Atlas Energy

January 28, 2020

The Registrar,

National Electric Power Regulatory Authority (NEPRA)
Nepra Tower, Ataturk Avenue (East) G-5/1,
Islamabad.

Subject: **Application of Atlas Energy Limited (AEnL) for grant of Generation License in respect of 995.60 kWp Solar Power Plant**

I, **Maqsood Ahmad**, being the duly authorized representative of Atlas Energy Limited by virtue of Board Resolution dated 04.02.2019, hereby apply to the National Electric Power Regulatory Authority for the grant of a Generation License to the Atlas Energy 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 (One Original & Three Copies) 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 HBL bankers cheque number 23305027 dated 27.01.2020 amounting Rupees 83,933 (Rupees Eighty-Three Thousand Nine Hundred and Thirty-Three Only), 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.

We request NEPRA to proceed/ approve our case at the earliest.

For & on behalf of

Atlas Energy limited

Maqsood Ahmad
Chief Executive Officer

Atlas Energy Limited
Registered Office: 26 / 27 km, Lahore-Sheikhupura Road, Sheikhupura.
Mailing Address: 64-XX, Khayaban-e-Iqbal, Phase-III, DHA, Lahore.
Ph: (92-56) 3406192-94, 3406202, (92-42) 37132644, 37132638 **Fax:** (92-42) 37332812

Atlas Energy

February 27, 2020

The Registrar,

National Electric Power Regulatory Authority (NEPRA)
Nepra Tower, Ataturk Avenue (East) G-5/1,
Islamabad.

Subject: **Applications of Atlas Energy Limited (AEnL) for grant of Generation Licenses**

Dear Sir,

Please refer to our meeting on February 26, 2020 on above subject.

Please note that Atlas Energy have reached an understanding with the owners of following five locations for the supply/ sale of solar power under private energy purchase agreements as per schedule mentioned against each.

App#	User	Area/ Roof	Size (kWp)	Time Lines
1	Atlas Honda Ltd.	Assembly Plant	858.80	Apr to Jun, 2020
2	Atlas Autos Ltd.	Delivery Control Center	608.00	Jul to Aug, 2020
3	Atlas Autos Ltd.	Engine Manufacturing Plant	501.60	Sept to Oct, 2020
4	Atlas Autos Ltd.	Spare parts Store	638.40	Nov to Dec, 2020
5	Atlas Autos Ltd.	Finish Good Store	995.60	Jan to Mar, 2021

Kindly issue us the respective generation license accordingly enabling us to add clean/ renewable energy as per the vision and rules of NEPRA.

For & on behalf of

Atlas Energy limited

Atlas Energy Limited

Maqsood Ahmad
Chief Executive Officer

Atlas Energy Limited
Registered Office: 26/27 km, Lahore - Sheikhupura Road, Sheikhupura.
Mailing Address: Building No. 64/XX, Khayaban-e-Iqbal, DHA Phase III, Lahore.
Ph.: (92-42) 37132637-38, **Fax:** (92-42) 37132634

Atlas Energy

Certified True Copy of resolutions of the Board of Directors passed by circulation on February 4, 2019

Resolved:

"That Mr. Maqsood Ahmed, Chief Executive Officer of the Company, be and is hereby authorised to file; (i) an application for grant of Generation License; (ii) any other clarification submission application petition or document in support thereof; (iii) to make any oral or written representations on behalf of the Company before the National Electric Power Regulatory Authority and any other body, organization, department judicial and quasi-judicial body in relation to the aforesaid filings and to do all other acts deeds, things and matters as may be deemed expedient in giving effect to the aforesaid resolution.

Further Resolved:

that Mr. Maqsood Ahmed, Chief Executive Officer of the Company may further delegate the aforesaid powers, in writing, to one or more persons, as deemed expedient from time to time."

Further Resolved:

"that these resolutions duly certified by one of the Directors of the Company or the Company Secretary be communicated to the concerned parties which shall constitute the Company's mandate to the concerned parties and shall remain in force until revoked/changed by notice in writing to the concerned parties."

Certified True Copy

Khalid Mahmood
Company Secretary

Atlas Energy Limited

Atlas Energy Limited
Registered Office: 26 / 27 km, Lahore-Sheikhupura Road, Sheikhupura.
Mailing Address: 64-XX, Khayaban-e-Iqbal, Phase-III, DHA, Lahore.
Ph: (92-56) 3406192-94, 3406202, (92-42) 37132644, 37132638 **Fax:** (92-42) 37332812

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SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

SECP

Company Registration Office * Securities and Exchange Commission of Pakistan

LAHORE

CERTIFICATE OF INCORPORATION ON CHANGE OF NAME

[Under section 13 of the Companies Ordinance, 2016 (VI of 2016)]

Corporate Universal Identification No. 0099710

I hereby certify that pursuant to the provisions of section 11 or section 12 of the Companies Ordinance, 2016 (VI of 2016), the name of

"ATLAS POWERGEN LIMITED"

has been changed to

"ATLAS ENERGY LIMITED"

and that the said company has been duly incorporated as a company limited by shares under the provisions of the said Ordinance.

This change is subject to the condition that for a period of three months from the date of issue of this certificate, the company shall continue to mention its former name along with its new name and incorporation number on the outside of its registered office and every office or place in which its business is carried on and in every document or notice referred to in clauses (a) and (d) of section 22.

Given under my hand at Lahore this 25th day of November, Two Thousand and Sixteen.

Fee Rs.5,000/-

SECP

(LIAQAT ALI DOLLA)
Additional Registrar

No.ARL/ 10391 Dated: 25/11/2016

A008945

SECP

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

COMPANY REGISTRATION OFFICE, LAHORE

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.0099710

I hereby certify that **ATLAS POWERGEN 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 **Eighteenth** day of **May,** Two **Thousand** and **Sixteen**.

Fee Rs.52,000/-

CERTIFIED TO BE TRUE COPY

(SHAUKAT HAMEED)
Joint Registrar

ADDITIONAL JOINT REGISTRAR OF COMPANIES
COMPANY REGISTRATION OFFICE
LAHORE.

No.ARL/24268 DATED: 18-05-2016

021767

SECP

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

LAHORE

[Under section 146(2) of the Companies Ordinance, 1984 (XLVII of 1984)]

Corporate Universal Identification No.0099710

CERTIFICATE FOR COMMENCEMENT OF BUSINESS

I hereby certify that the **"ATLAS POWERGEN LIMITED"** which was incorporated under the Companies Ordinance, 1984 (XLVII of 1984), on the 18th day of May, 2016 and which has filed a duly verified declaration in the prescribed form that the conditions of clauses (a) to (e) of sub-section (1) of section 146 of the said Ordinance have been complied with, is entitled to commence business.

Given under my hand at Lahore this 24th day of June, 2016 (Two Thousand and Sixteen).

Fee Rs.400/-

(LIAQAT ALI DOLLA)
Additional Registrar of Companies

CERTIFIED TO BE TRUE COPY
ADDITIONAL JOINT REGISTRAR OF COMPANIES
COMPANY REGISTRATION OFFICE
LAHORE.

No.ARL/3191 Dated: 29/6/16

3(5)(a)(ii) Certified Copies of Memorandum & Article of Association (Certified by SECP)

COMPANY LIMITED BY SHARES

Memorandum of Association

of

ATLAS ENERGY LIMITED

I. The name of the Company is ATLAS ENERGY LIMITED.

II. The Registered Office of the Company will be situated in the Province of Punjab.

III. The objects for which the Company is established are to do all or any of the following:

1. To design, insure, build, establish, own, operate, maintain, manage electric power generating plants for the generation, supply & transmission of electric power and in relation thereto, to establish, fix, carry out and maintain without limitation, any ancillary works, cables, wires, meter, lines, overhead lines, sub stations, switching stations, interconnect facilities, grid stations, transmission facilities, civil, electrical and mechanical works, subject to approval of concern authority (National Electric Power Regulatory Authority).

2. To carry on the business of power generation and in relation thereto, to generate, accumulate, transmit, distribute and sell electric power to the public sector, including the Water and Power Development Authority, National Transmission and Despatch Company, Government and Government bodies, and the private sector, subject to approval of concern authority (National Electric Power Regulatory Authority).

3. To manufacture, purchase, import or otherwise acquire, construct, own, process, operate and maintain buildings, workshops, warehouses and other storage facilities, apparatus, fixtures, fittings, plants, machinery, materials, and things as may be necessary, incidental to or convenient in connection with power generating plant for the generation of electric power and or in connection with supply, transmission and distribution of electric power.

4. To buy, sell, manufacture, repair, alter, improve, exchange or let out, import, export and deal in all works, plant, machinery, engines, tanks, cylinders, valves, regulators, testing equipment, tools, utensils, appliances, cookers, stoves, heaters, apparatus, products, materials, substances, raw materials, chemicals, natural gas (whether in vaporized form or liquefied), liquefied petroleum gas, fuel oil, coal, lubricants, articles and things and to manufacture, experiment with, render marketable and deal in all products, incidental to or obtained in the business carried on by the Company.

5. To purchase, take on lease or tenancy or in exchange, hire, take options over or otherwise acquire for any estate or interest whatsoever and to hold, develop, work, cultivate, deal with and turn to account concessions, grants, decrees, licenses, privileges, claims, options, leases, property, real or personal or rights or powers of any kind which may appear to be necessary or convenient for the business of the Company but not to act as a leasing company or property developer.

6. To sell, exchange, mortgage, let on royalty or tribute, grant licenses, easements, options and other rights over and in any manner deal with or dispose of the Company's property or any part thereof for such consideration as may be thought fit and in particular for stocks, shares or securities of any company but in any event not to act as an investment company or leasing company.

7. To establish laboratories and to employ and promote scientific research and invention, patronize such invention and enter into manufacture in collaboration with outside parties for transfer of technology from abroad and to promote transfer of technology from Pakistan abroad, and to carry on business in all other allied fields permissible by law.

8. To invest and deal with any surplus moneys of the Company not immediately for the time being required for any of the purposes of the Company in such investments as may be thought proper and to hold, sell or otherwise deal with such investments but in any event not to act as an investment company.

9. For the purposes of the business of the Company only, to advance money upon such terms as the Company may approve, and to guarantee the obligations and contracts of customers and others but not to act as a banking company.

10. To apply for, purchase or otherwise acquire and protect, prolong and renew whether in Pakistan or elsewhere any patents, patent rights, brevets d'invention, trade marks, design licenses, protections, concessions and the like conferring any exclusive or non-exclusive or limited right to use any secret or other information as to any invention, process or privilege which may seem capable of being used for any of the purposes of the Company or the acquisition of which may seem calculated directly or indirectly to benefit the Company and to use, exercise, develop, manufacture under grant, licenses, privileges in respect of, or otherwise turn to account the property, rights and information so acquired and to carry on any business in any way connected therewith.

11. To get insured against losses, damages, risks, accidents and liabilities of all kinds which may affect the company whether in respect of its contracts, agreements, advances or securities or in respect of servants or employees or directors of the company, or in respect of property belonging to or leased to or hired by the company, either by setting apart funds of the company or by effecting such insurance and in later case to pay the premium thereon.

12. To train personnel and workers, in Pakistan and/or abroad, to obtain technical proficiency in various specialties connected with the business of the Company.

13. To undertake and execute any project the undertaking whereof may seem desirable, and either gratuitously or otherwise.

14. To procure the Company to be registered or recognized in any foreign country or place.

15. To acquire and undertake all or any part of the business, property, goodwill and liabilities of any person or company carrying on any business which the Company is authorized to carry on or possessed of property suitable for the purposes of the Company.

16. To adopt such means of making known the business and/or services of the Company as may seem expedient and in particular by advertising in the press, or in the other media or by way of participation in exhibitions.

17. For the purposes of the Company, to purchase, manage, acquire by lease, mortgage, dispose of, sell, exchange, turn to account any part of the property and rights of the Company.

18. To employ or appoint any persons, experts, consultants, advisers, contractors (including O&M contractors), brokers in connection with the business of the Company.

19. To pay for any property or rights acquired by the Company, either in cash or fully paid shares or by the issue of securities, or partly in one mode and partly in another and generally on such terms as may be determined.

20. Only in connection with the business of the Company to open and operate any current, overdraft, loan, fixed or savings bank accounts for the Company, and draw, make, accept, discount, endorse, execute and issue promissory notes, bills of exchange, bills of lading and other negotiable or transferable instruments or securities and to advance money to the Company's executives, officers and employees/agents/customers and others having dealings with the company but in any event not to act as an investment, banking or finance company.

21. In connection with the business of the Company only, to give guarantees and indemnities for the payment of money or the performance of contracts or obligations by this Company but in any event not to act as an investment, banking or finance company.

22. To borrow and where required, to secure the payment of money in such manner as the Company shall think fit and in particular by the creation of mortgages and charges over the (present and future) property, assets and/or undertaking of the Company and/or by issue of debentures, participation term certificates, term finance certificates and other securities charged upon all or any of the Company's property both present and future, and to purchase, redeem and pay off any such securities.

23. To take, or otherwise acquire, and hold shares in any other company having objects altogether or in part similar to those of this Company or carrying on any business capable of being conducted so as directly or indirectly to benefit this Company but in any event not to act as an investment company.

24. To enter into partnership or into any agreement or agreements for sharing profits, union of interests, cooperation, joint venture, reciprocal concession and/or facilities with any person or company whether or not having objects similar to those of this Company but in any event not to act as managing agents.

25. So far as is permissible in law, to establish, maintain and/or contribute to any pension, superannuation, death benefits, funds or schemes for the benefit of, and to give, award or procure the giving or awarding, of donations, pensions, gratuities, allowances, annuities, emoluments or other benefits whatsoever to any persons who are or have at any time been in the employment or service of the Company or of any company which is its holding or which is a subsidiary of either the Company or any such holding company or of any company which is otherwise allied to or associated with the Company, or who are or have at any time been Directors or officers (or held comparable or equivalent offices) of the Company or of any or of any such other company, and also to the wives, widows, families and dependents of any such persons; to establish, subsidise or subscribe to any institutions, associations, clubs or funds which may be considered likely to benefit all or any such persons; to make payments for or towards the insurance of any such persons; to establish, support and maintain any form of profit-sharing, share purchase, share incentive, share option or employees' share scheme for any such persons eligible to participate in them or benefit from them (or to trustees on their behalf) for the purposes of or in connection with the operation and enjoyment of any such scheme.

26. To enter into any agreement or agreements with any government or other authority, supreme, municipal, local or otherwise, that may seem conducive to all or any of the objects of the Company and/or to obtain from such government or authority including the State Bank of Pakistan or National Electric Power Regulatory Authority (NEPRA) any rights, concessions or privileges, licenses which the Company may think desirable to obtain and to carry out, exercise and comply with any such arrangements, rights, privileges, concessions and licenses.

27. To pay all or any costs charges and expenses preliminary and incidental to the promotion, formation, establishment and registration of the Company and to pay any development costs incurred (whether before or after the incorporation of the Company) by the sponsors of the Company in connection with any project of the Company.

28. To pay brokerage or commission to any person or persons in consideration of his/their subscribing, or agreeing to subscribe, whether absolutely or conditionally, for any shares or debentures of the Company, or for procuring or agreeing to procure subscriptions whether absolute or conditional for the same which brokerage or commission may be paid either in cash or shares of the Company, credited as fully paid up.

29. To amalgamate, consolidate, or merge, either in whole or in part, with or into any other companies, associations, firms or persons carrying on any trade or business of a similar nature to that which this Company is authorized to carry on.

30. To resolve, settle disputes by negotiation, conciliation, mediation, arbitration, litigation or other means, judicial or extra judicial, and to enter in compromise agreement with creditors, members and any other persons in respect of a difference or dispute with them and to exercise the power to sue and be sued and to initial or oppose all actions, steps, proceedings or application which may seem calculated directly or indirectly to benefit or prejudice, as the case may be, the interest of the Company or of its members.

31. To do all or any of the things herein in any part of the world either as principals, agents, contractors or otherwise, and either alone or in conjunction with others but in any event not to act as managing agents.

32. To provide engineering, construction, consultancy and design services and radio and other communication systems and services, and any facilities, equipment and installations whether related to such services and systems or otherwise, subject to permission of concern authority.

33. To carry on any other business whether manufacturing or otherwise that may seem to the Company capable of being conveniently carried on in connection with the above objects or calculated directly or indirectly to enhance the value of or render profitable any of the Company's property or rights or which it may be advisable to undertake with a view to improving, developing, rendering or turning to account any property real or personal belonging to the Company or in which the Company may be interested and to do all or any of the above things either as principals, agents, contractors or otherwise, and either alone or in conjunction with others and either by or through agents, sub-contractors, trustees or otherwise, and to do all such things as are incidental or conducive to the attainment of the above objects but in any event not to act as managing agents.

34. To do all and everything necessary, suitable or proper or incidental or conducive to the accomplishment of any of the purposes or the attainment of any of the objects or the furtherance of any of the powers hereinbefore set forth, either alone or in association with other corporate bodies, firms or individuals or with any Government authority or public or quasi-public authority or any other authority, and to do every other act or thing incidental or appertinent to or arising out of or connected with the business or powers of the Company or part thereof, provided the same be lawful.

35. IT IS HEREBY UNDERTAKEN that the Company shall not engage in the banking business or Forex, illegal brokerage, business of a finance, investment, leasing or insurance company, or non-banking finance company or as a modaraba management company, or the business of land development or a managing agency or any unlawful business and that nothing in the objects clause shall be construed to entitle it to engage in such business directly or indirectly. The Company shall not launch multi-level marketing (MLM), Pyramid or Ponzi schemes.

36. Notwithstanding any thing stated in any object clause, the company shall obtain such other approval or license from the competent authority, as may be required under any law for the time being in force, to undertake a particulars business.

IV. The liability of the Members is limited.

V. The authorized capital of the Company is Rs. 500,000,000 (Rupees five hundred million) divided into 50,000,000 (Fifty million) shares of Rs. 10 (Pak Rupees Ten) each, with power of the Company, specifically, to increase the authorized share capital to include a further issue including of preference shares and generally, to increase or reduce the capital and to divide the shares in the capital for the time being into several classes in accordance with the provisions of the Companies Act, 2017 and any rules made there under, and to attach thereto respectively such preferential, deferred, qualified or special rights, privileges or conditions as may be determined by or in accordance with the Articles of Association of the Company for the time being, and to vary, modify or abrogate any such rights, privileges or conditions in such manner as may for the time being be provided by the Articles of Association of the Company in accordance with law.

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

Sr No.	Name and Surname in Full	Father's Name in Full	Nationality with any former Nationality	Occupation	CNIC Number	Residential address in full	No. of Shares	Signature
1.	Saquib Hussain Shirazi	Yusuf H. Shirazi	Pakistani	Business	42000-0509678-5	12 Khayaban-e-Bukhari, 5th Street, Phase 6, DHA, Karachi	1 (One)	
2.	Frahim Ali Khan	Ibrahim Ali Khan	Pakistani	Business Executive	42301-8765118-9	10-B/II, South Park Avenue, Phase II, DHA, Karachi	1 (One)	
3.	Maqsood Ahmed	Chaudhry Muhammad Sadiq	Pakistani	Business Executive	35202-2632390-1	House No. 397/B, EME, Thokar Niaz Baig, Lahore.	1 (One)	
	Total Number of shares taken						3 (Three)	

CERTIFIED TO BE TRUE COPY

ADDITIONAL JOINT REGISTRAR OF COMPANIES
COMPANY REGISTRATION OFFICE
LAHORE.

Date the 13th day of May 2016

Witnesses to the above signature

National Institutional Facilitation Technologies (Private) Limited
5th Floor, AWT Plaza,
I.I. Chundrigar Road,
Karachi
Pakistan

THE COMPANIES ORDINANCE, 1984

(COMPANY LIMITED BY SHARES)

ARTICLES OF ASSOCIATION

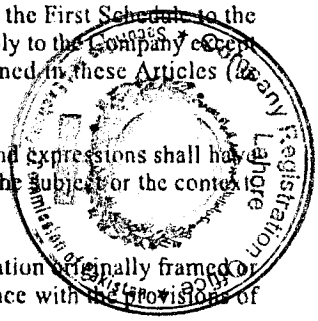
OF

ATLAS ENERGY LIMITED

PRELIMINARY

Table 'A' not to apply

1) The Regulations contained in Table A in the First Schedule to the Companies Ordinance, 1984 shall not apply to the Company except in so far as they are repeated or contained in these Articles (as modified and altered).



Definitions

2) In these Articles, the following words and expressions shall have meanings as under, unless excluded by the subject or the context, namely:

Articles means these Articles of Association originally framed or as altered from time to time in accordance with the provisions of the Ordinance and the Articles.

Board of Directors means collectively the Directors of the Company holding office of Directors for the time being and from time to time.

Chairman means the Chairman of the Board of Directors appointed from time to time pursuant to these Articles.

Chief Executive means the Chief Executive for the time being of the Company appointed from time to time pursuant to the Articles.

Commission means the Securities and Exchange Commission of Pakistan constituted under the Securities and Exchange Commission of Pakistan Act, 1997.

Company means **ATLAS ENERGY LIMITED**

Directors mean the Directors of the Company for the time being, including alternate Directors if any appointed by them.

Dividend includes a bonus.

General Meeting means an Annual General Meeting and/or an Extraordinary General Meeting.

Member means a member of the Company within the meaning of clause 21 of Section 2(1).

Memorandum means the Memorandum of Association of the Company as originally framed or as from time to time altered in accordance with the provisions of the Ordinance and the Articles.

Month means a calendar month according to the Gregorian Calendar.

Office means the Registered Office for the time being of the Company.

Ordinance means the Companies Ordinance, 1984 including all statutory modifications thereof for the time being in force and such other law as may from time to time be passed in substitution or amendment thereof.

Proxy means an instrument in writing whereby a Member authorizes another to vote for him at a meeting or meetings and unless the context otherwise requires, includes an attorney duly constituted under a power of attorney.

Register means the Register of Members to be kept pursuant to Section 147.

Section means a section of the Ordinance.

Special Resolution has the meaning assigned thereto by clause (36) of Section 2(1).

Seal means the common seal of the Company.

Secretary means the Secretary for the time being of the Company.

In writing and written include printing, typewriting, lithography, electronic transmission, including but not limited to facsimile, telex and electronic mail or any other mechanical or electronic process, as prescribed by section 3 of the Electronic Transactions Ordinance, 2000 or partly one and partly the other and other modes of representing or reproducing words in a visible form.

Unless the context otherwise requires, words signifying the singular number shall include the plural number and vice versa.

Unless the context otherwise requires, words signifying the masculine gender shall include the feminine gender.

Words importing persons shall include individuals, firms, companies, corporations, government state or agency or any association, trust or partnership (whether or not having a separately legal personality).

The heading and marginal notes are inserted for convenience only and shall not affect the interpretation or construction of these Articles.

PUBLIC COMPANY

Public Company 3) The Company is a public limited company and the Board of Directors shall have regard to the restrictions on the commencement of business imposed under section 146 of the Ordinance, so far as those restrictions are binding upon the Company.

BUSINESS

Business of the Company 4) Any branch or kind of business which the Company is either expressly or by implication authorised to undertake may be undertaken by the Directors at such time or times as they shall think fit, and further may be suffered by them to be in abeyance whether such branch or kind of business may have been actually commenced or not so long as the Directors may deem it expedient not to commence or proceed with such branch or kind of business.

