	1000V(IEC) or 1000V (UL) or 600V(UL)
(b).	PV Array	
(i).	No. of Arrays	7
(ii).	Modules in a String	Two Arrangements 18 & 19
(iii).	Total No. of Strings	184
(iv).	Modules in Array	Six arrangements 720, 756, 720, 76, 513 & 513 Modules
(v).	Total Modules	3374
(c).	PV Capacity	
(i).	Total Capacity	1.67 MW _P DC
(ii).	Net Capacity Factor	14.8 % 18.2 % (w.r.t AC)
(d).	Inverters	
(i).	Maximum DC Power Input	1.67 MW (@50°C)
(ii).	Inverter Model	i. SUN2000-60KTL-M0 ii. SUN2000-100KTL-M1

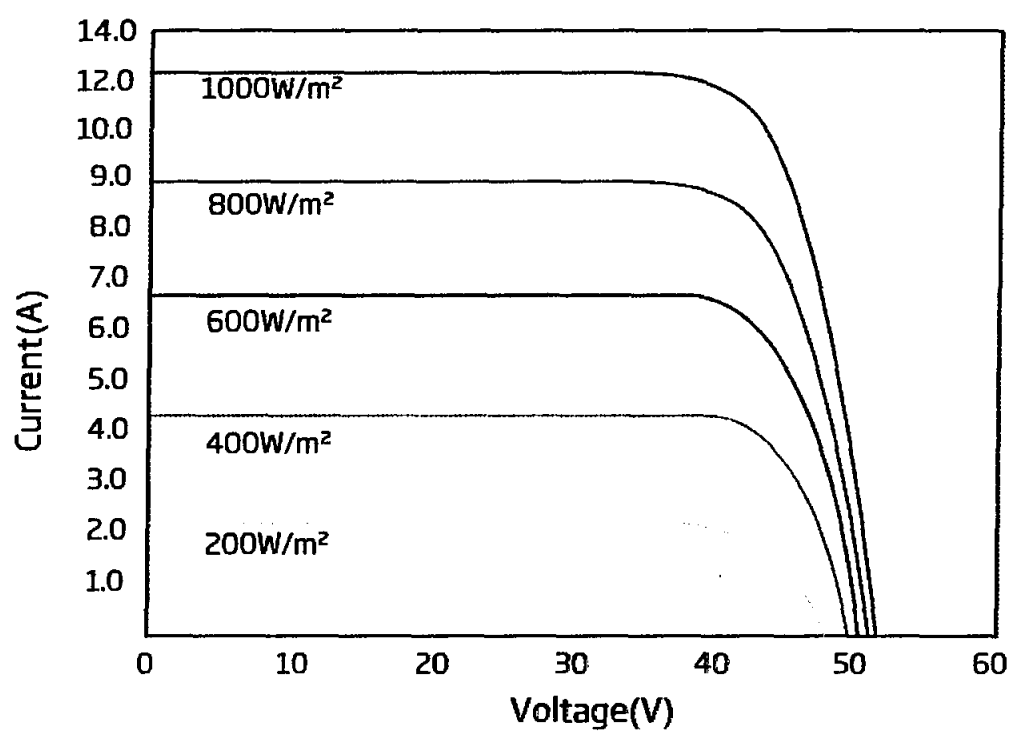
(iii).	Manufacturer	Huawei	
(iv).	Maximum DC Input Voltage	DC 1100 V	
(v).	Start Voltage	DC 200 V	
(vi).	Number of Inverters	14	
(vii).	Efficiency	98.7% & 98.7%	
(viii).	Max. Input Current	DC 132 A	
(ix).	MPP Voltage Range	200 V- 1000 V DC	
(x).	Output electrical system	3-Phase, 4-Wire	
(xi).	Rated Output Voltage	AC 230/400 V	
(xii).	Rated Frequency	50 Hz	
(xiii).	Power Factor	Adjustable – 0.8 lag to 0.8 lead	
(xiv).	Power Control	i. MPP Tracker (6 MPPT/Inverter) ii. MPP Tracker (10 MPPT/Inverter)	
(xv).	Environmental Enclosures	Operating Temperature Range	-25° C to 60° C
		Relative Humidity	100% non-condensing
		Protection Class	i. IP65 for 60KTL. ii. IP66 for 60KTL.
		Audible Noise	
		Operating Elevation	<4000m
(xvi)	Protection Devices	(a).	DC Disconnect Switch
		(b).	Anti-Islanding
		(c).	DC SPD
		(d).	DC Reverse Polarity Protection
		(e).	AC SPD

		(f).	Residual Current Monitoring Unit
(e).	Junction Boxes		
	N/A	Strings directly connected to Inverters	
(f).	Data Collecting System		
(i).	Weather Data	(a).	Seven Solar Sensor Box Irradiation, Temperature, PV Module Temperature, Wind speed.
(ii).	System Data	(a).	DC input voltage (V) & current (A) of each Inverter (Phase, Line)
		(b).	Total DC power (kW) generated by PV array.
		(c).	AC output voltage(V) and current (A) of each Inverter (Phase, Total)
		(d).	AC output power (kW) and energy (kWh) of each Inverter
		(e).	Frequency (Hz)
		(f).	Power Factor (PF)

(D). Other Details

(i).	COD of the Project	October 1 st , 2021
(ii).	Expected Life of the Project from the COD	25 Years

VI Curve of Solar Panel at STC for the Generation Facility/Solar Farm/Solar Power Plant of the Licensee/SPPL



SECTION 4: SCHEDULE II

SCHEDULE-II

The Total Installed Gross ISO Capacity of the Generation Facility/Power Plant/Solar Plant (MW), Total Annual Full Load (Hours), Average Sun Availability, Total Gross Generation of the Generation Facility/Solar Farm (in kWh), Annual Energy Generation (25 years Equivalent Net Annual Production-AEP) kWh and Net Capacity Factor of the Generation Facility/Power Plant/Solar Farm of Licensee is given in this Schedule

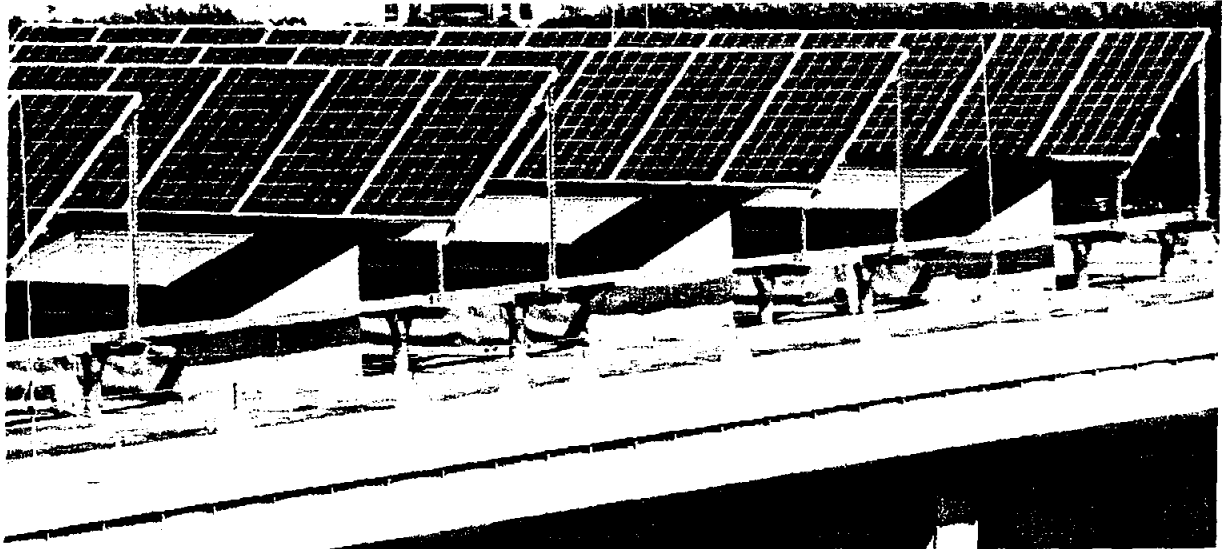
SCHEDULE-II

SHIFA INTERNATIONAL HOSPITAL, ISLAMABAD Facilities/Solar Farms/Solar Power Plants

(1).	Total PV Installed Capacity of Generation Facility	1.67 MWp DC 1.36 MWac (Inverter Output)
(2).	Average Sun Hour Availability/Day (Irradiation on Inclined Surface)	5.18 Hrs
(3).	Days per Year	365
(4).	PV Plant Generating Capacity Annually (As Per Simulation)	2,170 MWh
(5).	Expected Total Generation in 25 years Life Span	50,816 MWh
(6).	Generation per Year from plant keeping 24 Hours Working	$1.36 \times 24 \times 365 = 11,913.6$ MWh
(7).	Net Capacity Factor (4/6)	22.75 %

Note

All the above figures are indicative as provided by the Licensee. The Net energy available to the Power Purchaser for dispatch will be determined through procedures contained in the Energy Purchase Agreement.



**FEASIBILITY STUDY FOR 1.67 MW_p SOLAR
PLANT INSTALLATION**

**AT SHIFA INTERNATIONAL HOSPITAL,
ISLAMABAD**

by

SHAMS POWER (PVT) LIMITED

Contents

EXECUTIVE SUMMARY	2
Introduction.....	3
Technical Analysis.....	4
Site Conditions	4
Technology Review and Selection	4
Technology Selection	4
Plant Characteristics	6
Design Parameters	6
Layout	6
Electrical Design	7
Energy Yield Estimation	8
Simulation Parameters	9
Near Shading Definition	12
Losses	13
Simulation Results	14
Financial Analysis.....	15
Safety and Emergency Plans	16
Training and Capacity Development	16
Environmental Aspects	17
Socio-Economic Aspects	24

EXECUTIVE SUMMARY

The feasibility study examines the costs, practicality, and likely outcome of a solar photovoltaic (PV) installation in Maxim Production Facility at Khanewal.

The main outcomes of the feasibility report are given below:

Technical Site Analysis: The project site is suitable for a solar PV energy system. For the purpose of estimation of power generation potential, solar insolation is assumed to be "good" (1,920 kWh/ square meter/ year). Panel azimuths (-32, -90 & 57 degrees), panel tilt (5 and 10 degrees) and satisfactory roof & structure stability.

Anticipated System Information: The project will accommodate a 1.67 MWp (DC) solar PV system with a projected annual production of 2,710 MWh/ year. Use of a Trina Solar TSM-DE18M(II) (500 watt) PV panel as a basis for design will result in an acceptable system weight density of 20 lbs/SF. The system will offset approximately 1,153.4 tons of carbon dioxide annually.

