SCHEDULE 1
[Regulation 3(1)]

FORM OF APPLICATION

Date: March 30th 2015

The Registrar,
National Electric Power Regulatory Authority
Islamabad.

Subject: **Application for a Generation License**

I, Khalid Mahmood, being the duly authorized representative of Master Power Private Limited ("MPPL") by virtue of Board of Resolution dated 11/03/2015, hereby apply to the National Electric Power Regulatory Authority for the grant of a Generation License to the MPPL pursuant to section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

I certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provisions of the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, and undertake to abide by the terms and provisions of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and belief.

A Banker's Cheque No. 00201457 dated 24 March 2015 in the sum of Rupees 203,208/= (Rupees Two Hundred Three Thousand Two Hundred Eight 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.

Best Regards,

Khalid Mahmood
Executive Director
Master Power Private Limited

MASTER POWER (PVT) LIMITED

Check List for Examination of License Application – For New Project

Name of Company: **Master Power Private Limited** Capacity: **20 MW**

Prepared/Updated on: **16th April 2015**

Regulation No.	Information/Documents Required	Compliance
3(1)	Authorization from Board Resolution / Power of Attorney	Board Resolution dated 11th March 2015 submitted,
3(2)	Application fee (including Indexation)	Banker's Cheque # 00201457 of Bank Al Habib Limited dated 24 March 2015 Worth Rs. 203,208/- including CPI.
3(4)	Three copies of Application	Submitted in person on April 1, 2015
3(5)(a)(i)	Certificate of incorporation (Certified by SECP)	Attached - Annexure-1
3(5)(a)(ii)	Memorandum and articles of association (Certified by SECP)	Attached - Annexure-2(i) & Annexure-2(ii)
3(5)(a)(iii)	Annual Return statements or in lieu thereof (Certified by SECP)	1-Master Power (Private) Limited was incorporated on 4th February 2015 and its first Financial Year will end on 30th June 2015. Hence, Annual Tax Return of Master Power would be submitted after close of financial year i.e. June 2015. As Master Power (Pvt.) Ltd is a wholly owned company of Master Textile Mills Limited, the Annual Tax Return Statement of 2013-14 of the Parent Company (MTML) is submitted. 2- Certified copy of Certificate of Incorporation by SECP is attached as Annexure-1.
3(5)(b)	Profile of experience of the applicant, its management, staff and its members in power sector.	1- Master Power (Pvt.) Ltd is wholly owned subsidiary of Master Textiles Mills Limited (MTML) which is engaged in textile manufacturing and export business since 1992. Currently, MTML has a vertically composite textile set up having spinning, weaving, dyeing/ processing, garments and power house units MTML exported over 80% of its sales during last year Its annual turnover stood as over PKR 10 billion during 2013-14 It employs over 4,500 employees at present.

		2-Master Textiles currently has a consumption of 8- 10 MW for its manufacturing operations and expect to consume up to 14 MW after the ongoing expansion in the manufacturing facilities To meet its power requirement, MTML has a dedicated Electricity Grid of 8 MW load capacity and following installed capacity of power generation to meet any short fall in power supply /back up for LESCO power supply during load shedding and Gas un-availability: 1- Gas Turbines= 2x 4.5MW= 9 MW 2- Diesel Gensets= 4x1 MW= 4 MW 3- Gas Gensets = 3x 2 MW= 6 MW 4- HFO Genset-1= 1x 6.5 MW= 6.5 MW 5- HFO Genset-2= 1x 4.0 MW= 4 MW Total installed Capacity = 29.5 MW Company has proper management and technical staff set up to manage its in-house installed power supply equipment. Hence, Master Power(Pvt) Ltd , by virtue of being wholly owned subsidiary company of Master Textiles is well experienced in power generation and maintaining its in-house power supply network.
3(5)(c)	CVs of applicant's Senior Management and Technical professionals	1- Najeeb Malik (Managing Director)- M.Sc. in Engineering 2- Khalid Mahmood (Executive Director)- MBA 3- Khurram Iqbal (Chief Financial Officer)- ACA 4- Imran Khan (Deputy General Manager Utility & Power)- B.Sc. in Mechanical Technology & Masters in Project Management 5- Tahir Mahmood (Assistant Manager Electrical)- DAE in Electrical 6- Usman Sikandar (Mechanical Engineer)- B Sc in Mechanical Engineering

		7- Usama Amad (Project Coordinator)- B Sc in Electrical Engineering 8- Abdullah Shaukat (Asst Electrical Engineer)- B Sc. in Electrical Engineering Detailed CVs submitted along with application.
3(5)(d)(i)	Cash balance held in reserve along with the bank certificates	1. Bank of Punjab (Cash Balance held in MPPL's bank account as on 7th April 2015 is Rs. 5,000,965.00 i.e. Rupees Five Million nine hundred and sixty five only). 2. Bank Al Habib Limited (Bank Statement of MTML's bank account is attached). Bank Letters are attached as Annexure-3 & Annexure-4
3(5)(d)(ii)	Expression of interest to provide credit or financing along with sources and details thereof	1- Master Power's financing proposal of PKR 1,200 million is at final stage of approval with Bank of Punjab Limited for PKR 800 million and National Bank Limited for PKR 500 Million. Hoping to have approvals in 4-6 weeks. Request letters submitted to both banks for obtaining bank finance are submitted along with Application. 2- Master power would arrange the required Equity of PKR 400 million through its resources. 3- Earlier, this project was envisaged within ambient of Master Textile Mills Limited and it financing was approved from the following banks: a) Bank of Punjab b) Meezan Bank 3-B - Financing approval Letters favoring Master Textiles have been submitted as evidence of banks' in principal willingness to finance the project are submitted along with Application. .

		Not Applicable
3(5)(d)(iii)	Latest financial statements	Master Power (Private) Limited was incorporated on 4th February 2015 and its first Financial Year will end on 30th June 2015. Its Annual Financial Statements would be prepared accordingly. However, as of now, the Latest Financial Statement of the Parent Company (MTML) for 2013-14 is submitted.
3(5)(d)(iv)	Employment records of Engineers & Technical Staff	1- Imran Khan (Deputy General Manager Utility & Power)- 15 Years 2- Tahir Mahmood (Assistant Manager Electrical)- 18 Years 3- Usman Sikandar (Mechanical Engineer)- 8 Years 4- Usama Amad (Project Coordinator)- 2.5 Years 5- Abdullah Shaukat (Asst Electrical Engineer)- 3 Years
3(5)(d)(v)	Profile of Sub-contractors	**1. Shandong Yangguang Engineering Design Institute Ltd.(Design sub-contractor)** **Shandong Engineering Design Institute Ltd.** is the comprehensive one that possesses Engineering Consulting Qualification of grade A by an approval of Development Revolution Committee for thermal power, building materials (cement) and Engineering Design Qualification of grade B by an approval of Ministry of construction for thermo-power engineering, new

energy generation wind power generation power transformation projects, building materials engineering, building engineering, municipal engineering It is mainly engaged in thermo-power, building materials, municipal trades etc.

2. JINAN Boiler Group Co., Ltd (Boiler sub-contractor)

Jinan Boiler Group Co., Ltd. manufactures industrial boilers. Established in 1954, *Jinan Boiler* Group Co., Ltd. is one of top 10 boiler manufacturers, and the largest CFB boiler and biomass boiler in worldwide manufacturers. Supply boilers 35t/h to 670t/h and auxiliaries.

3. HANGZHOU Steam Turbine Co., Ltd (Turbine sub-contractor)

Hangzhou Steam Turbine Co., Ltd. (short as HTC) is the biggest corporation in producing industrial steam turbines in China. Set up in 1958 as Hangzhou Steam Turbine Factory, then on April 23, 1998, it was restructured and sponsored sole by Hangzhou Steam Turbine Power Group Co., Ltd, and it is a share company Limited founded by collecting foreign shares (B-share) listed domestically.

4. DESCON Engineering Limited (Erection sub-contractor)

DESCON Engineering is based in Lahore, Punjab, Pakistan. DESCON Engineering was established in 1977. It started out as a plant construction and services company Since then it has developed itself into a muti-

		discipline engineering Services Company serving a wide range of industries like fertilizers, chemicals, power, cement, textile and manufacturing within Pakistan as well as in GCC countries. **5. IZHAR Group of Companies (Civil sub-contractor)** **IZHAR** Group is in its 6th decade of pioneering construction operations since its inception in 1959, when it was established by the late Engineer Izhar Ahmad Qureshi. The consistent contributions in the domain of engineering and construction to date see the organization graduated into a multidimensional establishment exhibiting command over a diverse range of innovative cum economical construction methodologies. The group cherishes successful completion of numerous large industrial, commercial, educational and high-rise building projects along with infrastructure and development works to its credit.
3(5)(d)(vi)	Verifiable references w.r.t. experience of the Applicant and its sub-Contractors	**1) Master Textiles** currently has a consumption of 8- 10 MW for its manufacturing operations and expect to consume up to 14 MW after the ongoing expansion in the manufacturing facilities. It has total installed capacity of 29.5 MW. 1- Gas Turbines= 2x 4.5MW= 9 MW 2- Diesel Gensets= 4x1 MW= 4 MW 3- Gas Gensets = 3x 2 mw = 6 MW 4- HFO Genset-1= 1x 6.5 MW= 6.5 MW 5- HFO Genset-2= 1x 4.0 MW= 4 MW Company has proper management and technical staff set up to manage its

		in-house installed power supply equipment **2) Shandong Yangguang Engineering Design Institute Ltd.** They have Designed Olympia Chemicals Plant and Sitara Chemicals Plant. **3) JINAN Boiler Group Co. Ltd.** They have provided Boilers in Olympia Chemicals and ICI Soda Ash. **4) HANGZHOU Steam Turbine Co. Ltd.** They have sold Turbines to Olympia Chemicals, Nishat Mills and Sitara Chemicals.
3(5)(g)(a)	Type of Technology	MPPL has selected CFBC technology boiler, which can handle low grade local coal and reduce emissions, specially Sulphur Oxide by adding lime stone and Nitrates by designing low temperature furnace. MPPL has selected extraction condensate turbine to fulfill its electricity and steam requirement.

3(5)(h)	Feasibility Report	The proposed power plant is located inside Master Textile Mills Limited's Processing plant, with convenient transportation and smooth landform. Design capacity of the power plant is 20MW, with 1 set of High temperature and high pressure 100t/h CFB boiler, together with 1 set of 20MW extraction condensing STG unit. Turbine is manufactured by HTC and the model is EHNK40/56 (Rated power is 20MW. Main steam inlet pressure is 8.83Mpa. Main steam inlet temperature is 535 °C); Generator is supplied in matching model FHWS20000-2, Rated power is 20MW. Outgoing feeder voltage level is 11kV. 1 set of CFB (circulating fluidization bed) boilers model is UG100/9.8, (Rated capacity is 100t/h. Steam pressure is 9.8MPa. Steam temperature is 540 °C.) Semi-open layout is adopted. Fuel source of power plant is local coal of Pakistan with 15,500 kg/hr. The power plant is equipped with a set of dry coal shed with span of 30m, and length of 60m.Total area of dry coal shed is 1800m2. Underground water is adopted as process water, which is provided by the processing plant via digging deep wells. Detailed feasibility report is attached.
3(5)(i)	Prospectus	Master Power (Pvt.) Ltd (MPPL) is a wholly owned subsidiary of Master Textile Mills Ltd (MTML- a vertically composite export oriented textile unit). MPPL would basically be engaged in generation of electric power through coal fired steam turbine. Its gross capacity would be 20 MW. The Company has already applied to Environment Protection Department for the approval of construction/installation of project and expects to have approval in due course. MPPL would sell it major electric power to its parent company MTML. It would have about 6 MW surplus power available which would be sold to the neighboring industry on bi-lateral basis. Detailed Prospectus as Annexure-5

1	Location maps, site maps, land	3 Km. off: Raiwind-Manga Road, Adjacent to Sundar Industrial Estate Gate #3, Lahore Detailed MAPS are attached as Annexure-6
2.	Technology, size of plant, number of units	MPPL is using CFBC (circulating fluidized bed combustion) technology to produce thermal energy. The size of the plant is 20 MW while the number of units is one.
3.	Fuel: type, imported/indigenous, supplier, logistics, pipelines etc.	1. MPPL's plant will use Coal as its fuel. It will use both imported and indigenous coal, at the rate of 4500 Calorific Value/Kg as it is designed to use low quality coal. 2. There are number of local and international suppliers that are already providing around 120 Metric Tons of coal for MTML's existing coal based steam generation and oil heating program. 3. Daily consumption of MPPL's plant is expected to be around 340 Metric Tons which will need around 10 vehicles of logistics per day. 4. Pipelines are not applicable.
4.	Emission values	SO2 = 400 mg/Nm3 Nox= 500 mg/Nm3 Dust = 50 mg/Nm3
5.	Cooling water source: tube wells, sea/river/canal, distance from source, etc	Tube wells will be installed at plant site for water source.

		Not Needed / Not Applicable
6.	Interconnection with National Grid Co. distance and name of nearest grid, voltage level (single line diagram)	Electricity production will be used by parent company Master textile Mills Limited. The surplus of about 6 MW will be sold to neighboring industry on bi-lateral basis.
7.	Infrastructure: roads, rail, staff colony, amenities	Roads: Metal road is available 3 Km Off, Raiwind-Manga Road leading to the main entrance of Master Power (Private) Limited. Railway: Raiwind Railway Station is approximately 8 Km away from MPPL location. Metal road is available from the Project site to Railway Station. Staff Colony: MPPL has staff colonies for Executives, Officers and Workers at its premises. Amenities: Canteens, General Store, Utility Store, Barber's Shop, P.C.O and Mosque are available in MPPL's premises.
8.	Project cost, information regarding sources and amounts of equity, debt.	Project Cost is Rs. 1,600 Million with debt equity ratio of 75:25 Debt is equal to Rs. 1,200 Million while Equity will be Rs. 400 Million
9.	Project commencement and completion schedule with milestones	Project Starting date is 1st March 215. The estimated time for the project completion is 20 months. Advance payment for design has been paid. Detail engineering will be completed by December, 2015. Boiler and Turbine Erection will be completed by August, 2016. Commissioning will be completed by October, 2016. Project will be completed by 30th November 2016.

10	ESSA (Environmental and Social Soundness Assessment)	The Parent Company (MTML) has already got approval from Environment Protection Department for installation of 15 MW project and expects to have approval in due course for MPPL's 20MW Project.
11.	Safety plans, emergency plans	Local Technical Consultant (ME consultants) and International Technical & Design Consultant (Shandong Yangguang Engineering Design Institute Ltd.) are working on safety and emergency plans along with project engineering details as per Internationally prescribed safety and emergency standards.
12.	System studies, load flow, short circuit, stability, reliability	This is subject to detail engineering.
13.	Plant characteristics. generation voltage, power factor, frequency, automatic generation control, ramping rate, control metering and instrumentation	Generating Voltage = 11KV Power Factor = 0.8 Frequency = 50Hz Automatic Generation Control = Yes Ramping Rate = As per discharge
14.	Control, metering, instrumentation and protection	Control, metering, instrumentation and protection will be in accordance with ISA (The International society of Automation) standards.

15	Training and development	All Technical Vendors will provide necessary on job trainings prior to operations. Trainings will include boiler and turbine operation through DCS (Distribution Control System) and maintenance.
16.	Feasibility report.	The proposed power plant is located inside Master Textile Mills Limited's Processing plant, with convenient transportation and smooth landform. Design capacity of the power plant is 20MW, with 1 set of High temperature and high pressure 100t/h CFB boiler, together with 1 set of 20MW extraction condensing STG unit. Turbine is manufactured by HTC and the model is EHNK40/56 (Rated power is 20MW. Main steam inlet pressure is 8.83Mpa. Main steam inlet temperature is 535 °C); Generator is supplied in matching model FHWS20000-2, Rated power is 20MW. Outgoing feeder voltage level is 11kV. 1 set of CFB (circulating fluidization bed) boilers model is UG100/9.8, (Rated capacity is 100t/h. Steam pressure is 9.8MPa. Steam temperature is 540 °C.) Semi-open layout is adopted. Fuel source of power plant is local coal of Pakistan with 15,500 kg/hr. The power plant is equipped with a set of dry coal shed with span of 30m, and length of 60m.Total area of dry coal shed is 1800m2. Underground water is adopted as process water, which is provided by the processing plant via digging deep wells. Detailed feasibility report is attached.

MASTER POWER (PVT) LIMITED.