MINIMUM SUBSCRIPTION

Minimum subscription 5) For the purposes of Section 68(8), the minimum subscription on which the Board may proceed to allotment shall be Rs. 1,000,000 (Rupees one million only).

SHARES

Power to issue shares of different classes 6) Subject to Section 90 and any rules in that regard made under the Ordinance, any share in the Company may be issued with such rights and restrictions as may from time to time be determined by the Company in General Meeting.

Redeemable shares and securities 7) Subject to Section 95(4)(a) and any rules in that regard made under the Ordinance, the Company may issue shares which are to be redeemed or any other redeemable security, on such terms and in such manner as may be provided in the said Section and rules.

No partly paid shares to be issued 8) The Company shall not issue partly paid shares. In the case of an issue of shares for cash, the amount payable on application shall be the full nominal amount of the share, except where shares are issued at a discount.

Issue of shares at discount 9) With the previous authority of the Company in General Meeting and the sanction of the Commission and upon otherwise complying with the provisions of Section 84, it shall be lawful for the Board to issue shares in the capital of the Company at a discount.

Issue of shares 10) The shares in the capital of the Company for the time being remaining unissued, including any new shares resulting from an increase in the authorized share capital, shall be under the control of the Board which may allot or otherwise dispose of the same to such persons, on such terms and conditions, with such rights and privileges annexed thereto as the resolution creating the same

shall direct, and if no such direction be given, as the Board shall determine either at par or at premium or subject to Article 8 above at a discount, with power to the Board to give any person the right to call for and be allotted shares of any class of the Company at par or at a premium or subject as aforesaid at a discount such option being exercisable at such times and in such manner and for such consideration, as the Directors think fit.

Allotment of shares 11) As regards any allotment of shares, the Board shall duly comply with the provisions of Sections 68 to 73 as may be applicable.

Shares may be issued for consideration other than cash 12) The Board may allot and issue shares in the capital of the Company as payment or part payment for any property / assets sold or transferred to the Company, or for services rendered to the Company in the ordinary course of its business, and shares so allotted shall be issued as fully paid up shares and if so issued, shall be deemed to be fully paid up shares.

Commission for placing shares. 13) 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 or debentures of the Company or procuring or agreeing to procure subscriptions (whether absolute or conditional) for any shares or debentures of the Company, but so that the amount or rate of commission shall not exceed such amount or rate as is authorized by the Board of Directors (or such other rate as may be prescribed by the Commission under the Ordinance) of the price at which the shares are issued or of the nominal value of the debenture in each case subscribed or to be subscribed. In case any commission is to be paid, the Company shall comply with the provisions of Section 82 of the Ordinance.

Brokerage 14) The Company may pay such brokerage as may be lawful in respect of any issue of shares or debentures.

Registration as shareholders 15) Not more than four persons shall be registered as joint shareholders except in the case of executors or trustees of a deceased member. Shares may be registered in the name of any limited company or other corporate body.

Joint shareholders 16) If any shares stand in the name of two or more persons, the person first named in the Register shall, as regards receipt of Dividend or service of notices and all or any other matters connected with the Company, except voting at the meeting and the transfer of shares, be deemed the sole holder.

Death of joint shareholders 17) In the case of the death of anyone or more of the persons named in the Register as the joint holders of any share, the survivor or survivors shall be the only person or persons recognized by the Company as having any title to or interest in such share.

CERTIFICATES

Members right to certificate 18) Every person whose name is entered as a Member in the Register

shall be entitled to receive after allotment or registration of transfer one certificate for all his shares or several certificates each for one or more of his shares upon payment of such charge, if any, as the Board may determine for every certificate after the first.

Issue of certificates

19) In accordance with the applicable laws, the certificates of title to shares and duplicates thereof, when necessary, shall be issued under the Seal of the Company and signed by one Director and countersigned by the Company Secretary or such officers of the Company as shall from time to time be authorized by the Board for the purpose. Every person whose name is entered as a member in the Register shall, without payment, be entitled to receive within ninety (90) days after allotment, or within forty-five (45) days of the application for registration of transfer, one (1) certificate for all the shares of each class registered in his name, or if the Board so approves to several certificates each for one (1) or more of such shares. However, in respect of each additional certificate, the Board shall be entitled to charge such fee as it may determine, from time to time. Every certificate of shares shall specify the number and denoting numbers of the shares in respect of which it is issued and the amount paid up thereon.The Board may, by resolution, determine either generally or in any particular case, that the signature of any such Director or officer of the Company may be affixed on share certificates by some mechanical or electronic means, or be printed thereon, in the mode and manner specified in such resolution.

Certificates in the case of joint holders

20) The Company shall not be bound to issue more than one certificate in respect of a share or shares held jointly by two or more persons and delivery of a certificate for a share to anyone of the joint holders shall be sufficient delivery to all.

Time for issue of certificates

21) Unless the conditions of issue of any shares, debentures or debenture stock of the Company otherwise provide, the Company shall within ninety days after the allotment and within forty five days after receipt by the Company of the application for transfer of any such shares, debentures or debenture stock, complete and have ready for delivery the certificate of all shares, the debentures and the certificate of all debenture stock allotted or transferred, and unless sent by post or delivered to the person entitled thereto within the period aforesaid the Company shall immediately thereafter give notice to that person in the manner prescribed in these Articles for the giving of notices to Members that the certificate is ready for delivery.

Lost or mutilated certificates

22) If a certificate of shares, debentures or debenture stock is proved to the satisfaction of the Company to have been lost or destroyed or, being defaced or, mutilated or torn, is surrendered to the Company, and the Company is requested to issue a new certificate in replacement thereof, the Company shall, after making such enquiry as it may deem fit, advise the applicant within thirty days from the date of application the terms and conditions (as to indemnity and otherwise and as to payment of the actual expenses

incurred on such enquiry and of a fee not exceeding one rupee) on which the Company is prepared to issue a new certificate and a time for compliance therewith or of the reasons why the Company is unable to issue a new certificate, as the case may be, and in the former case if the applicant shall within the time allowed comply with the terms and conditions specified, the Company shall issue a new certificate to the applicant within forty-five days from the date of application.

TRANSFER OF SHARES

Execution of transfer

23) No transfer shall be registered unless a proper instrument of transfer together with the certificate(s) of shares has been delivered to the Company. The instrument of transfer of any share shall be signed both by the transferor and the transferee and the transferor shall be deemed to remain holder of the share until the name of the transferee is entered in the Register in respect thereof.

Form of transfer

24) (i) The instrument of transfer of any share shall be substantially in the following form or as near thereto as circumstances will admit:

ATLAS ENERGY LIMITED

I _____ of _____ in consideration of the sum of Rupees _____ (Rs. _____ only) paid to me by _____ of _____ (the "Transferee"), do hereby transfer to the Transferee _____ the share(s) numbered _____ to _____ inclusive, in ATLAS ENERGY LIMITED to hold unto the Transferee, his executors, administrators and assigns, subject to the several conditions on which I held the same at the time of the execution hereof, and I, the Transferee, do hereby agree to take the said share(s) subject to the conditions aforesaid.

As witness our hands this _____day of _____ 20____.

WITNESS:

Signature _____
Name _____
CNIC No. _____
Full Address _____
_____

Signature _____
Transferee

WITNESS:

Signature _____
Name _____
CNIC No. _____
Full Address _____
_____
_____

Signature _____
Transferor

CNIC No. / Passport No.
in case of foreigner _____
Full Name _____
Father's/Husband's
Name _____
Nationality _____
Occupation _____
Full Address _____
_____
_____

(ii) Every instrument of transfer shall be left at the office for registration, accompanied by the certificate of the shares to be transferred, and such other evidence as the Board 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 be registered as a member in respect of such shares. The Board may waive the production of any certificate upon evidence satisfactory to them of its loss or destruction.

Refusal to register transfer

25) The Directors shall not refuse to register any transfer of fully paid up shares unless the instrument of transfer is defective or invalid or is not accompanied by the certificate of shares to which it relates or due to non-payment of a fee, if any, as prescribed by the Board of Directors. The Directors may also decline to recognize any instrument of transfer unless it is accompanied, in addition to the certificate of shares to which it relates, by such other evidences as the Directors may reasonably require to show the right of transferor to make the transfer. The Directors may, on such terms and subject to such conditions, including without limitation the submission of indemnities, as the Directors may in their absolute discretion, determine, waive the requirement for the production of any certificate upon evidence satisfactory to them of its loss or destruction.

If the Board refuses to register a transfer of shares, it shall within 30 (thirty) days or such other period as may be required by the applicable laws, after the date on which the instrument of transfer was lodged with the Company, send to the transferee and the transferor notice in writing 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 instrument of transfer with the Company. Furthermore, the Directors shall not incur any liability for, in a bonafide manner, registering or acting upon a transfer of shares, 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 shares transferred, or otherwise in defective manner.

Register may be closed

26) On giving seven days prior notice, the transfer books and the Register may be closed during such time as the Board of Directors think fit, not exceeding the whole forty-five days in each year but not exceeding thirty days at a time.

TRANSMISSION OF REGISTERED SHARES

Nominees, executor, administrators and heirs

27) The executor or administrator of a deceased member or a person nominated under Section 80 or the holder of a succession certificate shall be the only persons recognized by the Company as having any title to the shares, except in cases of joint-holders, in which case the surviving holder or holders, or the executor or administrator of the last surviving holder shall be the only person entitled to be so recognized. The Company shall not be bound to recognize such executor or administrator unless the executor or administrator shall have obtained probate or letters of administration or other legal representation, as the case may be, from a court of competent jurisdiction provided nevertheless that in special cases as determined by the Board, it shall be lawful for the Board to dispense with the production of probate or letters of administration or such other legal representation, including a succession certificate, upon such terms as to indemnify or otherwise as the Board may deem fit.

Right of person entitled by death or insolvency

28) (a) Any person becoming entitled to shares in consequence of the death or insolvency of the holder of such shares, shall have the right, subject to verification by the Board and on giving such indemnities as may be required, to receive and give a discharge for any Dividend or other moneys payable or other advantages arising in respect of the shares to which he would be entitled if he were the registered holder of the shares, but he shall have no right to receive notice of, attend or vote at any General Meetings or (save as aforesaid) to any one of the right or privileges of Members in respect of the shares, unless and until he is named on the Register as a holder thereof.

(b) The Directors shall have the same right to decline or suspend registration as they would have had in the case of a transfer of the share by that Member before his death or insolvency as the case may be.

ALTERATION OF CAPITAL

Power to increase, consolidate, sub-divide and cancel capital

29) The Company may by ordinary resolution and subject to compliance with the requirements of Section 92:

(a) increase the authorized share capital by such sum, to be divided into shares of such amount, as the resolution shall prescribe;

(b) consolidate and divide its share capital into shares of larger amount than its existing shares;

(c) by sub-division of its existing shares or any of them, divide the whole or any part of its share capital into shares of smaller amount than fixed by the Memorandum; and

(d) 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 and diminish the amount of its share capital by the amount of the shares so cancelled.

Offers of shares to existing Members 30) The Board may from time to time increase the issued share capital by such sum as they think fit. Further issue of shares shall be carried out in accordance with the provisions of the Ordinance. Provided that fractional shares shall not be offered and all fractions less than a share shall be consolidated and disposed of by the Company and the proceeds from such disposition shall be paid to a charitable institution or as decided by the Board of Directors.

Ranking of new shares 31) Except so far as otherwise provided by the conditions of issue, or by these Articles, any capital raised by the creation of new shares shall be considered part of the original capital, ranking pari passu with the existing shares, and shall be subject to the provisions herein contained with reference to transfer and transmission, and otherwise.

Reduction of capital 32) Subject to Section 96, the Company may, by Special Resolution, reduce its share capital in any manner consistent with the law.

Power to modify rights 33) Variations of the shareholders rights may be effected by the Company in accordance with the provisions of Section 108.

Share premium account 34) The share premium account maintained pursuant to Section 83(1) may, be applied by the Company:

(a) in writing off the preliminary expenses of the Company;

(b) in writing off the expenses of, or the commission paid or discount allowed on, any issue of shares or debentures of the Company;

(c) in providing for the premium payable on the redemption of any redeemable preference shares or debentures of the Company; or

(d) in paying up unissued shares of the Company to be issued as fully paid bonus shares.

GENERAL MEETINGS

Statutory Meeting 35) The statutory general meeting of the Company shall be held within the period required by section 157.

Annual General Meeting 36) A General Meeting, designated as the Annual General Meeting, shall be held in accordance with the provisions of Section 158, within eighteen Months from the date of its incorporation of the Company and thereafter once at least in every calendar year, within a period of four Months following the close of each financial

year of the Company, but in such manner that an Annual General Meeting is held in every calendar year and not more than fifteen Months elapses between any two consecutive Annual General Meetings, and subject to the above, each such Annual General Meeting shall be held at such time as may be determined by the Board. Unless otherwise allowed by the Commission, Annual General Meetings shall be held in the town in which the Office is situated, and each such Annual General Meeting shall be held at such location in that town as the Board may determine.

Other meetings

37) All General Meetings other than Annual General Meetings shall be called Extraordinary General Meetings.

Extraordinary General Meeting

38) The Board may, whenever they think fit, call an Extraordinary General Meeting and Extraordinary General Meetings shall also be called on such requisition, or in default, may be called by such requisitionists, as provided for by Section 159.

NOTICE OF GENERAL MEETINGS

Notice of meetings

39) (a) Notice of a General Meeting shall be sent in the manner hereinafter mentioned at least twenty one days before the date on which the meeting is to be convened to all such persons as are under these Articles or the Ordinance entitled to receive such notices from the Company and shall specify the place, day and hour of the meeting and the nature of the business to be transacted thereat.

(b) In the case of an emergency affecting the business of the Company an Extraordinary General Meeting may be convened by such shorter notice than that specified in Article 39 (a) above and as the Registrar of Companies may authorize.

(c) Where any special business, that is to say business other than consideration of the accounts, balance sheet and the reports of the Directors and Auditors, the declaration of Dividend, the appointment and fixation of the remuneration of Auditors and the election of Directors (all such matters being herein referred to as ordinary business) is to be transacted at a General Meeting, there shall be annexed to the notice of such meeting a statement setting out all such facts as may be material for the consideration of such business including the nature and extent of the interest (whether direct or indirect) of any Director, and where the item of business involves approval of any document, the time and place appointed for inspection thereof, and to the extent applicable such a statement shall be annexed to the notice also in the case of ordinary business to be transacted at the meeting.

(d) Where a resolution is intended to be proposed for consideration at a General Meeting in some special or

particular form, a copy thereof shall be annexed to the notice convening such meeting.

(e) If a Special Resolution is intended to be passed at a General Meeting, the notice convening that meeting shall specify the intention to propose the resolution as a Special Resolution.

(f) A notice for a General Meeting convened for the election of Directors shall state the number of Directors to be elected at that meeting and the names of the retiring Directors.

(g) The notice of every General Meeting shall prominently specify that a proxy may be appointed who shall have the right to attend, demand and join in demanding a poll and vote on a poll and speak at the meeting in place of the Member appointing him and shall be accompanied by a form of proxy acceptable to the Company.

Omission to give notice

40) The accidental omission to give notice of a meeting to, or the non-receipt of notice of a meeting by, any person entitled to receive notice shall not invalidate the proceedings at that meeting.

PROCEEDINGS AT GENERAL MEETINGS

Quorum

41) No business shall be transacted at any General Meeting unless a quorum is present at the time when the meeting proceeds to business; save as herein otherwise provided (unless specified otherwise in the Ordinance) at least two Members present in person or by proxy representing twenty-five per cent (25%) of the total voting power shall be a quorum.

A company being a member of the Company and present by a representative duly appointed in pursuance of Section 162, shall be deemed to be a Member present personally for the purpose of this Article.

Lack of quorum

42) If within half an hour from the time appointed for the meeting a quorum is not present, the meeting, if called upon the requisition of Members, shall be dissolved; in any other case, it shall stand adjourned to the same day in the next week at the same time and place, and, if at the adjourned meeting a quorum is not present within half an hour from the time appointed for the meeting the Members present, being not less than two, shall be a quorum.

Chairman of meeting

43) The Chairman, if any, of the Board of Directors shall preside as Chairman at every General Meeting of the Company or if there is no such Chairman or if he shall not be present within fifteen (15) minutes after the time appointed for the holding of the meeting or is unwilling to act, any one of the Directors present may be elected to be Chairman of the meeting, or if no director is present, or if all the Directors present decline to take the chair, the Members present shall choose one of their members to be Chairman of the meeting.

While chair remains vacant

44) No business shall be discussed at any General Meeting except the election of a chairman so long as the chair is vacant.

Decision on resolutions

45) (i) At a General Meeting, a resolution put to the vote of the meeting shall be decided on a show of hands unless a poll is (before or on the declaration of the show of hands) demanded:

(a) by the chairman of the meeting; or

(b) by at least one Member present in person or by proxy if not more than seven such members are personally present, and by two such members present in person or by proxy if more than seven such members are personally present; or

(c) by any Member or Members present in person or by proxy holding not less than one-tenth of the issued capital which carries voting rights.

(ii) Unless a poll be demanded, at any General Meeting a declaration by the Chairman of the meeting that a resolution has on a show of hands been carried, or carried unanimously, or by a particular majority, or lost and an entry to that effect in the book containing the minutes of the proceedings of the Company shall until the contrary is proved, be evidence of the fact without proof of the number or proportion of the votes recorded in favour of or against such resolution.

Manner of taking of poll

46) If a poll is demanded, 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.

Casting vote

47) Every question submitted to a meeting shall be decided in the first instance by a show of hands and in case of equality of votes, the Chairman shall, both on a 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 and/or proxy or corporate representative.

Timing of polls

48) A poll demanded on the election of a Chairman or on a question of adjournment shall be taken forthwith. A poll demanded on any other questions shall be taken at such time, not being more than fourteen days from the day on which the poll is demanded, as the Chairman of the meeting directs.

Business may proceed notwithstanding demand of poll

49) The demand of a poll shall not prevent the continuance of the meeting for the transaction of any business other than the question on which a poll has been demanded.

VOTES OF MEMBERS

Right to vote

50) Subject to any special rights or restrictions as to voting upon

which any share may be issued or may for the time being be held, on a show of hands, every Member present in person and being a holder of ordinary shares shall have one (1) vote and every person present as general proxy who is not a Member of the Company or who is a Member not qualified to vote on behalf of a holder or holders of ordinary share shall have one (1) vote and upon a poll every Member present in person or by Proxy shall have one (1) vote for every share held by him in respect of which he is entitled to vote.

In case of an election or removal of a Director, the provisions of Section 178 and Article 68 and 69 respectively shall apply.

Procedure where a company is a Member of the Company

51) Where a company or other corporation is a Member of the Company, a person duly appointed to represent such company at a meeting of the Company in accordance with the provisions of the Ordinance, shall not be deemed to be a proxy and shall be entitled to exercise the same powers on behalf of the Company or corporation which he represents as that company or corporation could exercise if it were an individual Member of the Company present in person. The production before or at the meeting of a copy of such resolution duly signed by the director or secretary of such company or corporation and certified by him as being a true copy of the resolution shall be accepted by the Company as sufficient evidence of the validity of his appointment. A company or corporation which is a Member of the Company but which is not resident in Pakistan may appoint a representative as aforesaid by facsimile transmission which, if purporting to be sent by such company or corporation, need not be certified as a true copy as aforesaid.

Voting shares in different ways

52) On a poll, a Member entitled to more than one vote need not, if he votes, use all his votes or cast all the votes he uses in the same way.

Joint holders

53) In the case of joint holders, the vote of the senior holder present, whether in person or by proxy, shall be accepted to the exclusion of the votes of the other joint holders; and for this purpose seniority shall be determined by the order in which their names stand in the Register.

Member of unsound mind

54) A Member of unsound mind, or in respect of whom an order has been made by any court having jurisdiction in lunacy may vote, whether on a show of hands or on a poll, by his committee or other legal guardian and any such committee or guardian may, on a poll, vote by proxy.

Objections to Votes

55) No objection shall be raised to the qualification of any voter except at the meeting or adjourned meeting at which the vote objected to is given or tendered, and every vote not disallowed at such meeting shall be valid for all purposes. Any such objection made

in due time shall be referred to the Chairman of the meeting, whose decision shall be final and conclusive.

Votes by proxy 56) On a poll, votes may be given either personally (including without limitation a representative of a company or corporation authorized under Article 51 of these Articles) or by proxy.

Proxy to be in writing 57) The instrument appointing a proxy shall be in writing under the hand of the appointer or of his attorney duly authorized in writing, or, if the appointer is a corporation, either under seal or under the hand of an officer or attorney duly authorized. A proxy need not be a Member of the Company.

Instrument appointing proxy to be deposited 58) The instrument appointing a proxy and the power of attorney or other authority (if any) under which it is signed, or a notarially certified copy of that power or authority, shall be deposited at the Office not less than forty eight hours before the time for holding the meeting at which the person named in the instrument proposes to vote, and in default the instrument of proxy shall not be treated as valid.

Form of proxy 59) An instrument appointing a proxy shall, as nearly as circumstances will admit, be in the following form or in any other form which the Board may approve:

ATLAS ENERGY LIMITED

I/We _____ being a member of ATLAS ENERGY LIMITED and entitled to _____ votes, do hereby appoint _____ of _____, failing him _____ of _____ as my/our proxy to vote for me/us and on my/our behalf, at the Annual 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.

Signed by me this _____ day of _____ 20___.

_____

(Signature of Member)

Witness to the Signature
1.

_____

Full Name & Address

_____

_____

Proxy may demand poll 60) The instrument appointing a proxy shall be deemed to confer authority to demand or join in demanding a poll.

Revocation of authority 61) A vote given in accordance with the terms of an instrument of proxy shall be valid notwithstanding the previous death or insanity of the principal or revocation of the proxy or of the authority

under which the proxy was executed or the transfer of the shares in respect of which the proxy is given, provided that no intimation in writing of such death, insanity, revocation or transfer as aforesaid shall have been received by the Company at the Office before the commencement of the meeting or adjourned meeting at which the proxy is used.

DIRECTORS

Number of Directors 62) The minimum number of Directors of the Company shall be three. The Board shall fix the number of Directors of the Company not later than thirty five days before convening of the General Meeting at which Directors are to be elected, and the number so fixed shall not be changed except with prior approval of the General Meeting of the Company.

First Directors 63) The first Directors of the Company shall be as follows:

1. Mr. Saquib Hussain Shirazi
2. Mr. Frahim Ali Khan
3. Mr. Maqsood Ahmed

Election of Directors 64) Subject to the provisions of these Articles and the Ordinance, the Directors shall be elected by the Members in General Meeting.

Period of office of elected Directors 65) A Director elected by the Members in General Meeting shall hold office for a period of three years following the date from which his election is effective unless he resigns earlier, becomes disqualified from being a Director or otherwise ceases to hold office.

Casual vacancies 66) Any casual vacancy occurring among the Directors may be filled up by the Directors, and a person so appointed shall only hold office for the remainder of the term of the Director in whose place he is appointed. The Company shall, prior to every such appointment, secure in the form prescribed for this purpose, the consent and certificate of the person concerned consenting to act as a Director and certifying that he is not ineligible to become a Director and shall within fourteen days of his appointment file such consent with the Registrar of Companies as required by Section 184.