Financial Analysis: The total estimated project cost is estimated USD 1,085,500. The sponsors of Shams Power have agreed to finance the project on 100% equity.

Based on the technical and financial analysis, the installation of a 1.67 MWp Solar PV System at the Shifa International Hospital, Islamabad is deemed to be feasible.

Introduction

The project site is rooftops and rooftop space of Shifa International Hospital, Islamabad. The site is a commercial area. The exact coordinates of the project site are:

Latitude: 33°40'34.25"N

Longitude: 73° 4'0.62"E

A bird's eye view of the project site is given in the figure below:



Figure 1: Overview of Project Site

Technical Analysis

Site Conditions

The following tasks were carried out:

- Global Horizontal Irradiation, annual and inter-annual variation was assessed.
- Near shading objects were taken into account for placement of PV modules.
- Area required for selected module technology was calculated. Keeping in view available area and minimum inter row shading, tilt angle and appropriate spacing was calculated from near shading objects.

Details of the finalized parameters are given under section 3.5.1

Technology Review and Selection

Technology Selection

PV Modules:

S. No	Specification	Data
1	Type of Module	Trina Solar, 500Wp (TSM-DE18M(II))
2	Type of Cell	Monocrystalline (Perc)
3	Dimensions of each module	2176 × 1098 × 35 mm
4	Weight	26.3 Kg
5	No of Modules	3,374
6	Module Area	8,061 m ²
7	Total Land Area Used	Parking and Roof Top
8	Module Frame	Anodized aluminum alloy
9	Nominal Max. Power (Pmax)	500 W
10	Opt. Operating Voltage (Vmp)	42.8 V
11	Opt. Operating Current (Imp)	11.69 A
12	Open Circuit Voltage (Voc)	51.7 V
13	Short Circuit Current (Isc)	12.28 A
14	Module Efficiency	20.9 %
15	Operating Temperature	-40°C ~ +85°C
16	Max. System Voltage	1000 V (IEC) or 1000 V (UL) or 600 V (UL)
17	Module Fire Performance	TYPE 1 (UL 1703) or CLASS C (IEC 61730)

PV Array

S. No	Specification	Data
1	No of Strings	184
2	Modules in String	Three Arrangements 18 & 19

PV Capacity

S. No	Specification	Data
1	Total Site	1.67 MW Peak
2	Net Capacity Factor	18.5 %

Inverters

S. No	Specification	
1	Manufacturer	Huawei
2	Capacity of each Unit	100 KW & 60 KW
3	No of Inverters	14
4	MPP Input Voltage Range	200 V to 1000 V
5	Rated Input Voltage	600 V
6	Max Input Voltage	1100 V
7	Total Power (AC)	1.36 MW
8	Max Input Current Input per MPPT	i. 22A for 60KWac. ii. 26A for 100KWac.
9	Max Output Current	i. 95.3 A for 60KWac. ii. 160.4 A for 100KWac.
10	Output Electrical System	3 Phase AC (4 Wire)
11	AC Nominal Voltage	230/400 V
12	Rated Power Frequency	50 Hz
13	Efficiency	i. 98.5% for 60KWac. ii. 98.4% for 100KWac.
14	Relative Humidity (Non-Condensing)	100%
15	Degree of Protection	i. IP65 for 60KWac. ii. IP66 for 100KWac.

PV Mounting Structure

S. No	Specification	Data
1	Structure	Hot Dip Galvanized Iron with Aluminum clamps
2	Tilt of Array Frame	5°, 10°

Data Collecting System

S. No	Specification	Data
1	System Data	Continuous on-line logging and monitoring over web portal

Solar PV Yield Estimation and Simulation

The aim of yield estimation is to predict the average annual energy output of the site. PvSyst software is used for simulation and near shading analysis.

Working Conditions

The solar system will have automatic mechanism to ensure that PV power currently generated by the inverters always matches the current power consumption of the site load. A closed loop control system of inverter AC output is implemented in reference to energy flow at grid connection point which will reduce inverter AC output of the inverter if site load will be less than the solar production in case of Load shedding.

Plant Characteristics

Generation Voltage: 230/400 V three phase four wire system

Power Factor at rated power: 1

Frequency: 50 Hz

Generation characteristic: Inverter has built-in features of controllable active power ramp following grid disturbance or normal connection, voltage regulation and frequency response. There are no additional control metering and instrumentations.

Design Parameters

The following tasks were carried out for PV layout and shading.

- Assessment of shading (horizon and nearby building)
- Outline layout of area suitable for PV development
- Designing row spacing to reduce inter-row shading and associated shading losses.
- Designing the layout to minimize cable runs and associated electrical losses
- Creating access routes and sufficient space to allow movement for maintenance purposes
- Choosing a tilt angle that optimizes the annual energy yield according to the latitude of the site and the annual distribution of solar resource
- Module cleaning strategy
- Simulating the annual energy losses associated with various configurations of tilt angle, orientation and row spacing. The optimized configuration and simulation results are given in section "Energy Yield Prediction"
- PV layouts of the site are given in 3D and 2D view in the following section.

Layout

The detailed layout (2D and 3D) of the solar panels is given below; PV layout may change depending upon site constraints before or during installation. PvSyst simulation is also performed as per following layout:

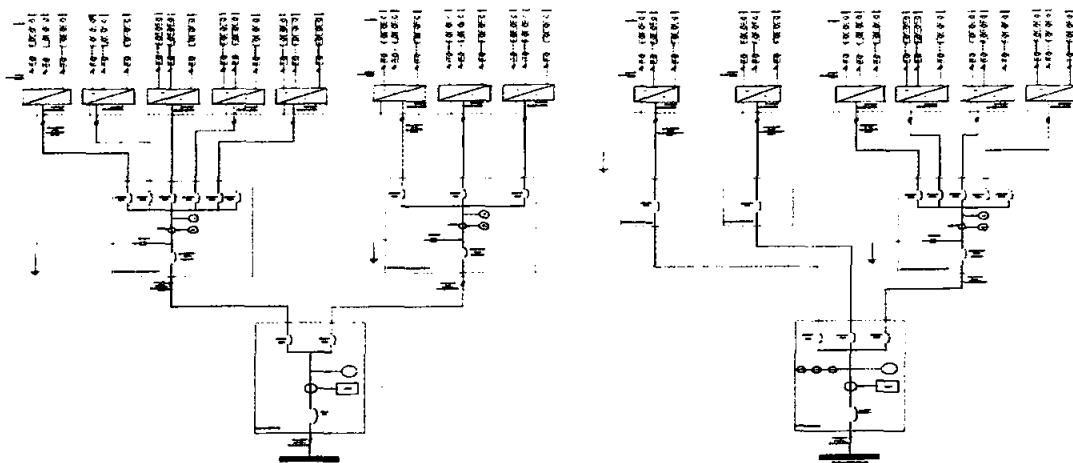


Figure 3: Single Line Diagram of PV Plant

Energy Yield Estimation

The energy yield prediction provides the basis for calculating project revenues. The aim is to predict the average annual energy output for the lifetime of the proposed power plant.

To estimate accurately the energy produced from a PV power plant, information is needed on the solar resource and temperature conditions of the site. Also required are the layout and technical specifications of the plant components.

A number of solar energy yield prediction software packages are available in the market. These packages use time step simulation to model the performance of a project over the course of a year. PvSyst software has been used for energy yield prediction for this site and its results are given below.

Details of the simulation steps are presented in the following sections:

Simulation Parameters

PVSYST V6.88	Shams Solar (Pakistan)		02/04/21	Page 1/8
Grid-Connected System: Simulation parameters				
Project : Shifa Hospital ISB				
Geographical Site		Sector-H-Eight(Shiffa Hospital)		Country Pakistan
Situation		Latitude 33.67° N	Longitude 73.07° E	
Time defined as		Legal Time Time zone UT+5	Altitude 632 m	
		Azimuth 0.20		
Meteo data:		Sector-H-Eight(Shiffa Hospital) Meteoronorm 7.2 (2002-2011) - Synthetic		
Simulation variant : Shifa Hospital 1.67 MWp-20210113				
		Simulation date 14/01/21 09h29 (version 6.88)		
Simulation parameters				
System type		Sheds on a building		
5 orientations		tilts/azimuths 10°-32°, 5°-32°, 5°-57°, 5°-90°, 5°-90°		
Sheds configuration		Nb. of sheds 119		
		Sheds spacing 8.27 m		
Shading limit angle		Limit profile angle 22.0°	Collector width 5.84 m	Ground cov. Ratio (GCR) 70.7 %
Models used		Transposition Perez	Diffuse Perez, Mismatch	
Horizon		Free horizon		
Near Shadings		According to module strings	Electrical effect	100 %
User's needs :		Unlimited load (grid)		
PV Arrays Characteristics (7 kinds of array defined)				
PV module		Simmons	Model	TSM-500DE18M(B)
Custom parameters definition		Manufacturer Tina Solar		
Sub-array "RCC Roof"		Orientation #1		
Number of PV modules		In series 18 modules	Tilt/Azimuth 10°-32°	In parallel 40 strings
Total number of PV modules		Nb. modules 720	Unit Nom. Power 500 Wp	
Array global power		Nominal (STC) 360 kWp	At operating cond. 328 kWp (50°C)	
Array operating characteristics (50°C)		U mpp 700 V	I mpp 468 A	
Sub-array "Parking S-E"		Orientation #2		
Number of PV modules		In series 18 modules	Tilt/Azimuth 5°-32°	In parallel 42 strings
Total number of PV modules		Nb. modules 756	Unit Nom. Power 500 Wp	
Array global power		Nominal (STC) 378 kWp	At operating cond. 344 kWp (50°C)	
Array operating characteristics (50°C)		U mpp 700 V	I mpp 492 A	
Sub-array "Parking S-W"		Orientation #3		
Number of PV modules		In series 18 modules	Tilt/Azimuth 5°-57°	In parallel 40 strings
Total number of PV modules		Nb. modules 720	Unit Nom. Power 500 Wp	
Array global power		Nominal (STC) 360 kWp	At operating cond. 328 kWp (50°C)	
Array operating characteristics (50°C)		U mpp 700 V	I mpp 468 A	
Sub-array "Parking w"		Orientation #4		
Number of PV modules		In series 19 modules	Tilt/Azimuth 5°-90°	In parallel 4 strings
Total number of PV modules		Nb. modules 76	Unit Nom. Power 500 Wp	
Array global power		Nominal (STC) 38.0 kWp	At operating cond. 34.6 kWp (50°C)	
Array operating characteristics (50°C)		U mpp 739 V	I mpp 47 A	
Sub-array "Parking E"		Orientation #5		
Number of PV modules		In series 19 modules	Tilt/Azimuth 5°-90°	In parallel 4 strings
Total number of PV modules		Nb. modules 76	Unit Nom. Power 500 Wp	
Array global power		Nominal (STC) 38.0 kWp	At operating cond. 34.6 kWp (50°C)	
Array operating characteristics (50°C)		U mpp 739 V	I mpp 47 A	