3 Km Off:
Raiwind, Manga Mandi
Road, Distt. Kasur,
Pakistan.
Tele (92-42) 353923-44-48
Fax . (92-42) 35392343

EXTRACT OF RESOLUTION PASSED IN THE MEETING OF BOARD OF DIRECTORS OF THE COMPANY HELD AT REGISTERED OFFICE ON MARCH 11, 2015 AT 11.40 AM

"Resolved that Mr. Khalid Mahmood (Executive Director), CNIC # 35202-9557295-5 Mr. Muhammad Khurram Iqbal (CFO), CNIC # 35201-1584770-1 of the company be and are hereby jointly and singly authorized to do any or all of the following acts, deeds and things, on behalf of the company, in connection with Generation License application to be filed with National Electric Power Regulatory Authority ("NEPRA") under the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 and the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999:

(a) Represent the Company before NEPRA , and in doing so perform all lawful acts, deeds and things which we shall be entitled or permitted to do ourselves, including but not limited to filing, signing, presenting, modifying, amending, with drawing applications and other documents, responding to any queries and meeting any objections, receiving notices and documents; and

(b) Do all acts, deeds and things, which are ancillary and incidental to the afore-said purposes and issuance of Generation License."

Certified to be true copy

MASTER POWER (PVT) LIMITED

Chief Executive

Director

Annexure - 1

[illegible]

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. 0091799

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

Given under my hand at **Lahore** this **Fourth** day of **February**, Two Thousand and **Fifteen**.

Fee Rs. 54,000.

(LIAQAT ALI DOLLA)
Additional Registrar

No. ARL/ [illegible] DATED [illegible]

Company Registration Office Lahore
Securities and Exchange Commission of Pakistan

Master power pvt ltd

19/2/18

Annexure-2(i)

THE COMPANIES ORDINANCE 1984
COMPANY LIMITED BY SHARES

MEMORANDUM OF ASSOCIATION

OF

MASTER POWER (PVT) LTD

I. The name of the Company is MASTER POWER (PVT) LTD

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

III. The objects of the Company are all or any of the following:

1) To generate, produce, manufacture, store, sell, export to supply electricity to all concerns, by whatever means including wind-mill, thermal, hydral, gas, and solar for industrial, commercial and residential use through distribution network and to construct, install, operate and maintain thereon power house, civil and mechanical works and structures, grid stations, transmission towers, power lines, building, workshops and other facilities as may time to time be necessary for the attainment of the object of the company subject to permission from relevant authority/ NEPRA.

2) To construct, lay-down, establish, fix, and carry out all necessary power stations, cables, wires, lines, accumulators, and works and to generate accumulate, distribute and supply electricity to cities, towns, streets, docks, markets, theaters, industrial zones, sites, areas and parks, buildings and places public and private subject to permission from relevant authority/ NEPRA.

3) To carry, on and undertake all civil, electrical and mechanical works related to the aforementioned business, and to generate, accumulate, distribute and such by electricity for the purposes of light, heat, motive power and for all other purposes for which electrical energy can be employed, and to deal in all apparatuses and things required for or capable of being used in connection with the generation, distribution, supply, accumulation and employment of electricity subject to permission from relevant authority/ NEPRA.

4) To manufacture, process, buy, sell, exchange, alter improve, otherwise deal in all kinds of electrical plants, machinery, equipments, appliance, energy saving devices, and products, gadgets, components and parts including specialized equipments for the purposes of the business for the Company, and to manufacture, import, export, sell, buy, and deal in all accessories, articles, apparatus, equipment and goods, which may seem calculated to promote or to be capable of being used in connection with the use of electric power supply.

Company Registration Office Lahore

Master Power Pvt Ltd

Master Power Pvt Ltd

5) To enter into, make and perform contracts and arrangements of every kind and description with the Central, Provincial government, City Government, or Local Authority or person that may be conducive to the Company's Object and to obtain from any Government Authority, firm or person any rights, privileges, contracts, concessions, exemptions, permissions approvals and grants which the company may think desirable, and to obtain and carry out, exercise and comply with any arrangements, rights, privileges, contracts and concession and dispose of the same or turn into account the same.

6) To carry on anywhere in Pakistan the business of power generation and distribution in all its branches and aspects and in particular to construct, lay down, establish, maintain and fix all necessary power stations together with ancillary works, cables, wires, lines, accumulators, lamps, and to generate, accumulate, distribute, sell and supply electricity subject to permission from relevant authority/ NEPRA.

7) To construct and maintain roads, bridges, wharves, quays, jetties and piers, pipelines and storage tanks for water, petroleum products, natural gas and other substances, water desalination and treatment plants and such other works as may be required for all or any of the above purposes.

8) To carry on the business of electrical engineers electricians, engineers, contractors, consultants, agents and manufacturers of electrical plant, machinery, equipment and apparatus, and of generating, producing and supplying light, heat and power by electricity, galvanism, magnetism or otherwise, suppliers of electricity whether for the purpose of light, heat, motive power, telephonic, telegraphic, industrial or other purposes and generally to install, execute, provide, work and maintain all necessary plant, machinery, equipment, cables, wires, accumulators, lamps, exchanges, telephones and apparatus.

9) To import export, buy, sell, hire or deal in plant, machinery, equipment, cables, wires, accumulators, lamps, exchangers, telephones, fittings and furniture and apparatus of very kind with special reference to plant, machinery, equipment or apparatus connected with the producing, storing, supplying, using, regulating or measuring the supply or facilitating the use of electricity or electrical currents or force.

10) To buy, sell, import, hire, manufacture, [illegible] turn to account plant, machinery, implements, conveniences, provision, articles and products capable of being used in connection with the operations of or required by workmen and others employed by the Company or incidentally or conveniently connected with any such business as aforesaid.

11) To purchase, take in, exchange or take on lease, rent, occupy or otherwise acquire any lands, hereditaments and estates and any property and effects thereon or used or connected therewith and to acquire any grants, concession, leases, rights, easements, licenses, privileges and any other interests in land.

12) To acquire, erect, construct, lay down, enlarge, replace, balance, modernize, alter and maintain any buildings, works, and machinery necessary or convenient for the Company's business.

13) To sell, acquire on lease, improve, manage, develop, mortgage, exchange, turn to account or otherwise deal with, dispose of absolutely, conditionally, or for any limited interest, and grant any license in respect of all or any of the property, rights or privileges of the Company, and to distribute in specie as dividend or bonus any moneys, shares, debenture stock that may be accepted as consideration for any such sale, lease, exchange or other disposition.

14) To sell, transfer or give any option of purchase over the whole or any part of the undertaking property and assets of the Company for such consideration and. on such terms as the Company may think fit.

15) To promote, amalgamate 'with or buy up any other company for the purpose of acquiring all or any of the property and liabilities of this Company or for any other purpose which may seem directly or indirectly calculated to benefit this Company and 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.

16) To enter into partnership or into any arrangement for sharing profits, for sharing profits, union of interest, co-operation, joint venture, reciprocal concession, or otherwise with any person or company carrying on or engaged in or about to carry on or engage in any business or transaction capable of being conducted so as to directly or indirectly benefit this Company to guarantee the contracts of or otherwise assist any such person or company and to take or otherwise acquire shares and securities of any such company and to sell, hold, re-issue without guarantee, or otherwise deal with the same.

17) To join or become members of any association, company or society formed or to be formed for the protection or advancement of the interests of Company or investors or others engaged in any trade or business and to subscribe to or subsidies any such association, company or society.

18) To enter into any arrangement or agreement with any Government or Authority, Federal, Provincial, Municipal, local or otherwise that may seem conducive to the Company's object or any of them, to obtain from any such Government or Authority any rights, privileges and concessions which the Company may think desirable to obtain and carry out, exercise and comply with any such arrangement, agreements, rights, privileges and concessions, and to apply for and obtain licenses, provisional orders, special Acts or other statutory or legislative authority for supplying electricity for any public or private purposes.

19) To promote any Bill or Bills in any legislature or other like body or make any application or applications to any public authority for any order, provisional order or license and to enter into any contract, to bear and pay the expenses of or in connection with the same or arising thereout, and to underwrite the capital required for carrying out any undertaking authorised by any such Act, order or license.

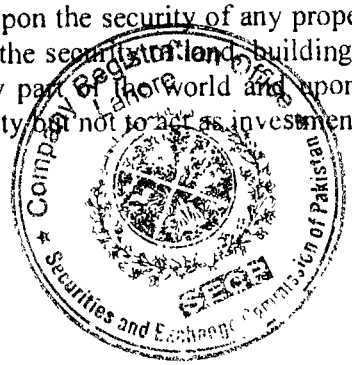
20) To purchase or otherwise acquire any patent, brevets d' inventions, trademarks licenses, concessions and the like conferring any exclusive or non-exclusive or limited to use any invention which may seem capable of being used for any of the purposes of the Company or the acquisition of which may seem calculated directly or indirectly to benefit the Company, and to use, exercise, develop or grant licenses in respect of or otherwise turn to account, the Property and right so acquired.

21) To pay for any property, rights or benefits acquired by the Company either in cash or in shared with such rights, in respect of dividend or repayment of capital or otherwise, as may be deemed fit by the Company or by any securities which the Company has power to issue or partly in one mode and partly in another and generally on such terms as the Directors may approve.

22) To issue all or any part of the original or enhanced share capital of the Company at par or at a premium or discount subject to any permission required under the law.

23) To borrow moneys, in such manner as the Company shall think fit and in particular by the issue of such securities, bonds and instruments payable to bearer or otherwise, and either permanent or redeemable or repayable or convertible into shares and collaterally to secure the repayment of any such moneys so raised or any such securities or instruments of the Company by means of a trust deed or otherwise.

24) To make advances upon the security of any property, rights or benefits acquired by the Company and upon the security of land, buildings and hereditaments or any interest or estate therein in any part of the world and upon any other assets real or personal or upon personal security, but not to act as investment Company.



25) To invest the surplus moneys of the Company not immediately required upon such securities and in such manner as may from time to time be determined.

26) To open maintain and operate bank accounts, make, draw, endorse, accept discount, execute, issue and negotiate Bills of Exchange, promissory notes, cheques or any other, negotiable or transferable instruments, concerning business of the Company.

27) To issue/accept guarantees for the performance of the contracts, agreements, obligations or discharge of any debt of the company or on behalf of associated companies in relation to the payment of any financial facility including but not limited to loans, advances, letters of credit or other obligations through creation of any or all types of mortgages, charges, hypothecations, or execution of the usual banking documents or instruments or otherwise encumbrance on any or all of the moveable or immoveable properties of the Company either present or future or both and issuance of any other securities or sureties by any other means in favour of any banks, non banking finance companies, or any finance institutions and to borrow money for the purpose of the company or associated companies or any other entity on such terms and conditions as may be considered appropriate by the Company.

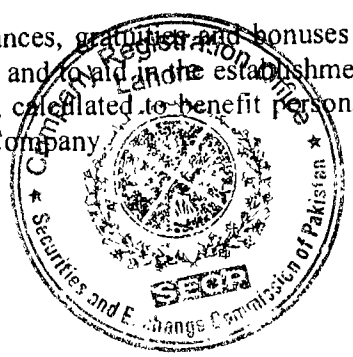
28) To take out any insurances that the Company deems necessary or appropriate and to pay the premium therefore.

29) To institute and defend in any forum legal proceedings of every kind or description whatsoever, enter into arbitration agreements and refer disputes to arbitration, pay, satisfy or receive payments in respect or compound or compromise any claim, demand, action, suit or proceeding of any nature whatsoever made or brought by or against the Company notwithstanding that the same may not be valid in law.

30) To remunerate any person or company for services rendered in placing or assisting to place any of the shares in the Company's capital or any debentures or other securities of the Company.

31) To employ or engage persons as employees or consultants or managers in or about the business of the Company and to indenture, contract or otherwise engage workmen skilled and unskilled.

32) To grant pensions, allowances, gratuities and bonuses to the persons employed by or trading with the Company and to aid in the establishment, support and subscribe to any association or institutions, calculated to benefit persons employed by the Company or having dealings with the Company.



33) During the construction of the Power Station and all works in connection therewith to pay from time to time, for a period which may extend to the close of the half-year during which the Power Station to be constructed shall be actually completed and commences sale or distribution of energy, a return on debentures, bonds or other securities in accordance with the terms thereof and to charge all such sums so paid to capital account as part of the original cost of construction of such Power Station.

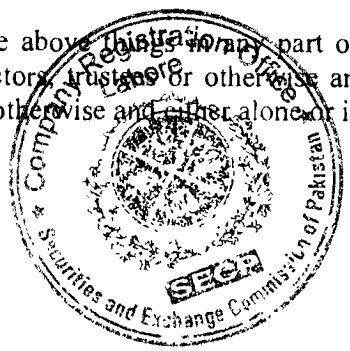
34) To pay or reimburse out of the funds of the Company an expenses which the Company may lawfully pay, incident to the promotion, formation and registration of the Company an advertising of or raising money for the Company by -shares, debentures, bonds or other securities and the issue of its capital, including brokerage and commission for obtaining applications for or taking, placing or underwriting shares, debentures, bonds or other securities.

35) To constitute and regulate separate branches or departments of the Company's business and to appropriate thereto respectively any of the assets of the Company and any of the capital issued or to be issued of the Company and from time to time to vary the constitution or regulations of any such branches or departments or any such appropriations and if thought fit to amalgamate all or any of the said branches or departments.

36) To procure the Company to be registered or recognized in any country or place outside Pakistan and to keep Branch Registers.

37) To carry on any other business or activity of any nature whatsoever whether inside or outside Pakistan which may seem to the Directors to be capable of conveniently or advantageously carried on in connection or conjunction with any business of the Company hereinbefore or hereinafter authorised or to be expedient with a view directly or indirectly to enhancing the value of or to rendering profitable or more profitable any of the Company's assets or utilizing its skills, know-how or expertise.

38) To do all or any of the above things in any part of the world as principals, agents, contractors, sub-contractors, trustees or otherwise and by or through trustees, agents, subsidiary company or otherwise and either alone or in conjunction with others.



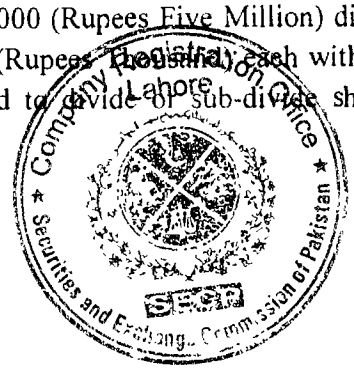
39) To do all such other things as are incidental or conducive to the attainment of the above objects, this general statement of objects being deemed as enabling and not in any way as restrictive of the foregoing objects.

40) It is declared that notwithstanding anything contained in the foregoing object clauses of this Memorandum of Association nothing contained therein shall be construed as empowering the company to undertake or to indulge in the business of banking company, investment, NBFC, leasing, managing agency, payment sales receipt scheme and insurance business directly or indirectly as restricted under the law of any other unlawful operation. The company shall not launch multilevel marketing, pyramid and ponzi schemes.

41) Notwithstanding anything stated in any object clause, the company shall obtain such other approval or licence from the competent authority as may be required under any law for the time being in force to undertake any particular business.

IV. The liability of the Members is limited.

V. The Authorized Capital of the Company is Rs.5,000,000 (Rupees Five Million) divided into 5,000 (Five Thousand) Ordinary Shares of Rs.1000 (Rupees Thousand) each with power to increase or reduce the Capital of the Company and to divide or sub-divide shares in to different classes of shares.



We the person whose name and address is subscribed, is desirous of being form into a Company, in pursuance of this Memorandum of Association and We agree to take the number of shares in the capital of the Company set opposite to my respective name.

Sr. No.	Name and Surname (present and former) In full block letters	Father's / Husband's Name in full	Nationality with any former Nationality	Occupation	Residential Address in Full	Numbers of shares taken by each subscriber	Signature of the subscriber
1	Master Textile Mills Limited (Reg. No. # 0026423) Through its Nominee Mr. Naveed Malik CNIC#35201-1450507-3	S/o Riaz Malik	Pakistani	Business	Daras Road Off: Raiwind, Manga Mandi Road, Lahore House No 126-Y, Street No.18, DHA, Lahore	98 (Ninety Eight)	
2	Mr. Naveed Malik CNIC# 35201-1450507-3	S/o Riaz Malik	Pakistani	Business	House No.126-Y, Street No 18, DHA, Lahore	01 (One)	
3	Mr. Najeeb Malik CNIC#35201-3088787-3	S/o Riaz Malik	Pakistani	Business	Plot No.321, Block K, Phase I, Lahore Cantt, Co-operative Housing Society Lahore.	01 (One)	
					TOTAL	100 (One Hundred)	

Dated 19 day of December 2014

Securities and Exchange Commission of Pakistan ★ Company Registration Office Lahore ★

10/2/18

Wintness to above signatures
Muhammad Khurram Iqbal S/o Muhammad Iqbal (ACA)
CNIC No.35201-1584770-1
MASTER TEXTILE MILLS LIMITED

Daras Road Off Raiwind, Manga Mandi Road,
Lahore

Annexure - 2 (ii)

ARTICLES OF ASSOCIATION

OF

MASTER POWER (PRIVATE) LIMITED

PRELIMINARY

1. The regulations contained in Table 'A' shall save as hereinafter appearing, apply to the Company so for these are applicable to a private company limited by shares.