Eligibility for election as Director 67) The Members in General Meeting shall elect the Directors from amongst persons who, not being ineligible in accordance with Section 187, offer themselves for election as Directors in accordance with this Article. Any person claiming to be eligible who desires to offer himself for election shall, whether he is a retiring Director or not, file with the Company not later than fourteen days before the date of the General Meeting at which Directors are to be elected, a notice that he, being eligible, intends to offer himself for election as a Director at that meeting and that he consents to act as a Director if elected. If such person is elected a Director,

then the Company shall file his consent to act as a Director with the Registrar of Companies within fourteen days of his election as required by Section 184. A person offering himself for election as a Director may withdraw his candidature at any time before the holding of the election and may do so by withdrawing the notice in which he offered himself for election. Not later than seven days before the date of the meeting, the Company will notify the Members of the persons offering themselves for election as Directors at such meeting.

Procedure for election of Directors

68) The provisions of this Article shall apply for the election of Directors by the Members in General Meeting from amongst the candidates eligible for election, namely:

(a) every Member present in person or by proxy shall have such number of votes as is equal to the product of the number of shares carrying the right to vote held by him and the number of Directors to be elected;

(b) the number of votes calculated in accordance with the preceding clause (a) may be given to a single candidate or may be divided between any two or more candidates in such manner as the person voting may choose; and

(c) the candidate who gets the highest number of votes shall be declared elected as Director and then the candidate who gets 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.

Removal of Directors

69) The Company in General Meeting may remove a Director from office by a resolution passed with the requisite number of votes determined in accordance with the provisions of Section 181.

Qualifying share

70) The qualification of a Director, except for a nominee under Section 183 or a Director covered by the proviso to Section 187(h) shall be holding of a share in the Company of the nominal value of Rs. 10/-. A first Director may act before acquiring his qualification, but shall in any case acquire the same within two months from his appointment and he shall be deemed to have agreed to take the said share from the Company, and the same shall be allotted to him accordingly.

Remuneration of Directors

71) The remuneration of the Directors shall, from time to time, be determined by the Board.

Special remuneration

72) Any Director who is an employee of the Company or who serves on any committee or who devotes 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, may be paid such remuneration as the Board may determine.

ALTERNATE DIRECTORS

Alternate Directors

73) A Director who is about to leave or is absent for a period of three Months or more from Pakistan may with the approval of the Directors appoint any person who is eligible under Section 187 for appointment as a Director to be an alternate Director during his absence from Pakistan and such appointment shall have effect and such appointee, whilst he holds office as an alternate Director, shall be entitled to exercise in place of his appointer all the functions of his appointer as a Director of the Company but he shall ipso facto vacate office as and when his appointer returns to Pakistan or vacates office as a Director or removes the appointee from office. Any appointment or removal under this Article shall be effected by notice in writing under the hand of the Director making the same. Such alternate Director may be one of the Directors of the Company, in which case he shall be entitled to act in both capacities. An alternate Director need not hold any share qualification.

POWERS AND DUTIES OF DIRECTORS

Borrowing Powers

Borrowing powers

74) (a) The Directors may exercise all the powers of the Company to raise money otherwise than by the issue of shares and to mortgage or charge its undertaking or property or any part thereof and to issue debentures and other securities whether outright or as security for any obligation or liability or debt of the Company to any third party.

(b) In exercising the aforesaid powers of the Company, the Directors may, from time to time and on such terms and conditions as they think fit, raise money from banks and financial institutions and from other persons under any permitted system of financing, whether providing for payment of interest or some other form of return, and in particular the Directors may raise money on the basis of mark-up on price, musharika, modaraba or any other permitted mode of financing, and without prejudice to the generality of the foregoing, the Directors may exercise all or any of the powers of the Company arising under Section 196(2).

(c) Subject to the provisions of Article 75(a) in regard to the issue of securities, the Directors may exercise all or any of the powers of the Company arising under Sections 19(2), 87, 120 and 196 (2) and in particular the Directors may issue any security as defined in Section 2(1)(34) or may issue any instrument or certificate representing redeemable capital as defined in Section 2(1)(30A) or participatory redeemable capital as defined in Section 2(1)(25).

Other Powers and Duties

General powers of Company vested in Directors

75) (a) The business of the Company shall be managed by the Directors, who may exercise all such powers of the Company as are not by the Ordinance or any statutory modification thereof for the time being in force or by these Articles are required to be exercised by the Company in General Meeting, subject nevertheless to any regulation of these Articles, to the provisions of the Ordinance, and to such regulations being not inconsistent with the aforesaid regulations or provisions, as may be prescribed by the Company in General Meeting; but no regulation made by the Company in General Meeting shall invalidate any prior act of the Directors which would have been valid if that regulation had not been made.

(b) A resolution at a meeting of the Directors duly convened and held shall be necessary for exercising the powers of the Company specified in Section 196(2).

Power of Attorney

76) The Directors may from time to time and at any time by power of attorney appoint any company, firm or person or body of persons, whether nominated directly or indirectly (including any Director or officer of the Company) by the Directors, 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 Articles) and for such period and subject to such conditions as they may think fit, and any such powers of attorney may contain such provisions for the protection and convenience of persons dealing with any such attorney as the Directors may think fit and may also authorize any such attorney to delegate all or any of the powers, authorities and discretions vested in him; and without prejudice to the generality of the foregoing any such power of attorney may authorize the attorney to institute, conduct, defend, compound or abandon any legal proceedings by or against the Company, whether generally or any particular case.

Official seal for use abroad

77) The Company may exercise the powers conferred by Section 213 with regard to having an official seal for use abroad, and such powers shall be vested in the Directors.

Office of profit

78) A Director of the Company or a firm of which such Director is a partner or a private company of which such Director is a director may with the consent of the Company in General Meeting hold any office of profit under the Company provided that no such consent is required where the office held is that of Chief Executive or a full time employee or legal or technical adviser or banker.

Contracting with Company

79) Subject to authorization being given by the Directors in accordance with Section 216, a Director shall not be disqualified from

contracting with the Company either as vendor, purchaser or otherwise, nor shall any such contract or arrangement entered into by or on behalf of the Company with any company or partnership of or in which any Director of the Company shall be a member or otherwise interested be avoided nor shall any such Director so contracting or being such member or so interested be liable to account to the Company for any profit realized by any such contract or arrangement by reason of such Director holding that office or of the fiduciary relation thereby established.

Disclosure of interests

80) A Director who, or whose spouse or minor child, is in any way, whether directly or indirectly, concerned or interested in any contract or arrangement or proposed contract or arrangement with the Company shall disclose the nature of such concern or interest at a meeting of the Directors in accordance with Section 214.

Where Director's interest lies in appointment of Chief Executive etc

81) Where by any contract or resolution of the Directors, an appointment or a variation in the terms of an existing appointment is made (whether effective immediately or in the future) of a Chief Executive, whole time Director or Secretary of the Company, in which appointment of any Director of the Company is, or after the contract or resolution becomes, in any way, whether directly or indirectly, concerned or interested, the Company shall inform the Members of such appointment or variation in the manner required by Section 218 and shall comply with the requirements of that Section in regard to the maintaining of such contracts and resolutions open for inspection by Members at the Office, the provision of certified copies thereof and extracts there from and otherwise.

Prohibition of voting by interested Directors

82) Except as provided in Section 216, a Director shall not vote in respect of any contract or arrangement in which he is either directly or indirectly concerned or interested nor shall his presence count for the purpose of forming a quorum at the time of any such vote; and if he does so vote, his vote shall not be counted.

Register of contracts, arrangements and appointments

83) The Company shall comply with the provisions of Section 219 of the Ordinance with regard to the keeping of a register and the entry therein of the particulars of all contracts and arrangements or appointments of the kind referred to in Sections 214, 215, 216 or 218 of the Ordinance separately for each Section, and with regard to maintaining such register open for inspection by Members at the Office, the provision of certified copies thereof and extracts therefrom and otherwise.

Interested directorships

84) A Director of the Company may be or become a director of any other company promoted by the Company or in which the Company may be interested as a vendor, shareholder or otherwise and no such Director shall be accountable for any benefits received as a director or member of such other company.

Signing powers

85) All cheques, promissory notes, drafts, bills of exchange and other negotiable instruments, and all receipts for moneys paid to the Company, shall be signed, drawn, accepted, endorsed, or otherwise executed, as the case may be, in such manner as the Directors shall from time to time by resolution determine.

Minutes of meetings

86) The Directors shall cause minutes of all Board meeting, committee of Directors meeting and General Meeting of the Company to be made in books provided for the purpose and kept at the office:

(a) of all appointments of officers made by the Directors;

(b) of the names of the Directors present at each meeting of the Directors and of any committee of Directors;

(c) of all resolutions and proceedings at all meetings of the Company, and of the Directors and of committee of Directors;

and the Directors present at any meeting of Directors or committee of Directors and all Members and proxies of Members present at any General Meeting shall sign their names in books to be kept for that purpose; and such minutes of such a meeting purporting to be signed by the chairman thereof, or by chairman of the next succeeding meeting of the same body, shall be sufficient evidence without any further proof of the facts therein stated.

Payment of pensions

87) The Directors on behalf of the Company may pay a gratuity or pension or allowance on retirement to any Director who has held any other salaried office or place of profit with the Company or to his widow or dependents and may make contributions to any fund and pay premiums for the purchase or provision of any such gratuity or pension or allowance.

DISQUALIFICATION OF DIRECTORS

Disqualification of Directors

88) A Director shall ipso facto cease to hold office if:-

(a) he becomes ineligible to be appointed as a Director on any one or more of the grounds specified in Section 187, or

(b) he absents himself from three consecutive meetings of the Directors or from all meetings of the Directors for a continuous period of three Months, whichever is the longer, without leave of absence from the Directors; or

(c) he or any firm of which he is a partner or any private company of which he is a director without the sanction of the Company in General Meeting accepts or holds any office of profit under the Company other than that of a chief executive or a legal or technical adviser or a banker; or

(d) he fails to obtain within two Months from the effective date of his appointment or at any time thereafter ceases to hold, the share qualification necessary for his appointment.

PROCEEDINGS OF DIRECTORS

Meetings of Directors

89) The Directors may meet together for the despatch of business, adjourn and otherwise regulate their meetings as they think fit. Except or otherwise provided herein questions arising at any meeting shall be decided by a majority of votes. In case of an equality of votes, the Chairman shall have a second or casting vote. A Director may, and the Secretary on the requisition of a Director shall, at any time, summon a meeting of Directors. The Board of Directors may determine to hold a meeting through audio or video conferencing or any other technology whereby all the Directors can, simultaneously, communicate to and with each other. A copy of the minutes of Directors meetings shall be furnished to each Director within fourteen days of such meeting. Notice shall be given in writing to every Director or his alternate Director for any meeting of the Directors and such notice shall be given in writing to his address in Pakistan and by facsimile or email transmission to his address outside Pakistan, if any, notified by him to the Company for this purpose.

Quorum of Directors

90) Unless otherwise determined unanimously by the Directors, the quorum necessary for the transaction of the business of the Directors shall be majority of directors holding office for the time being. An alternate Director whose appointment is effective shall be counted in a quorum.

Effect of vacancy

91) The continuing Directors may act notwithstanding any vacancy in their body so long as their number is not reduced below the number fixed by or pursuant to these Articles as the necessary quorum of Directors.

Chairman

92) The Directors may elect a Chairman of their meetings and determine the period for which he is to hold office. If no such Chairman is elected, or if at any meeting the Chairman is not present within thirty minutes after the time appointed for holding the same, the Directors present may choose one of their numbers to be the Chairman of such meeting only.

Powers of meeting

93) 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 the Ordinance and these Articles for the time being vested in or exercisable by the Directors generally.

Power to appoint committees and to delegate

94) The Directors may delegate any of their powers to committees consisting of such member or members of their body as they think fit and may from time to time revoke such delegation. Any committee so formed shall, in the exercise of the powers so

delegated, conform to any regulations that may from time to time be imposed upon them by the Directors.

Validity of acts 95) All acts done at any meeting of the Directors, or of a committee of 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 or continuance in office of any such Directors or person acting as aforesaid, or that they or any of them were disqualified or had vacated office, or were not entitled to vote, be as valid as if every such person had been duly appointed or had duly continued in office and was qualified and had continued to be a Director and had been entitled to be a Director and had been entitled to vote.

Resolution in writing 96) Subject to the provisions of Article 75(b) of these Articles, a resolution in writing, signed by all the Directors (or in their absence their alternate Directors) for the time being available (not being less than the requisite quorum of Directors) or by all the members of a committee for the time being available shall be as valid and effectual as if it had been passed at a meeting of the Directors, or as the case may be of such committee, duly called and constituted in accordance with the provisions of these Articles. Such resolution be contained in one document or in several documents in like form each signed by one or more of the Directors or members of the committee concerned. A facsimile or email transmission sent by a Director or a member of the committee shall be deemed to be a document signed by him for the purposes of this Article.

Meeting by way of electronic communication 97) Subject to any rules framed under or any regulations or directives issued pursuant to the Ordinance, Directors or Members of a committee may take part in a meeting of the Directors or a committee by using any communication equipment which allows everybody participating in the meeting to speak to and hear each other. Taking part in this way will count as being present at the meeting. Meetings will be treated as taking place where the largest group of the participants are or, if there is no such group, where the Chairman of the meeting is present.

CHIEF EXECUTIVE

Appointment of Chief Executive 98) The Company shall have an office of Chief Executive which shall be filled from time to time by the Directors who may appoint a Director or (subject to Section 201) any other person to be the Chief Executive for a period not exceeding three years and on such terms and conditions as the Directors may think fit, and such appointment shall be made within fourteen days from the date on which the office of Chief Executive falls vacant. Upon the expiry of his term of appointment, the Chief Executive shall be eligible for re-appointment. If the Chief Executive at any time is not already a Director he shall be deemed to be a Director of the Company. The Chief Executive may be removed from office in accordance with the provisions of Section 202.

Remuneration of Chief Executive 99) The Chief Executive shall receive such remuneration as the Directors may determine and it may be made a term of his appointment that he be paid a pension and/or gratuity and/or other benefits on retirement from his office.

Powers of Chief Executive 100) The Directors may entrust to and confer upon the Chief Executive any of the powers exercisable by them as they may think fit, and may confer such powers for such time, and to be exercised for such time, and to be exercised for such objects and purposes, and upon such terms and conditions, and with such restrictions as they may think fit and may from time to time revoke, alter or vary all or any of such powers.

OTHER APPOINTMENTS

Appointment of Company Secretary 101) The Company Secretary may be appointed by the Directors from time to time for such term, at such remuneration and upon such conditions as they may think fit. The directors may from time to time remove, dismiss him from office and appoint another in his place.

THE SEAL

Common Seal 102) The Directors shall provide for the safe custody of the Seal which shall only be used by the authority of the Directors or of a committee of the Directors authorized by the Directors on that behalf, and every instrument to which the Seal shall be affixed shall either be signed by one Director and countersigned by the Secretary or by a second Director or by some other person appointed by the Directors for that purpose or be signed by the Chief Executive alone, but so that the Directors may by resolution determine either generally or in any particular case, that the signature of the Chief Executive, any Director and/or Secretary may be affixed by some mechanical means to be specified in such resolution including without limitation by printing, lithography or stamping.

DIVIDENDS AND RESERVES

Declaration of Dividend 103) The Company in General Meeting may declare Dividends, but no Dividends shall exceed the amount recommended by the Directors.

Interim Dividends 104) The Directors may from time to time pay to the Members such interim Dividends as appear to the Directors to be justified by the profits of the Company.

Dividends payable out of profits 105) No Dividends shall be paid otherwise than out of profits of the year or any other undistributed profits and in the determination of the profits available for Dividends the Directors shall give due regard to the provisions of the Ordinance, in particular Sections 83, 235 and 248.

Reserve 106) (a) The Directors may, before recommending any Dividend set aside out of the profits of the Company such sums as

they think proper as a reserve or reserves which shall, at the discretion of the Directors, be applicable for meeting contingencies, or for equalizing Dividends, or for any other purpose to which the profits of the Company may be properly applied, and pending such application, at the like discretion, either be employed in the business of the Company or be invested, subject to the provisions of the Ordinance, in such investments (other than shares of the Company) as the Directors may from time to time think fit.

(b) The Directors may also carry forward any profits which they may think prudent not to distribute, without setting them aside as a reserve.

Apportionment of Dividends

107) All Dividends shall be declared and paid according to the amounts paid on the shares. All Dividends shall be apportioned and paid proportionally to the amounts paid or credited as paid on the shares during any portion or portions of the period in respect of which the Dividend is paid. If any share is issued on terms providing that it shall rank for Dividend as from a particular date, such share shall rank for Dividend accordingly.

Effect of transfer

108) A transfer of shares shall not pass the right to any Dividend declared thereon before the registration of the transfer.

Payment by post

109) The Dividend in respect of any share shall be paid to the registered holder of such share or to his banker or to a financial institution (as defined in Section 2(1)(15A)) nominated by him for the purpose. Unless otherwise instructed in writing by the registered holder of a share, any Dividend payable in cash in respect of such share may be paid by cheque or warrant sent through the post by registered mail to the registered address of the holder or, in the case of joint holders, to the registered address of that one of the joint holders who is first named on the Register or to such banker or financial institution as may have been nominated by the registered holder. Every such cheque or warrant shall be made payable to the order of the person to whom it is sent. Anyone of two or more joint holders may give effectual receipts for any Dividends payable in respect of the shares held by them as joint holders.

Time for payment of Dividend

110) All Dividends shall be paid within the periods specified in Section 251 of the Ordinance.

Dividend not to bear interest

111) No Dividend payable in respect of a share shall bear interest against the Company.

Unclaimed Dividends

112) All Dividends unclaimed for one 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 the Company shall not deemed to be a trustee in respect thereof.

Payment of Dividends in specie

113) With the sanction of a General Meeting, any Dividend may be paid wholly or in part by the distribution of specific assets and in particular of paid up shares or debentures of any other company or in any one or more of such ways. Where any difficulty arises in regard to such distribution, the Directors may settle the same as they think expedient, and in particular may issue fractional certificates and fix the value for distribution of such specific assets or any part thereof and may determine that cash payments shall be made to any Members upon the footing of the value so fixed, in order to adjust the rights of all Members, and may vest any such specific assets in trustees upon trust for the Members entitled to the Dividend as may seem expedient to the Directors.

ACCOUNTS

Keeping of accounts

114) The Directors shall cause to be kept proper books of account with respect to:-

(a) all sums of money received and expended by the Company and the matters in respect of which the receipts and expenditures take place;

(b) all sales and purchases of goods by the Company;

(c) all assets of the Company;

(d) all liabilities of the Company; and

(e) where the provisions of Section 230(1)(c) of the Ordinance are applicable, such particulars relating to utilization of material or labour or to other inputs or items of cost as may be prescribed.

Location

115) The books of account shall be kept at the Office or at such other place in Pakistan as the Directors may decide and shall be open to inspection by the Directors during business hours. If the Directors decide to keep the books of account at a place other than the Office they shall comply with the directions contained in the proviso to Section 230(1).

Period

116) The Company shall preserve in good order the books of account of the Company in respect of any financial year for such period as is required by law following the close of that year.

Inspection by Members

117) The Directors shall from time to time determine whether and to 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 not being Directors and no Member (not being a Director) shall have any right of inspecting any account or books or papers of the Company except as conferred by the Ordinance or authorized by the Directors or by the Company in General Meeting.

Annual accounts and reports

118) (a) The Directors shall arrange to place before the Annual General Meeting of the Company at some date not later than eighteen Months after the incorporation of the Company and subsequently once in every calendar year, a duly audited balance sheet and profit and loss account, conforming to the requirements of Sections 234, 237, 238 and 240 and prepared by a date not more than four Months before the date of such meeting and having the auditor's report attached thereto, and a report of the Directors, conforming to the requirements of Section 236.

(b) As required by Section 241, the balance sheet and profit and loss account shall first be approved by the Directors and when so approved shall be signed by the Chief Executive and at least one Director, but if on account of his absence from Pakistan or other reason the signature of the Chief Executive cannot be obtained, the balance sheet and profit and loss account shall be signed by at least two Directors for the time being in Pakistan, and in every such case a statement signed by those two Directors shall be joined to the balance sheet and profit and loss account stating the reason why the signature of the Chief Executive was not obtained.

(c) The Directors may authorize the Chairman or the Chief Executive to sign the report of the Directors which may then be signed accordingly, but in the absence of any such authority the report of the Directors shall be signed as required by Section 236(3) in the same manner as the balance sheet and profit and loss account.

Copies of annual accounts and reports

119) (a) A copy of the balance sheet, profit and loss account and the reports of the Directors and auditors shall be sent not less than twenty one days before the date of the Annual General Meeting to the Members and other persons entitled to receive notices of General Meetings in the manner in which notices are to be given hereunder and a copy thereof shall be kept for a period of at least twenty-one days before the meeting at the Office for inspection by the Members.

(b) After the balance sheet, profit and loss account and the reports of the Directors and auditors have been laid before the Annual General Meeting of the Company, such number of copies thereof along with prescribed documents, signed by the signatories thereto shall be filed with the Registrar of Companies within thirty days from the date of the meeting and the Company shall also comply with the provisions of Section 242(2) where applicable.

Compliance with the Ordinance

120) The Directors shall in all respects comply with the provisions of Sections 230 to 247 of the Ordinance, or any statutory modification thereof for the time being in force.

CAPITALIZATION OF PROFITS

Power to capitalize

121) The Company in General Meeting may upon the recommendation of the Directors resolve that it is desirable to capitalize any part of the amount for the time being standing to the credit of any of the Company's reserve accounts or to the credit of the profit and loss account or otherwise available for distribution, and accordingly that such sum be set free for distribution amongst the Members who would be entitled thereto if distributed by way of Dividend and in the same proportions on condition that the same be not paid in cash but be applied either in or towards paying up any amounts for the time being unpaid on any shares held by such Members respectively or paying up in full unissued shares or debentures of the Company to be allotted and distributed as fully paid up to and amongst such Members in the proportion aforesaid, or partly in the one way and partly in the other, and the Directors shall give effect to such resolution.

Effect of resolution to capitalize

122) Whenever such a resolution as, aforesaid shall have been passed the Directors shall make all appropriations and applications of the undivided profits resolved to be capitalized thereby, and all allotments and issues of fully paid shares or debentures, if any, and generally shall do all acts and things required to give effect thereto, with full power to the Directors to make such provision by the issue of fractional certificates or by payment in cash or otherwise as they think fit for the case of shares or debentures becoming distributable in fractions and also to authorize any person to enter on behalf of all the Members entitled thereto into an agreement with the Company providing for the allotment to them respectively, credited as fully paid up, of any further shares or debentures to which they may be entitled upon such capitalization, or (as the case may require) for the paying up by the Company on their behalf, by the application thereto of their respective proportions of the profits resolved to be capitalized, of the amounts or any part of the amounts remaining unpaid on their existing shares, and any agreement made under such authority shall be effective and binding on all such Members.

AUDIT

Auditors

123) Auditors shall be appointed and their duties regulated in accordance with Sections 252 to 255 of the Ordinance, or any statutory modifications thereof for the time being in force.