PVSYST V6.88		Shams Solar (Pakistan)		02/04/21	Page 2/8
Grid-Connected System. Simulation parameters					
Sub-array "Parking Extension-E"		Orientation	#4	Tilt/Azimuth	5°/90°
Number of PV modules		In series	19 modules	In parallel	27 strings
Total number of PV modules		Nb. modules	513	Unit Nom. Power	500 Wp
Array global power		Nominal (STC)	257 kWp	At operating cond.	234 kWp (50 °C)
Array operating characteristics (50 °C)		U mpp	739 V	I mpp	316 A
Sub-array "Parking Extension -W"		Orientation	#5	Tilt/Azimuth	5°/90°
Number of PV modules		In series	19 modules	In parallel	27 strings
Total number of PV modules		Nb. modules	513	Unit Nom. Power	500 Wp
Array global power		Nominal (STC)	257 kWp	At operating cond.	234 kWp (50 °C)
Array operating characteristics (50 °C)		U mpp	739 V	I mpp	316 A
Total Arrays global power		Nominal (STC)	1687 kWp	Total	3374 modules
		Module area	8061 m²	Cell area	7449 m²
Sub-array "RCC Roof" : Inverter		Model	SUN2000-100KTL-M1-400Vac		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Operating Voltage	200-1000 V	Unit Nom. Power	100 kWac
				Max. power (→30° C)	110 kWac
Inverter pack		No. of inverters	3 units	Total Power	300 kWac
				Pnom ratio	1.20
Sub-array "Parking S-E" : Inverter		Model	SUN2000-100KTL-M1-400Vac		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Operating Voltage	200-1000 V	Unit Nom. Power	100 kWac
				Max. power (→30° C)	110 kWac
Inverter pack		No. of inverters	3 units	Total Power	300 kWac
				Pnom ratio	1.26
Sub-array "Parking S-W" : Inverter		Model	SUN2000-100KTL-M1-400Vac		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Operating Voltage	200-1000 V	Unit Nom. Power	100 kWac
				Max. power (→30° C)	110 kWac
Inverter pack		No. of inverters	3 units	Total Power	300 kWac
				Pnom ratio	1.20
Sub-array "Parking w" : Inverter		Model	SUN2000-60KTL-M0_400Vac		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Operating Voltage	200-1000 V	Unit Nom. Power	60.0 kWac
				Max. power (→30° C)	66.0 kWac
Inverter pack		No. of inverters	3 * MPPT 17 %	Total Power	30 kWac
				Pnom ratio	1.27
Sub-array "Parking E" : Inverter		Model	SUN2000-60KTL-M0_400Vac		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Operating Voltage	200-1000 V	Unit Nom. Power	60.0 kWac
				Max. power (→30° C)	66.0 kWac
Inverter pack		No. of inverters	3 * MPPT 17 %	Total Power	30 kWac
				Pnom ratio	1.27
Sub-array "Parking Extension-E" : Inverter		Model	SUN2000-100KTL-M1-400Vac		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Operating Voltage	200-1000 V	Unit Nom. Power	100 kWac
				Max. power (→30° C)	110 kWac
Inverter pack		No. of inverters	2 units	Total Power	200 kWac
				Pnom ratio	1.28
Sub-array "Parking Extension -W" : Inverter		Model	SUN2000-100KTL-M1-400Vac		
Custom parameters definition		Manufacturer	Huawei Technologies		
Characteristics		Operating Voltage	200-1000 V	Unit Nom. Power	100 kWac
				Max. power (→30° C)	110 kWac
Inverter pack		No. of inverters	2 units	Total Power	200 kWac
				Pnom ratio	1.28

Project created by Shams Solar Pakistan

Grid-Connected System: Simulation parameters

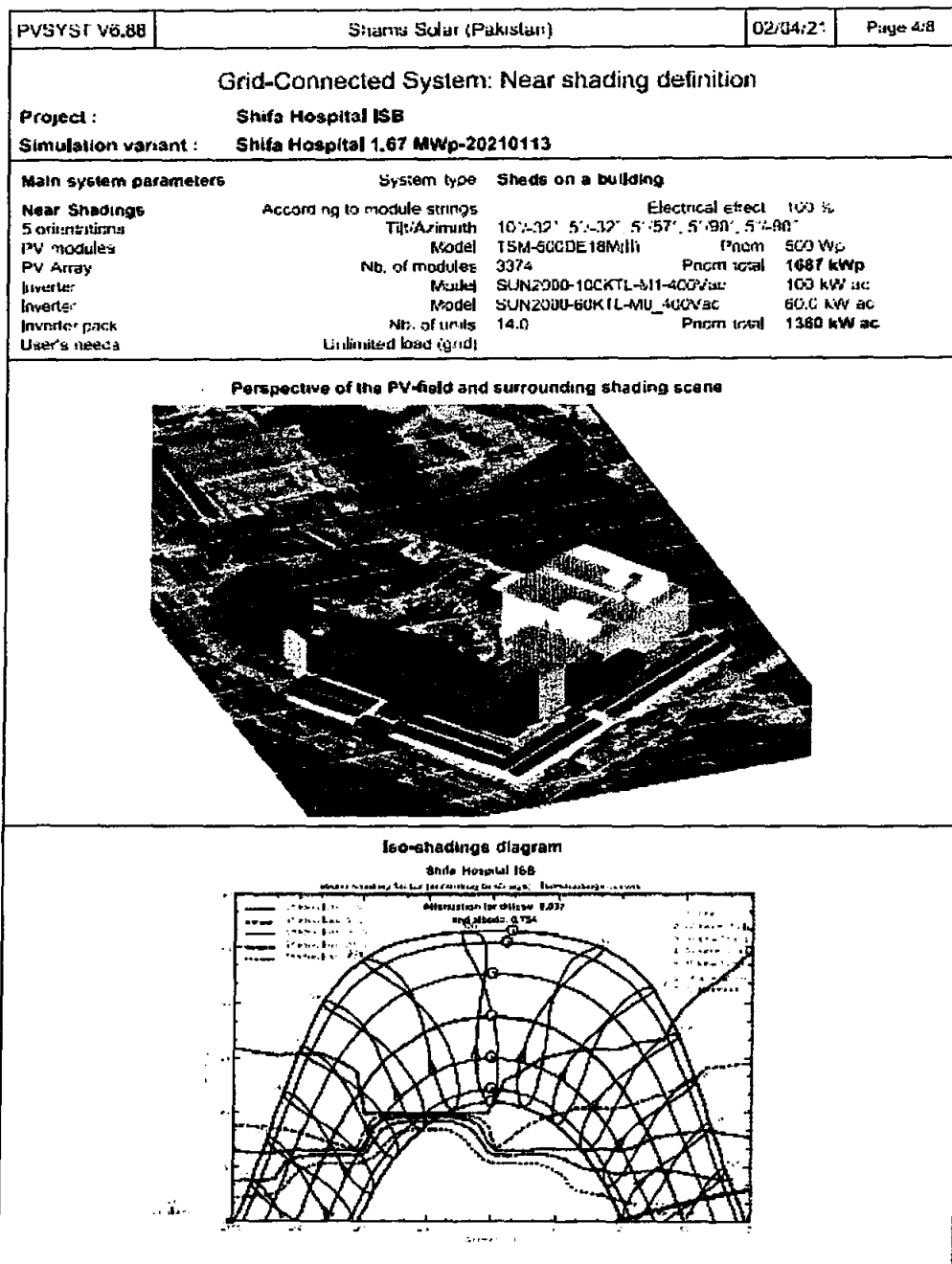
Total	No. of inverters	14	Total Power	1360 kWac
PV Array loss factors				
Array Soiling Losses			Loss Fraction	3.0 %
Thermal Loss factor	Lic (const)	29.0 W/m ² K	U _v (wind)	0.0 W/m ² K / m/s
Wiring Ohmic Loss	Array#1	33 mOhm	Loss Fraction	2.0 % at STC
	Array#2	24 mOhm	Loss Fraction	1.5 % at STC
	Array#3	25 mOhm	Loss Fraction	1.5 % at STC
	Array#4	261 mOhm	Loss Fraction	1.5 % at STC
	Array#5	261 mOhm	Loss Fraction	1.5 % at STC
	Array#6	39 mOhm	Loss Fraction	1.5 % at STC
	Array#7	39 mOhm	Loss Fraction	1.5 % at STC
	Global		Loss Fraction	1.0 % at STC
Series Diode Loss	Voltage Drop	0.7 V	Loss Fraction	0.1 % at STC
LID - Light Induced Degradation			Loss Fraction	2.0 %
Module Quality Loss			Loss Fraction	-0.8 %
Module Mismatch Losses			Loss Fraction	1.0 % at MPP
Strings Mismatch loss			Loss Fraction	0.10 %

Incidence effect (IAM) (user defined profile):