DEFINITIONS

2. In these presents.

   a) "Board" means the Board of Directors for the time being of the Company:

   b) "Company" or "the Company" means MASTER POWER (PVT) LTD.

   c) "Section" means section of the Ordinance: company:

   d) Table "A" means Table A contained in the First Schedule of the Ordinance:

   e) "The Ordinance" means Company Ordinance, 1984.

   f) "The Seal" means the Common Seal of the Company:

   g) "These presents" means the Memorandum and Articles of Association of the Companies as amended from time to time and resolutions of any nature of the Company.

3. Unless the context otherwise requires words or expressions contained in these presents shall have the same meaning as assigned to them in the Ordinance: and words importing the singular shall include the plural, and vice versa, and words, importing the masculine gender shall include females and words importing persons shall include bodies corporate.

PRIVATE LIMITED COMPANY

4. The Company is a Private Company Limited by shares within the meaning of clause 28, Sub- section (1) of Section 2 and accordingly;

   a) No invitation shall be issued to the public to subscribe for any shares or debentures of the Company.

Company Registration Office Lahore

Master power pvt ltd

Master power pvt ltd

b) The number of the Members of the Company (exclusive of the persons in the employment of the Company) shall be limited to fifty provided that for the provision of this clause when two or more persons hold one or more shares jointly in the company they shall be treated as a single member, and

c) The right to transfer shares in the Company is restricted in the manner and to the extent hereinafter stated.

BUSINESS

5. The business of the Company shall be restricted exclusively to the objects enumerated in the Memorandum of Association and may be commenced soon after the incorporation of the company as the directors shall think fit and notwithstanding that a part of the capital has been subscribed.

CAPITAL AND SHARES

6. The authorized share capital of the company is Rs.5,000,000/- (Rupees Five Million Only) divided into 5,000/- (Five Thousand) Ordinary shares of Rs.1,000/- (Rupees One Thousand only) each with powers to increase or reduce the capital subject to as hereinafter provided in the Articles of the company and subject to any provisions of the Companies Ordinance, 1984.

7. The shares shall be under the control of the Directors who may allot or otherwise dispose of the same under the law for the time being in force.

8. The shares in the capital of the Company may be issued or allotted in payment or pan payment or part payment of any property, land, building, machinery, or goods supplied or any services, rendered to the Company or conduct of its business and any shares so allotted may be fully paid up.

9. The Directors may raise and secure payment or any sum by issue of Term Finance Certificates. The Term Finance Certificates Participation Term Certificates may be issued at a discount, premium or otherwise with special privilege as to redemption, into Term Finance Certificates.

10. Except to the extent and in the manner allowed by Section 95 no part of the funds of the Company shall be employed in the purchase of or in loans upon the security of the Company's shares.

CERTIFICATE

11. Every person, whose name is entered, as a member in the Register of Members shall, without payment be entitled to a certificate under the common seal of the Company

Company Registration Office Lahore
Securities and Exchange Commission of Pakistan
SECP

specifying the share or shares held by him. However, the Company shall not be bound to issue more than one certificate, and delivery of a share certificate to anyone of the several joint holders shall be sufficient delivery to all.

12. If a certificate is defaced, lost or destroyed it may be renewed on payment not exceeding ten rupees and on such terms as to evidence and indemnity and payment of expenses incurred by the Company in investigating title as the Directors thank fit.

TRANSFER AND TRANSMISSION OF SHARES

13. As provided under Section 76(1) no shares of the Member of the Company shall be transferred unless the Transfer Deeds are properly stamped, signed, and at least majority of the Directors of the Company have approved the transfer of the shares applied for.

14. The Directors may decline to register any transfer of shares, and may refuse to register any transfer to a transferee (not being an existing shareholder) whom they do not approve, and shall not be bound to show any reason for exercising their discretion. The Directors may also decline to transfer any share, the registration of which will involve a contravention of Article 4 above, but in all cases the Company shall have regard of Sections 76 to 810.

15. No fee shall be charged for any transfer if approved by the Directors.

16. In case the Directors refuse to register a transfer of any shares, they shall, within one month from the date on which the instrument of transfer was lodged with the Company, give to the transferor and the transferee, notice of the refusal as required by sub-section (1) of Section 78.

17. No shares can be mortgaged, pledged, sold, hypothecated, transferred or disposed of by any member to a non-member without the previous sanction of the directors except that the members may pledge their shares with bank(s) as a collateral security for any advance to the Company, if required.

18. The legal heirs, executors, administrators or nominees of a deceased shareholder shall be the only persons to be recognized by the Directors as having any title to the share. In case of shares registered in the name of two or more holders, the survivors and the executors of the deceased shareholder shall be the only person to be recognized by the Company as having any title to shares.

GENERAL MEETING

19. The First Annual General Meeting shall be held within 18 months from the date of incorporation of the Company in accordance with the provisions of on 158 and thereafter once at least in every year and within a period of four months following the close of its

financial year and not more than fifteen months after the holding of its last preceding Annual General Meeting as may be determined by Director. The Director may, whenever he thinks fit, call an Extraordinary General Meeting of the shareholders in term of Section 159 of the Companies Ordinance, 1984.

PROCEEDINGS AT A GENERAL MEETING

20. At least twenty-one days' notice shall be given specifying the nature of business to be transacted, the place, the day and time of the General Meeting. An accidental omission to give such notice or non-receipt of such notice by any member shall not invalidate the proceedings of the General Meeting. No business shall be transacted in any General Meeting unless a quorum is present two members present in person and having not less than 25% of total voting power in their own account or through proxies shall form the quorum for a General Meeting.

21. The Chairman of the Board of Director, it any shall preside as Chairman at every General Meeting of the Company, but if there is no such Chairman, or if at any meeting he is not present within fifteen minutes after the time appointed for the meeting or is unwilling to act as Chairman, any-one of the Directors present may be elected to be Chairman and if none of the Directors is present, or willing to act as Chairman, the members present shall choose one of them to be the Chairman.

22. The Chairman, with the consent of any meeting of which a quorum is present, may (and shall, if so directed by the meeting) adjourn the meeting from time to time and from place to place, but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place.

23. No person shall act as proxy unless he is a member. An instrument appointing a proxy shall be in the form as prescribed in clause 39 of Table 'A' and the instrument of proxy shall be deposited at the registered office of the Company not later than forty eight hours before the time for holding the Meeting at which the person named in instrument proposes to vote, and in case of default the instrument of proxy will become invalid.

24. At any General Meeting a resolution placed before the meeting shall be decided on a show of hand, unless a poll is demanded in accordance with the Provision of Sections 167 and 168.

25. On a poll member shall have voting right as laid down in Section 160.

Company Registration Office Lahore Securities and Exchange Commission of Pakistan SECP

26. On a show of hands every member present in person shall have one vote, and on a poll every member shall, whether present in person or by proxy, have one vote in respect of each share held by him but subject to Regulation 34 of Table 'A'.

27. In case of an equality of votes, whether on a show of hands or on, a poll, the Chairman of the meeting at which the show of hands takes place, or at which the poll is demanded, shall be entitled to a second or casting vote as provided under Regulation 33 of Table 'A'.

28. (a) A notice may be given by the company to any member either personally or by sending it by post to him or to his last registered address (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 notice to him.

    (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 to have been effected at the time at which the letter would be delivered in the ordinary course of post.

29. The Director of the Company shall fix the number of the elected Directors of the Company not later than 35 days before convening of the General Meeting in which Directors are to be elected. The number of Directors shall not be less than two and the number so fixed shall not be changed except with the prior of a Meeting or the Company.

    a. The Chairman of the Board of Directors and the Chief Executive shall Directors or any other person appointed by the directors in this regard.

    b. The following persons shall be appointed first director of the company and till the First Annual General Meeting of The Company and are eligible for re-election as Directors of the Company.

        1. Mr. Naveed Malik

        2. Mr. Najeeb Malik

30. The Directors may appoint one of the Directors or any other person as the Chief Executive of the Company, in the manner provided in Section 198 and Section 199 and he will hold his office till First Annual General Meeting or a period of three years unless or unless or until he becomes incapable for this post for any reason, or he may be removed by the Directors as provided in Section 202. The said Chief Executive shall by paid remuneration as may be decided by the Directors from time to time.

31. The election of Directors shall be held in accordance with the provisions of Section 178 in the following manner:

    a. Member shall have such number of votes of votes as is equal to the product of the number of voting shares or securities hold by him and the number of Directors to be elected.

    b. A member may give all his votes to a single candidate or divide them between more the one of the candidates in such manner as he may choose.

    c. The candidate who gets the, highest number votes shall be declared elected as Director, and then the candidate who-gets next highest number of vote, s shall be so declared, and so on until the total number of Directors to be elected have been so elected.

    d. The Directors including the Chief Executive, if any, shall hold office for a period of three years, unless he resigns earlier or becomes disqualified from being a Director or otherwise ceases to hold office.

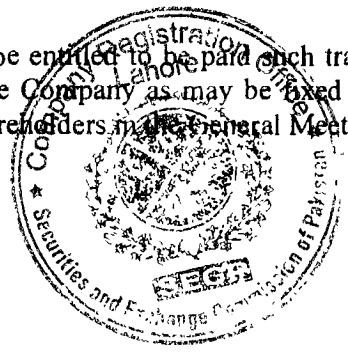
32. A resolution for removing a Director appointed elected in the manner provided for in Article 29 and 31 above shall not be deemed to have been passed except as provided in Section 181.

33. The qualification of a Director shall be the holding of one Ordinary Share in his own name subscribed either in case or in kind, except those of nominee's Directors or Technical Directors appointed by the Board.

34. The remuneration of Directors (other than the regularly paid Chief Executive and working Directors) shall not exceed Rs. 500/- per meeting at which the Directors are present.

35. The Directors may sanction the payment of such additional sums as they may think fit to any Director for any special service he may render to the Company or be thought capable of rendering such service but shall be subject to the approval of the shareholders in a General Meeting.

36. The Directors who reside out of station shall also be entitled to be paid such traveling and other expenses for attending the meeting of the Company as may be fixed by the Directors from time to time and approved by the shareholders in the General Meeting.



37. Any casual vacancy occurring on the Board of Directors may be filled in by a resolution of the Directors, and the person so appointed shall hold office for the remainder of the term of the Director in whose place he is appointed as provided under Section 180 (2).

38. A Director may, and the Secretary on the requisition of a Director shall, at any time summon a meeting of Directors.

39. The quorum necessary for the transaction of the meeting of the Directors may be fixed by the Directors and unless so fixed shall be two.

40. No Director shall be disqualified from his office by contracting with the Company either as vendor, purchaser of otherwise, nor shall any Director be liable to account for any profit realized from any such contract or arrangement or the fiduciary relation thereby established, but the nature of his interest must be disclosed by him at the first meeting of Directors after acquisition of his interest, and that no Director shall vote in respect of any contract of arrangement in which he is interested or in any subsequent transaction with such firm or company.

MANAGEMENT

41. The whole business and affairs of the company shall be conducted or managed by the Directors, who shall have all powers, authorities and discretion as are given by the Ordinance or by any other law for the time being in force or may be entrusted by these resents.

42. The Directors may from time to time raise or borrow any sums of money for and on behalf of the Company from the members or other persons, Companies or banks or may themselves advance to the Company such sums on such terms as may be approved by the Directors from time to time in their meetings.

43. Without prejudice to the powers conferred by these presents, the Directors shall have the following powers, that is to say, power:-

    a. To receive money or goods on behalf of the Company.

    b. To sell, deal in and dispose of all articles and goods of the Company.

    c. To engage, fix and pay the remuneration and dismiss or discharge all managers, agents, secretaries, clerks, servants, workmen and other persons employed in or in connection with the Company's business.

    d. To appoint any person or persons to be Attorney or Attorneys of the Company for such purposes and with such powers, authorities and

discretion and for such period and subject to such conditions as he may from time to time think fit.

e. To make and give receipts releases and discharges, all money payable to the Company and / or for the claims and demands of the Company,

f. To draw, accept, endorse and negotiate all such cheque, bills of exchange promissory notes, hundies, draft, Government and other securities as shall necessary in or carrying on the affairs of the Company, whether the account may be overdrawn or not.

g. To institutes compromise, withdraw or abandon any legal proceedings by or against the Company or its officers or otherwise, concerning the affairs of the Company.

h. To give to any officer or other person employed or contracted by the Company a commission on the profits of any particular business or transaction of the Company but as permitted under the law, and commission shall be treated a part of the working expenses of the Company.

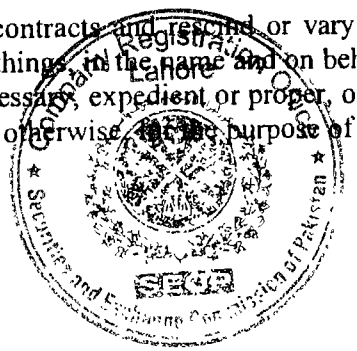
i. To provide for the welfare of the employees or ex-employees of the Company and the wives, widows or families or the dependents or connections of such pert of the working expenses of the Company.

j. To delegate any of these powers to any persons, agent, or managers as he thinks fit;

k. To open current accounts or letters of credit for any amount with any bank or banks and to give instructions for operation of such accounts.

l. To appear before any civil, criminal, revenue, excise, income-tax and other authorities for and on behalf of the company and to sign any statement or documents on behalf of the company and to sign power of attorney, etc on behalf the company in favor of any person to represent, defend and safeguard the interests of the company,

m. To enter into all such negotiations and contracts and rescind or vary all such contracts and do all acts, deeds and things, in the name and on behalf of the company as they may consider necessary, expedient or proper, or in relation to any of the matters aforesaid or otherwise for the purpose of the company.



n. To invest or advance money against real, personal, or other security and to give effectual discharge for moneys payable to company and for its claims and demands;

o. To purchase or take on lease or otherwise acquire for the company land, buildings, rights and privileges for the purpose of offices, shops or premises of the company at such prices and generally on such terms as they may think necessary and expedient to building, altering and furnishing offices, houses, and premises and let or sub-let any such houses or premises either in portion or otherwise;

p. To demand and enforce payment, delivery, transfer of any dues for recovery and receive from all and every persons, body-corporate or corporations, firms or companies what so ever, all money, securities for money, debts and claims of all kinds and demand enforce delivery and receive and take possession of moneys, securities, shares and goods produced and property of all kinds, whether belonging to the company as security or in trust or hold any person or company in trust or by way of security for the

q. To deal with make arrangements, sign contracts with government, semi-government, autonomous bodies, corporations and local governments, institutions, etc.

ACCOUNTS

44. 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 matters in respect of which the receipt and expenditure take places;

b. All sales and purchases of goods made by the company;

c. All assets and liabilities of the company;

d. The books of accounts shall be kept at the registered office of the company or at such other place or places as the Directors shall think fit, subject to provisions of sections 230.

BORROWING POWERS

45. The Directors may from time to time borrow and sum of money for and on behalf of the company from the members, companies, banks, or financial institutions or they may

themselves advance money to the company on such terms and conditions as they think fit without indulging in the business of an investment company.

46. The directors may from time to time secure the payment of such money in such manner and upon such terms and conditions in all respects as they may think fit as in particulars by the issue of debentures or participation term certificate, modaraba certificate, musharika certificate, term finance certificate, pre-organization or such other investment as the federal government may, by notification in the official gazette specify for the purpose, or bonds of the company by mortgage charges upon some or all the assets of the company.

47. Any debentures, bonds or other securities may be issued at a discount, premium or otherwise and with special privileges subject to the permission required under law.

INDEMNITY

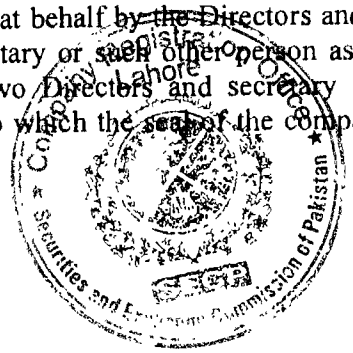
48. Every officer or agent for the time being of the company may be indemnified out of the whether civil or criminal, arising out of his dealings in relation to the affairs of the company, except those brought by the company against him, in which judgment is given in his favor or in which he is acquitted, or in connection with any application under section 488 in which relief is granted to him by the court.