NOTICES

Notice to Member

124) (a) A notice may be given by the Company to any Member either personally or by sending it by post to him to his registered address or by courier or (if he has no registered address in Pakistan) to the address, if any, within Pakistan supplied by him to the Company for the giving of notices to them.

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

Notices by advertisement

125) If a Member has no registered address in Pakistan and has not supplied to the Company an address within Pakistan for the giving of notices to him, a notice addressed to him or to Members generally and advertised in a newspaper circulating in the province in which the Office is situated shall be deemed to be duly given to him on the day on which the advertisement appears. In all such cases, the Company shall also comply with the requirements of the proviso to Section 50(3) of the Ordinance where applicable.

Notice to joint holders

126) 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.

Notice to legal representatives

127) 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 prepaid letter addressed to them by name, or by the title of representatives of the deceased, or assignee of the insolvent or by any like description, at the address (if any) in Pakistan supplied for the purpose by the persons 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.

Notice to foreign shareholder

128) Notwithstanding anything hereinabove to the contrary, in addition to any other notice it or he shall be entitled to receive, a Member, which is a foreign corporation, company or individual shall be given notice, if applicable, by facsimile transmission, electronic mail addressed to such Member at the facsimile number or electronic mail address supplied by it or him to the Company.

Notices of General Meetings

129) Notice of every General Meeting shall be given in same manner hereinbefore authorized to (a) every Member 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, (b) every Member of the Company being a foreign corporation or company which has supplied to the Company a facsimile number or electronic mail address for the sending of notices to it, (c) 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 (d) the auditors of the Company.

Binding value of prior notices

130) 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.

WINDING-UP

Distribution of assets in specie

131) If the Company shall be wound up, the liquidator may, with the sanction of a Special Resolution of the Company and any other sanction required by the Ordinance, 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 the same kind or not) and may, for such purpose, set such value as he deems fair upon any property to be divided as aforesaid and may determine how much 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 trusts for the benefit of the Members or any of them 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.

SECRECY

Inspection of the premises of the Company

132) Save as otherwise provided in the Ordinance, no Member or other person (not being a Director) shall be entitled to visit and inspect any of the Company's premises or properties of the Company without the permission of Directors of the Company for the time being or any person authorized in this behalf by the Directors or to 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 of trade or secret process or of any matter whatsoever which may relate to the conduct of the business of the Company and which in the opinion of the Directors will be inexpedient in the interest of the Members of the Company to communicate to the public.

INDEMNITY

Indemnity of Directors, Officers and Auditors

133) Every Director or officer of the Company and every person employed by the Company as Auditor shall be indemnified out of the funds of the Company against all liability incurred by him as such Director, officer or Auditor in defending any proceedings, whether civil or criminal, in which judgement is given in his favour, or in which he is acquitted, or in connection with any application under Section 488 in which relief is granted to him by the Court.

DISPUTE RESOLUTION

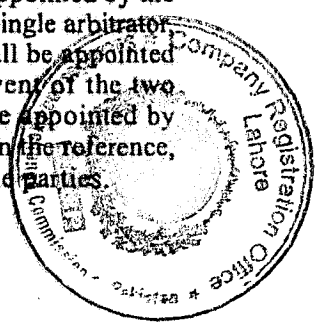
Settlement of dispute through mediation

134) In the event of a dispute, claim or controversy arises between the Company, its management or its shareholders, or between shareholders inter se, or the directors inter se, all steps shall be

taken to settle the dispute and resolve the issue through mediation by an accredited mediator before taking recourse to formal dispute resolution such as arbitration or litigation.

Differences to be referred to Arbitration(s)

135) Whenever any difference arises between the Company on the one hand and any of the Members, their executors, administrators or assigns on the other hand, touching the true intent or construction, or the incident or consequence of these Articles or of the statutes, or touching anything there or thereafter done, executed, omitted or suffered in pursuance of these Articles or of the statutes or touching any breach or alleged breach of these Articles, or any claim on account of any such breach, or alleged breach, or otherwise relating to the premises, or to these Articles or to any statute affecting the Company or to any of the affairs of the Company, every such difference shall, as a condition precedent to any other action at law be referred in conformity with the Arbitration Act, 1940, or any statutory modification thereof and any rules made there under, to the decision of an arbitrator to be appointed by the parties in difference or if they cannot agree upon a single arbitrator, to the decision of two arbitrators of whom one shall be appointed by each of the parties in difference, or in the event of the two arbitrations not agreeing, then of an umpire to be appointed by the two arbitrators, in writing, before proceeding on the reference, and such decision shall be final and binding on the parties.



We, the several persons, whose names and addresses are subscribed below, are desirous of being formed into a Company in pursuance of this Articles of Association, and we respectively agree to take the number of shares in the capital of the Company indicated herein below against our respective names:

Sr. No.	Name and Surname in Full	Father's Name in Full	Nationality with any former Nationality	Occupation	CNIC Number	Residential address in Full	No. of Shares	Signature
1.	Saquib Hussain Shirazi	Yusuf H. Shirazi	Pakistani	Business	42000-0509678-5	12, Khayaban-e-Bukhari, 5th Street, Phase 6, DHA, Karachi.	1 (One)	
2.	Frahim Ali Khan	Ibrahim Ali Khan	Pakistani	Business Executive	42301-8765118-9	10-B/II, South Park Avenue, Phase II, DHA, Karachi.	1 (One)	
3.	Maqsood Ahmed	Chaudhry Muhammad Sadiq	Pakistani	Business Executive	35202-2632390-1	House No. 397/B, EME, Thokar Niaz Baig, Lahore.	1 (One)	
						Total Number of Shares taken	3 (Three)	

CERTIFIED TO BE TRUE COPY

ADDITIONAL JOINT REGISTRAR OF COMPANIES
COMPANY REGISTRATION OFFICE
LAHORE.

9.12.15

Dated the 13th day of May 2015

Witnesses to the above signatures

National Institutional Facilitation Technologies (Private) Limited
5th Floor, AWT Plaza,
I.I. Chundrigar Road,
Karachi
Pakistan

3(5)(g)(a) The type, technology, model, technical details and design of the facilities proposed to be acquired, constructed, developed or installed

Details of Generation Facility

Project Profile	
Project Size	995.60 kWp
Location	Atlas Autos Limited (DCC-2) 26/27km Lahore-Skp Road Sheikhupura.
Type of Project	Roof Mounted
Construction Period	2-3 Months

Energy Generation

Project Profile	
Capacity Factor	15.48 %
Energy Generation Units	1,350,081 kWh
Degradation Factor	First Year 2.5% & remaining 24 Years 0.7%

Model & Technical Details of Equipment

PV Modules	
Type of Module	Cheetah HC JKM400M-72H
No. of Modules	2,489 (2,489 * 400 Wp = 995,600)
Type of Cell	Mono crystalline
Dimension of each Module	2008x1002x40mm(79.06x39.45x1.57 inch)
Total Module Area	2.012016 m2
Frame of Panel	Anodized aluminium alloy
Weight of one Module	22.5 kg
No of Solar Cells in each module	144 (6×24)
Efficiency of module	19.88%
Maximum Power (P_{max})	400 W_P
Voltage @ P_{max}	41.7 V
Current @ P_{max}	9.60 A
Open circuit voltage (V_{oc})	49.8V
Short circuit current (I_{sc})	10.36A
Maximum system open Circuit Voltage	1000VDC (IEC)

Inverters	
Size & Model	60 KW-SUN2000-60KTL-M0
Input Operating Voltage Range	200 V to 1000 V
Efficiency of inverter	98.7 %
Max. Allowable Input voltage	1100V
Max. Current	22 A
Max. Power Point Tracking Range	200 V to 1000 V
Output electrical system	3 Phase AC
Rated Output Voltage	380 to 480
Power Factor (adjustable)	0.8 LG...0.8 LD
Power control	MPP tracker
Rated Frequency	50 Hz

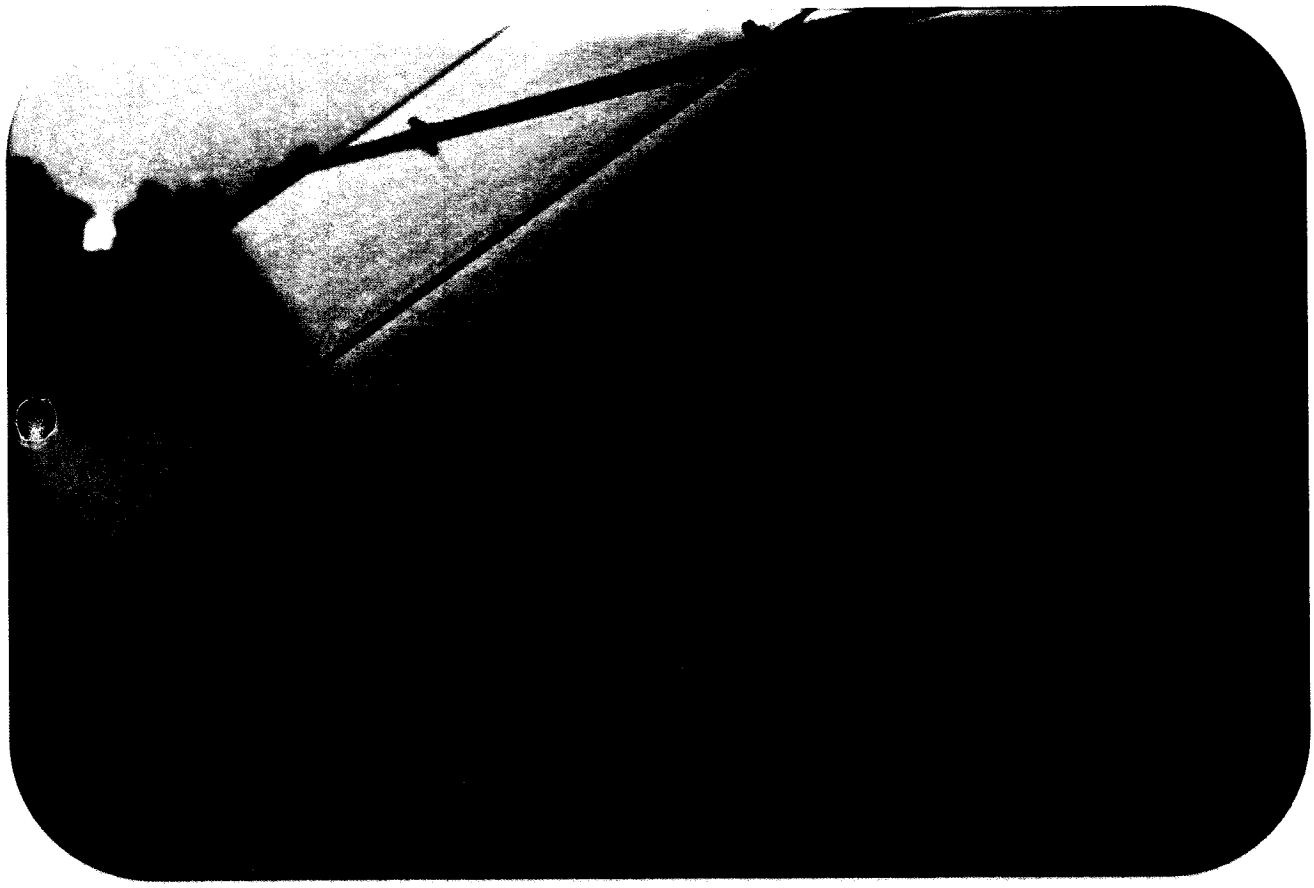
Mounting Structure	
Structure	Mild Steel/ Aluminum
Tilt Angle	8°
Degradation Factor	First Year 2.5% & remaining 24 Years 0.7%

Data Collecting System	
System Data	Continuous online logging with data logging software to portal.

3(5)(h) Feasibility Report

AtlasEnergy

Application for Generation License
995.60 kWp On-grid Solar PV Plant



AtlasEnergy

Feasibility Report 995.60 kWp
Solar PV Plant

1. Executive Summary

The feasibility study examines the costs, practicality, and likely outcome of a solar photovoltaic (PV) installation on the rooftop of below site:

Location
Atlas Autos Limited (CBU) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.

2. Project Brief

Atlas Energy intends to install 995.60 kWp Solar Power Plants in owner premises to provide electricity under PEPA mode. The installed capacity of plants is proposed by critically analyzing the current load and future load projections of site.

The main outcomes of the feasibility report are given below:

- **Technical Site Analysis**
- **Financial Analysis**

2.1. 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". Panel azimuth (10° South East & 10° North West), panel tilt (8°) and satisfactory roof condition and structure are also assumed. Anticipated System Information: The projects in will accommodate 995.60 kWp solar PV system with a projected annual production of 1,350,081kWh/ year with use of a JKM400M-72H (400 Wp) PV panel.

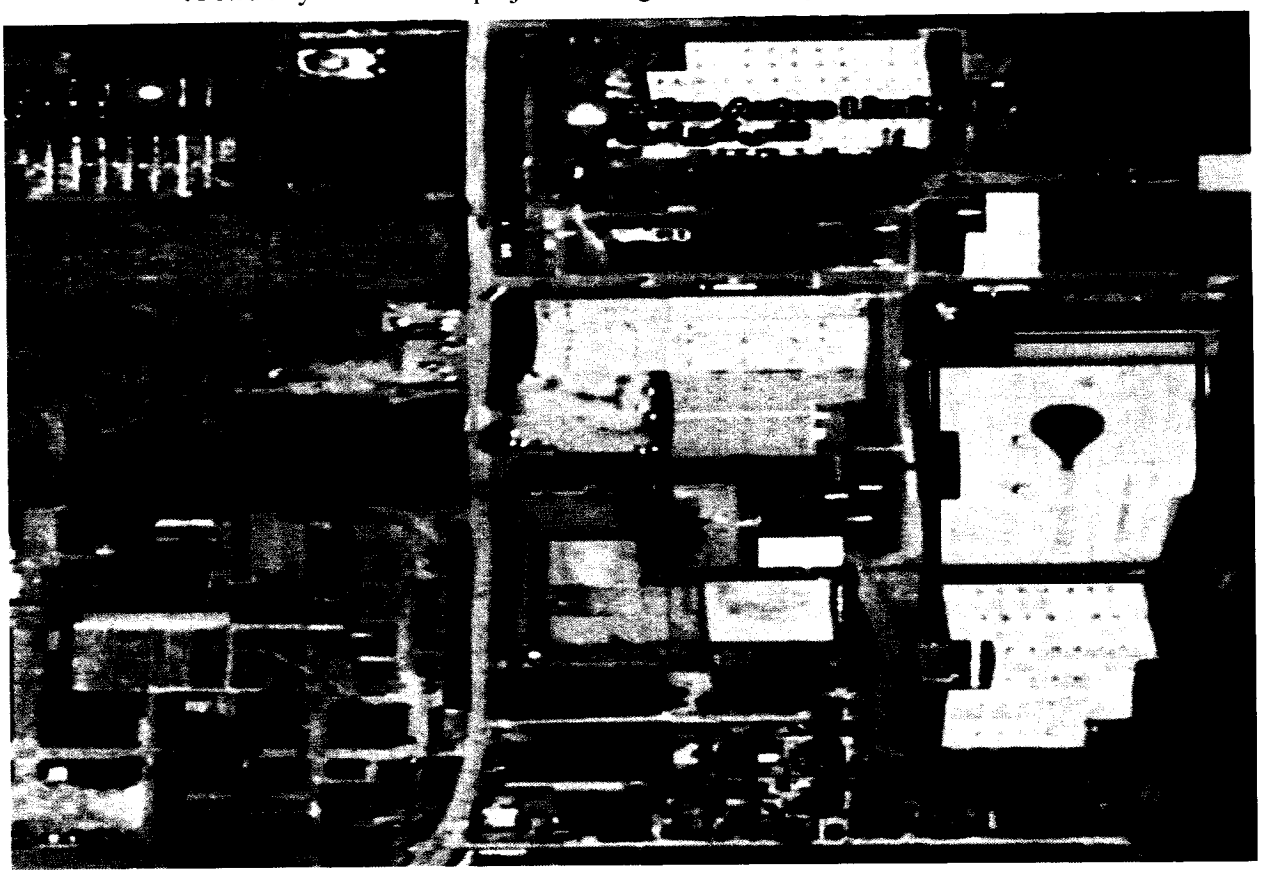
2.1.1. Site Coordinates & Location:

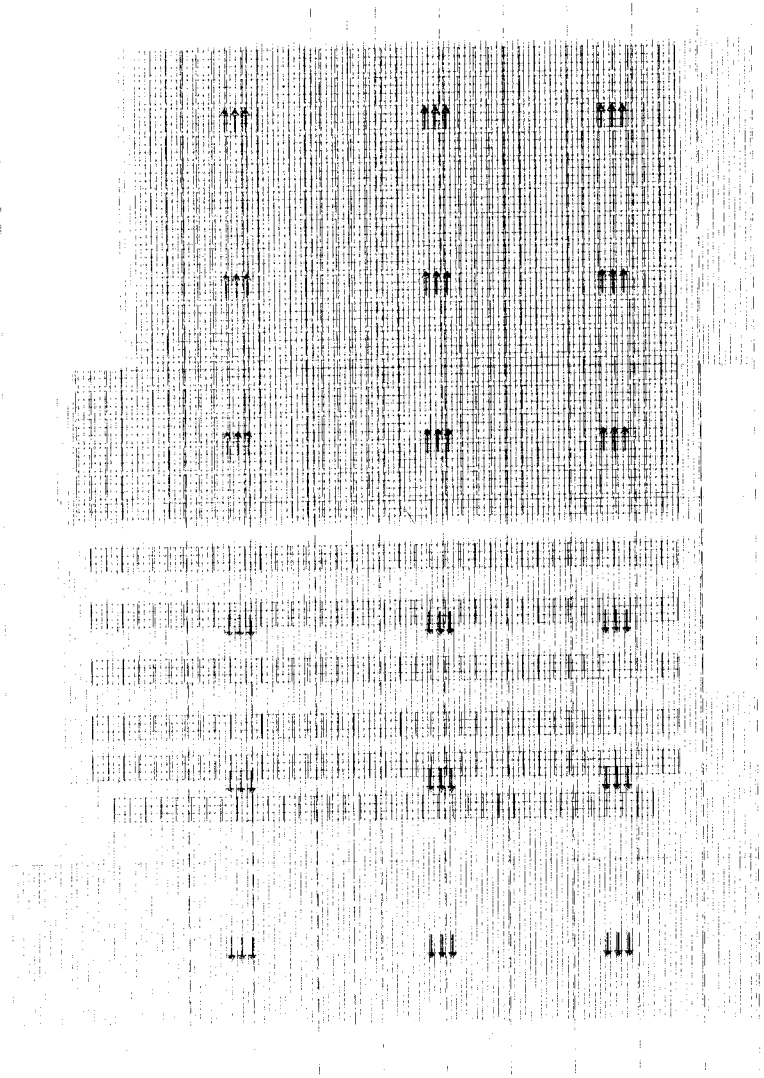
The project site is the rooftop and exact coordinates of the project site are as below:

Coordinate	
Latitude:	31°40'56.5"N
Longitude:	74°05'34.6"E
Field Type:	Fixed tilt plane

2.1.2. Location Map:

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





2.1.3. 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.

2.1.4. Technology Review & Selection:

PV Modules	
Type of Module	Cheetah HC JKM400M-72H
No. of Modules	2,489 (2,489 * 400 Wp = 995,600)
Type of Cell	Mono crystalline
Dimension of each Module	2008x1002x40mm(79.06x39.45x1.57 inch)
Total Module Area	2.012016 m2
Frame of Panel	Anodized aluminium alloy
Weight of one Module	22.5 kg
No of Solar Cells in each module	144 (6×24)
Efficiency of module	19.88%
Maximum Power (P_{max})	400 W_P
Voltage @ P_{max}	41.7 V
Current @ P_{max}	9.60 A
Open circuit voltage (V_{oc})	49.8V

Short circuit current (I_{sc})	10.36A
Maximum system open Circuit Voltage	1000VDC (IEC)

Inverters	
Size & Model	60 KW-SUN2000-60KTL-M0
Input Operating Voltage Range	200 V to 1000 V
Efficiency of inverter	98.7 %
Max. Allowable Input voltage	1100V
Max. Current	22 A
Max. Power Point Tracking Range	200 V to 1000 V
Output electrical system	3 Phase AC
Rated Output Voltage	380 to 480
Power Factor (adjustable)	0.8 LG...0.8 LD
Power control	MPP tracker
Rated Frequency	50 Hz

Mounting Structure	
Structure	Mild Steel/ Aluminum
Tilt Angle	8°
Degradation Factor	First Year 2.5% & remaining 24 Years 0.7%

www.jinkosolar.com

JinKO Solar

Bearing Your Trust

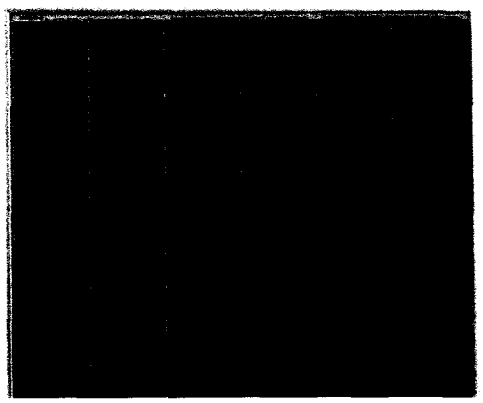
Cheetah HC 72M
380-400 Watt

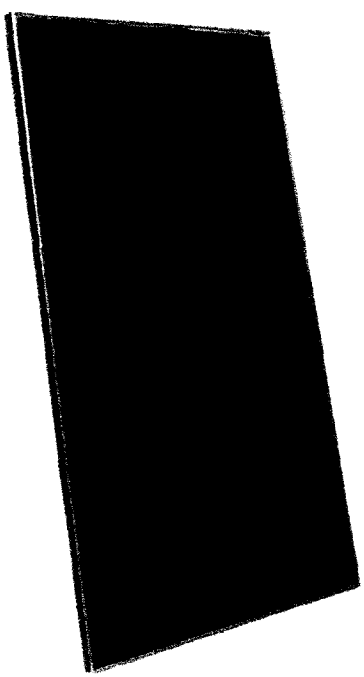
MONO PERC HALF CELL MODULE

Positive power tolerance of 0~+3%

- Half Cell
- Mono PERC 72 Cell

Cheetah PERC





KEY FEATURES

5 Busbar Solar Cell

5 busbar solar cell adopts new technology to improve the efficiency of modules , offers a better aesthetic appearance, making it perfect for rooftop installation.

High Efficiency

Higher module conversion efficiency (up to 19.88%) benefit from half cell structure (low resistance characteristic).

PID Resistance

Excellent Anti-PID performance guarantee limited power degradation for mass production.

Low-light Performance

Advanced glass and cell surface textured design ensure excellent performance in low-light environment.

Severe Weather Resilience

Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).

Durability Against Extreme Environmental Conditions

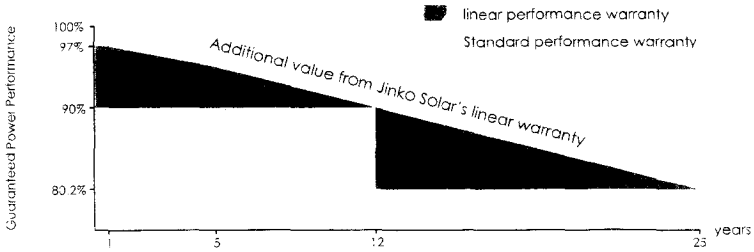
High salt mist and ammonia resistance certified by TUV NORD.