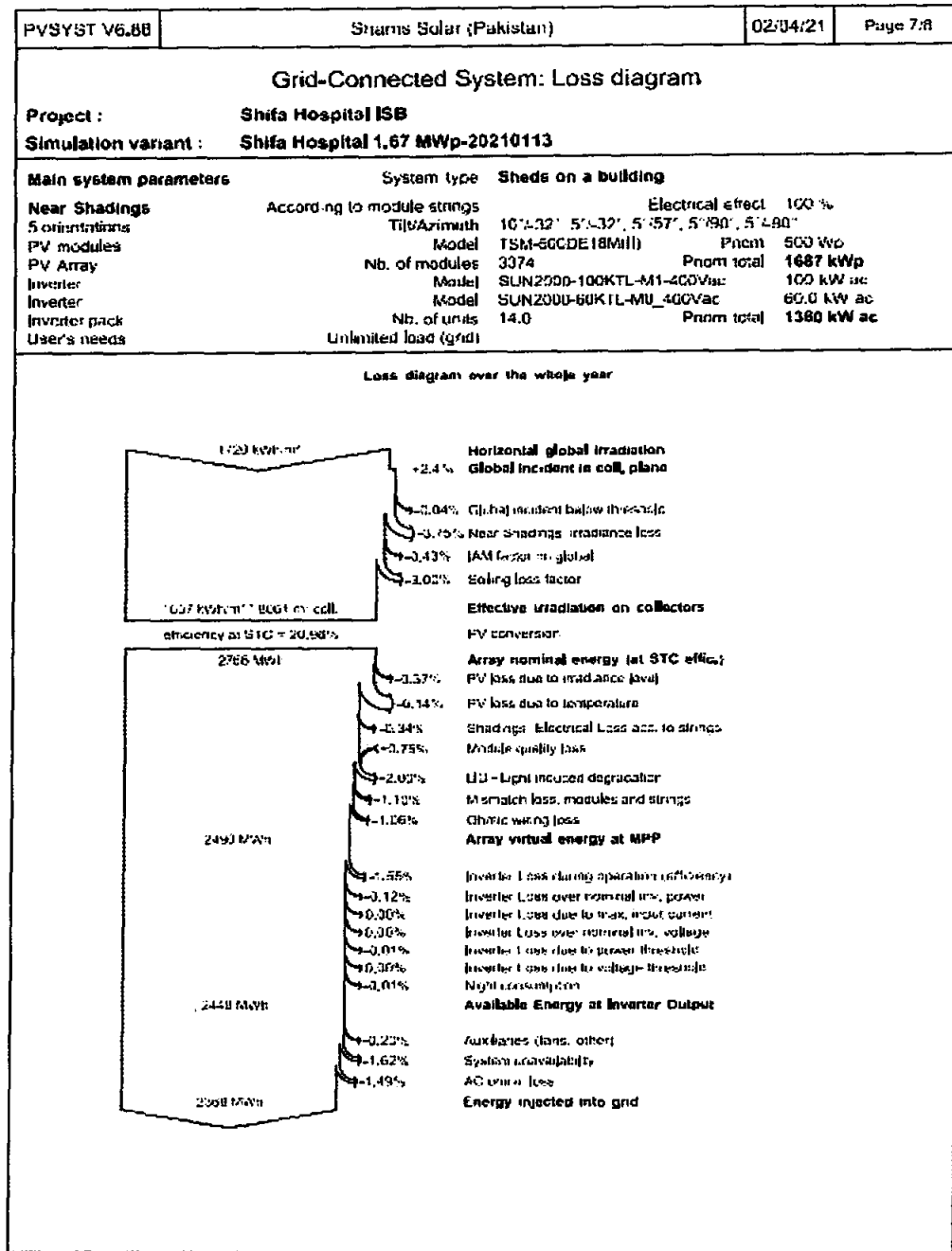
0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	0.999	0.992	0.979	0.955	0.910	0.000

System loss factors	Wires: 3x1000.0 mm ²	155 m	Loss Fraction	3.0 % at STC
Unavailability of the system	7.1 days, 3 periods		Time fraction	2.0 %
Auxiliaries loss	Proportional to Power	2.0 W/kW	... from Power thresh.	0.0 kW

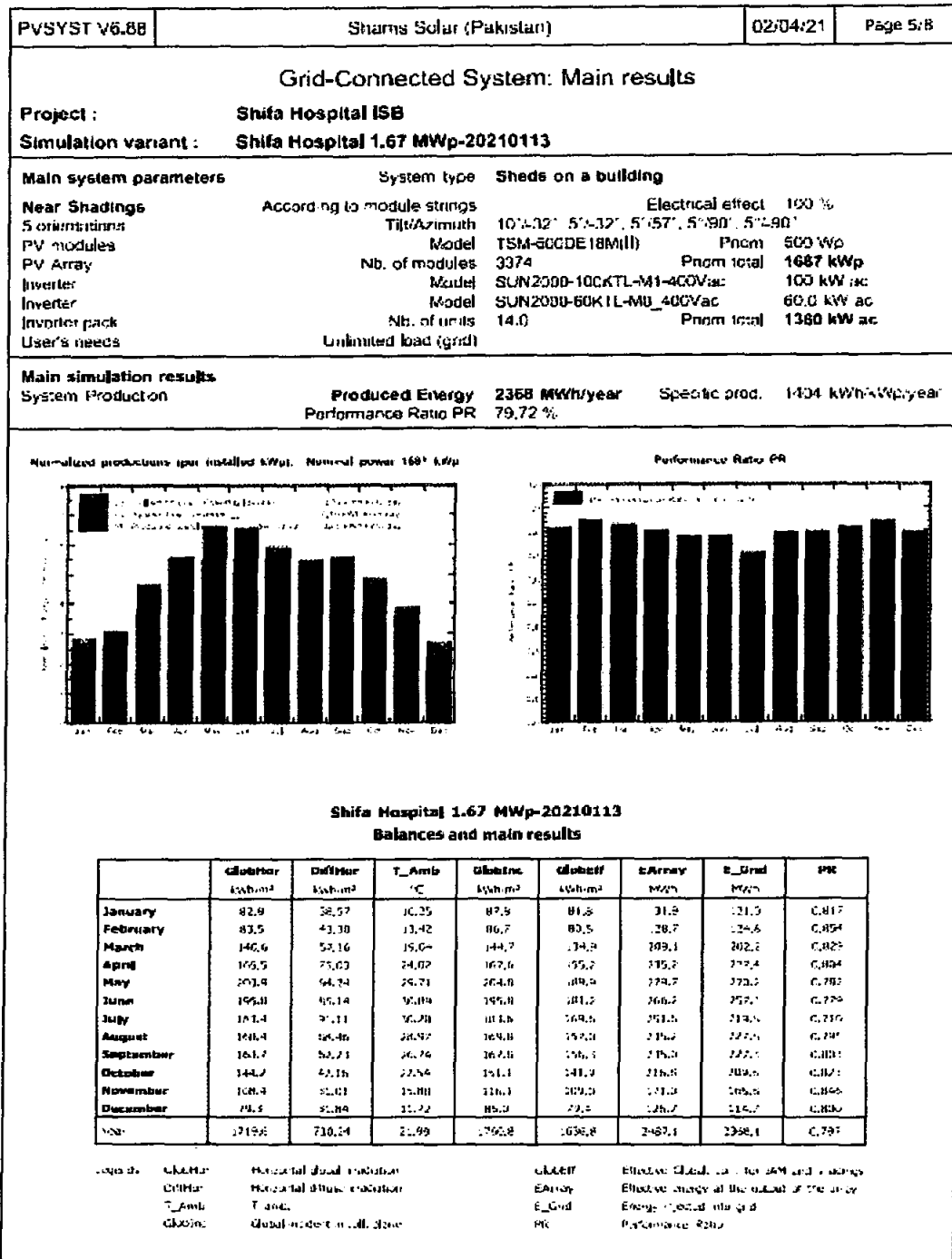
Near Shading Definition



Losses



Simulation Results



Financial Analysis

Cost/watt: USD 0.72

Total Project Cost for 1.67 MWp (DC) Solar PV System: USD 1,202,400

Equity: 100%

Debt: 0%

Safety and Emergency Plans

- Only qualified and authorized electricians will be allowed to undertake servicing or maintenance tasks.
- The authorized personnel will wear appropriate equipment, including a safety harness to restrain from falling off the roof, sturdy shoes that will have thick rubber soles to provide electrical insulation and good grip and appropriate clothing for personal protection, including a hat, sunglasses, gloves and long pants and sleeves
- Lock out and tag out procedures will be used before commencement of maintenance tasks.
- On-going operation and maintenance concerns for solar power systems will be addressed properly. These systems are exposed to outdoor weather conditions that enhance the aging process, and the infrastructure needs to be in place for the on-going maintenance of these systems to assure their safe operation.
- Properly grounded or double insulated power tools will be used for maintenance tasks. Tools will be maintained in good condition.
- Working on electrical equipment and circuits will be carried out in de energized state.
- Proper pathways will be available for operation, maintenance and firefighting.
- Fire protection and suppression will be placed at site

Training and Capacity Development

Trained and qualified personnel will be available at site 24/7 with proper safety and firefighting training. Training program will focus on but not limited to Solar Resource Assessment, Site Survey, Technology, Engineering Design, Regulation, Policy, Metering & Billing, and Project Management of Rooftop Solar System. The following components will include in training and development program.

- a. Collection of Resource Data
- b. Variability and uncertainty of resource data
- c. Site evaluation
- d. Crystalline and Thin film technology comparison
- e. Rooftop solar system components
- f. Module mounting structure selection
- g. Inverter selection
- h. Design of PV Array
- i. Shadow Analysis
- j. DC cable sizing
- k. DC cable layout
- l. Protection and Metering
- m. Installation and testing standards for solar PV plants
- n. Solar Module testing standards
- o. Economy of Roof top Solar System
- p. Detailed Project Report
- q. Operation and maintenance of rooftop solar system
- r. Safety and firefighting training

Environmental Aspects

Every energy generation and transmission method affect the environment. Conventional generating options can damage air, climate, water, land and wildlife, landscape as well as raise the levels of harmful radiation. PV technology is substantially safer offering a solution to many environmental and social problems associated with fossil and nuclear fuels. Solar PV energy technology provides obvious environmental advantages in comparison to the conventional energy sources thus contributing to the sustainable development of human activities. Not counting the depletion of the exhausted natural resources, their main advantage is related to the reduced CO₂ emissions and normally absence of any air emissions or waste products during their operation.

The use of solar power has additional positive implications such as:

- Reduction of the emissions of the greenhouse gases (mainly CO₂, NO_x) and prevention of toxic gas emissions (SO₂, particulates)
- Reduction of the required transmission lines of the electricity grids

Weather Conditions in Islamabad

The climate of Islamabad is a humid subtropical climate with four seasons: a pleasant Spring (March–April), a hot Summer (May–August), a warm dry Autumn (September–October), and a cold Winter (November–February). For the purposes of this report, the geographical coordinates of Islamabad are 33.7205° latitude, 73.0405° longitude. The city is located at the northern edge of the Potwar (Pothohar) Plateau at an elevation of 540 m (1,770 ft), south of a range of Himalayan foothills known as the Margalla Hills.

For solar data collection, nine ground-based solar measurement stations have already been installed at following locations. The geographical locations of the sites are distributed all over Pakistan covering different solar and climatic regimes, with several universities:

1. QA Solar Park, Bahawalpur
2. National University of Science and Technology (NUST), Islamabad
3. Kala Shah Kaku (KSK) Campus of UET Lahore, KSK
4. MNS Campus of UET Lahore, Multan
5. University of Engineering and Technology (UET), Peshawar
6. NED University, Karachi
7. Mehran University, Jamshoro
8. Balochistan University of Information Technology (BUITEMS), Quetta
9. Balochistan University of Engineering and Technology (BUET), Khuzdar.