SECRECY

49. No person shall be entitled to visit or inspect any office, work of the company without the previous permission of the Chief Executive, Directors or the person duly authorized by them or to require any matter which is or may be in the nature of a trade secret or process which may relate to the conduct of the business of the Company and which in the opinion of the Directors will be in expedient in the interest of any person of the Company to communicate to the public.

THE SEAL

50. The Directors shall provide for the safe custody of the seal, and the seal shall not be affixed to any instrument except by the authority of a resolution of Directors or by a committee of Directors authorized in that behalf by the Directors and in the presence of at least two Directors and of the secretary or such other person as the Directors may appoint for the purpose; and those two Directors and secretary or other person as aforesaid shall sign every instrument to which the seal of the company is so affixed in their presence.



AUDIT

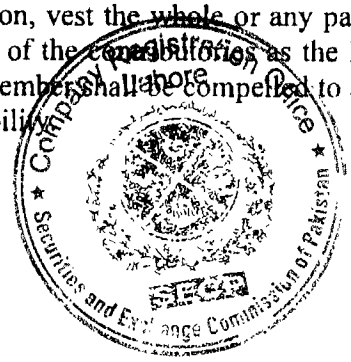
51. Auditors shall be appointed and their duties regulated in accordance with sections 252 to 255 or any statutory modification thereof for the time being in force.

WINDING UP

52. If the company is wound up, the liquidator may, with the sanction of a special resolution of the company and any sanction required by the ordinance, divide amongst the members, in cash or kind, the whole or any part of the assets of the company, whether they consist of property of the same kind or not.

53. For the purpose aforesaid, the liquidator may set such value as he deems fair upon any property to be divided as a aforesaid any may determine how such division shall be carried out as between the members or different classes or members.

54. 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 contributories as the liquidator, with the like sanction, thinks fit, but so that no member shall be compelled to accept any share or other securities whereon there is any liability.



We the person whose name and address is subscribed, is desirous of being form into a Company, in pursuance of this Articles of Association and We agree to take the number of shares in the capital of the Company set opposite to my respective name.

Sr. No.	Name and Surname (present and former) In full block letters	Father's / Husband's Name in full	Nationality with any former Nationality	Occupation	Residential Address in Full	Numbers of shares taken by each subscriber	Signature of the subscriber
1	Master Textile Mills Limited (Reg. No. # 0026423) Through its Nominee Mr. Naveed Malik CNIC#35201-1450507-3	S/o Riaz Malik	Pakistani	Business	Daras Road Off: Raiwind, Manga Mandi Road, Lahore House No.126-Y, Street No.18, DHA, Lahore	98 (Ninety Eight)	
2	Mr. Naveed Malik CNIC# 35201-1450507-3	S/o Riaz Malik	Pakistani	Business	House No 126-Y, Street No 18, DHA, Lahore	01 (One)	
3	Mr. Najeeb Malik CNIC#35201-3088787-3	S/o Riaz Malik	Pakistani	Business	Plot No.321, Block K, Phase I, Lahore Cantt, Co-operative Housing Society Lahore.	01 (One)	
					TOTAL	100 (One Hundred)	

Dated 19 day of December, 2014

Company Registration Office Lahore
Securities and Exchange Commission of Pakistan

Wintness to above signatures
Muhammad Khurram Iqbal S/o Muhammad Iqbal (ACA)
CNIC No.35201-1584770-1
MASTER TEXTILE MILLS LIMITED

Daras Road Off: Raiwind, Manga Mandi Road,
Lahore

Annexure -5

PROSPECTUS

Brief Introduction

Master Power (Pvt.) Limited (MPPL) is a wholly owned subsidiary of Master Textile Mills Limited (MTML). MPPL has decided to set-up a 20 MW capacity Captive Coal based Power Project to ensure regular power supply to parent company. MPPL would have a surplus power supply of approximately 6 MW to sell to neighboring manufacturing units on bi-lateral basis.

Master Textile Mills Limited (MTML) parent company of Master Power (Pvt.) Limited is a vertical textile unit engaged in manufacturing of cotton and blended yarns, Greige fabric, Dyeing and Processing of woven fabric and garment manufacturing. MTML is an export oriented company having over 80% exports to Europe, US, Australia, China, UK, Hong Kong and Bangladesh. MTML had total turnover of Rs. 10 Billion during last year and employ over 4,500 people.

Salient Features

Master Power (Pvt.) Limited (MPPL) would generate electric power through coal fired steam turbine and its Gross Capacity will be 20 MW. MPPL has already applied to Environment Protection Department for the approval of construction/installation of project and expect to have approval in due course.

Proposed Investment

Total project cost of Master Power (Private) Limited (MPPL) is determined to be 1.6 Billion Pak Rupees with Debt and Equity ratio as 75:25 %.

For Debt financing, financial institutions like Bank of Punjab, Meezan Bank and National Bank of Pakistan have offered us their interest in the Power Project.

Social and Environmental Impact

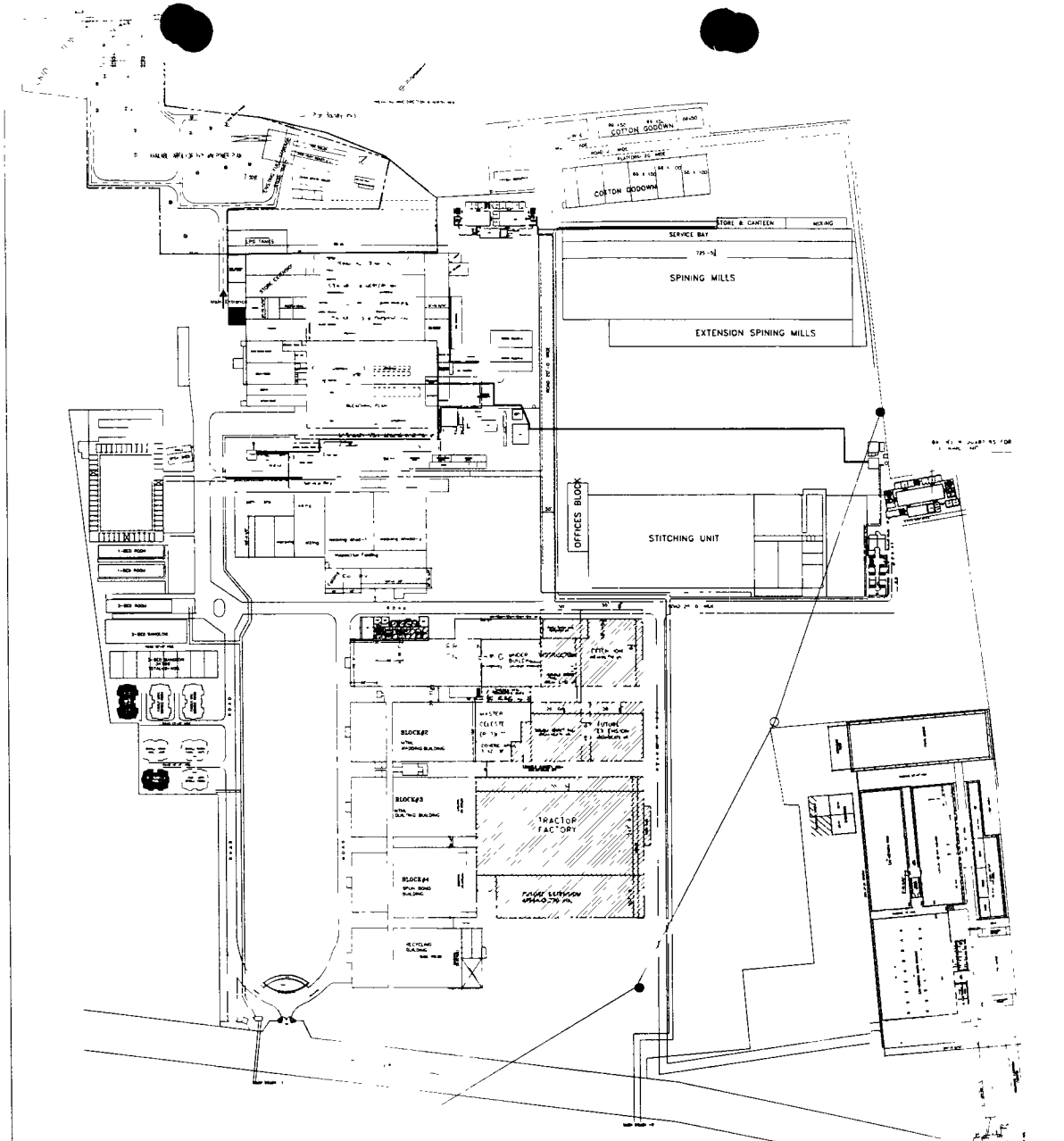
MPPL has selected Circulating Fluidized Bed (CFB) combustion technology which has relatively low nitrogen oxides (NOx) and sulphur oxides (SOx) emissions by design.

Open cycle circulating cooling system is used for power plant without external drainage or thermal pollution. A small amount of process drain and industrial sewage will be discharged to integrated sewage treatment system.

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

Plant zone is far away from resident's concentrated zone. Noise generated by generator after muffler treatment will not influence surrounding residents.

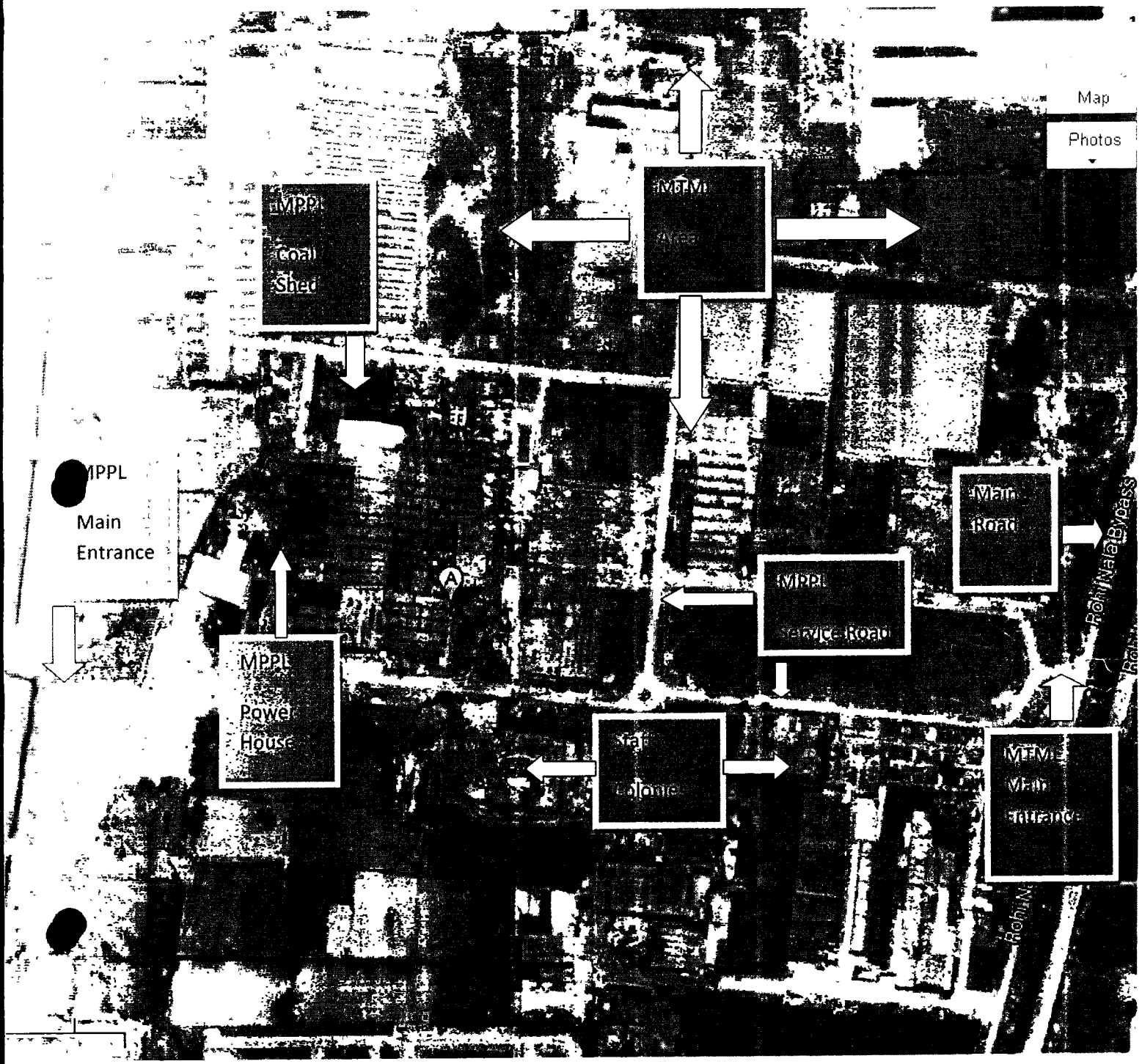
Annexure-6



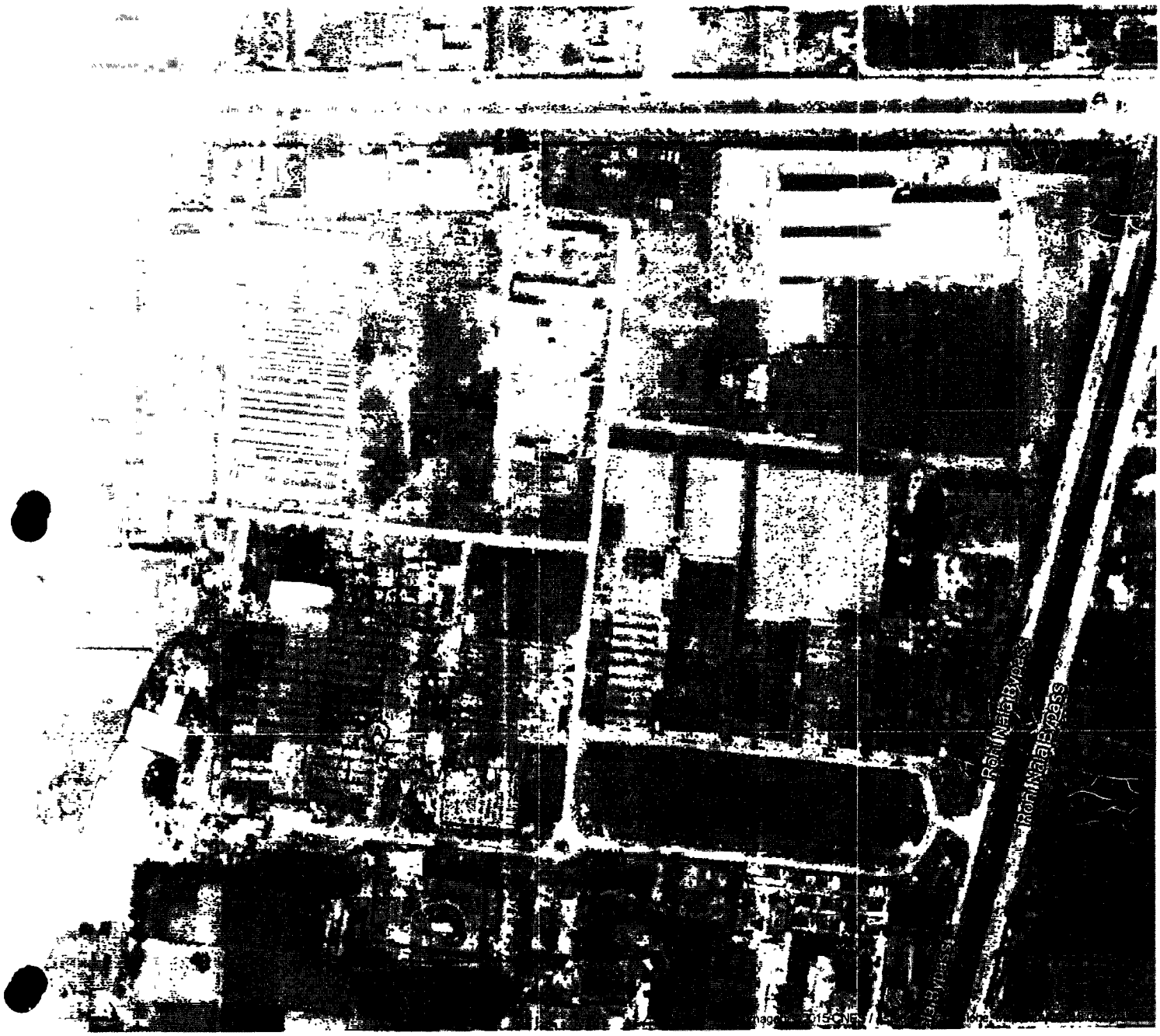
LAYOUT PLAN FOR MASTER POWER PRIVATE LIMITED

MASTER TEXTILE
MILLS LIMITED RAIWIND.