LINEAR PERFORMANCE WARRANTY

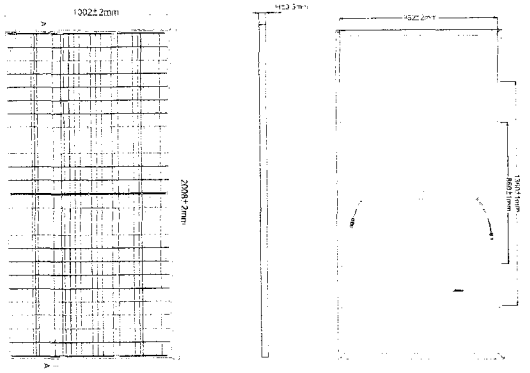
10 Year Product Warranty • 25 Year Linear Power Warranty

PV CYCLE · TÜVRheinland CERTIFIED · CE · POSITIVE QUALITY Continuous Quality Assurance · CLEAN ENERGY COUNCIL MEMBER

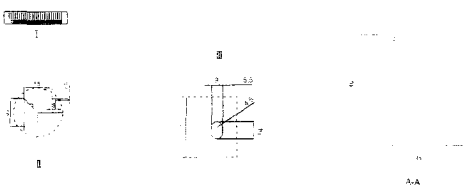
- ISO9001:2008, ISO14001:2004, OHSAS18001 certified factory
- IEC61215, IEC61730, UL1703 certified product



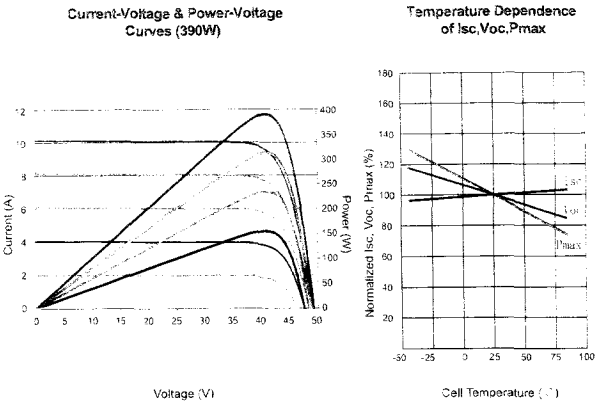
Engineering Drawings



Front Side Back



Electrical Performance & Temperature Dependence



Packaging Configuration

(Two pallets =One stack)

27pcs/pallet , 54pcs/stack, 594pcs/40'HQ Container

Mechanical Characteristics

Cell Type	Mono PERC 158.75×158.75mm
No.of Half-cells	144 (6×24)
Dimensions	2008×1002×40mm (79.06×39.45×1.57 inch)
Weight	22.5 kg (49.6 lbs)
Front Glass	3.2mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67 Rated
Output Cables	TÜV 1x4.0mm², (+) 290mm, (-) 145mm or Customized Length

SPECIFICATIONS

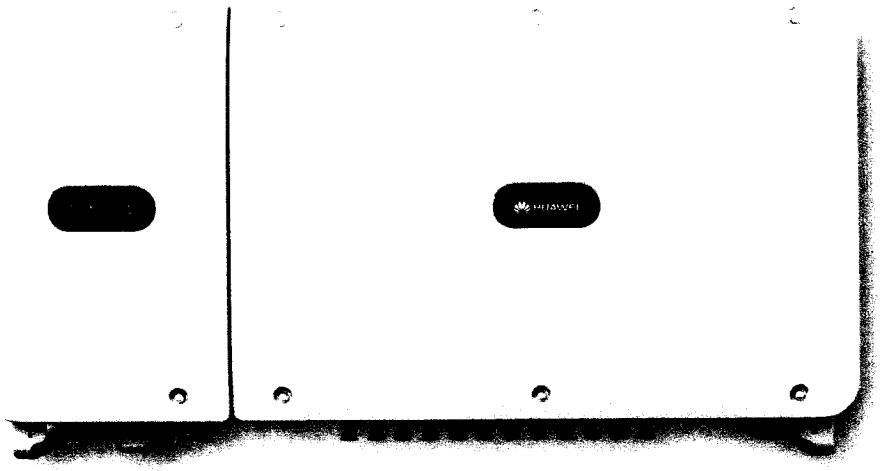
Module Type	JKM380M-72H		JKM385M-72H		JKM390M-72H		JKM395M-72H		JKM400M-72H	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	380Wp	286Wp	385Wp	290Wp	390Wp	294Wp	395Wp	298Wp	400Wp	302Wp
Maximum Power Voltage (Vmp)	40.5V	38.6V	40.8V	38.8V	41.1V	39.1V	41.4V	39.3V	41.7V	39.6V
Maximum Power Current (Imp)	9.39A	7.42A	9.44A	7.48A	9.49A	7.54A	9.55A	7.60A	9.60A	7.66A
Open-circuit Voltage (Voc)	48.9V	47.5V	49.1V	47.7V	49.3V	48.0V	49.5V	48.2V	49.8V	48.5V
Short-circuit Current (Isc)	9.75A	7.88A	9.92A	7.95A	10.12A	8.02A	10.23A	8.09A	10.36A	8.16A
Module Efficiency STC (%)	18.89%		19.14%		19.38%		19.63%		19.88%	
Operating Temperature (℃)	-40℃~+85℃									
Maximum System Voltage	1000VDC (IEC)									
Maximum Series Fuse Rating	20A									
Power Tolerance	0~+3%									
Temperature Coefficients of Pmax	-0.36%/℃									
Temperature Coefficients of Voc	-0.28%/℃									
Temperature Coefficients of Isc	0.048%/℃									
Nominal Operating Cell Temperature (NOCT)	45±2℃									

STC: Irradiance 1000W/m² Cell Temperature 25°C AM=1.5

NOCT: Irradiance 800W/m² Ambient Temperature 20°C AM=1.5 Wind Speed 1m/s

* Power measurement tolerance: ± 3%

SUN2000-60KTL-M0
Smart String Inverter



6
MPP Trackers

98.9% (@480V)
Max. Efficiency

String-level
Management

Smart I-V Curve
Diagnosis Supported

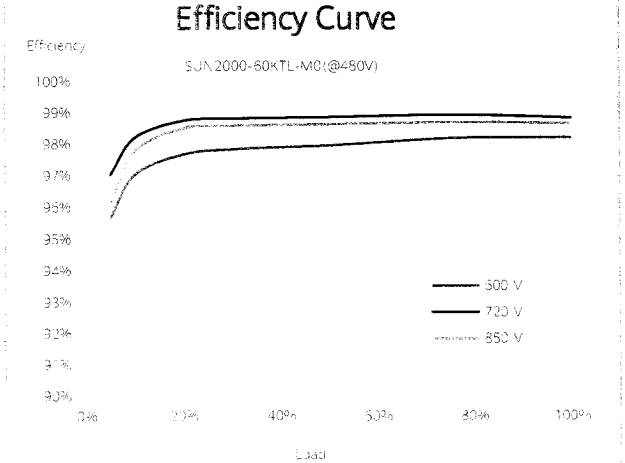
Residual Current
Monitoring Integrated

Fuse Free
Design

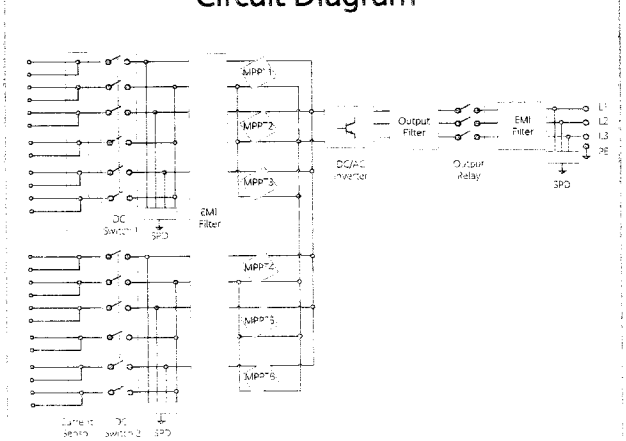
Surge Arresters for
DC & AC

IP65
Protection

Efficiency Curve



Circuit Diagram



SUN2000-60KTL-M0

Technical Specifications

Efficiency

Max. Efficiency	98.9% @480 V, 98.7% @380 V / 400 V
European Efficiency	98.7% @480 V, 98.5% @380 V / 400 V

Input

Max. Input Voltage	1,100 V
Max. Current per MPPT	22 A
Max. Short Circuit Current per MPPT	30 A
Start Voltage	200 V
MPPT Operating Voltage Range	200 V ~ 1,000 V
Rated Input Voltage	720 V @480 Vac, 600 V @380 Vac / 400 Vac
Number of Inputs	12
Number of MPP Trackers	6

Output

Rated AC Active Power	60,000 W
Max. AC Apparent Power	66,000 VA
Max. AC Active Power (cosΦ=1)	66,000 W
Rated Output Voltage	480 V/ 400 V/ 380 V, 3W+(N)+PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	72.2 A @480 V, 86.7 A @400 V, 91.2 A @380 V
Max. Output Current	79.4 A @480 V, 95.3 A @400 V, 100 A @380 V
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Max. Total Harmonic Distortion	< 3%

Protection

Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
Residual Current Monitoring Unit	Yes

Communication

Display	LED Indicators, Bluetooth + APP
USB	Yes
MBUS	Yes
RS485	Yes

General

Dimensions (W x H x D)	1,075 x 555 x 300 mm (42.3 x 21.9 x 11.8 inch)
Weight (with mounting plate)	74 kg (163.1 lb.)
Operating Temperature Range	-25°C ~ 60°C (-13°F ~ 140°F)
Cooling Method	Natural Convection
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0 ~ 100%
DC Connector	Amphenol Helios H4
AC Connector	Waterproof PG Connector + OT Terminal
Protection Degree	IP65
Topology	Transformerless

Standard Compliance (more available upon request)

Certificates	EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 60068, IEC 61683, IEC 61727, DEWA, IEEE 1547, CEI 0-16, CEI 0-21, G59 Issue 3, G99/1-3, NRS 097-2-1

Data Collecting System	
System Data	Continuous online logging with data logging software to portal.

2.1.5. Solar PV Yield Estimation and Simulation of Site:

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:

2.1.6. Working Conditions: Zero Grid Export

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.

2.1.7. 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.

2.1.8. Design Parameters:

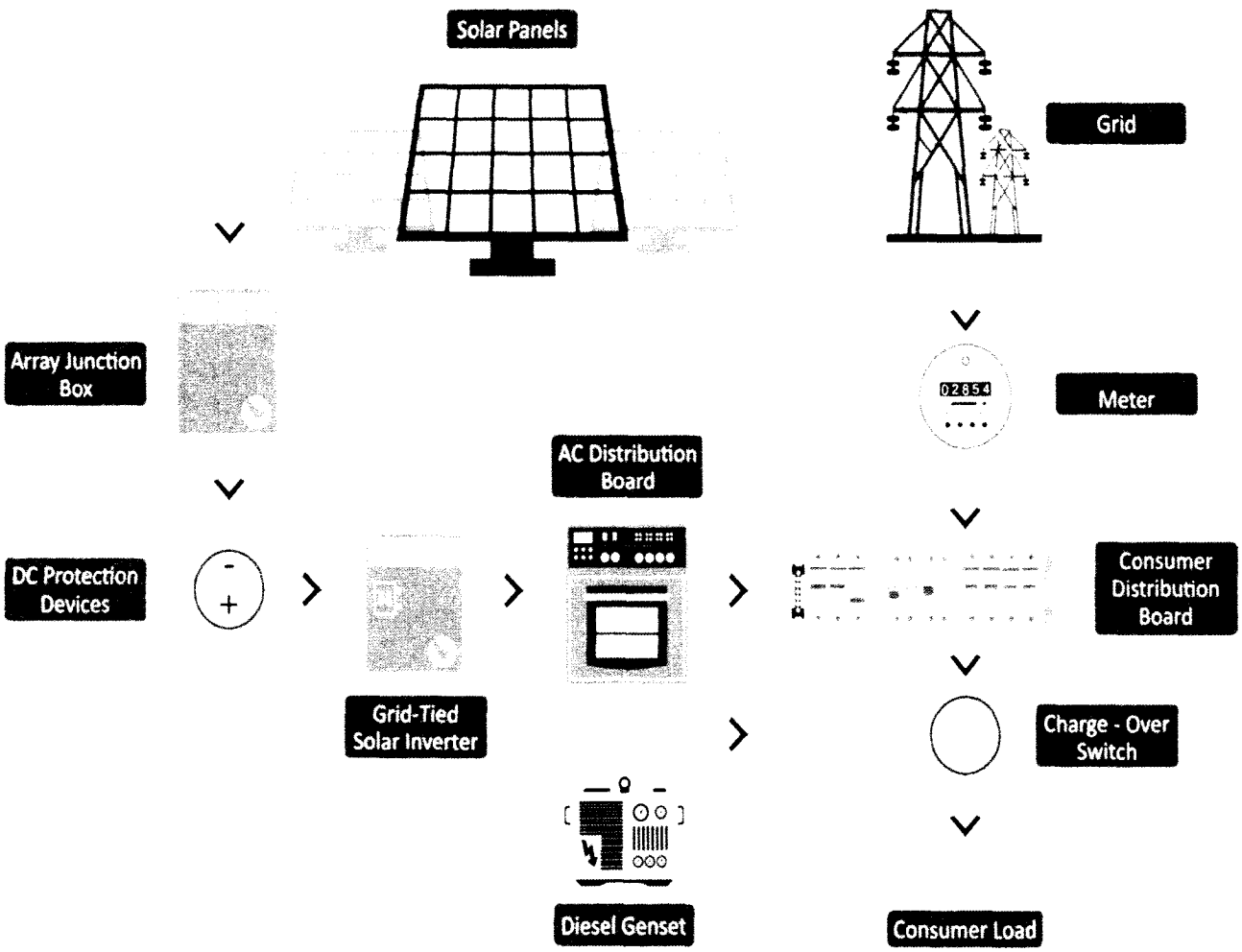
The following tasks were carried out for PV layout and shading.

a) Assessment of shading (horizon and nearby building).
b) Outline layout of area suitable for PV development.
c) Designing row spacing to reduce inter-row shading and associated shading losses.
d) Designing the layout to minimize cable runs and associated electrical losses.
e) Creating access routes and sufficient space to allow movement for maintenance purposes.
f) Choosing a tilt angle that optimizes the annual energy yield according to the latitude of the site and the annual distribution of solar resource.
g) Module cleaning strategy.

h) 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"

i) PV layouts of the site are given in view in the following section.

2.1.9. Concept Design:



2.1.10. Single Line Diagram:

The electrical system comprises the following components:

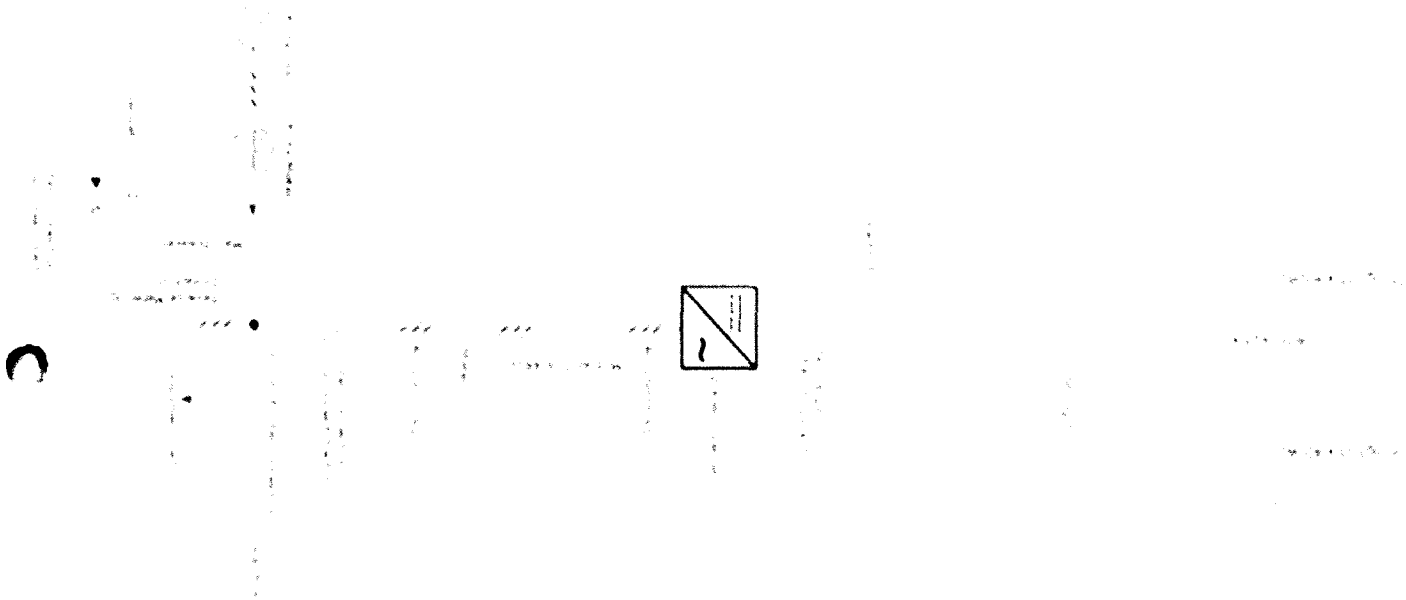
- Array(s) of PV modules
- DC/AC cabling (module, string and main cable)

- DC connectors (plugs and sockets)
- Junction boxes and combiners
- Disconnects/switches
- Protection devices e.g. fuses, surge protective devices, beakers
- Energy Metering
- Earthing

The single line diagrams of DC and AC sides are given below. The single line diagram includes the protection devices that will be used for safe and smooth operation of the system.

Protections DC Side: 'String Fuses, Surge Protective Device and DC Disconnect Switches

Protections AC Side: MCBs, Main Breaker



2.2. Financial Analysis: The project will be financed on an 80% debt & 20% equity model. The total estimated project cost is PKR 77,298,500. Based on the technical and financial analysis, the installation of an 995.60 kWp Solar PV System on the rooftop of various sites as shown in above table

Grid-Connected System: Simulation parameters

Project : **AAL CBU N Project**

Geographical Site	**Atlas Honda Limited**		Country	**Pakistan**
Situation	Latitude	31.68° N	Longitude	74.09° E
Time defined as	Legal Time	Time zone UT+5	Altitude	209 m
	Albedo	0.20		
Meteo data:	**Atlas Honda Limited**	Meteonorm 7.2 (1981-1990) - Synthetic		

Simulation variant : **New simulation variant**

	Simulation date	25/01/20 16h46
	Simulation for the	**1st year of operation**

Simulation parameters	System type	**No 3D scene defined, no shadings**		
Collector Plane Orientation	Tilt	6°	Azimuth	-170°
Models used	Transposition	Perez	Diffuse	Perez, Meteonorm
Horizon	Free Horizon			
Near Shadings	No Shadings			
User's needs :	Unlimited load (grid)			

PV Array Characteristics

PV module	Si-mono	Model	**JKM 400M-72H-V**	
Custom parameters definition		Manufacturer	Jinkosolar	
Number of PV modules		In series	19 modules	In parallel 70 strings
Total number of PV modules		Nb. modules	1330	Unit Nom. Power 400 Wp
Array global power		Nominal (STC)	**532 kWp**	At operating cond. 487 kWp (50°C)
Array operating characteristics (50°C)		U mpp	702 V	I mpp 693 A
Total area		Module area	**2676 m²**	Cell area 2413 m²

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		Nb. of inverters	7 units	Total Power 420 kWac
				Pnom ratio 1.27

PV Array loss factors

Array Soiling Losses — Average loss Fraction 4.0 %

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%

Thermal Loss factor	Uc (const)	18.0 W/m²K	Uv (wind)	0.0 W/m²K / m/s
Wiring Ohmic Loss	Global array res.	8.1 mOhm	Loss Fraction	0.7 % at STC
LID - Light Induced Degradation			Loss Fraction	2.0 %
Module Quality Loss			Loss Fraction	0.7 %
Module Mismatch Losses			Loss Fraction	1.0 % at MPP
Strings Mismatch loss			Loss Fraction	0.10 %
Module average degradation	Year no	1	Loss factor	1.2 %/year
Mismatch due to degradation	Imp RMS dispersion	0.4 %/year	Vmp RMS dispersion	0.4 %/year

Incidence effect (IAM): User defined profile

0°	30°	50°	65°	70°	75°	80°	85°	90°
1.000	1.000	1.000	0.957	0.918	0.865	0.759	0.532	0.000

Grid-Connected System: Simulation parameters

System loss factors

Wiring Ohmic Loss	Wires: 3x300.0 mm² 30 m	Loss Fraction	0.6 % at STC
Unavailability of the system	7.3 days, 3 periods	Time fraction	2.0 %

Grid-Connected System: Main results

Project : **AAL CBU N Project**

Simulation variant : **New simulation variant**

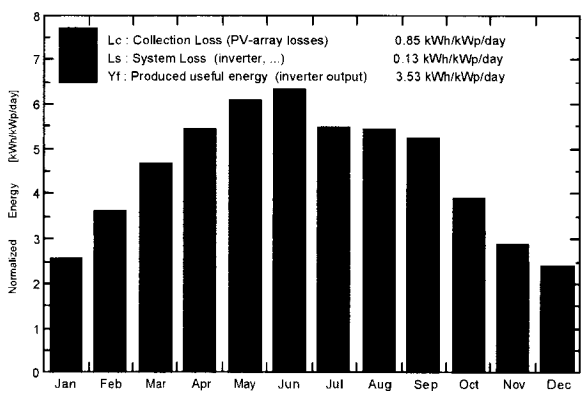
Simulation for the 1st year of operation

Main system parameters	System type	**No 3D scene defined, no shadings**		
PV Field Orientation	tilt	6°	azimuth	-170°
PV modules	Model	JKM 400M-72H-V	Pnom	400 Wp
PV Array	Nb. of modules	1330	Pnom total	**532 kWp**
Inverter	Model	SUN2000-60KTL-M0_400Vac		60.0 kW ac
Inverter pack	Nb. of units	7.0	Pnom total	**420 kW ac**
User's needs	Unlimited load (grid)			

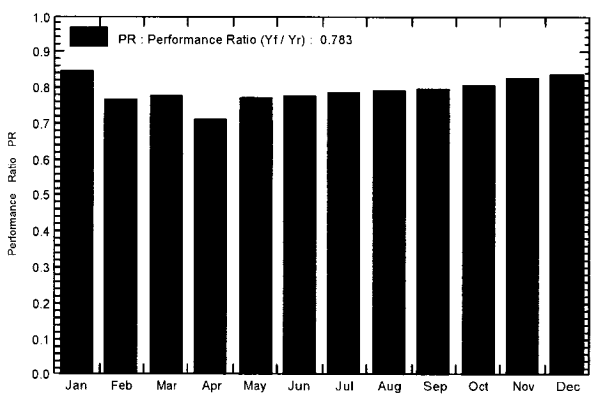
Main simulation results

System Production	**Produced Energy**	**685.1 MWh/year**	Specific prod.	1288 kWh/kWp/year
	Performance Ratio PR	78.34 %		