Following Figure-1 shows the Global Horizontal Irradiation details of Pakistan, recorded and published by World Bank

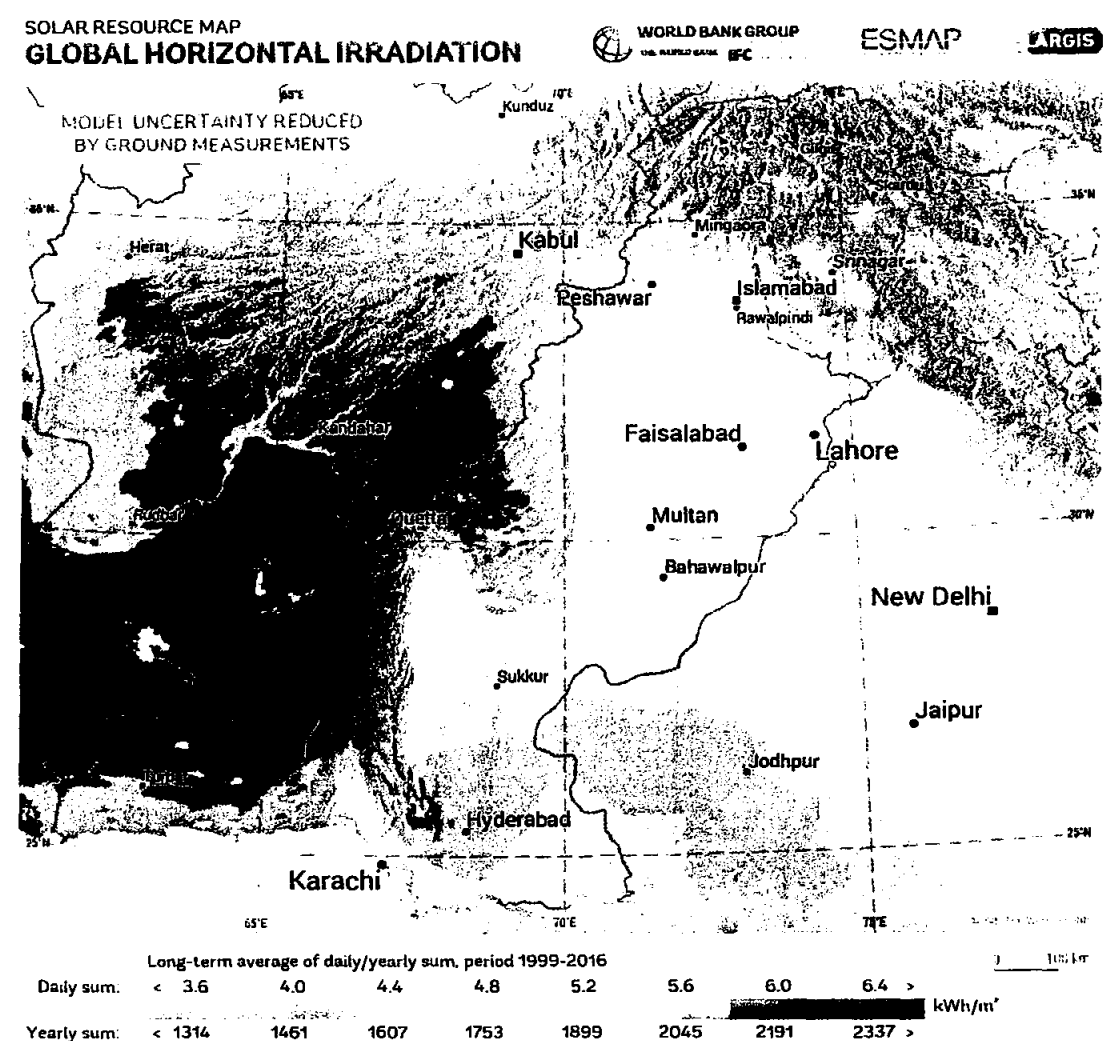


Figure-1 (Global Horizontal Irradiation, Pakistan).

From below detailed recorded graphs, January is the coldest month in Islamabad, with an average high-temperature of 17.6°C and an average low-temperature of 7.6°C. June is the warmest month, with an average high temperature of 39.1°C and an average low-temperature of 27.3°C.

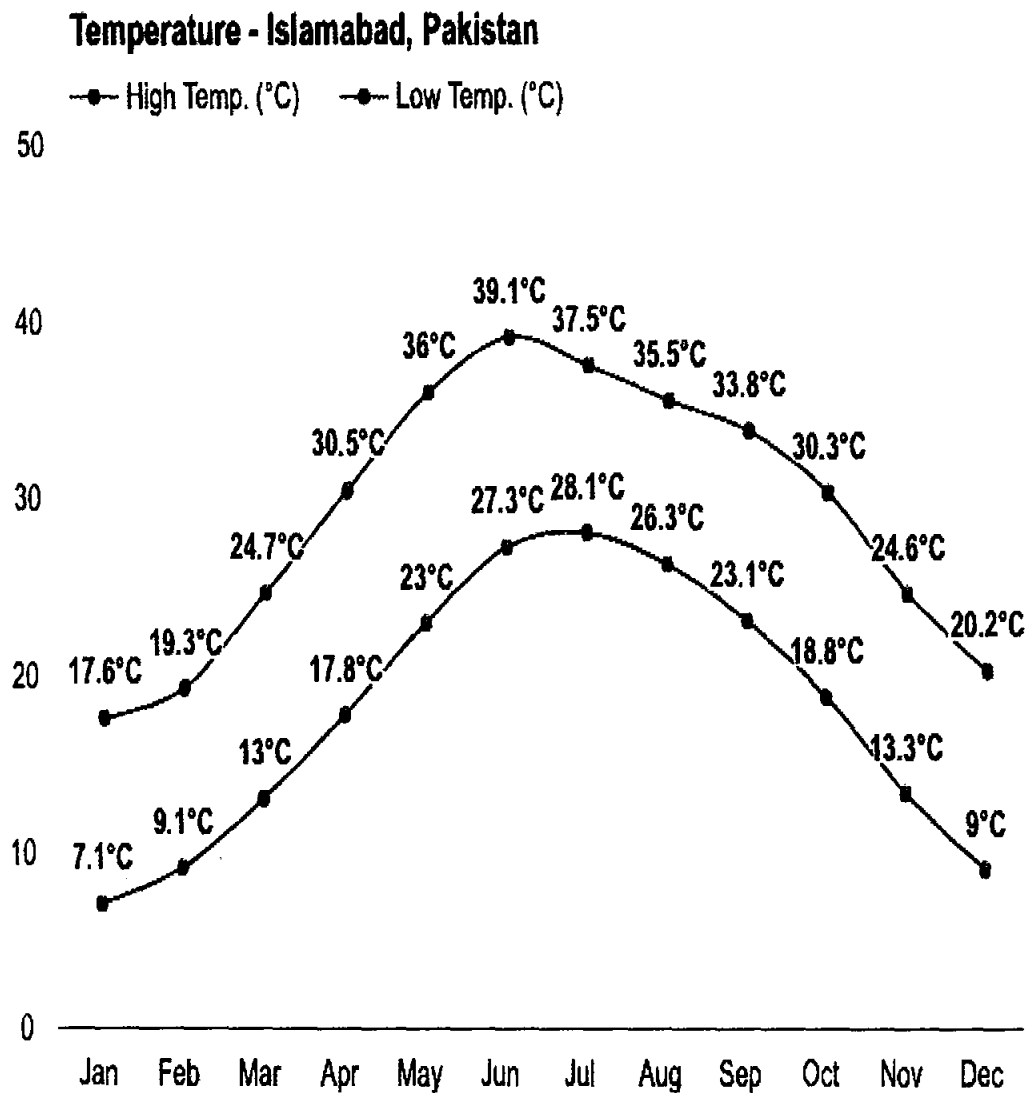


Figure-2 (Average Temperature of Islamabad, Pakistan).

Below detailed Figure-3 shows the annual day light and sunshine recorded values of each month, shows that the least sunshine in Islamabad, Pakistan, is January, with 6.7 hours. With an average of 9.3 hours of sunshine, May & June have the most sunshine of the year with 11.9 hours. With an average of 12.1 hours of daylight, June has the longest days of the year in Islamabad.

Daylight hours / Sunshine hours - Islamabad, Pakistan

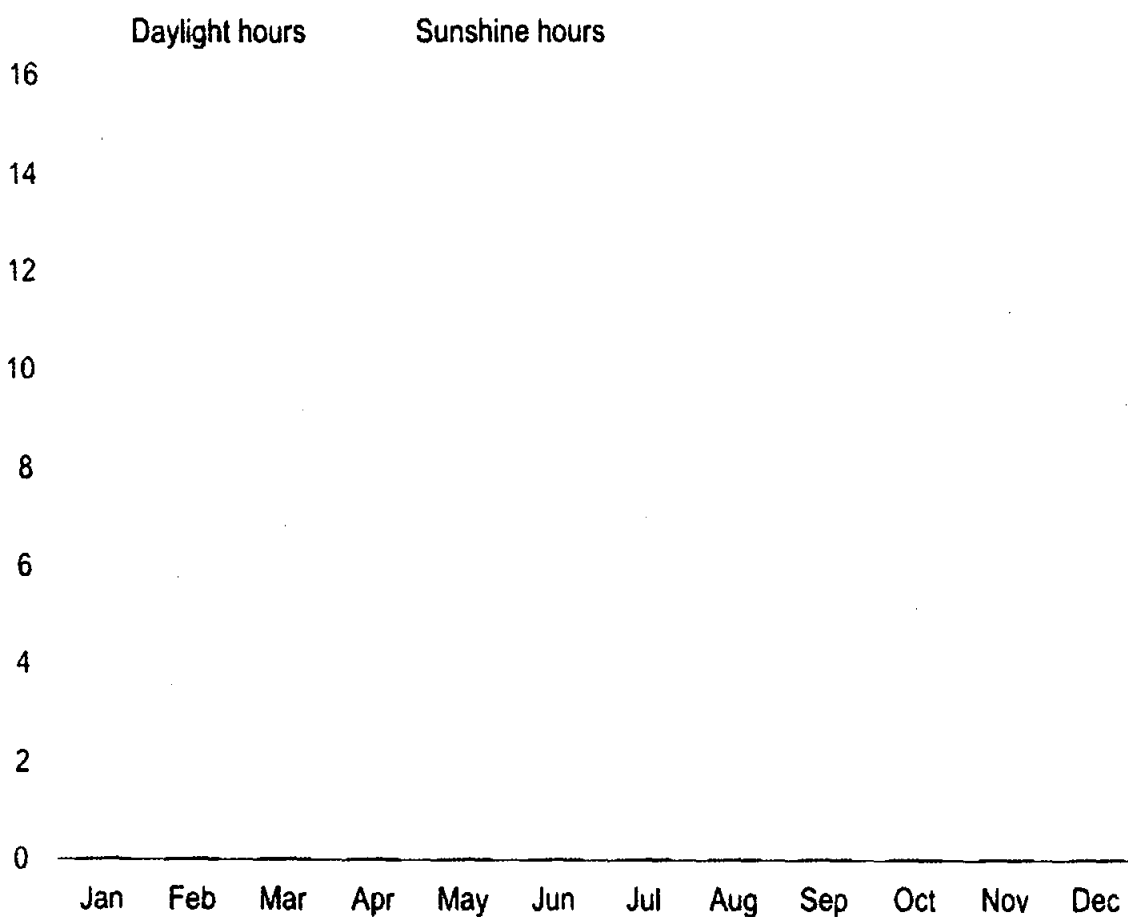


Figure-3 (Average Daylight/Sunshine Statistics of Islamabad, Pakistan).