	PROJECT LAYOUT	
	USMAN SIKANDAR	2015-04-01
	IMRAN KHAN	
	NTS	


Map
Photos
MPPL
Coal
Shed
MPPL
Main
Entrance
MPPL
Power
House
MPPL
Service Road
Main
Road
Rohi Nala Bypass

To see all the details that are visible on the screen, use the "Print" link next to the map



Regional Corporate Credit Administration Department
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Gulberg II, Lahore Pakistan
Phone 35783667
Fax 35784060

M. Najeeb Malik
Chief Executive Officer
Master Textile Mills Limited
[illegible], Gulberg III, Lahore

August 11, 2014
RCAD/CIBG/265A

Dear Sir,

BANKING FACILITIES

With reference to your request letter dated June 11th, 2014 for banking facilities, we **The Bank of Punjab** (hereafter refer to as "**Bank**") are pleased to inform you that the Bank has, in principle, approved the following facilities in favor of **Master Textile Mills Limited** (hereafter known as the "**Client**"), which are to be utilized jointly in accordance with the terms and conditions mentioned hereunder:

DETAILS OF FACILITIES

1. FOR SYNDICATED TERM FINANCE FACILITY/TERM FINANCE/LTFF (NEW)

Purpose:	To partially finance the set up of a Coal Based Steam Power Generation Plant of 15 MW at Company's Factory Premises. The facility would be utilized for retirement of SLCs, mentioned under line 1(a), including but not limited to finance Local Machinery, Local Procurement, Building Construction, Civil Works, etc
Limit Amount:	PKR. 800,000,000/- (Pakistani Rupees Eight Hundred Million Only)
Mark up:	Average 06 Months Kibor + 125 bps to be recovered on quarterly basis
Rate Resetting:	Average KIBOR of first working day of each calendar half year will be applicable for six months
LTF Rate:	As per SBP with BOPL spread of 125 bps
Mark-up Rate Over due:	6 Months KIBOR + 500 bps
Tenor:	7 Years including 2 years Grace Period
Grace Period:	02 years from the date of first Drawdown
Principal Repayment:	In 10 Semi-annual installments on arrear basis, starting from 30th month from the first Drawdown date

Principal Repayment Plan		
Sr	Semi-Annual Principal Payment	Ending Balance
	2 Years Grace Period	800,000,000
1	80,000,000	720,000,000
2	80,000,000	640,000,000
3	80,000,000	560,000,000
4	80,000,000	480,000,000
5	80,000,000	400,000,000
6	80,000,000	320,000,000

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7	80,000,000		280,000,000
8	80,000,000		160,000,000
9	80,000,000		80,000,000
10	80,000,000		
Total	800,000,000		

Final Maturity: December 2021 (Tentative)

Security:

1. Specific Charge of PKR 800.00 Million on Project Assets including Plant, Machinery, Land and Building to be registered with SECP
2. First Pari Passu Charge of PKR 267.00 Million on Present and future Fixed Assets of the company (Plant & Machinery Only) to be registered with SECP (In total, Ranking Charge will be registered which will be upgraded to 1st Pari Passu Charge within 120 days)
3. Personal Guarantees of all Directors of the company along with Net worth Statements (NWS)

1a. FOR OPENING OF IMPORT SIGHT DOCUMENTARY LETTERS OF CREDIT (SLC) (NEW)

Purpose:	To Import Plant & Machinery related to a Coal Based Steam Power Generation Plant of 15 MW
Limit Amount:	PKR 800,000,000/- (Pakistani Rupees Eight Hundred Million Only)
Commission	0.15% Per Quarter/s
Mode of Shipment:	By Air/ Sea or by Road/ by Rail
Take Out of LC:	Through STTF/TF facility mentioned under Line 1
Mark Up on PAD:	Average 06 Months KIBOR+125bps for first 15 days only afterwards Average 06 Months KIBOR+500 bps
Tenor:	Maximum 04 Quarters
Overdue Markup Rate:	6 Months Kibor+500 bps
Security:	

- Lien over Import documents
- Other security as mentioned under STTF/TF Facility detailed under line 1

2. ERF-SBP [Part-I (Pre & Post) Part-II]/FAPC/FAFB (NEW)

Purpose:	To meet Working Capital requirement of the company/financing of export orders booked by Letter of Credit & Contract (CAD/DA) Basis
Limit Amount:	PKR 250,000,000/- (Pakistani Rupees Two Hundred Fifty Million Only)
Pre/ Post Shipment	
ERF-I/II Mark up.	SBP's Rate +100 bps (As amended by SBP from time to time)
FAPC/FAFB	

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Mark-Up Rate:	Relevant KIBOR+100 bps
Rate Resetting:	KIBOR at the time of disbursement of FAPC/FATB shall be applied
Overdue Markup Rate	Average 3 Months Kibor+500 bps
Repayment:	Door maturity through own sources/export proceeds
Tenor	Max upto 180 Days or as stipulated by SBP
Primary Security:	

- First charge on export L/C (Sight/Usance) CAD/DA contracts (Part-I)/FAPC
- Lien on export documents and proceeds thereof (Post Shipment)
- Lien on ERE statement (Part-II)
- First Pari Passu Charge of PKRs 334.00 Million on present and future Current Assets of the Company (Initially Ranking Charge will be registered which will be upgraded to 1st Pari Passu Charge within 120 days. Client to arrange all relevant NOCs in these 120 days)

Special Conditions:

a) Revised Financial Projections for Coal Project to be provided before any drawdown
b) Only eligible Machinery/Equipment/items would be allowed under LTFF, in line with SBP guidelines
c) Disbursement will be allowed only upon availability of BOQ justifying project cost
d) Disbursement will be allowed upon availability of Fresh valuation report conducted by bank's approved valuator only
e) Project Consultant must be appointed before financial close of the transaction
f) Cost overruns in Coal Project to be supported by sponsors. No further financing to support cost overruns will be allowed by BOP
g) Drawdown/SBC for the project would only be established upon vacation of the existing charges over Fixed Assets (Plant & Machinery only)/ equivalent to the shortfall amount i.e. PKR 2,100.0 M
h) Cushion in Current Assets required for registration of Charge of Rs 334.0 M
i) TF facility of Rs 800.0 M is allowed subject to confirmation of financing. Remaining debt portion amounting Rs 700.0 M availed or to be availed from other bank's/FI's
j) Existing loans from directors must be subordinated in favor of BOP.
k) ERF Part II is available subject to curtailment under the existing entitlements of the company as per EE Statement
l) In case of FAFB/ERF (Post)/ TERF-II no financing to be allowed against buyers having history of overdue bills
m) Client to route trade business of at least 3 lines from BOP counters by next annual review of the facilities
n) Title clearance of project land (Clearly Demarcated within factory premises) along with other Due Diligence shall be done by BOP's legal counsel. Project valuation of assets must be conducted within one month of COD by BOP appointed valuator
o) All financial covenants to be in line with STFF/TF/LTFF Agreement
p) 1% (plus FED) of the STFF/TF/LTFF to be paid as Arrangement Fee
q) Processing Fee of PKR 500,000/- (plus FED) for Working Capital Lines

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... AND such other securities as may reasonably be requested by the Bank from time to time. In addition, the Bank shall have a banker's lien on all your deposits, accounts and properties held with the Bank. The security and other agreements, negotiable instruments and documents to be executed by client in favor of the Bank shall be in form and substance satisfactory to the Bank.

Other Terms & Conditions: Client will comply with the following general terms and conditions:

The Client will bear all costs and expenses and reimburse the amount paid by the Bank forthwith after receiving the Banks demand for payment. In addition, client will also be responsible for all costs and expenses (including litigation costs and lawyer's fees) incurred by the Bank in recovering any amount from client through litigation or otherwise or enforcing your obligations to the Bank.

All expenses, including legal and valuation fees and incidental costs incurred by the Bank in relation to the granting of the facilities and the taking, registering and enforcing, if necessary, of securities relating thereto shall be charged to the Client and the Client will duly liquidate the same as and when required by the Bank. Moreover, the Client will also pay to the Bank any penalty imposed by SBP due to any violation of SBP prudential requirements due to client's fault.

The Client will not, without the prior written intimation to the Bank, amend and/ or alter any of the provisions of your Memorandum and Articles of Association/ Bye laws/ other constitutive documents (as the case may be). The Client will also inform the Bank in writing and immediately, of any plans to change your shareholding structure. In the event the Bank thereafter concludes that such a change may impair your standing credit, the Bank reserves the right to require the Client to effect a prepayment of the facilities, including all accrued mark-up, commissions, charges, fees and all moneys arising from the facilities by acceleration.

The Client will provide the Bank with a duly certified true copy of your audited annual balance sheet prepared by your external auditors in accordance with standard applicable accounting principles as in force in Pakistan together with your profit and loss statements and a detailed list of your debtors and creditors, immediately after its issuance, but in any case no later than 4 months after the close of your financial year. (Quarterly account of public limited companies should be obtained within 45 days from the quarter end.)

The Client will undertake to pay all taxes, duties and levies as may be required to be paid by the Client or the Bank on the facilities herein advised and on the sale of the goods/ assets to the Bank or on the repurchase of the goods/ assets from the Bank. Such taxes, duties and levies shall include all taxes payable by the Bank pursuant to any law, enactment, order or rule (excluding tax on the corporate income of the Bank), on an amount of the purchase price/ mark-up price outstanding against the Client or on the facilities herein advised. The Client will undertake to pay/ reimburse the Bank any and all taxes, duties and levies (excluding tax on the corporate income of the Bank) as may be imposed or levied upon the Bank in any manner arising from any finance/mark-up agreement which may be executed or from the facilities herein advised or from or in respect of any amounts payable by the Client to the Bank. For such taxes, duties and levies, the Bank shall be entitled and empowered to debit your account with the Bank for such payments, irrespective of any dispute regarding such payment between the Client and the Bank. Furthermore, the client will gross-up its payments in case any deductions or withholding is required to be made by the client under any applicable law for the time being so

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to ensure that receives and retains a sum equal to the net amount that the Bank may have received in case such deduction or withholding was not required to be made in terms hereof.

3.6 The Client will not, without the prior written consent of the Bank borrow any money or monies or avail any other finance or mark-up facility from any other banks/ financial institutions or any other person. Any indebtedness in respect of borrowed monies by the client which is neither (a) paid when due or (b) paid if it becomes due and payable before its normal maturity, shall, inter alia, constitute an event of default and the Bank will be entitled to exercise its rights under the law for recovery of all or any such outstanding.

3.7 The availability and/or utilization of credit line shall be subject to the State Bank of Pakistan's Credit/ Exchange Control, Prudential Regulations and Clear/Clean CIB Report, and any other relevant policy, regulation or rule which may be effected from time to time, by any competent authority and/ or regulatory body as determined by the Bank.

3.8 The Client further undertakes and ensure to utilize the facilities strictly for the purposes for which the Client has requested and also under the terms of approval of the Bank. The Client further unconditionally undertakes that if the facilities are used for any other purpose(s) other than approved, or are deviated by the Client in any manner whatsoever, for which the Bank shall be the sole judge, the Bank shall be at liberty to proceed in the manner the Bank considers appropriate, including but not limited to forthwith cancel/suspend the facilities and the Client shall be responsible for any consequences thereof."

3.9 The utilization of facilities shall be subject to prior completion of necessary formalities including fresh documentation and securities in consultation with the legal advisor of the Bank to its satisfaction, and shall contain the requisite representations, warranties, covenants, etc as may be required by the Bank.

3.10 In the event of default in payment of principal amount or mark-up or commission on the relevant due dates, the Bank shall have the right, power and authority to charge liquidated damages @ of 2% p.a on the principal amount during the delayed period and other amounts, costs, charges and expenses, etc as may be agreed or specified in any agreement, instrument or document governing the facilities and the bank will also have the option to revise mark up/commission/charges rate upwards only, at any moment if market conditions change.

3.11 Subject to the furnishing/execution of fresh agreements and documents and any necessary amendments which the Bank may in its sole discretion decide to incorporate, all the terms and conditions of the agreements/arrangements governing the facilities previously granted to the Client will continue hereto, and the Client will be liable to pay the total outstanding amounts(s) together with all applicable mark up, costs, commissions, charges and expenses and any other levies that the Bank may impose from time to time.

3.12 Any disbursement by the Bank under these facilities shall be subject to calculation of the Drawing Power / limit based on the security held inc the stock reports submitted by the Client or by the Muccadam appointed by the Bank.

3.13 The Client will not, without the prior written consent of the Bank, undertake any action and/or omission that may result in any encumbrances being created on or against the securities / collateral / credit support or any of them provided to the Bank, whereby the securities / collateral / credit support available with the Bank may in any way become adversely affected.

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3.14 The Client will execute or cause to be executed all such instruments, deeds or documents, which the Bank may in its sole discretion require

3.15 The Client will furnish all such information, as the Bank may require at any time and from time to time, relating to the position of the security, collateral credit support, goods and pecuniary liabilities

3.16 The Client will keep the goods security/collateral/credit support/property fully insured covering all possible risks with an insurance company acceptable to the Bank for an amount covering the entire facilities and the Bank shall be designated as the beneficiary of such insurance policy and the Client will deliver to the Bank copies of receipts evidencing payment of the premium, in respect thereto

3.17 The Client will keep, maintain and protect the interest of the Bank in any and all securities provided to the Bank and the Client will not to undertake any act of commission or omission by which the payment of any amount payable to the Bank or any of the Securities are in any manner adversely affected

3.18 The Client will create and furnish the Bank with any and all such other securities as the Bank may require from time to time and to fulfill all documentation and other formalities required for perfecting the security / collateral / credit support in favor of the Bank

3.19 In the normal course of business, the above facilities are valid upto and repayable on <u>August 31st, 2015</u> at which time it will be reviewed and renewed at our sole discretion However, we reserve the right to terminate the facilities at our discretion whereupon all outstandings with us will be repayable immediately

3.20 The Bank has irrevocable right to engage outside consultants for appraising and evaluating the operating performance or any other aspect of the borrower/company, at any time during the currency of the loan agreement, as deemed appropriate The fees of consultants for such studies shall be borne by the borrower/company

3.21 The Bank reserves the right to modify, amend, alter, add, withdraw or cancel any of the terms and conditions of this facility offer letter.

3.22 You will not amend / change the constitution of the company as well as no change will take place in the management of the company without prior approval of the bank The sponsor directors of your company shall not sell or dispose off their shareholdings in the company and shall not permit transfer / change of senior management without prior written consent of BOP Furthermore, it will be the responsibility of the company to notify BOP in advance about any proposed change in the list of directors well within a reasonable time enabling BOP to decide the future course of action In the event of non-compliance to this condition, the bank will be entitled to immediately recall your company's entire outstanding facilities The company through acceptance of this facility offer letter confirms that no change in senior management / sponsorship has taken place during the last 1 year & likewise no change in senior management / sponsors is proposed in the near future

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The Client undertakes that funds provided by BOP shall strictly be utilized for the purpose mentioned ... & shall not be diverted towards speculative activities including but not limited to real estate & capital markets.

... The Bank has irrevocable right to engage outside consultants for appraising and evaluating the operating performance or any other aspect of the borrower/company, at any time during the currency of the loan agreement, as deemed appropriate. The fees of consultants for such studies shall be borne by the borrower/company.

... The Bank reserves the right to modify, amend, alter, add, withdraw or cancel any of the terms and conditions of this facility offer letter.

Please note that the contents of this Offer/facilities letter states some of the indicative terms and conditions on the basis of which the facilities requested by the Client will be granted. However, the Bank reserves the right to, without prior notice, modify or cancel the terms and conditions upon which the facilities shall be granted or to revoke the entire indicative terms and conditions to grant the facility itself, and nothing contained in this letter should be construed as a legally binding commitment on the part of the Bank to grant the requested facilities.

Kindly confirm your agreement and acceptance of the aforementioned terms and conditions by signing and affixing your Company's stamp on the duplicate of this letter and thereafter return the same to the Bank for record.

We trust that the above shall be to your satisfaction.

Yours sincerely,

For The Bank of Punjab

Authorized Signatory

Authorized Signatory

HARIS YAMIN KHAN
Sr. Relationship Manager
Wholesale Banking-Central
The Bank of Punjab Lahore.

For and on behalf of Master Textile Mills Limited

(Authorized Signatures)

Witnesses

1. ____________
Name
Address
CNIC No

2. ____________
Name
Address
CNIC No

Meezan Bank

The Premier Islamic Bank

OFFER LETTER

Original

MBL/CBG/06/MTML
June 04, 2014

M/s. Master Textile Mills Limited
82-C/1, Gulberg III,
Lahore

Dear Sir

السلام عليكم ورحمة الله وبركاته

Subject: Banking Facilities to M/s. Master Textile Mills Limited

Please refer to your request for renewal of credit facilities, Meezan Bank Limited (hereinafter referred to as "the Bank") is pleased to offer the banking facilities to M/s **Master Textile Mills Limited** (hereinafter referred to as "the Customer") on the terms and conditions stated hereunder.