Normalized productions (per installed kWp): Nominal power 532 kWp



Performance Ratio PR



New simulation variant

Balances and main results

	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	PR
January	88.8	42.80	11.26	79.5	73.2	36.44	35.86	0.848
February	110.4	46.30	15.50	101.4	94.6	45.93	41.33	0.766
March	153.0	64.40	21.17	145.0	136.1	63.75	59.94	0.777
April	166.8	82.40	26.53	162.7	153.0	69.76	61.36	0.709
May	189.6	96.70	32.16	187.9	177.2	78.22	76.96	0.770
June	190.0	98.70	31.94	189.7	178.9	79.39	78.11	0.774
July	170.8	96.80	30.81	170.1	160.1	72.12	70.98	0.784
August	171.2	97.20	30.22	168.1	158.2	71.75	70.63	0.790
September	163.1	74.40	28.03	156.4	147.0	67.23	66.19	0.795
October	129.6	66.30	24.66	121.4	113.7	52.97	52.17	0.808
November	96.2	44.70	17.99	86.7	80.2	38.74	38.15	0.828
December	85.1	39.10	13.16	75.1	68.8	33.99	33.46	0.837
Year	1714.6	849.80	23.66	1643.9	1540.9	710.33	685.12	0.783

Legends:

GlobHor	Horizontal global irradiation	GlobEff	Effective Global, corr. for IAM and shadings
DiffHor	Horizontal diffuse irradiation	EArray	Effective energy at the output of the array
T_Amb	T amb.	E_Grid	Energy injected into grid
GlobInc	Global incident in coll. plane	PR	Performance Ratio

Grid-Connected System: Special graphs

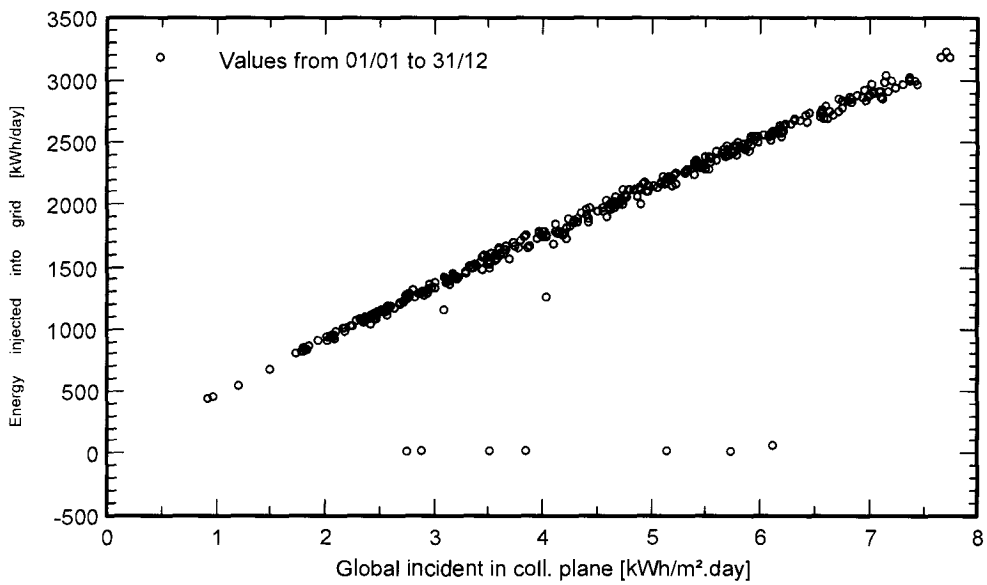
Project : **AAL CBU N Project**

Simulation variant : **New simulation variant**

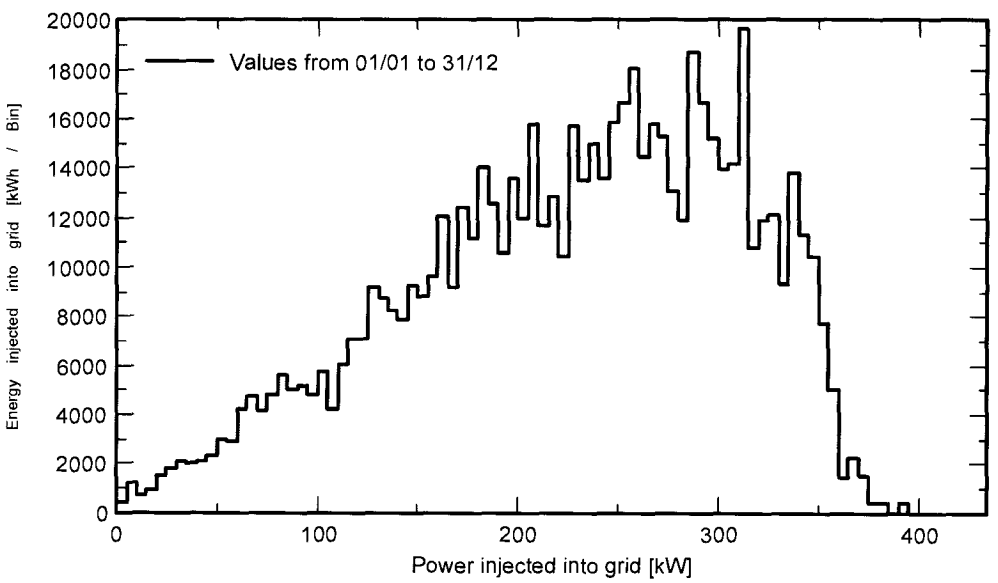
Simulation for the 1st year of operation

Main system parameters	System type	**No 3D scene defined, no shadings**		
PV Field Orientation	tilt	6°	azimuth	-170°
PV modules	Model	JKM 400M-72H-V	Pnom	400 Wp
PV Array	Nb. of modules	1330	Pnom total	**532 kWp**
Inverter	Model	SUN2000-60KTL-M0_400Vac		60.0 kW ac
Inverter pack	Nb. of units	7.0	Pnom total	**420 kW ac**
User's needs	Unlimited load (grid)			

Daily Input/Output diagram



System Output Power Distribution



Grid-Connected System: Loss diagram

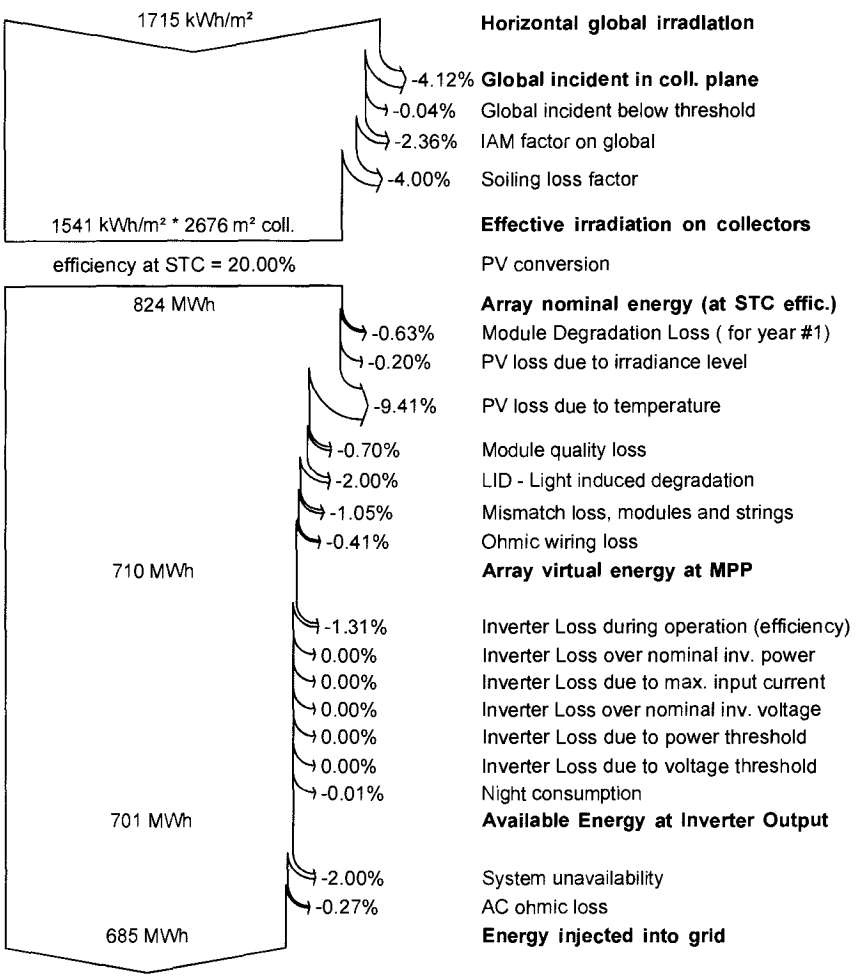
Project : **AAL CBU N Project**

Simulation variant : **New simulation variant**

Simulation for the 1st year of operation

Main system parameters	System type	**No 3D scene defined, no shadings**		
PV Field Orientation	tilt	6°	azimuth	-170°
PV modules	Model	JKM 400M-72H-V	Pnom	400 Wp
PV Array	Nb. of modules	1330	Pnom total	**532 kWp**
Inverter	Model	SUN2000-60KTL-M0_400Vac		60.0 kW ac
Inverter pack	Nb. of units	7.0	Pnom total	**420 kW ac**
User's needs	Unlimited load (grid)			

Loss diagram over the whole year



Grid-Connected System: P50 - P90 evaluation

Project : **AAL CBU N Project**

Simulation variant : **New simulation variant**

Simulation for the 1st year of operation

Main system parameters	System type	**No 3D scene defined, no shadings**		
PV Field Orientation	tilt	6°	azimuth	-170°
PV modules	Model	JKM 400M-72H-V	Pnom	400 Wp
PV Array	Nb. of modules	1330	Pnom total	**532 kWp**
Inverter	Model	SUN2000-60KTL-M0_400Vac		60.0 kW ac
Inverter pack	Nb. of units	7.0	Pnom total	**420 kW ac**
User's needs	Unlimited load (grid)			

Evaluation of the Production probability forecast

The probability distribution of the system production forecast for different years is mainly dependent on the meteo data used for the simulation, and depends on the following choices:

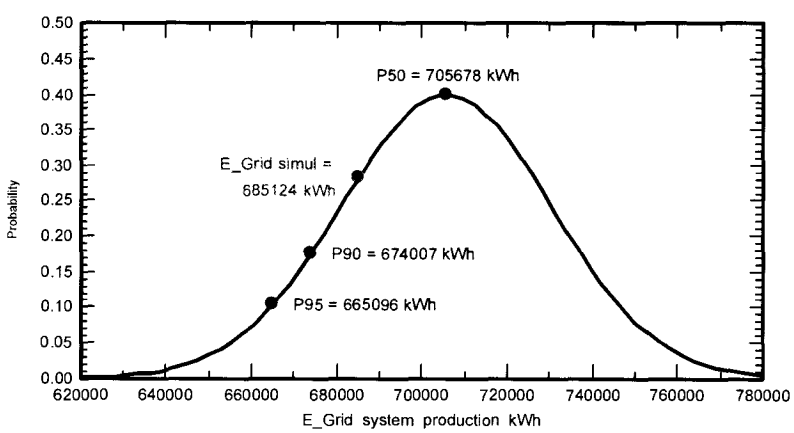
Meteo data source		Meteonorm 7.2 (1981-1990)		
Meteo data	Kind	Monthly averages	Synthetic	Multi-year average
Specified Deviation	Climate change	3.0 %		
Year-to-year variability	Variance	3.0 %		

The probability distribution variance is also depending on some system parameters uncertainties

Specified Deviation	PV module modelling/parameters	1.0 %	
	Inverter efficiency uncertainty	0.5 %	
	Soiling and mismatch uncertainties	1.0 %	
	Degradation uncertainty	1.0 %	
Global variability (meteo + system)	Variance	3.5 %	(quadratic sum)

Annual production probability	**Variability**	**24.7 MWh**
	P50	**705.7 MWh**
	P90	**674.0 MWh**
	P95	**665.1 MWh**

Probability distribution



Grid-Connected System: Simulation parameters

Project : **AAL CBU S Project**

Geographical Site	**Atlas Honda Limited**		Country	**Pakistan**
Situation	Latitude	31.68° N	Longitude	74.09° E
Time defined as	Legal Time	Time zone UT+5	Altitude	209 m
	Albedo	0.20		
Meteo data:	**Atlas Honda Limited**	Meteonorm 7.2 (1981-1990) - Synthetic		

Simulation variant : **New simulation variant**

	Simulation date	25/01/20 16h43
	Simulation for the	**1st year of operation**

Simulation parameters	System type	**No 3D scene defined, no shadings**		
Collector Plane Orientation	Tilt	6°	Azimuth	-10°
Models used	Transposition	Perez	Diffuse	Perez, Meteonorm
Horizon	Free Horizon			
Near Shadings	No Shadings			
User's needs :	Unlimited load (grid)			

PV Array Characteristics

PV module	Si-mono	Model	**JKM 400M-72H-V**		
Custom parameters definition		Manufacturer	Jinkosolar		
Number of PV modules		In series	19 modules	In parallel	61 strings
Total number of PV modules		Nb. modules	1159	Unit Nom. Power	400 Wp
Array global power		Nominal (STC)	**464 kWp**	At operating cond.	424 kWp (50°C)
Array operating characteristics (50°C)		U mpp	702 V	I mpp	604 A
Total area		Module area	**2332 m²**	Cell area	2103 m²

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		Nb. of inverters	6 units	Total Power	360 kWac
				Pnom ratio	1.29

PV Array loss factors

Array Soiling Losses — Average loss Fraction 4.0 %

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%

Thermal Loss factor	Uc (const)	18.0 W/m²K	Uv (wind)	0.0 W/m²K / m/s	
Wiring Ohmic Loss	Global array res.	9.2 mOhm	Loss Fraction	0.7 % at STC	
LID - Light Induced Degradation			Loss Fraction	2.0 %	
Module Quality Loss			Loss Fraction	0.7 %	
Module Mismatch Losses			Loss Fraction	1.0 % at MPP	
Strings Mismatch loss			Loss Fraction	0.10 %	
Module average degradation	Year no	1	Loss factor	1.2 %/year	
Mismatch due to degradation	Imp RMS dispersion	0.4 %/year	Vmp RMS dispersion	0.4 %/year	

Incidence effect (IAM): User defined profile

0°	30°	50°	65°	70°	75°	80°	85°	90°
1.000	1.000	1.000	0.957	0.918	0.865	0.759	0.532	0.000

Grid-Connected System: Simulation parameters

System loss factors

Wiring Ohmic Loss	Wires: 3x300.0 mm² 30 m	Loss Fraction	0.5 % at STC
Unavailability of the system	7.3 days, 3 periods	Time fraction	2.0 %

Grid-Connected System: Main results

Project : **AAL CBU S Project**

Simulation variant : **New simulation variant**

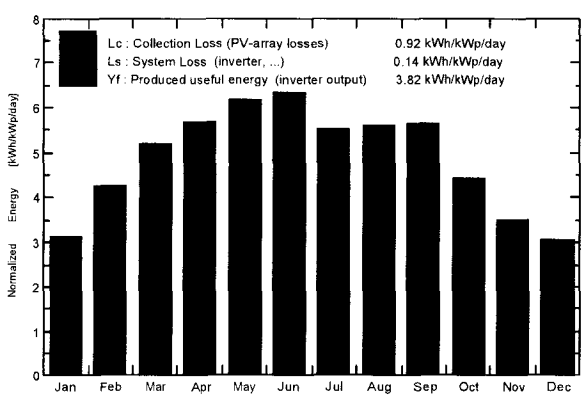
Simulation for the 1st year of operation

Main system parameters	System type	**No 3D scene defined, no shadings**		
PV Field Orientation	tilt	6°	azimuth	-10°
PV modules	Model	JKM 400M-72H-V	Pnom	400 Wp
PV Array	Nb. of modules	1159	Pnom total	**464 kWp**
Inverter	Model	SUN2000-60KTL-M0_400Vac		60.0 kW ac
Inverter pack	Nb. of units	6.0	Pnom total	**360 kW ac**
User's needs	Unlimited load (grid)			

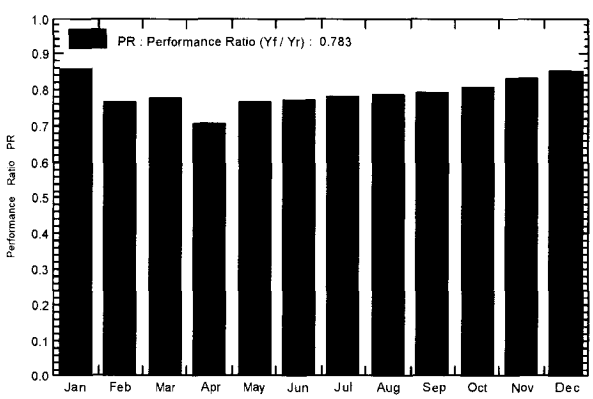
Main simulation results

System Production	**Produced Energy**	**646.7 MWh/year**	Specific prod.	1395 kWh/kWp/year
	Performance Ratio PR	78.31 %		

Normalized productions (per installed kWp): Nominal power 464 kWp



Performance Ratio PR



New simulation variant

Balances and main results

	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	PR
January	88.8	42.80	11.26	97.6	91.5	39.41	38.77	0.857
February	110.4	46.30	15.50	119.5	112.5	47.12	42.32	0.764
March	153.0	64.40	21.17	160.6	151.3	61.13	57.55	0.773
April	166.8	82.40	26.53	170.5	160.5	63.34	55.52	0.702
May	189.6	96.70	32.16	191.0	180.0	68.96	67.85	0.766
June	190.0	98.70	31.94	190.1	179.1	69.10	68.00	0.772
July	170.8	96.80	30.81	171.1	161.0	63.00	62.01	0.782
August	171.2	97.20	30.22	173.6	163.4	64.24	63.24	0.786
September	163.1	74.40	28.03	169.6	159.7	63.13	62.14	0.790
October	129.6	66.30	24.66	137.5	129.4	52.06	51.26	0.804
November	96.2	44.70	17.99	105.4	98.9	41.26	40.62	0.832
December	85.1	39.10	13.16	95.0	89.1	38.05	37.45	0.850
Year	1714.6	849.80	23.66	1781.4	1676.4	670.81	646.75	0.783

Legends:

GlobHor	Horizontal global irradiation	GlobEff	Effective Global, corr. for IAM and shadings
DiffHor	Horizontal diffuse irradiation	EArray	Effective energy at the output of the array
T_Amb	T amb.	E_Grid	Energy injected into grid
GlobInc	Global incident in coll. plane	PR	Performance Ratio

Grid-Connected System: Special graphs

Project : **AAL CBU S Project**

Simulation variant : **New simulation variant**

Simulation for the 1st year of operation

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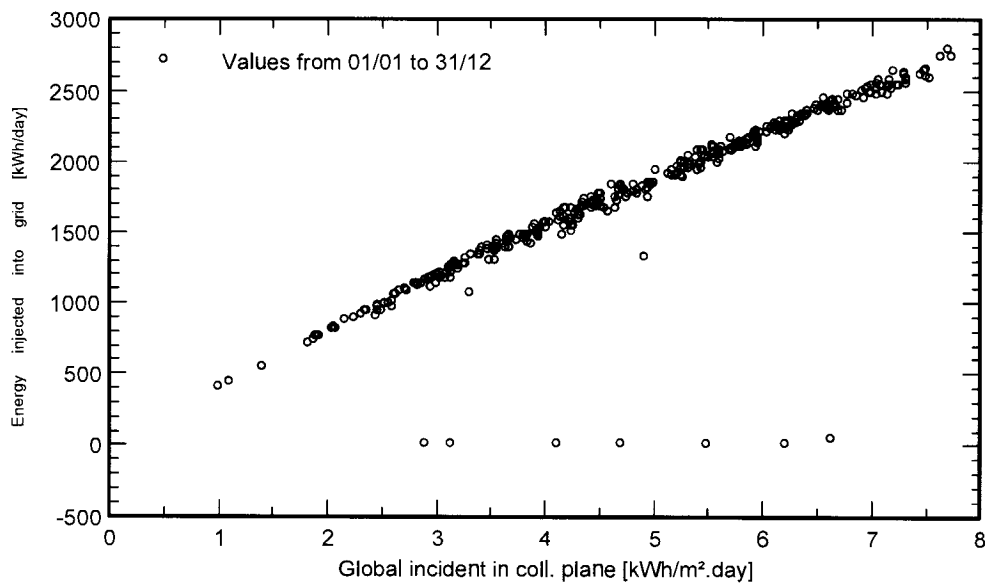
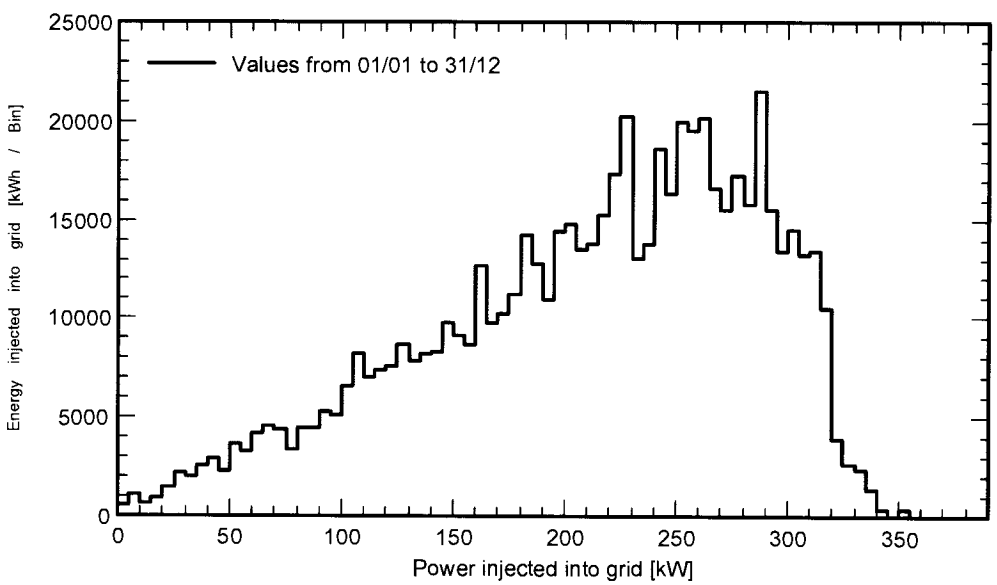
Inverter pack	Nb. of units	6.0	Pnom total	**360 kW ac**
User's needs	Unlimited load (grid)			