Figure-4 presents the annual average rainfall recorded values of each month, shows that the least rainfall in Islamabad, Pakistan, is December, with 2.2 mm. With an average of 11.2 mm of rainfall, August & September have the most sunshine of the year up to 20.2 mm.

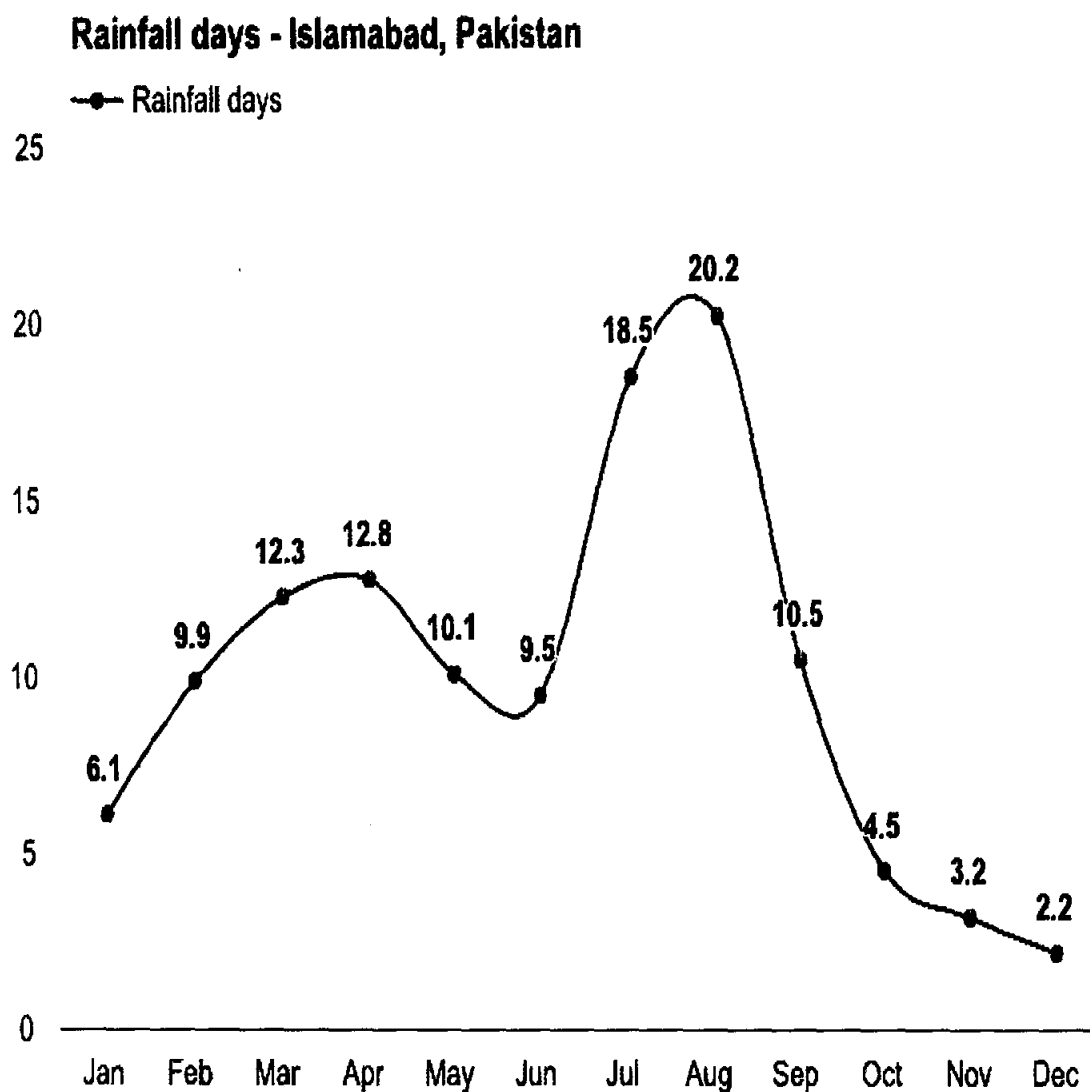


Figure-4 (Average Rainfall Statistics of Islamabad, Pakistan).

The month with the highest relative humidity is August (53%). Months with the lowest relative humidity are May, June and December (26%). Figure-5 illustrates the details:

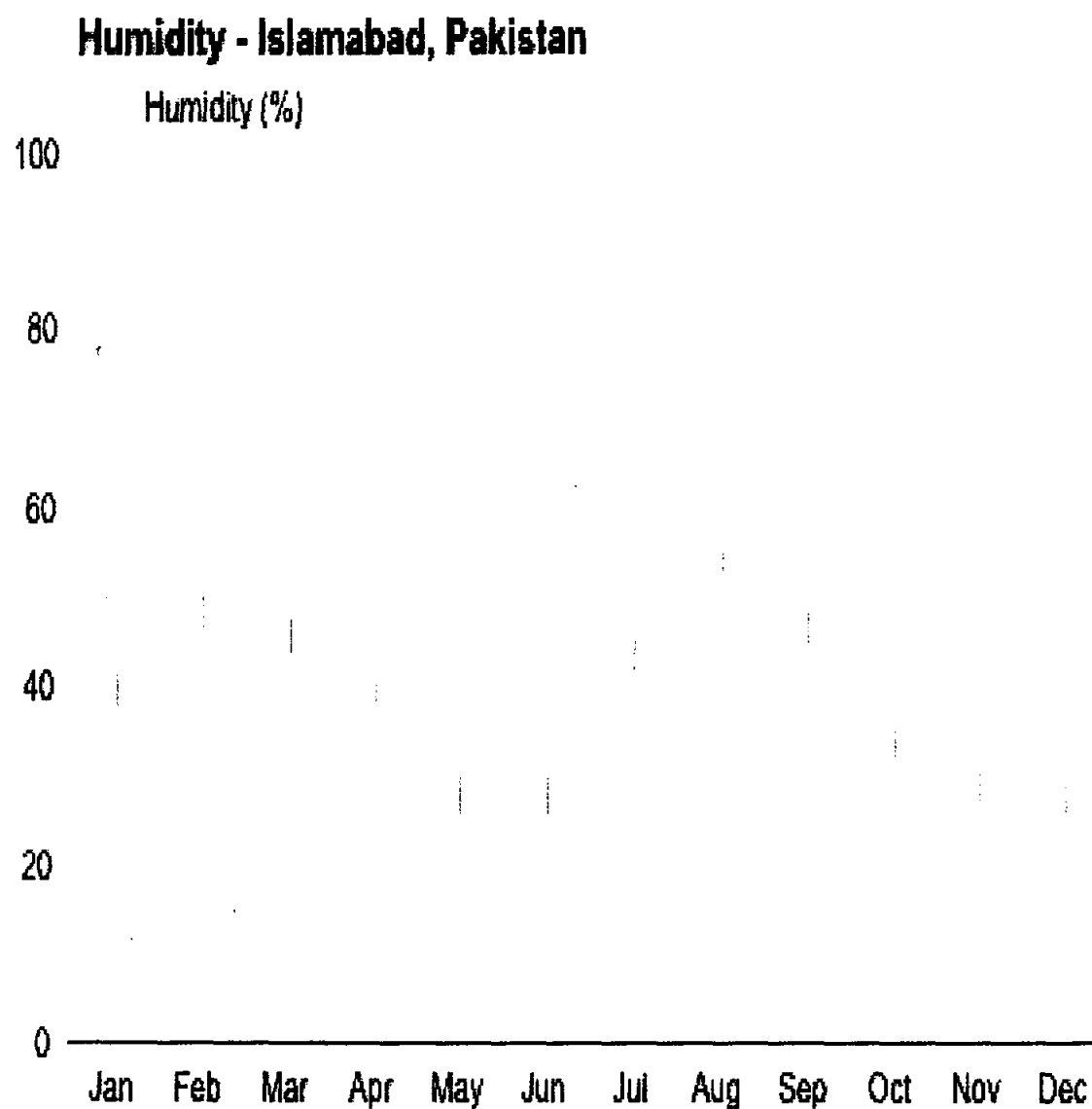


Figure-5 (Average Humidity Statistics of Islamabad, Pakistan).