Facility – 1	Murabaha / Murabaha – FIM (Regular & Spot)
Facility Amount	PKR 800,000,000/- (Pak Rupees Eight hundred million only)
Purpose	For purchase / Import of Cotton, Polyester & Yarn
Facility Profit Rate	To be negotiated at the time of disbursement
Facility Tenure	07 to 240 days.
Security	1. **For Murabaha:** Pledge of Imported / Local Cotton with 10% safety margin, Local Polyester with 10% safety margin and Yarn with 20% safety margin, where margin to be maintained in form of raw material / finished goods, under Bank's approved Muqaddam arrangement 2. **For Import Murabaha FIM.** Pledge of imported Material/Cotton / Polyester only, where 10% Safety margin to be determined / calculated viz. 10% in shape of landed cost, under Bank's approved Muqaddam Additional Security in case of Murabaha Spot / Murabaha – FIM Spot A. Trust Receipt on Customer's letterhead (on Bank's format) B. Undertaking for purchase of goods within a maximum Tenure of 240days C. Ranking charge on current assets of the Customer with 25% safety margin Note: Enhancement of PKR500 Million i.e. from PKR300 Million to PKR800 Million is allowed on one-off basis

Meezan Bank Ltd.
Gulberg Branch
60 Main Boulevard Gulberg II Lahore - Pakistan
Tel (92-042) 35879870-2 Fax: (92-042) 35879873 www.meezanbank.com

Facility – 1a Sublimit of Facility no. 1	Sight LC under MMFA – Import
Facility Amount	Rs. 300,000,000.00 (Rupees Three Hundred Million Only)
Purpose	For import of Cotton / Polyester, Spare Parts etc
Service Charges	As per Bank's Schedule of Bank charges subject to 80% discount in 1st qtr and 60% discount in subsequent qtrs (i.e 0.10% p.q.)
Security	- Lien over Import documents - Nil Cash Margin or as per SBP requirement, whichever is higher

Facility – 1b Sublimit of Facility no. 1	Local LC under MMFA-Sight/Usance
Facility Amount	Rs. 300,000,000.00 (Rupees Three Hundred Million Only)
Purpose	For the purchase of raw material including raw material/ polyester, fabric, stores & spares, tools etc
Service Charges	As per Bank's Schedule of Bank charges subject to 80% discount in 1st qtr and 60% discount in subsequent qtrs (i.e 0.10% p.q.)
Security	- Lien over local documents. - Nil Cash Margin or as SBP requirement, whichever is higher - Same as facility no 1.

Facility – 2	Murabaha / Murabaha – FIM (Regular & Spot) – Seasonal *
Facility Amount	Rs. 200,000,000.00 (Rupees two hundred million only)
Purpose	To finance working capital requirements of the Customer on the basis of approved/ to be approved process flow by PDSC i.e. For purchase/import of cotton, polyester & yarn to cater seasonal needs of the customer. In this regard, the period of utilization was from August to January each year, which will subsequently by settled by maximum 30th June
Facility Profit Rate	To be negotiated at the time of disbursement
Facility Tenure	07 to 180 days *
Security	A. Same as facility no.1, except that undertaking for maximum tenure of 180 days to be obtained.

* The period of utilization will be from August to January each year, which will subsequently be settled maximum by 30th June.

Facility – 3	Murabaha / Istisna / Tijarah USD FE-25* against Un-accepted Export Clean Usance LCs (Both Pre & Post Shipment)
Facility Amount	PKR 50,000,000/- (Pak Rupees Fifty Million Only)
Purpose	To finance working capital requirements of the Customer on the basis of approved / to be approved process flow by PDSC
Facility Profit Rate	To be negotiated at the time of disbursement
Facility Tenure	15 to 180 days.
Security	- Lien over Export Clean Un-accepted Usance LCs / documents drawn under export Usance LCs - Ranking Charge over the Current Assets of the Customer for PKR 66.667 Million inclusive of 25% risk margin duly registered with SECP, to be upgraded to Pari Passu within 90 days of first drawdown/utilization

* Subject to availability of USD at Bank's Treasury end

Facility – 3a Sublimit of Facility no. 3	Istisna – Export/ Local, Tijarah – Export/ Local
Facility Amount	PKR 50,000,000/- (Pak Rupees Fifty Million Only)
Purpose	To finance working capital requirements of the Customer on the basis of approved / to be approved process flow by PDSC
Facility Profit Rate	To be negotiated at the time of disbursement
Facility Tenure	Up to 180 days maximum.
Security	- Lien over Export/Local Bills. - Ranking Charge over the Current Assets of the Customer for PKR 66.67 Million inclusive of 25% risk margin, to be upgraded to Pari Passu within 90 days of first drawdown / utilization OR - Pledge of raw material / stocks / finished goods with the margin as per following details

Details of Margin	
Raw Cotton	10 %
Polyester	10 %
Yarn	20%

Facility – 4	Islamic Export Refinance Facility (IERF) – Part II under Murabaha/Istisna & Tijarah
Facility Amount	PKR 500,000,000/- (Pak Rupees Five Hundred Million Only)
Purpose	To finance working capital requirements of the Customer on the basis of approved/ to be approved process flow by PDSC
Facility Profit Rate	SBP Base Rate + 1.00% p.a
Facility Tenure	Up to 180 days maximum or as per SBP instructions, whichever is lesser
Security	- Pledge of Imported / Local Cotton with 10% safety margin, Polyester with 10% safety margin and Yarn with 20% safety margin where margin to be maintained in the form of raw material / finished goods And/Or - Ranking Charge over the Current Assets of the Customer for PKR 666.67 Million inclusive of 25% risk margin, to be upgraded to Pari Passu within 90 days of first drawdown/ utilization

Facility – 5	Bai Salam Against Clean Export DA/ Contract/ Un-Accepted/ Discrepant Usance Bills/ Discrepant Sight Bills
Facility Amount	PKR 500,000,000/- (Pak Rupees Five Hundred Million Only)
Purpose	To facilitate working capital requirements of the Customer
Facility Profit Rate	As per Bank's Treasury Quotes.
Facility Tenure	- To be decided by the Bank's Treasury
Security	- Ranking Charge over the Fixed Assets i.e. Plant & Machinery of the Customer inclusive of 25% risk margin. - Lien over Export Bills

Note 1: Enhancement of PKR400 Million i.e. from PKR100 Million to PKR500 Million against facility no 5,5a, 5b was approved by earmarking cushion available in limits no. 1, 2 & 4; however total exposure shouldn't exceed by PKR 1,850 Million

Note 2: Once the un-accepted Usance bills gets accepted, the facility will transfer to facility no. 8

Facility – 5a Sub limit of Facility – 5	Bai Salam Against Export Sight Contract
Facility Amount	PKR 500,000,000/- (Pak Rupees Five Hundred Million Only)
Purpose	To Facilitate working capital requirements of the Customer
Facility Profit Rate	As per Bank's Treasury Quotes.
Facility Tenure	- To be decided by the Bank's Treasury
Security	- Same as facility no. 5

Facility – 5b Sub limit of Facility – 5	Bai Salam Against Clean Export Sight Bills under LC
Facility Amount	PKR 500,000,000/- (Pak Rupees Five Hundred Million Only)
Purpose	To Facilitate working capital requirements of the Customer
Facility Profit Rate	As per Bank's Treasury Quotes
Facility Tenure	- To be decided by the Bank's Treasury
Security	- Lien over Export Bills.

Facility – 6	Car Ijarah of locally assembled and imported vehicles: Non-Commercial
Facility Amount	PKR99,125,220/- (Pak Rupees Ninety Nine Million One Hundred Twenty Five Thousand Two Hundred Twenty Only)
Facility Profit Rate	6 Months KIBOR + 1.5% p.a (Floor 8% Cap 21%)
Facility Tenure	Up to 5 Years
Repayment	To be agreed at the time of disbursement
Advance Rental	10% of the Leased rental
Early Termination	Allowed without Prepayment Penalty
Documentation Charges	PKR 10,000/- for lease facility agreement of PKR 100 Million, PKR 300/- for sub-lease agreement of every subsequent lease.
Security	• Exclusive ownership of the leased assets. • Personal Guarantee of Directors i.e. Mr Naveed Malik, Mr Nadeem Malik, Mr Najeeb Malik. • Post dated cheques

Note: As of today, customer has so far utilized an amount of PKR 5,861,500/- Therefore cushion of PKR 93,138,500/- is available for fresh draw down. However the overall funded exposure to be remained cap at PKR 1,650/- Million

Facility – 7	Sight LC under MMFA
Facility Amount	PKR 200,000,000/- (Pak Rupees Two Hundred Million Only)
Purpose	For import of Cotton / Polyester, stores, tools etc
Service Charges	As per Schedule of Bank charges subject to 80% discount in 1st qtr and 60% discount in subsequent qtrs (i.e. 0.10% p.q.)
Cash Margin	Nil cash margin or as per SBP requirement whichever is higher
Security	- Lien over Import documents

Facility – 8	Bai Salam Against Accepted Export Usance Bills (Bank Risk Line)
Facility Amount	PKR 400,000,000/- (Pak Rupees Four Hundred Million Only)
Purpose	To Facilitate working capital requirements of the Customer
Facility Profit Rate	As per Bank's Treasury Quotes
Tenure	Up to 180 days
Security	- Acceptance from the LC Issuing Bank through authenticated swift message for payment on due date. - Bank Risk and Country Risk must be approved by the Bank's FI Deptt

* Personal Guarantee of directors namely, Naveed Malik, Nadeem Malik & Najeeb Malik will be covering all the facilities

General Security for all Facilities:

Personal Guarantees of Mr. Najeeb Malik, Mr Naveed Malik and Mr Nadeem Malik. To secure overall credit package

Other Conditions/ Covenants.

- Istisna/Tijarah (Export) facilities should be availed/allowed only against confirmed export orders and only to reputable customers (Trade Finance to endorse & ensure this also)
- Overall capping of 25% i.e PKR 375 Million (against the exposure of PKR1,500 Million) under pledge (PKR1,000 Million regular – PKR 500 Million one-off) for open pledge of imported/ local cotton. Out of PKR 375 Million. PKR 125 Million will be on one-off basis i.e. 25% of the approved facility of PKR 500 Million& upon settlement of one-off facility of PKR 500 Million; the exposure against open pledge will be restricted to PKR 250 Million

DP Monitoring & Application of Rate Mechanism:

- For disbursement on any given date against Cotton Bales under our effective pledge, MBL will refer the KCA rate published in daily Dawn and/or Business Recorder and accordingly credit the customer's account by No. of bales under our pledge
- DP calculation on weekly basis and rate determination would be as published in Daily Dawn and/or Business Recorder
- In case of any shortfall, customer will fulfill the margin within 3 working days and the same will be released in 3 working days in case of any excess upon customer's request.
- **MBL position in terms of security is not inferior to other Banks.**

Other terms and conditions:

1. The facilities shall be governed by the rules and regulations of the Government of Pakistan (GOP) and the State Bank of Pakistan (SBP) including the Prudential Regulations and the regulations issued for Islamic banking and applicable AAOIFI standards for Islamic financing transactions but not restricted to regulations of the GOP and the SBP now in force and as amended from time to time and cred'. restrictions imposed by the GOP and the SBP from time to time.

2 It must be noted that Murabaha Facility is a fixed term facility and it must be repaid on or before the agreed maturity dates. The bank may sanction a new facility after undertaking annual credit review and bank's internal approvals

3 The hypothecated/pledged/mortgaged/leased/Diminishing Musharakah assets shall be duly insured in favor of the Bank with the Bank as the loss payee. The Takaful/ insurance company shall be approved by the Bank. The Customer shall provide original Takaful/ Insurance policies along with the premium payment receipts to the Bank. The Leased/Diminishing Musharakah assets shall be insured by a Takaful company in favor of the Bank and the insurance premium of the leased /Diminishing Musharakah Assets shall be paid by the Bank. The Bank may recover all costs and expenses related to the leased /Diminishing Musharakah assets including insurance premium through the lease rentals

4. The hypothecated/pledged/mortgaged/leased/Diminishing Musharakah assets may be inspected by the Bank's official and/or valuator/surveyor acceptable to the Bank as and when required by it and the Customer shall allow access to and cooperate with the authorized representatives of the Bank in carrying out such inspections valuations. The cost incurred in respect of the Inspections/Valuations shall be borne by the Customer. The Customer shall provide to the Bank stock reports in respect of the charged assets (on a monthly basis) containing break up of bank-wise outstanding amounts along with age-wise break there against.

5. The Customer shall not change its scope of activities as specified in its Articles and Memorandum of Association without obtaining prior permission in writing from the Bank. Any material change in the shareholding structure, ownership, directorship or management of the Customer during the tenor of the facility shall constitute an event of default under the facility and the Bank shall be entitled at its sole discretion to amend, cancel or terminate the facility.

6 The hypothecated/ mortgaged/ pledged/ leased/ Musharakah assets and all other plant/ machinery equipment/ land/ building or any other fixed assets imported or otherwise acquired during the subsistence of the facility granted to you by the Bank, you shall execute and register a legal mortgage at your own cost and expense as and when so required by the Bank.

7 The Bank will require evidence by way of invoices or otherwise from the Customer that the finances have been utilized for the purpose of acquiring the assets in terms of Murabaha facility. Furthermore, Bank has the right to verify all those evidences for Shariah Compliance purposes.

8 All expenses incurred on account of Mucadeam charges, documentation, charge registration, inspection or any other costs in relation to the facility mentioned in this letter including bank charges legal/documentation expenses, excise duties, Government of Pakistan's and State Bank of Pakistan's levies, duties, stamp duties, fees, etc. (or other similar taxes or charges) now or hereafter levied on the Bank in respect of or in connection with the facility and security thereof shall be payable by the Customer immediately on the Bank's demand.

- Disbursements under offered financing products would be subject to approval and acceptance of mutually agreed process flows

- In the event of delay, default or irregular payment to the Bank of any payment, the bank shall have the right to cancel the facility granted under this letter and demand immediate payment of all sums due to the Bank from yourselves in respect of the facility

- The Bank reserves the right to amend, cancel, reduce or terminate the outstanding limits or undisbursed facilities without assigning any reason thereof

All draw downs under the offered products are subject to mutually agreed process flows. This offer letter is valid for acceptance by June 18, 2014 after which it will expire and will be of no legal effect, unless extended by the Bank in writing

Kindly return to us the original letter duly signed by your authorized signatories. We look forward establishing a mutually beneficial relationship with you and assure you of our best service at all times.

Yours truly,

Hassan Cheema	**Salman Tariq**	**Wasfali Babar**	**Mukhtar Ahmed**
SRM – Corporate	SRM – Corporate	Manager Corporate Banking	Unit Manager-CAD Lahore

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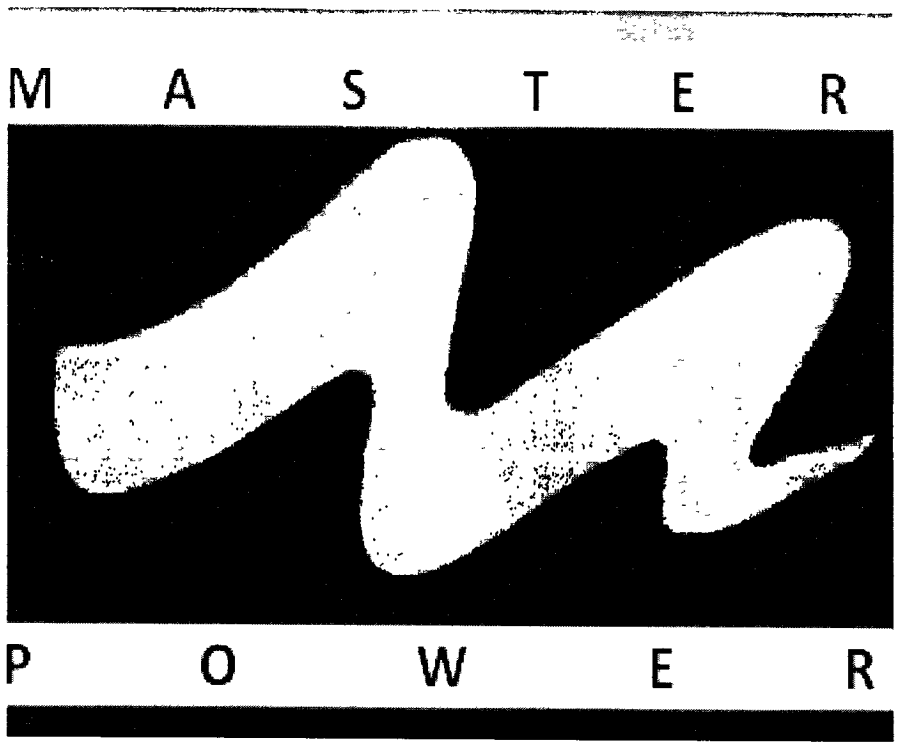
We accept the above terms & conditions for & on behalf of Master Textile Mills Limited

Authorized Signatory **Authorized Signatory**

(Please affix Corporate Seal/Company Stamp here)



Master Power (Private) Limited

Management Profile

Company Overview

Master Power (Pvt.) Limited (MPPL) is a wholly owned subsidiary of Master Textile Mills Limited (MTML). Regular supply and cost of power to industry is a vital issue for manufacturing sector in general and textile sector in particular. Due to increase in the demand of energy, the delta between demand and supply is perpetually increasing and has culminated into frequent energy crises. Keeping in view the severe energy shortages, MTML has decided to set-up a 20 MW capacity Captive Coal based Power Project to ensure regular power supply at sustainable prices. This project would also render an additional power supply of approximately 6 MW to sell to neighboring manufacturing units on bilateral basis.