Daily Input/Output diagram



System Output Power Distribution



Grid-Connected System: Loss diagram

Project : **AAL CBU S Project**

Simulation variant : **New simulation variant**

Simulation for the 1st year of operation

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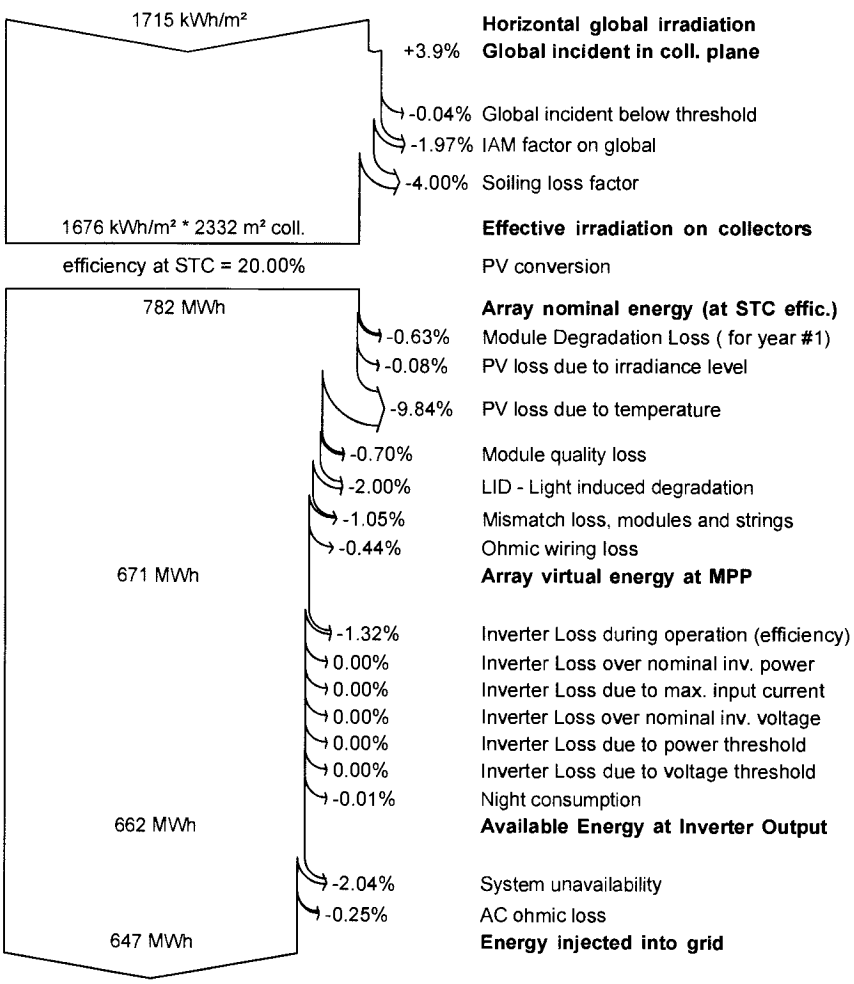
User's needs	Unlimited load (grid)			

Loss diagram over the whole year



Grid-Connected System: P50 - P90 evaluation

Project : **AAL CBU S Project**

Simulation variant : **New simulation variant**

Simulation for the 1st year of operation

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The probability distribution of the system production forecast for different years is mainly dependent on the meteo data used for the simulation, and depends on the following choices:

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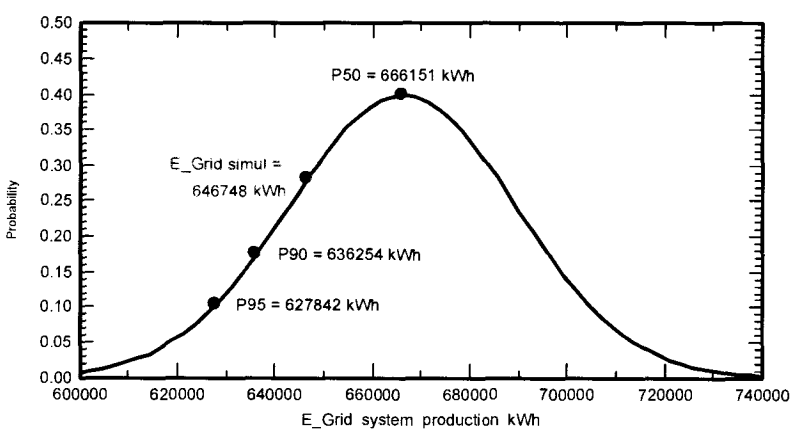
Global variability (meteo + system)	Variance	3.5 %	(quadratic sum)

Annual production probability	**Variability**	**23.3 MWh**
	P50	**666.2 MWh**
	P90	**636.3 MWh**
	P95	**627.8 MWh**

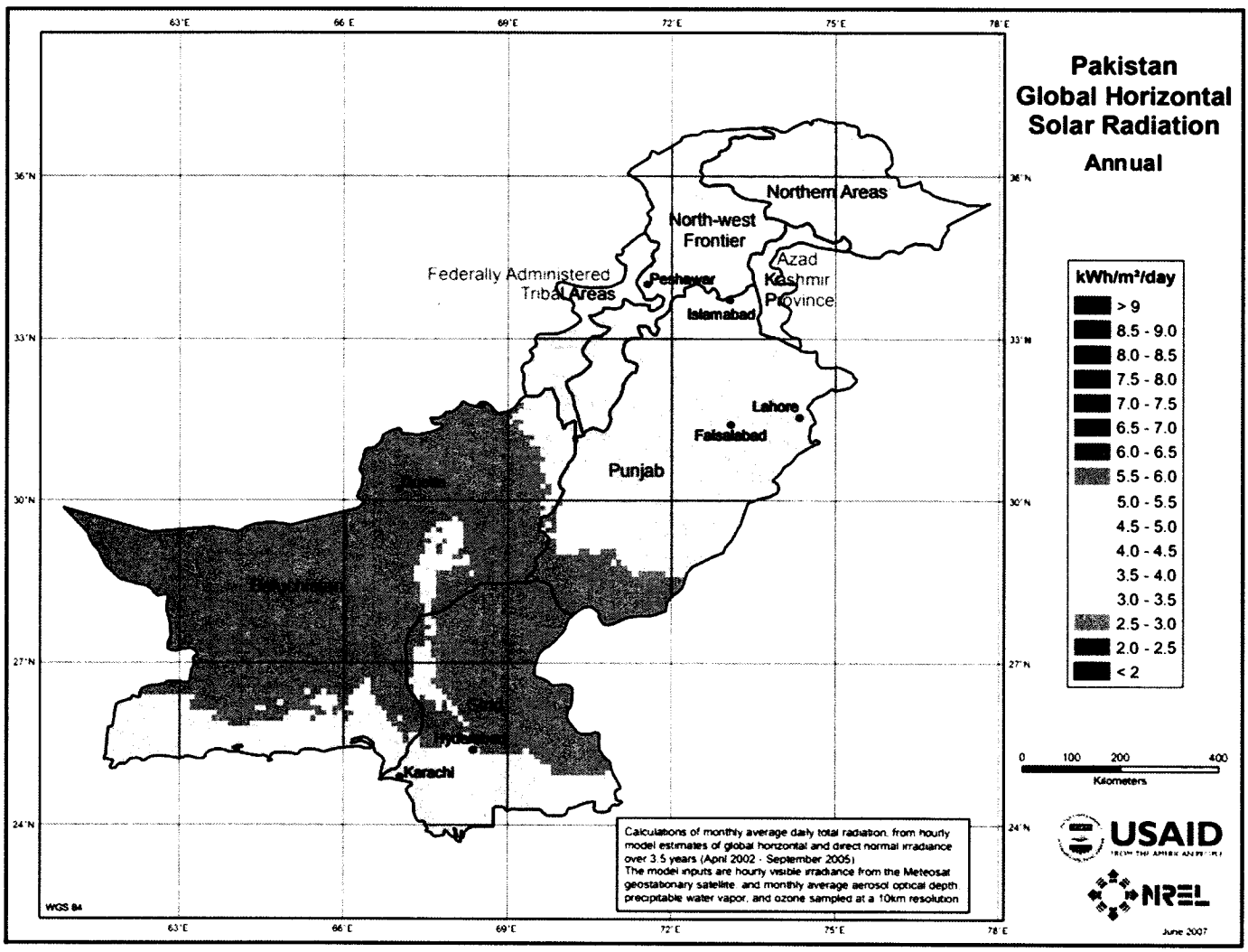
Probability distribution



3. Project Rationale

It is a commonly knowledge that availability of electricity in any country that has direct effect on its economy and social factors and therefore, in order to measure the affluence of a society, the per capita energy consumption is used as index. An economy's production and consumption of electricity are basic indicators of its size and level of development. Although a few countries export electric power, most production is for domestic consumption. Expanding the supply of electricity to meet the growing demand of increasingly urbanized and industrialized economies without incurring unacceptable social, economic, and environmental costs is one of the great challenges facing developing countries. Modern societies are becoming increasing dependent on reliable and secure electricity supplies to underpin economic growth and community prosperity. This reliance is set to grow as more efficient and less carbon intensive forms of power are developed and deployed to help decarbonize economies. Maintaining reliable and secure electricity services while seeking to rapidly decarbonize power systems is a key challenge for countries throughout the world. In developing economies growth in energy use is closely related to growth in the modern sectors - industry, motorized transport, and urban areas - but energy use also reflects climatic, geographic, and economic factors (such as the relative price of energy). Energy use has been growing rapidly in low- and middle-income economies, but high-income economies still use almost five times as much energy on a per capita basis. Governments in many countries are increasingly aware of the urgent need to make better use of the world's energy resources. Improved energy efficiency is often the most economic and readily available means of improving energy security and reducing greenhouse gas emissions. Pakistan's per capita energy consumption of Pakistan Generation of electricity in Pakistan is largely on furnace oil whose substantial quantity is imported, prices whereof adversely affect the generation in the country. Although natural gas is a cheaper fuel however its reserves are depleting rapidly. In these circumstances, the use of solar power in Pakistan appears to be quite an attractive mode of generation of electric power. Further, its use does not require refining, transporting and conveying fuels and power over long distances. Moreover, solar power does not create pollution. Naturally, Pakistan is located in the Sunny Belt and can take advantage of its ideal situation for utilization of solar energy. The country potential for solar generation is beyond doubt as it has high solar irradiation and enough space for installation of generation system those are ideal for PV and other solar energy applications. Villages and other areas which are away from grid or distribution system of utilities can also benefit from solar power generation which will also save the extra cost of laying the system and the losses. Solar energy, on the other hand, 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. meter in a year. It has an average daily global isolation of 19 to 20 MJ/sq. meter 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. Pakistan receives about 15.5x1014 kWh of solar irradiance each year with most regions receiving approximately 8 to 10 sunlight hours per day. The installed capacity of solar photovoltaic power is estimated to be 1600 GW per year, providing approximately 3.5 PWh of electricity (a figure approximately 41 times that of current power generation in the country). To summarize, the sun shines for 250-300 days per years in Pakistan with average sun shine hours of 8-10 per day. This gives huge amount of energy to be used for electricity generation by solar photovoltaic

and solar thermal power plants. A quick idea for the potential of solar energy in Pakistan can be obtained from the satellite map of solar radiation released by National Renewable Energy Lab (NREL) of USA.



4. Environment Aspect:

Every energy generation and transmission method affects the environment. Conventional generating options can damage air, climate, water, land & 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 operations.

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

- Reduction of the emissions of the greenhouse gases (mainly CO2, NOx) and prevention of toxic gas emissions (S02, particulates)
- Reduction of the required transmission lines of the electricity grids.

5. 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
- Support of the deregulation of energy market
- Diversification of the deregulation of energy markets

6. Safety & 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.

7. Training and Capacity Development:

Trained and qualified personnel will be available at site 24/7 with proper safety and fire-fighting 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 & development program.

- Collection of Resource Data
- Variability and uncertainty of resource data
- Site evaluation
- Crystalline and thin film technology comparison
- Rooftop solar system components
- Module mounting structure selection
- Inverter selection
- Design of PV Array
- Shadow Analysis
- DC Cable Layout
- DC Cable Sizing
- Protection and Metering
- Installation and Testing standards for solar PV plants
- Solar Module testing standards
- Economy of Roof Top Solar System
- Detailed Project Report
- Operation and maintenance of rooftop solar system
- Safety and fire-fighting training

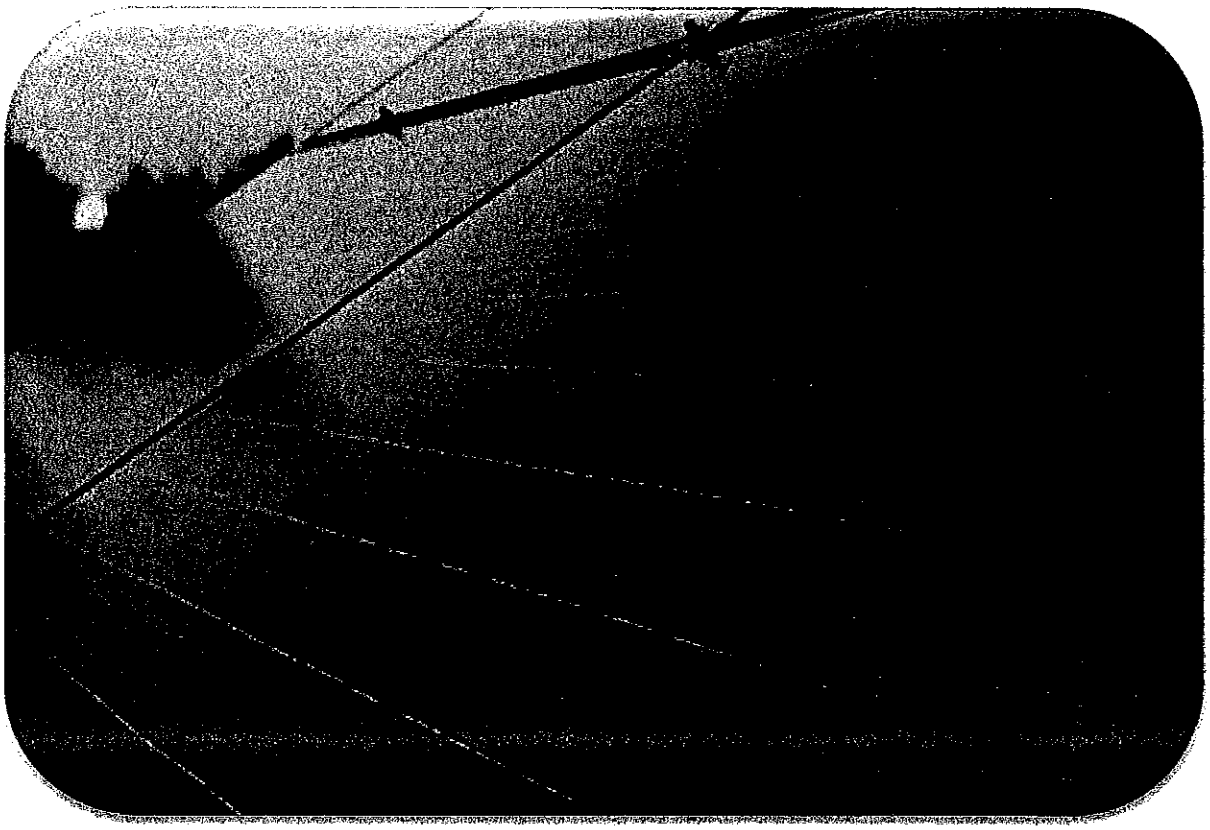
8. Conclusion:

This feasibility study is conducted to ascertain the technical feasibility and commercial viability of installation of 995.60 kWp at designated location on rooftop. Installation of the PV system will result in annual power generation of approx. 1,350,081 kWh/ Year. The results of the financial analysis indicate that the project is feasible. Based on the outcomes of both the technical and financial analysis, the project is deemed to be viable.

3(5)(i) Prospectus

Atlas Energy

Application for Generation License
995.60 kWp On-grid Solar PV Plant



Atlas Energy

ATLAS ENERGY LIMITED

Company Profile

Atlas Energy Limited

Introduction

Atlas Energy Limited was incorporated as an unquoted - public limited company in Pakistan on 18 May 2016, under the Companies Ordinance, 1984. The registered office of the Company is situated at 26-27 km, Lahore – Sheikhupura Road, Sheikhupura. The Company was incorporated to provide cost effective tailored solar solutions for industrial and commercial consumer through sale of power, Engineering, Procurement and construction (EPC), operation and Maintenance and giving attractive return to investors.

Vision:

A leading Company in Solar industry in all respects – providing cost effective tailored solutions for industrial and commercial consumer through sale of power, Engineering, Procurement and construction (EPC), operation and Maintenance and giving attractive return to investors being responsible corporate citizen and employer of choice.

Mission:

Being Competitive to provide unique, advance and effective solar solutions to industrial and commercial customers in safe, reliable and environment friendly manner acting with integrity following sound practices with a sense of service in a culture that respects and values the satisfaction of our customers.

Membership of Industry & Associations:

- Pakistan Engineering Council
- Lahore Chamber of Commerce & Industries
- Alternative Energy Development Board

List of Projects:

Some of our successful completed projects are as follows:

Sr. No.	Category	Project Name/ Location	Nature of Work	Size of Installation (kWp)
1.	Industrial	Honda Atlas Cars Pak Ltd. (Lahore)	EPC	497.7
2.	Domestic	DHA Phase-V, Karachi	EPC	6.0
3.	Domestic	DHA Phase-V, Karachi	EPC	6.0
4.	Industrial	Atlas Honda Ltd. (Sheikhupura)	EPC	589.05
5.	Industrial	Pakistan Cables (Nooriabad, Sindh)	EPC	7.20
6.	Industrial	Atlas Honda Ltd. (Sheikhupura)	EPC	405.79

Total Projects Installed: 1,511.74 kWp

Purpose

Atlas Energy intends to install 995.60 kWp Solar Power Plants in owner premises to provide electricity under PEPA mode. The installed capacity of plants is proposed by critically analyzing the current load and future load projections of site.

Project cost, information regarding sources and amounts of equity, debt.

The Capital cost shall include the cost borne by the Applicant Company on feasibility studies, planning, designing, material, construction and installation of the Generation Facilities.

The cost of land, step-up transformer, interconnection with distribution system of utility are not included being not required.

The Applicant shall arrange the required funding through 20% Equity, 80% Debt. Debt may be availed under SBP Green Financing Scheme.

Location	System Size (kWp)	Total Project Cost (PKR)	Debt 80%	Equity 20%
Atlas Autos Ltd. Sheikhupura	995.60	77,298,501	61,838,801	15,459,700

Environment Assessment/ Conclusion:

The site allocated is private land within the premises of Atlas Autos Limited (Plant) and the applicant has carried out detailed environment assessment of the site for installation of solar PV Plant. Overall findings:

Environment Parameters	Level of Impact	Reasons	Mitigation Measures
Air Impact	Low	Solar Energy is Carbon Free	(No Emissions)
Water	Low	Plant will required a very low quantity of water for cleaning purpose only	RO Plant is already installed at site and water from said source may be used for cleaning of Modules
Land	Low	No impact on Land	As said project is purely roof based which have no impact on Land
Ecosystem	Low	No ecologically sensitive area lies with in premises	There is no significant vegetation cover within the selected area
Socio Eco system	Low	Total area identified for said project is in plant premises and no acquisition is needed	Not Applicable

Safety plans, 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 fire-fighting 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 & development program.

- Collection of Resource Data
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- Module mounting structure selection
- Inverter selection
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- Shadow Analysis
- DC Cable Layout
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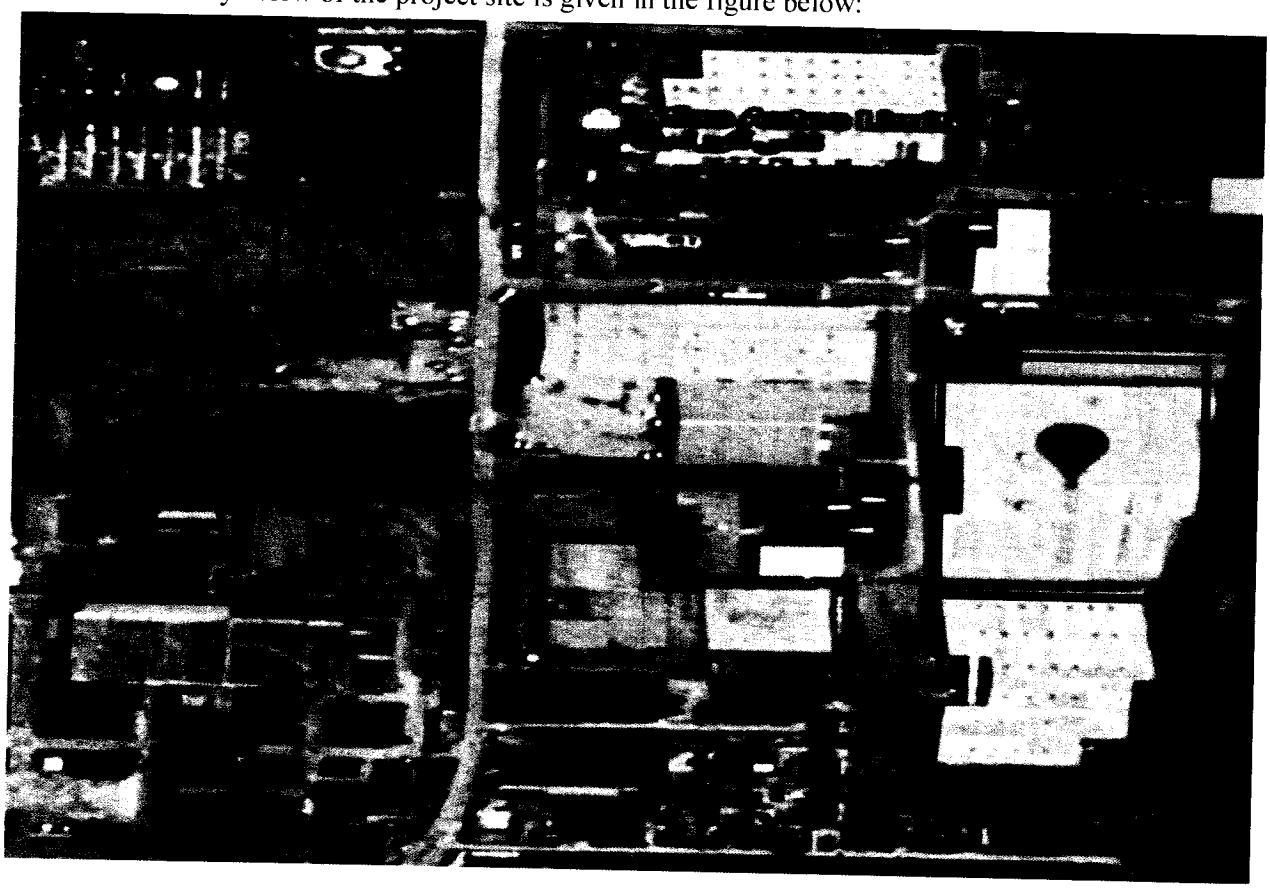
- Protection and Metering
- Installation and Testing standards for solar PV plants
- Solar Module testing standards
- Economy of Roof Top Solar System
- Detailed Project Report
- Operation and maintenance of rooftop solar system
- Safety and fire-fighting training

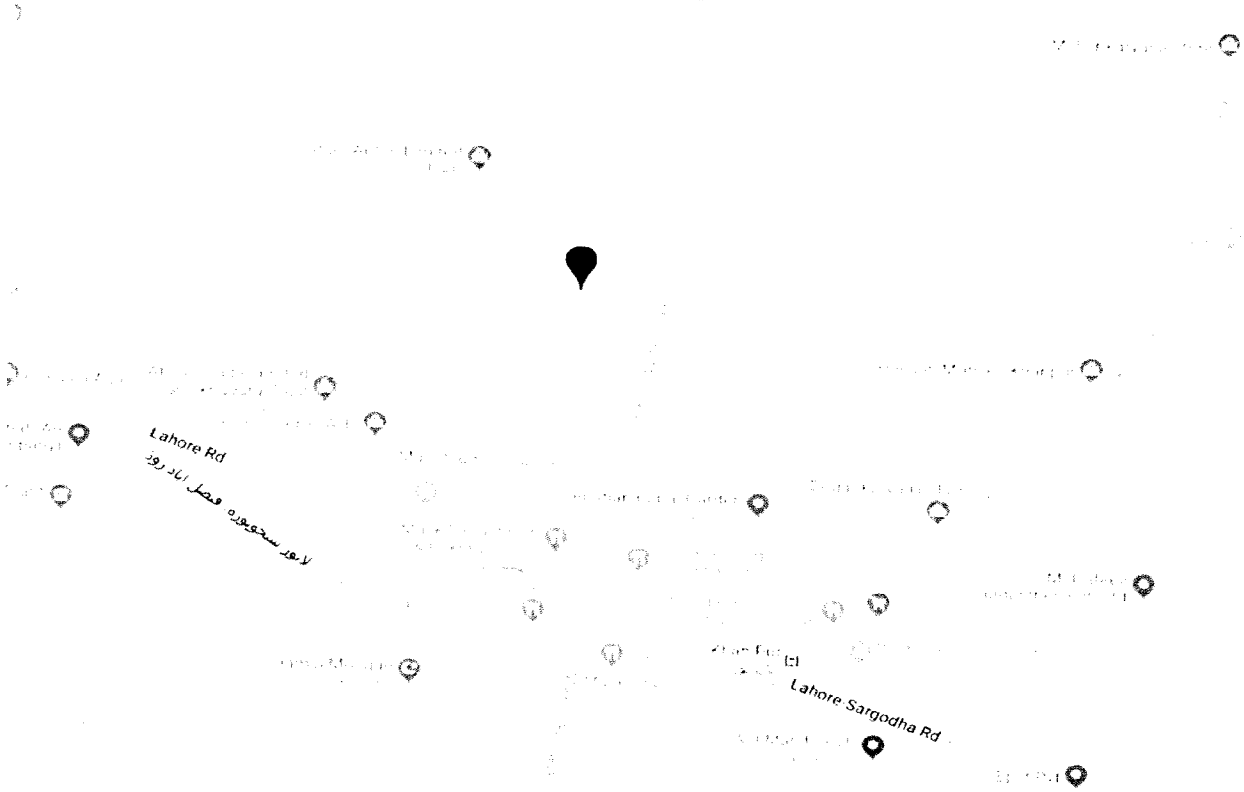
Infrastructure: roads, rail, staff colony, amenities

The Project Site is Located at Lahore-Sheikhupura Road and Sheikhupura railway station is approx. 12 km far away from project site.