The below summarized, Figure-6 represents the day per month during which the wind reaches a certain speed in Islamabad. The monsoon creates steady strong winds from December to April, and calm winds from June to October. Graph shows that wind speed varies in between 1.6 to 8 m/s speed:

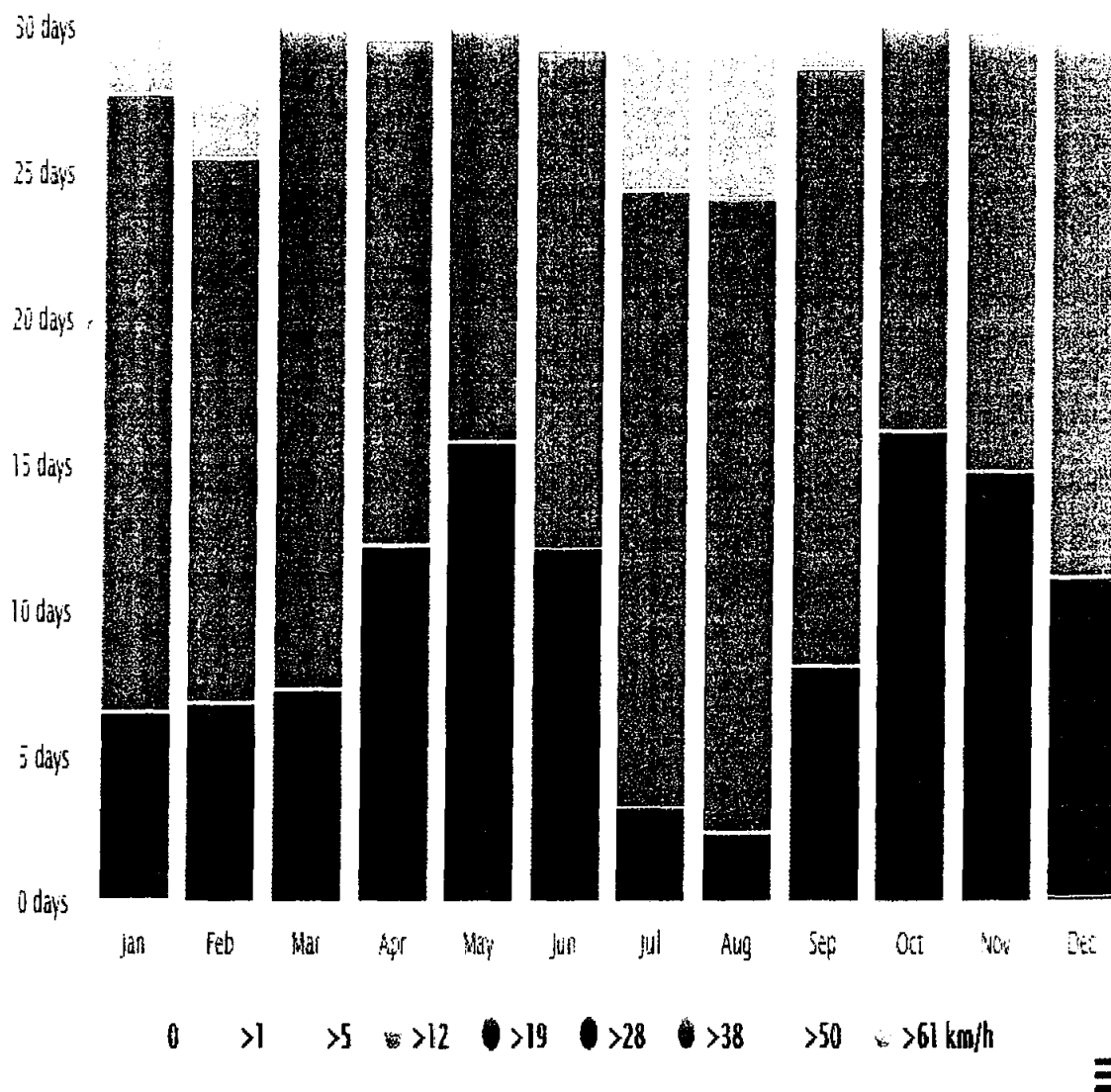


Figure-6 (Average Wind Speed Statistics of Islamabad, Pakistan).

Socio-Economic Aspects

In regard to the socio-economic viewpoint, the benefits of exploitation of solar PV system comprise of:

- Increase of the regional/national energy independency
- Provision of significant work opportunities
- Diversification and security of energy supply
- Support of the deregulation of energy markets

Ref.: SPPL/GL-A/0005

The Registrar,
National Electric Power Regulatory Authority (NEPRA).

Subject: Submission of Requisite Information / Documents.

Ref.:
Your Office Letter No.: NEPRA / R / LAG-30 / 21107 Dt.: 26-04-2021.

With reference to Shams Power's application for 1.67 MWp Generation License and above-mentioned office letter, had requested some additional information / documentation for further processing of the said GL application.

Shams Power Private Limited has compiled responses to the queries raised by the Authority (NEPRA) as follows:

1. **Point # 1:**
Please see Certified True copies of Certification of Incorporation (Col) in **Annexure-1**.
2. **Point # 2 & 3:**
Pursuant to Regulation 3(5)(d) of The Regulations, and as an evidence of availability of adequate financial resources, please find enclosed, as an **Annexure-2**, LOI from Shams Power's sponsors to equity finance the project on 100% equity basis.
3. **Point # 4:**
Please see Last Year's Financial Audited Report of firm in **Annexure-3**.
4. **Point # 5:**
Since the generated power is for the use of Shifa International Hospital, Islamabad only and added protection will be installed to prevent back feeding of any power into national grid Regulation 3(6)(A)(a)(6) of the Regulations does not remain Applicable. Consumer (Shifa International Hospital, Islamabad), details are added as **Annexure-4** to this letter.
5. **Point # 6:**
Since Regulation 3(6)(A)(a) of the Regulation, titled 'NEW GENERATION FACILITIES (THERMAL)' is specifically for Thermal generation facilities. As there is no emission of any harmful Gas in Generation of Electricity from Sun's Radiation and Solar Power Plants are a source of clean energy, it can be safely assumed that the plant will not have any negative impact on the environment. ESSA (Environmental and Social Soundness Assessment) as required pursuant to 3(6)(A)(a)(10) is specifically needed for thermal plants and is as such not applicable here. Nevertheless, ESSA conducted for this project is attached as **Annexure-5**.
6. **Point # 7:**
The generation facility will not be used to export power to the national grid. Since, all the energy will be used in house and export to NTDC or DISCO is not involved, system stability studies with grid and load flow analysis are not required/applicable under this arrangement.

7. **Point # 8:**

Control, metering, instrumentation and protection:

Reverse Feed in Protection:

In PV Plants with 100 % self-consumption all the generated power has to be consumed by the connected site/load. In case the load is less and more PV Power is being generated, the excess power will go to the grid. In order to avoid feed-in to the grid a special control system is needed to be installed.

In case of Shifa International Hospital, Islamabad PV Plant, the feedback control loop to limit the active power feed-in to grid is implemented by using Huawei's smart loggers 'Smart logger 3000'. They will actively sense the electrical parameters at interconnection points and curtail inverter's output to restrict feed-in to the grid.

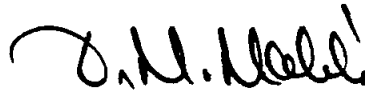
Metering and Protection:

There is one interconnection point and distance of point to the PV plant is approximately 90 - 120 meters. The metering of PV plants will be performed at the main LT load busbar. Sensitivity Class for meters will be at least 0.5 with bidirectional 4 quadrant calculations algorithm. Metering parameters, including total import and export units TOD Calculations, MDI, active and reactive power calculations etc. can be extracted over the period, Solar power plant is designed to have the following protections for the line and load side;

- Over and under voltage/frequency protections
- Phase Failure, Unbalance and Phase reversal protection
- Short Circuit protections
- Earth Fault detection
- Over current protection
- Surge Protection

SPPL has designed the PV plant keeping in mind the international best practices and PV standards. Since high emphasis is given on quality of equipment, protection of system and compatibility with local grid, SPPL is confident that, if allowed by the Authority (NEPRA), the said PV plant will meet and/or exceed its estimated annual yield.

SPPL hopes that the compiled information and the responses to queries are acceptable to the Authority. For any further information/documentation SPPL is at NEPRA's disposal and will gladly co-operate with the Authority.



Omar M. Malik
(Chief Executive Officer)



ESSA

(Environmental and Social Soundness Assessment)

Executive Summary:

Shams Power Private Limited (SPPL) was incorporated on January 15, 2015 under Section-32 of the companies' ordinance, 1984, with corporate universal identification No. 0091515. The business office of the company is at 2nd Floor, AL-Maalik building, 19-Davis Road Lahore. Shifa International Hospital Islamabad is a 550-bed quaternary care healthcare facility, offering quality services to local as well as international patient communities for over 25 years. In 1987, the Hospital was incorporated as a Private Limited Company and then later converted into a Public Limited Company as the only hospital listed on Pakistan Stock Exchange. Shifa was officially opened in 1993, with 8 OPD Clinics & 36 beds.

Shams Power Private Limited (SPPL) intends to install 1.67 MWp Solar photovoltaic (PV) power plant at rooftop of Shifa International Hospital, Islamabad.

The 1.67 MWp Solar Photovoltaic power plant will be installed at roof top and car parking of Shifa International Hospital, Islamabad and will be of grid connected type. Trina solar panels will be used while inverters will be from Huawei. Since conversion of solar radiation energy to electricity does not emit any harmful gas and there aren't any environmentally hazardous activities associated with installation of Solar Power Plants, PV Plants are considered clean source of energy worldwide.

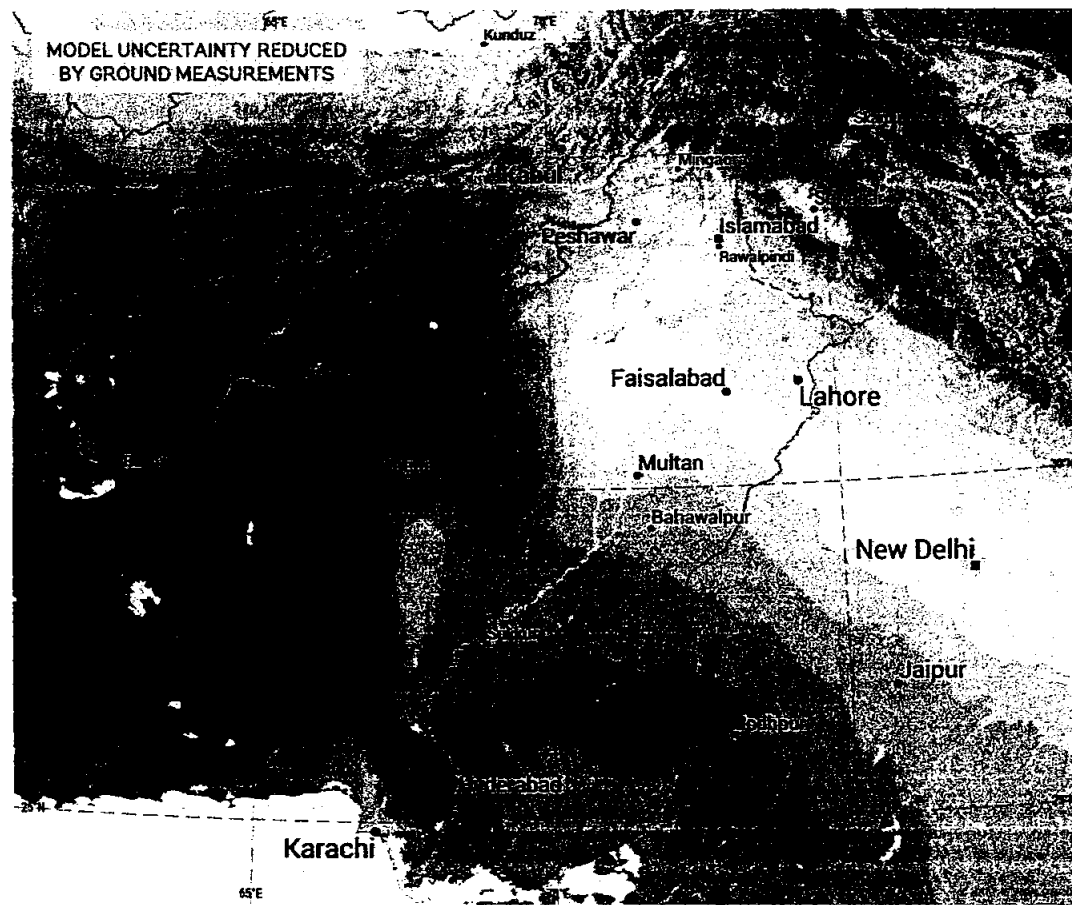
We have conducted Environmental and Social Soundness Assessment (ESSA) for the said plant and this report documents the findings of the assessment.