Master Textile Mills Limited (MTML) parent company of Master Power (Pvt.) Limited is a vertical textile unit engaged in manufacturing of cotton and blended yarns, Greige fabric, Dyeing and Processing of woven fabric and garment manufacturing. MTML is an export oriented company having over 80% exports to Europe, US, Australia, China, UK, Hong Kong and Bangladesh. MTML had total turnover of Rs. 10 Billion during last year and employ over 4,500 people.

Master Power (Pvt.) Limited (MPPL) would principally be engaged in generation of electric power through coal fired steam turbine and its Gross Capacity will be 20 MW. MPPL will sell its major electric power to MTML and rest of its generation will be sold to neighboring bulk buyers. We have initially received approval for construction installation phase of the above mentioned project from Environment Protection Department, Government of the Punjab and now we are applying for the generation and distribution license from National Electric Power Regulatory Authority (NEPRA).

MASTER POWER (PRIVATE) LIMITED

DETAIL FEASIBILITY REPORT

20 MW COAL POWER PROJECT RAIWIND, LAHORE.

MASTER POWER (PRIVATE) LIMITED

20 MW COAL POWER PROJECT

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1. Plant Characteristics

1.1 Introduction

1.1.1 Project introduction

Electrical Power is essential for running machinery in factories and industrial units. There has been an enormous increase in the demand of Electrical energy in the last two decades due to industrial development, but sadly, there has been no significant increase in energy production. Therefore, supply of energy is far less than the actual demand; consequently a huge energy crisis is looming over Pakistan. Keeping in view the severe energy crisis, Master Textile Mills Limited (MTML) has decided to set-up a Coal based power project which will be sufficient enough to fulfill the energy requirements of the MTML and may distribute the extra energy to nearby bulk users as well. Coal based Power is economical and viable option in comparison to other sources like fuel based which are more expensive.

The project cost of MPPL is envisaged as Rs 1.6 billion with a Debt/Equity ratio of 75:25. Debt portion works out to be as Rs 1.2 million.

Master Power (Private) Limited (MPPL) is a wholly owned subsidiary of MTML projected to be a 20MW coal-fired power plant to provide steam and power to processing plant, and to meet the steam and power requirement of production. The proposed power plant is located inside the processing plant, with main configuration of 1 ×20MW extraction condensing type turbine equipped with 1 ×20MW brushless excitation generator, and 1×100t/h CFB boiler, with high temperature (540 oC) and sub-high pressure (9.8MPa) parameter. Annual operation hours are set as ≥8000 hours. Outgoing feeder voltage of generator is 11kV which is synchronized to the grid of processing plant. After put into operation, hourly steam supply is 45t, steam supply pressure is 0.10MPa and temperature is 259 oC, supply power is 17MW. The power plant adopts Pakistan local coal or Imported coal (which one is more economical) as fuel.

1.1.2 Design Basis

Basic design data is provided by the Master Power (Private) Limited.

1.1.3 Design scale and scope

1.1.3.1 Design scale

Design capacity of the power plant is 20MW, with 1 set of 100t/h high temperature, high pressure CFB boiler, 1 set of 20MW extraction condensing steam turbine equipped with 1 set of 20MW brushless excitation generator.

1.1.3.2 Design scope

Boiler system
Turbine system
Generator system

--Fuel conveying system
--Limestone powder preparation system
Limestone power desulfurization system
Alkali spraying desulphurization system
---Ash & slag handling system
Chemical water treatment system
Water supply & drainage system of power plant
Firefighting system of power plant
Electrical system
---Control & Instrumentation system
---Ventilation and air conditioning system
-Other civil works matched with the above system
Not limited to the above.

1.2 Introduction to Plant Address

1.2.1 Natural Conditions of Plant Area

The proposed power plant is located inside Master Textile Mills Limited's Processing plant, with convenient transportation and smooth landform. The power plant takes approx. 3hm as shown in fig 01.

1.2.2 Water Source of Power Plant

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

1.2.3 Fuel Supply

Fuel source of power plant is local coal of Pakistan with annual consumption of approx. 124,000 tons. Coal is transported to dry coal shed by car.

1.2.4 Desulfurizer supply

Internal desulfurization system adopts limestone as de-sulfurization agent, with annual consumption of approx. 23000t. Limestone powder is prepared and supplied by the cogeneration power plant.
FGD after boiler adopts waste alkali liquid from the processing plant as de-sulfurization agent, with annual consumption of approx. 23000t. Waste alkali liquid is sent to cogeneration power plant from the processing plant via pump.

1.2.5 General Layout of Power Plant

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

1.3 Power supply load

Outgoing feeder voltage level of the generator is 11kV, which is synchronized to the grid of processing plant. After put into operation, it can supply 17MW (deducting the auxiliary load) electricity to the grid of processing plant.

1.4 Load for steam supply

After put into operation, hourly steam supply is 45t/h, steam supply pressure is 0.10MPa and temperature is 259 °C.

1.5 Main Design Principle

1 set of High temperature and high pressure 100t/h CFB boiler is set for this project during this phase, together with 1 set of 20MW extraction condensing STG unit. Turbine is manufactured by HTC and the model is EHNK40/56 (Rated power is 20MW. Main steam inlet pressure is 8.83Mpa. Main steam inlet temperature is 535 °C); Generator is supplied in matching model FHWS20000-2, Rated power is 20MW. Outgoing feeder voltage level is 11kV. 1 set of CFB (circulating fluidization bed) boilers model is UG100/9.8, (Rated capacity is 100t/h. Steam pressure is 9.8MPa. Steam temperature is 540 °C.) Semi-open layout is adopted.

1.5.1 Fuel conveying system

The power plant is equipped with a set of dry coal shed with span of 30m, and length of 60m. Total area of dry coal shed is 1800m2, which can store up to 3300t, meeting 10-day coal demand of the power plant. Coal in dry coal shed is transported to coal belt conveyor by coal feeder below underground coal hopper and then sent back to raw coal bunker of main power building by belt conveyor after crushing. Single-loop belt conveyor with belt width of 650mm shall be used, with systematic output being 100t/h.
In accordance with the requirements of environmental protection, bag filter is used for flue gas dust removal, whose dust removal efficiency is 99.9%. Internal limestone desulfurization system is adopted for the boiler. When calcium sulfur molar ratio is 2.5, the desulfurization efficiency can reach 85%; FGD after furnace adopts waste alkali liquid desulfurization tower system which can reach 80% desulfurization efficiency; combined de-sulfurization efficiency can reach 96%.
There is a steel stack within this phase. Height is 60mm and outlet inner diameter is
2.5m. the stack is lined with YT-2 type lightweight thermal insulation acid resistant castable. Based on flue gas composition of waste alkali FGD system, and relative humidity of Lahore region between 76.6% and 43.5%, steel cylinder MOC of Q235B, pedestal part MOC is Q345B.

1.5.2 Ash & Slag Removal System

Ash and slag of boiler is utilized completely and comprehensively as raw material for brick and tile plant. Total annual ash & slag discharge of power plant is about 35000 tons.
Positive-pressure dense phase silo pump conveying system is used for ash removal system. The project is arranged with 1 set of bag filter, and a set of air compressor station with 2 x1.5m3/h air compressor installed inside, with 1 in operation and 1 standby. 6 ash hoppers are arranged below each bag filter. 1 set of 1.0m3 dense phase pneumatic delivery pump is installed below each ash hopper. Ash inside silo pump is in suspension form. Under the effect of compressed air, dry ash is delivered into ash silo through delivery pipe. Ash inside dry ash silo is transported outside after discharged by ash unloading device, for comprehensive utilization of cement plant or brick & tile plant. Ash inside dry ash silo can be discharged directly, or humidified into wet ash to be discharged.
Boiler slag is discharged to cooling slag remover and cooled dry slag is transferred to slag silo through large-inclination belt conveyor, then transported to cement plant or brick
& tile plant by vehicles for comprehensive utilization.

1.5.3 Chemical Water Treatment System

Makeup water of boiler is temporarily handled by Pass 1 RO plus mixed bed demin system according to main equipment type, parameter and makeup water quality requirements. Makeup water quality standard after system treatment is as the followings:
Due to poor quality of raw water, makeup water of circulating cooling water system adopts purified water from Pass 1 RO system.

1.5.4 Circulating Cooling Water System

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

1.5.5 Main Electrical Wiring System

1 set of 20MW generator is set for power plant during this phase. Outgoing feeder voltage level is 11kV. A section of 11kV bus is set in this main power building and generator is directly connected to the bus via the switch. Bus adopts single-bus wiring scheme .11kV bus provides power to UAT and 11kV motor, and is connected to substation via an 11kV tie-in line.

1.5.6 Thermodynamic System

Main steam system adopts unit system scheme. Live steam from boiler outlet is respectively connected to motorized isolation valve and then to main stop valve of turbine, finally to speed governing valve and drive the turbine to work.
The turbine is arranged with 2 stages of non-adjustable steam extraction and 1 stage of adjustable extraction, to provide heating steam source to 2 set of LP heater and 1 set of de-aerator and supply steam.
Feed water piping of HP and LP heater both adopt unit scheme. 2 sets of motorized feed water pumps are arranged, with 1 set is in operation and 1 set standby.

1.5.7 Combustion System

Raw coal is sent from raw coal bunker into boiler for combustion by coal supply air and sowing air by 4 sets of coal feeders. Heated flue gas ignition is used by oil gun under CFB for boiler ignition. Combustion air is divided into primary air and secondary air for segmented air supply. Flue gas enters into cyclone separator from furnace outlet and that after separation by cyclone separator enters into back-pass duct of boiler. It will be pressurized by ID fan after de-dusted by bag filter. Most of materials will be separated from cyclone separator during boiler operation. They will be sent back to combustion house by loop seal air. De-sulfurization system adopts limestone powder de-sulfurization system inside furnace.

1.5.8 Layout of main power building

Main power building has 5 column spaces with 1 space of 7.5m and 4 spaces of 6m. Total length is 31.5m. Main power building is set in 3 columns, i.e. turbine house, deaeration coal bunker room and boiler house, with span of 18m, 9.5m and 23 m respectively. Bag filter, ID fan, external FGD device and stack are set in outer side of boiler house in sequence.

1.5.9 Thermal Automation Part

Industrial computer, LED large-screen display and a special key are used as main measures for indoor control process system of thermal automation control room so as to control operation process of the entire power plant. DCS control system of this project proposes to consist of data acquisition system (DAS),

analog quantity control system (MCS), sequence control system (SCS) and electrical control system (ECS). Thermal automation control room is set on operating floor of deaeration coal bunker 7m deck.

1.6 Energy Conservation and Raw Materials

After put into operation, the power plant can supply 8.64x107kWh power annually. Coal consumption for power generation is 422g/kWh, and coal consumption for power supply is 515g/kWh (based on client's supplied SGS coal analysis report, the GCV of coal is 5168 kcal/kg, NCV of Pakistan local coal is 965kcal/kg coal). It can supply 2.88 x105 t steam annually, and coal consumption for steam supply is 158kg/t Steam.

CFB boiler has high combustion efficiency (89%) and large load regulation scope. It still can burn stably without oil injection which can support combustion so as to save oil under 40% of low load.
Limestone powder is added as desulfurization agent during operation of CFB boiler which is of excellent desulfurization effect.
Due to the combustion conditions of low-temperature and segmented air supply in this furnace, the NOx generation is remarkably decreased.
Station auxiliary transformer of low losses is selected for this project to save energy consumption.
Sufficient high-precision surveying instruments is furnished for electrical and steam-water systems according to regulations. Operation indicators is surveyed and checked reasonably to control economic operation of power plant effectively.
Recycle and circulate drainage of industrial cooling water of main power building to save water consumption.
Measures are adjusted to local conditions and adopt open or semi-open layout reasonably to save raw materials such as steel products and cement, etc.

1.7 Environmental Protection

Influence of power plant to surrounding environment is introduced as followings after project construction:
As calculated, if bag filter is adopted, dust emission concentration of 1 set of 90t/h
CFB boiler is ≤50mg/Nm3. (Dust collection efficiency is 99.9%).
As internal and external desulfurization system is adopted, comprehensive de-sulfurization efficiency can reach 96%, and SO2 at stack outlet is ≤400 mg/Nm3.
As low-temperature combustion is adopted (850 °C -950 °C), NOx content is largely decreased to 300mg/Nm3.
Open cycle circulating cooling system is used for power plant without external drainage or thermal pollution. Industrial wastewater and living sewage of power plant shall be drained after treatment without environment pollution.
Plant zone is far away from resident's concentrated zone. Noise generated by generator after muffler treatment will not influence surrounding residents.
The project adopts wet ash removing method, with hydraulic ash removing system properly arranged, which has little effect on environment, and can make comprehensive utilization of ash and slag.

1.8 Labor Safety and Industrial Sanitation

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

1.9 Operation Organization and Design of Fixed Manpower

1.9.1 Organization

Organization of power plant is managed by three levels, namely, plant, workshop and shift. Plant consists of office, Production Technology Office, Financial Department and Administration Office. Production workshop consists of operation workshop, repair workshop and fuel workshop. There are 87 fixed workers in this plant.

1.9.2 Design of Fixed Person

There are 87 fixed workers (namely, 56 operators, 10 for overhaul, 9 management personnel and 12 other persons) in this plant.

2. General Layout & Transportation

2.1 Layout principle

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

2.2 General layout

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

2.3 Traffic and transportation in the plant

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

2.4 Landscaping in the plant area

Special landscaping requirements should be considered in space combination during plan and set landscape along main roads in the plant by framework of ornamental trees so that brushes, grass and flowers can form beautiful vegetation and consider dust, noise and wind resistance functions in various functional zones.

2.5 Vertical layout of the plant area

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

3. Thermal Mechanical Part

3.1 Introduction

3.1.1 Design basis

Basic design data is provided by the Master Power Limited.

3.1.2 Main design principle

The project is arranged with 1 set of EHNK40/56 extraction condensing steam turbine, equipped with1 set of FHWS20000-2 generator (Rated power is 20MW); and 1 set of 100t/h CFB boiler.

3.1.3 Specification of main equipments:

3.1.3.1 Boiler

1	Rated output	100 t/h
2	Design thermal efficiency	89%
3	Main steam temperature	540 °C
4	Main steam pressure	9.8MPa
5	Feed water temperature	150 °C
6	Design Coal	Pakistan local coal
7	Coal consumption at BMCR	15,550kg/h
8	Flue gas exhaust temperature	150 °C
9	Boiler blow down rate	2%

3.1.3.2 Turbine

1	Model	EHNK40/56
2	Rated power	20MW
3	Rated rotation speed	6512/3000 RPM
4	Rotation direction	Clockwise direction
5	Steam inlet pressure	8.83MPa
6	Steam inlet temperature	535 °C
7	Rated steam volume	100.74t/h
8	Extraction pressure	0.10MPa
9	Extraction temperature	259.2□
10	Extraction volume	45 t/h
11	Rated steam rate	5.516kg/kWh
12	Rated heat rate	8483.4 Kj/Kw.h
13	Circulating cooling water inlet temperature	33 °C
14	Rated steam exhaust pressure	0.008 MPa
15	Unit vibration value	< 0.03mm
16	Noise (measured in distance which is 1m away from cover shell)	< 85db(A)
17	Regulation mode	DEH (Digital Electro-hydraulic)

3.1.3.3 Generator

1	Model	FHWS20000-2
2	Rated power	20MW
3	Rated voltage	11KV
4	Rated Current	1312 A

5	Rated rotation speed	3000RPM
6	Rated frequency	50Hz
7	Power factor	0.8
8	Excitation mode	AC brushless excitation
9	Efficiency	97%
10	Cooling mode	air-cooled
11	Rotation direction	Clockwise direction
12	Insulation level (of stator or rotor)	F
13	Overload ability	10%

3.1.4 Design scope

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

3.2 Fuel

3.2.1 Fuel source

The project adopts Pakistan local coal. Coal is transported to dry coal shed by car.