1. Location maps, site maps, land

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





6. Interconnection with National Grid Co. distance and name of nearest grid, voltage level (single line diagram)

Not Applicable: It is a distributed solar system and Power Generated through this system will be consumed in-house by the relevant Office/ Plant wherein the system would be installed.

8. Project cost, information regarding sources and amounts of equity, debt.

The Capital cost shall include the cost borne by the Applicant Company on feasibility studies, planning, designing, material, construction and installation of the Generation Facilities.

The cost of land, step-up transformer, interconnection with distribution system of utility are not included being not required.

The Applicant shall arrange the required funding through 20% Equity, 80% Debt. Debt may be availed under SBP Green Financing Scheme.

Area/Roof	System Size KWp	Total Project Cost	TPC/Wp	Debt 80%	Equity 20%
AAL CBU	995.6	77,298,501	77.64	61,838,801	15,459,700

9. Project commencement and completion schedule with milestones

ID	Task	Task Name	Duration	Predecessors	% Complete
1		**Total Days**	**127 days**		**0%**
2		**Procurement**	**95 days**		**0%**
3		Solar Panel ordering	1 day		0%
4		Solar Panel delivery	1 day	3FS+55 days	0%
5		Inverter Ordering	1 day		0%
6		Inverter Delivery	0 days	5FS+88 days	0%
7		Mounting Structure Ordering	1 day		0%
8		Mounting Structure Delievery	1 day	7FS+25 days	0%
9		Cables & Consumables	1 day		0%
10		Cables & Consumables	1 day	9FS+35 days	0%
11		**Kick off meeting**	1 day		0%
12		**Project proposal, Structure**	**1 day**		**0%**
13		Submission to client	1 day		0%
14		**Final drawings approval from**	1 day		0%
15		**Site Execution**	**55 days**		**0%**
16		**Mechanical Work**	**40 days**		**0%**
17		Installation of mounting	25 days		0%
18		Panels mounting	18 days		0%
19		**Electrical Work**	**30 days**		**0%**
20		Cable trays installation	6 days		0%
21		Grounding Cable Laying &	2 days		0%
22		AC Cable Laying	5 days		0%
23		DC Cable Laying	10 days	22	0%
24		Inverters Mounting &	4 days		0%
25		DC Cable Termination to	4 days	24	0%
26		AC Cable all terminations	4 days		0%

Task		Inactive Task		Start-only	
Split		Inactive Milestone		Finish-only	
Milestone		Inactive Summary		Deadline	
Summary		Manual Task		Progress	
Project Summary		Duration-only		Manual Progress	
External Tasks		Manual Summary Rollup			
External Milestone		Manual Summary			

ID	Task	Task Name	Duration	Predecessors	% Complete
27		**Commissioning/ Testing**	**7 days**		**0%**
28		Pre-commissioning	5 days		0%
29		Functional Tests	3 days		0%
30		**Project Completion**	**2 days**		**0%**
31		Functional test report	1 day		0%
32		Project Sign Off/ Closure	1 day		0%

Task	Inactive Task	Start-only	
Split	Inactive Milestone	Finish-only	
Milestone	Inactive Summary	Deadline	
Summary	Manual Task	Progress	
Project Summary	Duration-only	Manual Progress	
External Tasks	Manual Summary Rollup		
External Milestone	Manual Summary		

10. ESSA (Environmental and Social Soundness Assessment)

AtlasEnergy

Application for Generation License
995.60 kWp On-grid Solar PV Plant

ESSA (Environmental and Social Soundness Assessment) Report

1. Introduction:

Extensive fossil fuel consumption in almost all human activities has led to some undesirable phenomena such as atmospheric and environmental pollutions, which have not been experienced before in known human history. Consequently, global warming, green house affect, climate change, ozone layer depletion, and acid rain terminologies started to appear in the literature frequently. Since 1970, it has been understood scientifically by experiments and researches that these phenomena are closely related to fossil fuel uses because they emit greenhouse gases such as carbon dioxide (CO2) and methane (CH4), which hinder the long-wave terrestrial radiation escape into space, and, consequently, the earth troposphere becomes warmer. In order to avoid further impacts of these phenomena, the two concentrative alternatives are either to improve the fossil fuel quality with reductions in their harmful emissions into the atmosphere or, more significantly, to replace fossil fuel usage as much as possible with environmentally friendly, clean, and renewable energy sources. Among these sources, solar energy comes at the top of the list due to its abundance and more even distribution in nature than any other renewable energy type, such as wind, geothermal, hydro, wave, and tidal energies. Solar energy technologies are essential components of a sustainable energy future. Energy from fossil fuels may be inexpensive and assurances may have been given of the plentiful supplies of petroleum and other fossil fuels, but these fuels are finite in nature and a major source of greenhouse gas emissions.

2. Rationale:

It is a commonly knowledge that availability of electricity in any country that has direct effect on its economy and social factors and therefore, in order to measure the affluence of a society, the per capita energy consumption is used as index. An economy's production and consumption of electricity are basic indicators of its size and level of development. Although a few countries export electric power, most production is for domestic consumption. Expanding the supply of electricity to meet the growing demand of increasingly urbanized and industrialized economies without incurring unacceptable social, economic, and environmental costs is one of the great challenges facing developing countries.

Modern societies are becoming increasing dependent on reliable and secure electricity supplies to underpin economic growth and community prosperity. This reliance is set to grow as more efficient and less carbon intensive forms of power are developed and deployed to help decarbonize economies. Maintaining reliable and secure electricity services while seeking to rapidly decarbonize power systems is a key challenge for countries throughout the world. In developing economies growth in energy use is closely related to growth in the modern sectors - industry, motorized transport, and urban areas - but energy use also reflects climatic, geographic, and economic factors (such as the relative price of energy). Energy use has been growing rapidly in low- and middle-income economies, but high-income economies still use almost five times as much energy on a per capita basis. Governments in many countries are increasingly aware of the urgent need to make better use of the world's energy resources. Improved energy efficiency is often the most economic and readily available means of improving energy security and reducing greenhouse gas emissions. Pakistan's per capita energy consumption of Pakistan Generation of electricity in Pakistan is largely on furnace oil whose substantial quantity is imported, prices whereof adversely affect the generation in the country. Although natural gas is a cheaper fuel however its reserves are depleting rapidly. In these circumstances, the use of solar power in Pakistan appears to be quite an attractive mode of generation of electric power. Further, its use does not require refining, transporting and conveying fuels and power over long distances. Moreover, solar power does not create pollution. Naturally, Pakistan is located in the Sunny Belt and can take advantage of its ideal

situation for A utilization of solar energy. The country potential for solar generation is beyond doubt as it has high solar irradiation and enough space for installation of generation system those are ideal for PV and other solar energy applications. Villages and other areas which are away from grid or distribution system of utilities can also benefit from solar power generation which will also save the extra cost of laying the system and the losses. Solar energy, on the other hand, 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. meter in a year. It has an average daily global isolation of 19 to 20 MJ/sq. meter 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.

Pakistan receives about 15.5x1014 kWh of solar irradiance each year with most regions receiving approximately 8 to 10 sunlight hours per day. The installed capacity of solar photovoltaic power is estimated to be 1600 GW per year, providing approximately 3.5 PWh of electricity (a figure approximately 41 times that of current power generation in the country). To summarize, the sun shines for 250-300 days per years in Pakistan with average sun shine hours of 8- 10 per day. This gives huge amount of energy to be used for electricity generation by solar photovoltaic and solar thermal power plants. A quick idea for the potential of solar energy in Pakistan can be obtained from the satellite map of solar radiation released by National Renewable Energy Lab (NREL) of USA.

3. Environment Assessment Report:

The sites are allocated in private land (Roof Top) within the premises of Customer, and the applicant has carried out a detailed environment assessment of the sites in preparation of the Solar PV Plant.

The assessment of the Project has been considered for both positive and negative effects. The proposed photovoltaic Power Project has been located as per international guidelines. Adoption of green power generation with no emission and effluent discharge with have least impact on the ambient environment and on the host community. However, in the long term the project and related activities in areas may bring about slight change in ambient air quality of area.

The importance of the sustainable development concept has increased in the whole world. As a result, some new regulations enforce that all development projects should be compatible with the environmental criterions. An environmental impact assessment should be carried out to make sure that projects are compatible with the environmental criterions. Environmental Impact Assessment (EIA) can be defined as a process of environmental management, planning, and decision-making with a purpose of keeping and improving the quality of the environment.

The main goal is to develop environmentally friendly industrialization. With this kind of environmentally friendly industrialization, "sustainable development" can be a possibility in the future by keeping the usage/protection balance between economic development and the environmental protection.

Every energy generation and transmission method affects the environment. Conventional generating options can damage air, climate, water, land & 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 operations.

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

- Reduction of the emissions of the greenhouse gases (mainly CO2, NOx) and prevention of toxic gas emissions (S02, particulates)
- Reduction of the required transmission lines of the electricity grids.

4. Study Area:

Pakistan is geographically situated approximately between 24-37 IV latitudes and 62-75 longitudes in the western zone of south Asia. The distribution of rainfall in Pakistan varies on wide ranges, mostly associated with the monsoon winds and the western disturbances, but the rainfall does not occur throughout the year. Like, Khyber Pukhtonkhuwa (northern mountains) and Balochistan provinces receive maximum rainfall in the months of December to March while in Punjab and Sindh receive 50-75% of rainfall during monsoon season (Kaziet al, 1951; FAO, 1987; Khan, 1993 & 2002; Kureshy, 1998; Luo and Lin, 1999). The precipitation received in the country can be divided into two main seasons, summer or monsoon and winter precipitation. The monsoon rainfall enters Pakistan from east and north east during the month of July to September. During this duration a good amount of rainfall is received in the north and northeastern areas of the country. Winter precipitation (December to March) are mainly received from western disturbances entering from Iran and Afghanistan. The weather systems entering from Afghanistan are called the primary western disturbances and cover only the north and north western parts of the country, whereas those approaching from the Iran are secondary and cover a large area of theCountry including Balochistan, Punjab, Khyber Pukhtonkhuwa, Kashmir and northern areas and sometimes Sindh province. A large amount of snowfall is received in the northern areas, upper Khyber Pukhtonkhuwa, Kashmir and northern Balochistan and is the main source of water supply for water reservoirs of the country in dry season. This water received from the snow melt and from the seasonal rains plays an important role in the agricultural and socioeconomic activities of the country. Agriculture of Pakistan is mainly climate dependent and every area has its own crops and fruits according to its climate. The country's most important crops and fruits are grown in winter season in different areas according to its climate conditions. If there is any abnormality in the usual climate condition the nation suffers for the whole year and there is also a huge loss to the economy.

5. Zone Classification:

Detection of rainfall trend is subject to limitations: there is no clear altitudinal trend of rainfall. Therefore, for analysis, a dataset spreads over a period of 30 years (1976-2005) covering the whole country i.e. 30 stations from extreme north to south and east to west have been selected. The stations included in this study were selected on the basis of their latitudinal position, elevation from sea level, length of record, completeness and reliability of data so that a synoptic view of the entire

country could be obtained. Further the selected stations have been divided into five different microclimatic zones. These zones were named A, B, C, D and E as shown in Figure 1, along with their latitudinal extent.

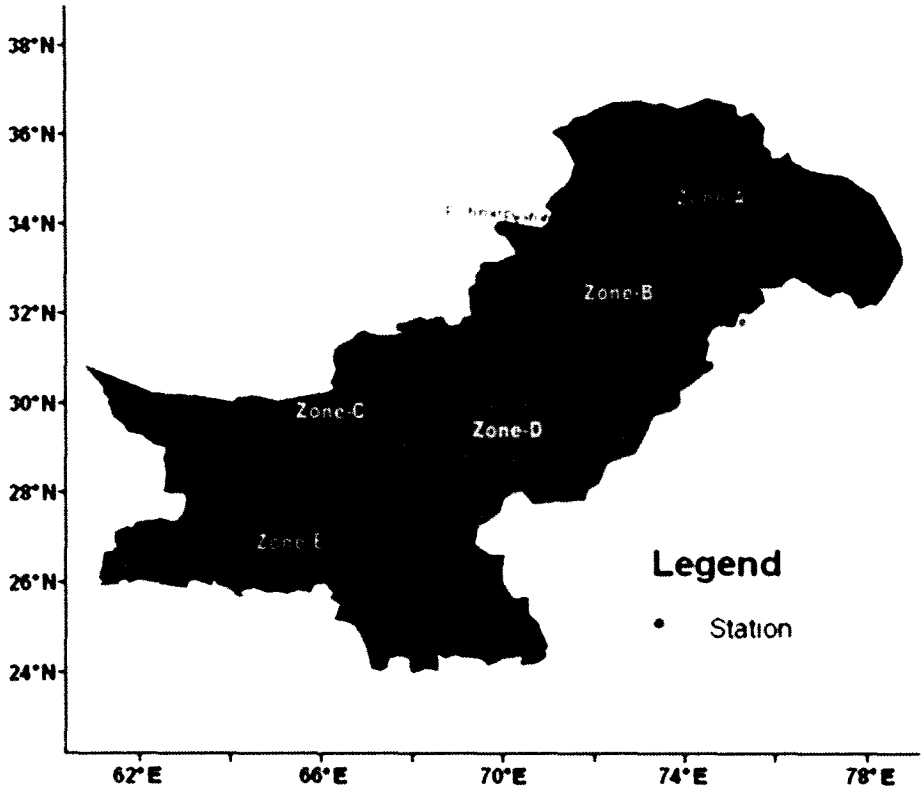


Figure 1: Map showing the climatic zones of the study area

Zone A

Zone A comprises those stations having cold climate and high mountains, situated in the north of Pakistan. These stations are Chitral, Gilgit, Muzaffarabad, Said-u- Sharif, Skardu, Astor, Dir, Chilas Parachinar and Kakul. These are mostly hill stations located between 34 N to 38 N in the Himalaya, Hindukash and Koh-e- Sufaid mountain ranges.

Zone B

This zone has mild cold climate and Sub Mountains, located between 31N to 34 N. The stations are Sialkot, D.I.Khan, Islamabad, Peshawar, Cherat and Lahore.

Zone C

Climate is cold in winters and hot in summers. Most of them are mountainous stations with high elevations from mean sea level and cover an area between 27 N to 32N and 64 E to 70 E. Stations included in this zone are Quetta, Zhob, Kalat and Khuzdar.

Zone D

This is the hottest and dry zone of the country where highest maximum temperatures are recorded in stations of Sibbi and Jacobabad. The area is almost plain with some area included in Thar Desert. Stations included are Sibbi, Jacobabad, Bahawalpure, Khanpur, Multan and Rohri.

Zone E

Zone E is a big zone having many stations and coastal cities, near to Arabian Sea. The coastal Part comprises only a small part of this region and climate above coastal parts in Balochistan as well as in Sindh province is mostly arid to hyper arid. The selected stations from this zone are Hyderabad, Karachi, Nawabshah and Jewani.

6. Project Environmental Impacts & Mitigation Measures:

This Section discusses the potential environmental impacts, assesses the significance, recommends mitigation measure to minimize the adverse effect and identifies the residual impacts associated with the proposed activities of the project during the construction and operation phase of the proposed project at the proposed site and of secondary actions like potable, raw water and waste water lines. Solar energy is a lot cleaner when compared with conventional energy sources. Solar energy systems have many significant advantages, like being cheaper and not producing any pollutants during operation, and being almost an infinite energy source when com-pared with fossil fuels. Nevertheless, solar energy systems have some certain negative impacts on the environment just like any other energy system. Some of these impacts will be summarized in this section.

Identification of Potential Impacts:

a) Discharge of Pollutants

b) Visual Impacts

c) Impact on Natural Resources

d) Air Pollution

e) Noise Intrusion

f) Impact on Air

g) Impact on Ground Water/ Surface Water

h) Impact on Solid Waste

i) Impact on Soil

j) Impact on Natural Resources

Discharge of Pollutants: Solar cells do not emit any pollutants during their operations. But solar cell modules contain some toxic substances, and there is a potential risk of releasing these chemicals to the environment during a fire. Necessary precautions should be taken for emergency situations like fire. The possibility of an accidental release of the chemicals of the solar cell modules to soil and groundwater poses a great threat for the environment.

Visual Impacts: There will be some visual impacts depending on the type of the scheme and the surroundings of the solar cells. Especially for applications on the buildings, solar cells can be used as a cladding material that could be integrated into the building during the construction phase. Solar cell applications after the construction phase of the buildings might cause negative visual impacts. Solar cell utilization should be planned at the architectural phase and fitted to the building to minimize visual pollution. For the other application areas, proper sitting and design are important factors, especially for large solar cell applications. Another important factor about the control of the visual impacts is the use of color. Enough care should be taken for the usage of proper colors while assembling the solar cell modules.

Impacts on Natural Resources: Despite being a benign energy system during operation, solar cells have some negative impacts on the environment during their production phase like many other systems. The energy needed for the production of solar energy systems is still produced in conventional methods today. Some toxic chemical substances used during the production phase are produced as a by-product. Especially, the solar cell batteries pose a threat on natural resources by having a short lifespan and containing heavy metals such as cadmium.

Air Pollution: Solar cells do not emit any substances to the air during operation. But there could be some emissions during manufacturing and transport. The emissions associated with the transport of the modules are insignificant when compared with the emissions associated with the manufacture. Transport emissions are 0.1-1% of the manufacturing emissions.
Noise: Intrusion Solar cells do not make a noise during operation. But during the construction phase, there will be a little noise as usual in other construction activities.

Impact on Air: There would be no hazardous emissions at site as well as during construction phase except Motor Vehicle and Crane. Moreover, there are no objectionable odors as well as alternation of air temperature.

Impact on Ground Water/ Surface Water: There would be no use of water during design phase except curing of civil pads during construction, which have no negative impact on environment.

Impact on Solid Waste: It may only Create litter and trash waste which is recyclable and may be cleared from site after construction.

Impact on Soil: No impacts as all installed systems are roof top.

Impact on Natural Resources: There won't be any increase in the rate of usage of any natural resource like any minerals, additional fuel other than vehicles. But there would be increase in the amount of usage of Paper for mapping, enlisting items etc. However, paper may be recycling by throwing it in ordinary dustbin, further ensure the maximum usage of electronic system e.g. emails.

7. Environment Assessment/ Conclusion:

The site allocated is private land within the premises of Atlas Honda Limited (Plant) and the applicant has carried out detailed environment assessment of the site for installation of solar PV Plant. Overall findings:

Environment Parameters	Level of Impact	Reasons	Mitigation Measures
Air Impact	Low	Solar Energy is Carbon Free	(No Emissions)
Water	Low	Plant will required a very low quantity of water for cleaning purpose only	RO Plant is already installed at site and water from said source may be used for cleaning of Modules
Land	Low	No impact on Land	As said project is purely roof based which have no impact on Land
Ecosystem	Low	No ecologically sensitive area lies with in premises	There is no significant vegetation cover within the selected area
Socio Eco system	Low	Total area identified for said project is in plant premises and no acquisition is needed	Not Applicable

11. Safety plans, 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.

12. System studies, load flow, short circuit, stability, reliability

Not Applicable: Power Generated through Solar system will be consumed by the relevant Office/ Plant.

13. Plant characteristics: generation voltage, power factor, frequency, automatic generation control, ramping rate, control metering and instrumentation

Generation Voltage	380 to 480
Power Factor	0.8 LG...0.8 LD
Frequency	50 Hz
Automatic Generation Control	Included
Ramping Rate	N/A
Control Metering And Instrumentation	DC circuit breaker
	AC circuit breaker
	DC overload protection (Type 2)
	Overheat protection
	Grid monitoring
	Insulation monitoring
	Ground fault monitoring

14. Control, metering, instrumentation and protection

The Distributed Generator will furnish and install a manual disconnect device along with smart meter that has a visual break to isolate and avoid any reverse feeding to Grid.

The grid connected inverters and generators shall comply with Underwriter Laboratories UL 1741 standard (Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources) which addresses the electrical interconnection design of various forms of generating equipment, IEEE 1547 2003, IEC 61215, EN or other international standards.

15. Training and development

Trained and qualified personnel will be available at site 24/7 with proper safety and fire-fighting 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 & development program.

- Collection of Resource Data
- Variability and uncertainty of resource data
- Site evaluation
- Crystalline and thin film technology comparison
- Rooftop solar system components
- Module mounting structure selection
- Inverter selection
- Design of PV Array
- Shadow Analysis
- DC Cable Layout
- DC Cable Sizing
- Protection and Metering
- Installation and Testing standards for solar PV plants
- Solar Module testing standards
- Economy of Roof top Solar System
- Detailed Project Report
- Operation and maintenance of rooftop solar system
- Safety and fire-fighting training