Environmental Conditions

Solar energy has excellent potential in areas of Pakistan that receive high levels of solar radiation throughout the year. Every day, for example, the country receives an average of about 19 Mega Joules per square meter of solar energy.

Pakistan being in the Sun Belt is ideally located to take advantage of solar energy technologies. This energy source is widely distributed and abundantly available in the country. The mean global irradiation falling on horizontal surface is about 200-250 watt per sq.m in a day. This amounts to about 2500-3000 sun shine hours and 1.9 - 2.3 MWh per sq.met in a year. It has an average daily global insolation of 19 to 20 MJ/sq.met per day with annual mean sunshine duration of 8 to 8.5 hours (6-7hrs in cold and 10-12 hrs in hot season) and these values are among the highest in the world. For daily global radiation up to 23MJ/m², 24 (80%) consecutive days are available in this area for solar energy. Such conditions are ideal for solar thermal applications.

Islamabad is also among cities that have good solar radiation as can be seen in the diagram below, prepared by World Bank Group:



Long-term average of daily/yearly sum, period 1999-2016

0 100 km

Daily sum:	< 3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	>
Yearly sum:	< 1314	1461	1607	1753	1899	2045	2191	2337	>

kWh/m²

This map is published by the World Bank Group, funded by ESMAP, and prepared by Solargis. For more information and terms of use, please visit <http://globalsolaratlas.info>

Climate

Climate of Islamabad is Semi-Arid, with five seasons:

- foggy winter (Nov - Feb).
- pleasant spring (Feb - April).
- summer (April - June) with dust, rain storms and heat wave periods.
- rainy monsoon (July - September) and dry autumn (September - November)

According to Köppen and Geiger, this climate data is presented below:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temperature °C (°F)	9.2 °C (48.5) °F	11.5 °C (52.7) °F										10.9 °C (51.7) °F
Min. Temperature °C (°F)	3.5 °C (38.4) °F	5.7 °C (42.2) °F	8.8 °C (48.0) °F	12.2 °C (54.0) °F						14.9 °C (58.8) °F	9.5 °C (49.2) °F	5.1 °C (41.2) °F
Max. Temperature °C (°F)												
Precipitation / Rainfall mm (in)	70 (2.8)				36 (1.4)	65 (2.6)			73 (2.9)	31 (1.2)	29 (1.1)	39 (1.5)
Humidity (%)	65%	65%	59%	49%	38%	43%	69%	77%	67%	53%	58%	61%
Rainy days (d)	5				5					3	2	3
avg. Sunhours (hours)												

Figure 1: Islamabad Weather Averages

The highest temperature ever recorded was 30 °C (86 °F) (1985) and lowest temperature is -2.2 °C (28.0 °F).

Seismic Intensity:

According to Regional Seismic Monitoring Centre, Islamabad, the city falls under Moderate Hazard Category.

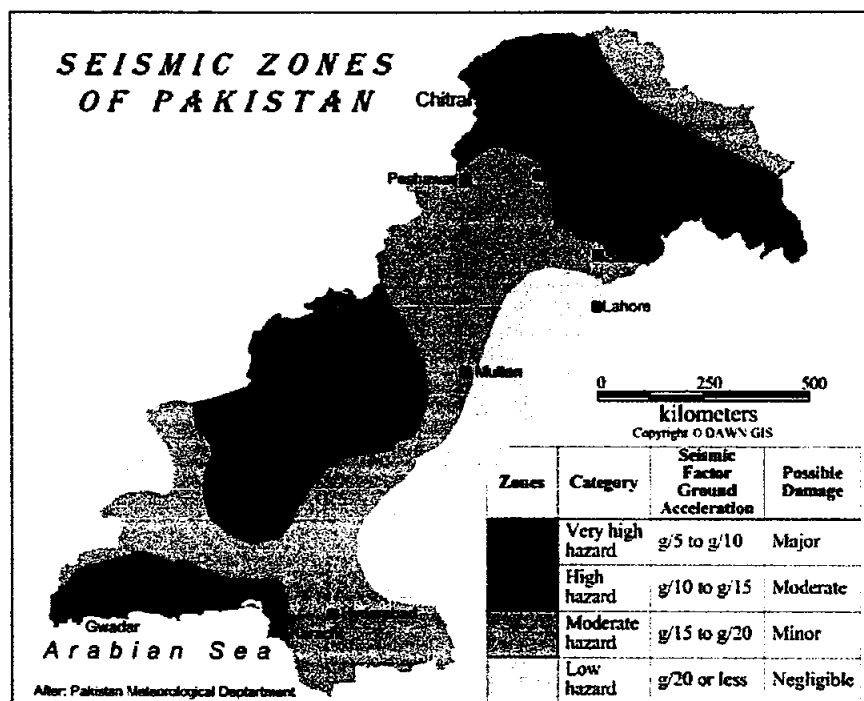


Figure 2: Pakistan Seismic Zones

ENVIROMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

This section discusses potential impact of the 1.67 MWp solar power plant on different environmental parameters throughout the project's life.

Impact on different factors of environment and society are identified using professional judgment, published literature on similar projects, environmental guidelines and checklists. Following are the major factors affected by Solar Power Plant

- Occupational health and safety/ Public Health (of contractors, workers and nearby community including safety at work, Fire, explosives, diseases etc.
- Ground/surface water
- Energy
- Natural Resources
- Land Usage
- Soil
- Traffic and Transportation
- Noise vibration
- Air quality (ambient air quality and indoor air quality).
- Solid Waste Management (including domestic waste, construction waste)
- Impact on population
- Impact on utilities and infrastructure
- Socio-economic impact (people, their social, cultural values, and aspirations)

In the following paragraphs we have assessed each of these impacts and suggested possible mitigation actions that would be taken to avoid any adverse effect.

The proposed project may have impacts on the environment during construction & operation phases. During the construction phase, the impacts may be regarded as temporary or short-term; while long term impacts may be observed during the operation stage. Spatially the impacts have been assessed over the study area of 1 km radius of the project site.

Project Activities, Possible Impacts and Mitigation Actions

Activity	Affected Environmental Attribute	Possible Impacts	Mitigation
Land	Usage	No Impact since Roof top and Parking is used only	Not Required
	Socio economic	No Impact due to Rehabilitation & Resettlement issues is expected	Not Required
Site clearing and Levelling (cutting, stripping, excavation, earth movement, compaction)	Air	Air Emission from Construction machinery and transportation	Efficient use of Machines and Vehicles
	Water	For Plant construction minimum water is required hence no wastage	Not Required
	Noise	Noise Pollution will be generated during construction phase	Use of heavy machinery is very limited, hence generated noise is well within acceptable range
	Soil	No affect since installation is at site.	Not Required
	Ecology	No loss of vegetation/ habitat as the site is roof top and car parking	Not Required
Transport and Storage of Construction Material	Air	Air Pollution due to Transportation	This is temporary effect and cannot be avoided. We can minimise by efficient use of Transportation
	Public Utilities	Increased traffic on Public Road	This is temporary effect and can be minimised by limiting movement of heavy traffic in late night hours only
Civil Construction Activities	Air and Water	Since there will be significant civil activities (due to roof top and parking structure nature of installation), there will be some impact.	This is temporary effect and can be minimised by limiting the usage of water.
Mechanical and Electrical Activities	Air	Minor emission from machines and activities	Not Required
Human Resource used in Project Activities	Socio-Economic	Requirement of Skill Labour for project activities will increase employment opportunities in the area	Positive Impact- No Mitigation Required
Transportation and Disposal of Construction Debris	Pollution	Air pollution due to transportation Pollution caused by construction debris	Air pollution can be controlled by efficient usage of transport Pollution can be mitigated by categorising the debris

			in recyclable and non-recyclable wastage and recycle the as much as possible
Drilling and construction activities	Noise	Drilling will cause some noise; similarly different construction activities will generate noise	Since only small machines will be used for major part of the project, the generated noise will have no impact on the environment
Operations and Maintenance	Water	Washing of Panel consumes water	Water usage can be minimised using optimal cleaning strategy including dry cleaning procedures and further water usage can be optimised by using pressurised water

From the above assessment it is clear that the project has overall positive impacts by providing a competitive, cost-effective, pollution free reliable mode of Solar PV power. It will certainly meet the ever-increasing Demand of Power and bridge the Gap between Demand and Supply of Power.

The environmental impact during construction phase is localized and of short-term magnitude. However, as this project is installed at Roof Top of the mall, the changes in land use will be zero.

Conclusion

Impacts are manageable and can be managed cost effectively. Careful mitigation and monitoring, specific selection criteria and review/assessment procedures for project activities have been specified to ensure that minimal impacts take place. The detailed design would ensure inclusion of any such environmental impacts that could not be specified or identified at this stage are taken into account and mitigated where necessary. Those impacts can be reduced through the use of mitigation measures such as correction in work practices at the construction sites, or through the careful selection of access routes etc.

The proposed project will have positive social impacts like improvement in the economic activities in the surrounding areas due to generation of direct and indirect employment opportunities.

Most impacts are expected to occur during the construction phase and are considered to be of a temporary nature. No endangered or protected species of flora or fauna are affected at all.

From this perspective, the project is expected to have a negligible "environmental footprint".