3.2.2 Fuel analysis data is as followings:

Pakistan local coal analysis

1	Net calorific value	4981(ADB)
2	Volatile matter	40.36%(ADB)
3	Total Moisture	15.49% (ARB)
4	Ash content	22.55%(ADB)
5	Fixed Carbon	33.11%(ADB)
6	Hydrogen	4.29%(ADB)
7	Oxygen	13.70%(ADB)
8	Nitrogen	1.73%(ADB)
9	Sulfur	8.03%(ADB)

3.2.3 Ignition fuel

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

3.3 Combustion System

3.3.1 Coal consumption of boiler

Calculation principle of coal consumption of boiler is as followings:

1	Annual operation time of boiler	7200Hrs
2	Average daily operation hours of boiler	24Hrs
3	Combustion efficiency of boiler	89%
4	Continuous blow-down rate of boiler	2%
5	Net calorific value of coal	4981
6	Hourly coal consumption	15.5 t/h
7	Daily coal consumption	372 t/d
8	Annual coal consumption	124000 t/y

3.3.2 Combustion System

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

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

There is 1 raw coal bunker of 250m3 for every boiler to store fuel of 165t and meet coal fired demand of boiler for 12 hours.

3.4 Thermodynamic System

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

3.4.1 Main steam system

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

3.4.2 Extraction Heat supply & Recovery System

There are totally 3 stages of non-adjustable steam extraction, among which 1 stage is adjustable extraction and the others are non-adjustable steam extraction. The 1st stage of is adjustable steam extraction with pressure of 0.98MPa(a) and temperature of 293℃ in which 45t/h steam will be supplied to steam users after de-superheated to 259 and the rest is connected to heated steam pipe. Heated steam is sent to the de-aerator through heated steam pipe to heat de-aerated feedwater. The 2nd stage extraction is connected to #2 LP heater and the 3rd stage is connected to #1 LP heater. 1st and 2nd stage extraction piping is equipped with single-way closing steam valve Electromagnet of interlinkage device of steam extraction valve is actuated after main throttle valve is shut down; the drain pressurized water in hydraulic non return valve is released. The single way closing valve can close automatically due to pressure of the valve spring. External steam supply pipe of the 1st stage extraction is equipped with a 0.5 second QCNRV quick non return valve, which can cut off the connection between extraction pipe and the outside during normal or emergency shutdown of turbine, to prevent turbine damage due to over-speed caused by jamming of single-way closing steam valve. The 3rd stage of steam extraction pipeline is fitted with 1 ordinary check valve due to low steam extraction pressure of 3rd stage. Besides, thermodynamic system is fitted with a steam sealing heater. Condensation water can be heated by leakage steam in steam sealing and valve rod to increase thermal efficiency of power plant.

For current project, besides one regular PRDS from steam turbine to LP header, another PRDS should be furnished from boiler to LP header for backup use of process steam.

3.4.3 Demin Water System

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

3.4.4 Condensate System

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

Condensate system is fitted with 2 condensate pumps. 1 is in operation and 1 standby.

3.4.5 Boiler feed water system

Boiler feed water system is fitted with 2 water feed headers, namely, LP feed water header, and HP feed water header. Feed water after de-aeration is sent to motorize feed water pump by LP feed water header respectively. Feed water after pressurization is sent to boiler economizer through HP water feed pipe.

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

3.4.6 Vacuum System of Condenser

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

3.4.7 Industrial Water System

Open cycle system is used for industrial cooling water without industrial water tank.

Industrial cooling water system is to provide cooling water for primary fan, secondary fan,

ID fan, motorized feed water pump and steam-water sampling cooler, etc. In order to save water, 1 set of. Boiler house is arranged with 10m3 low elevation water tank and 2 sets of low elevation water pump, with 1 set in operation and 1 set standby.

3.5 Layout of main power building

3.5.1 General

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

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

3.5.2 Turbine house

Span of turbine house is 18m. Column space is 7.5m and 6m, and there are totally 5 column spaces and total length is 31.5m. Turbine is set longitudinally and machine head faces toward fixed end. Central line of STG set is 8m away from that of Row A of columns.

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

3.5.3 De-aeration Coal Bunker House

Span of de-aeration coal bunker house is 9.5m. Column space is 7.5m and 6m.

There are totally 5 column spaces in 5-level arrangement and total length is 31.5m. Plant power distribution room is on the bottom floor. Steam & water pipeline and cable levels are on 4m level.

Elevation of operating floor is 7m. Elevation of de-aerator level is 13m. Elevation of coal conveying belt level is 25m.
7m operating floor is arranged with centralized control room of turbine, boiler and electrical system and main steam headers. Raw coal bunker is arranged below 25m floor, and staircase is set at fixed end.

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

3.5.5 ID Fan, desulfurization tower and stack
ID fan and desulfurization tower are set in open area. Stack has a height of 60m and outlet diameter of 2.5m, of steel structure.

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

3.5.7 Maintenance & Hoisting Facilities
Turbine house is fitted with a motorized double-beam double-hook overhead traveling crane of 20/5t for unit maintenance. Auto crane is used for maintenance of ID fan.

3.6 Auxiliary facility

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

3.6.2 Air Compressor Station
An air compressor station is built in this power plant. It is fitted with 2 screw type air compressors with parameters of 10m3/min and 0.8Mpa. 1 unit is in operation and 1 standby. Air compressor station provides compressed air for operation of limestone desulfurization system, dust collection and ash & slag removal system. It also provides compressed air for boiler and turbine maintenance.
3.6.3 Material of construction and performance of steam & water piping, gas & air duct, raw coal bunker.

Material of main steam piping is 15CrMoG; material of HP feed water piping is 20G; material of circulating cooling water piping, industrial water piping, compressed air piping is Q235-A ; material of construction of other steam & water piping is Steel 20.
Material of gas & air duct and raw coal bunker is both Q235-A. Wall thickness of cold air pipe is 3mm, while that of hot air pipe is 4mm; wall thickness of flue gas duct is
5mm and that of raw coal bunker is 10mm. Inner wall of raw coal bunker is lined with polymer plate.
Boiler fuel is Pakistan local coal, owning to the fact the sulfur content of local coal is on the higher side, i.e. 5-10 times of that of the South African Indonesian coal, SO2 content of boiler flue gas is also on the higher side, wall of air pre-heater of boiler back-pass will be of anti-corrosion materials and anti-corrosion measures should be taken such as enamel porcelain tube etc. Alternatively air pre-heater could be arranged in external form, heated source of air pre-heater is steam from turbine extraction.

3.7 Thermal insulation of pipes and facilities

For thermal mechanical equipments, pipeline and accessories (excluding thermal insulation of turbine & boiler proper, desulfurization and dedusting system) as per the above mentioned, thermal insulation is required for pipeline and equipment whose medium temperature exceeds 50□ within the above scope.

3.7.1 Main thermal insulation materials

3.7.1.1 Main thermal insulation materials of steam-water pipes and auxiliaries whose temperature exceeds 350 °C shall be made of aluminum silicate fiber.
Properties of aluminum silicate fiber products are as follows:

1	Thermal conductivity:	λ = 0.072W/m.k (500□)
2	Bulk density	≤160 kg/m 3
3	The maximum usage temperature:	350

3.7.1.3 Adopt galvanized steel plates of 0.5mm for protective layer.
3.7.2 Painting of pipes and equipments
3.7.2.1 Painting of non-thermal insulation pipes and equipments
3.7.2.1.1 In general, it is required to brush two layers of anti-corrosion paint then brush ready-mixed paint once for pipes and equipments.
3.7.2.1.2 In general, it is required to brush anti-corrosion paint once then brush asphalt paint twice for directly buried pipes or those in the trench.
3.7.2.2 Painting of pipes and equipments with thermal insulation
3.7.2.2.1 Brush anti-corrosion paint on metallic surface of pipes and equipments for two layers when medium temperature is no more than 120 °C.
3.7.2.2.2 In general, there is no need to brush anti-corrosion paint on the metallic surface of pipes and equipments when medium temperature exceeds 120 °C.
3.7.3 In general, it is required to brush anti-corrosion paint on supports and hangers which are manufactured on the site twice then brush ready-mixed paint which matches color of supports and hangers supplied by the factory once.
3.7.4 Brush paint with same or coordinated color once if paint is damaged or color is inconsistent for equipments, supports and hangers which are supplied by the factory.
3.7.5 In general, it is required to brush anti-corrosion paint twice for platform ladder then brush the ready-mixed paint once and color of ready-mixed paint shall be the same to that of platform of boiler body or building structure.

3.8.2 Internal de-sulfurization by limestone powder injection limestone

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

Due to high sulfur content (5%-6%) of Pakistan local coal, so CFB boiler is selected. CFB boiler adopts internal desulfurization system by limestone powder injection. CFB boiler has the following characteristics rather than conventional coal-fired boilers (like pulverized coal fired boiler and stoker fired boiler): low combustion temperature (850 ~ 900); long dwelling time of fuel; strong turbulent mixing in combustion chamber. Based on these features, if limestone powder is directly put into the furnace during combustion process, due to the combustion temperature from 850 ~ 900 is the best reaction temperature range for desulfurization between quick lime (CaO) and SO2, therefore, according to the sulfur content in coal, put proper amount of limestone powder (equivalent ratio of calcium and sulfur being 2.5) into the CFB boiler furnace, and the desulfurization efficiency of 85% can be achieved. The reaction equation is as followings: CaCO3, CaO + CO2; CaO + SO2 + 1/2 02 - CaS04. Therefore, CFB boiler is economical, efficient, and environmental protection.

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

A set of 100m3 limestone power silo has been arranged, with capacity of 140t which can meet 2-day consumption of the boiler.

Limestone Composition Analysis Table

1	SiO2	% 1.2-2.1
2	Al2O3	% 0.15-0.33
3	Fe2O3	% 0.37-0.62
4	CaO	% 53-54
5	MgO	% 1.52-1.72
6	Loss on ignition	% 40.4
7	Particle size	≤1mm
8	Hourly Limestone consumption	3.87 t/h
9	Daily limestone consumption	91.2 t/h
10	Annual limestone consumption	33288 t/h

Master Waste Water Analysis Report

Sr.	Description	Unit	Value	Remarks
1	PH		11.39	
2	Temperature		45 °C	
3	BOD		580 mg/lit	
4	COD		1,146 mg/lit	

5	TSS	412 mg/lit
6	TDS	4,148 mg/lit
7	Chromium	mg/lit ND
8	Copper	mg/lit ND
9	Oil & grease	54 mg/lit

3.8.3.1 Technical index of de-sulfurization system

Guaranteed de-sulfurization efficiency≥94 %

Operational flexibility 50 ~ 110%

Outlet SO2 concentration ≤400mg/Nm3

Flue gas discharge temperature ≥65

Pressure drop of flue gas through de-sulfurization system ≤1200Pa

Power consumption of de-sulfurization system ≤300kW

Make up water of de-sulfurization system≤9.63t/h

Lime consumption of de-sulfurization system≤1.36t/ (90% purity)

Addictive consumption of de-sulfurization system 24.78t/h (alkali waste water from textile processing)

Efficiency of demister ≥98%

Service life of main equipment such as de-sulfurization tower≥20 years

3.8.3.2 Technical process flow and process flow characteristics

Adopted de-sulfurization process : Sodium and calcium dual-alkaline FGD method Desulfurizer : quick lime (CaO) , auxiliary de-sulfurizer is alkali waste water from textile processing. Particle size of quick lime shall be ≤63μm (as for limestone powder.

De-sulfurization system is having one de-sulfurization tower matching with 1 set of regeneration and sediment system of de-sulfurizer solution is furnished, one set of electrical/ control system is furnished. Processing capacity of FGD system is designed as per gas volume of the boiler at 110% working condition, in continuous operation for 24 hours.

3.8.3.3.2 Main economic & technical index

1	FGD inlet gas temperature	150□
2	De-sulfurization efficiency	94%
3	De-sulfurization system pressure drop	≤1200Pa
4	Annual operation hours	7200 Hrs
5	CaSO4 production	32.5 t/h
6	Emission concentration of inlet SO2	≤400mg/Nm3

4. Ash and Slag Removal System

4.1 Slag quantity of power plant

1	Boiler Ash volume	266666 m3/h
2	FGD inlet gas temperature	150□
3	De-sulfurization efficiency	94%
4	De-sulfurization system pressure drop	≤1200Pa
5	Annual operation hours	7200 Hrs

6	CaSO4 production	32.5 t/h
7	Emission concentration of inlet SO2	≤400mg/Nm3
8	Hourly Ash Removal	2.7t/h
9	Daily Ash Removal	64.8t/h
10	Yearly Ash Removal	23652t/h

Note: Daily rated load shall be calculated by 24 hours and annual rated load shall be calculated by 7,200 hours and efficiency of bag filter shall be calculated based on 99.9%, and comprehensive ash content shall be calculated based on 35%.

4.2 Ash removal system

Positive-pressure dense phase silo pump conveying system is used for ash removal system. The project is arranged with 1 set of bag filter, and a set of air compressor station with 2 x1.0m3 air compressor installed inside, with 1 in operation and 1 standby. 6 ash hoppers are arranged below each bag filter. 1x1.0m3 dense phase pneumatic delivery pump is installed below each ash hopper. Ash inside silo pump is in suspension form.
Under the effect of compressed air, dry ash is delivered into ash silo through delivery pipe.
Ash inside dry ash silo is transported outside after discharged by ash unloading device, for comprehensive utilization of cement plant or brick & tile plant. Ash inside dry ash silo can be discharged directly, or humidified into wet ash to be discharged. Power plant is arranged with a set of 400m3 ash bunker, which can store 18-day ash discharging quantity of the system.
Process flow of ash removal system is as followings:
Ash hopper of bag filter→ diverter damper → silo pump →ash silo → double-shaft blender→ transported away

4.3 Slag removal system

Boiler slag is discharged into cooling slag discharger and cooled dry slag is transferred to slag silo through large-inclination slope-protected belt conveyor and transported away.
Volume of slag silo is 100m3 to store 2-day slag discharging quantity of the system.
Process flow of slag removal system is as followings:
Boiler slag discharging pipe →diverter damper →slag cooler & discharger
→large-inclination slope-protected belt conveyor →slag silo → bulk machine
→transported away

5. Chemical Water Treatment System

5.1 Introduction

The power plant is equipped with 1 set of 100t/h CFB boiler, and 1 set of 20MW extraction condensing STG unit, with high temperature (54054) and high pressure (9.8MPa) parameter. Max. steam supply volume is 45t/h, without water recovery. Boiler make up water is supplied by water treatment workshop. Based on water analysis report, water treatment system for boiler make up water is set as Pass 1 2 section RO plus mixed bed demin system. Water quality is as following:

1	PH	7.61
2	Conductivity	1773μs/m
3	TDS	1014mg/l
4	Total hardness (CaCO3)	163.2mg/l
5	Ca	27.7mg/l

6	Mg	22.89mg/l
7	Ca hardness (Ca)	69.36mg/l
8	Mg hardness(Mg)	93.84mg/l
9	Alkalinity (CaCO3)	470.25mg/l
10	Oxygen	≤7μg/L
11	Fe	≤30μg/L
12	Cu	≤5μg/L

Design output of system is 60t/h.

5.2 Boiler feed water treatment system

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

System process is as followings:

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

Demin water quality is as follows after system treatment:

1	Hardness	≈0μe/l
2	Silica	<0.02mg/l
3	Conductivity	<0.2 μs/cm

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

5.3 Make up water treatment system of circulating cooling water

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

System process is as follows:

Raw water tank→ clean water pump → active carbon filter → multi-media filter → cartridge filter of 5μm → HP pump → (Pass 1 2-section) RO device → carbon remover → purified water tank →make up water pump → cooling tower

6. Civil Engineering

6.1 Geology of the project

Temporarily deficient

6.2 Meteorological conditions

1	Ambient Air Temperature (Max., Mean,Min.)	48 / 25 / □2 □
2	Relative Humidity (Max., Mean, Min.)	90 / 60 / 24 %
3	Dry Bulb Temperature (Design)	50 □

4	Wet Bulb Temperature (Design)	32 □
5	Relative Humidity (Design)	60 %
6	Absolute Atmosphere Pressure (Max.,Mean, Min.)	992 / 980 / 973 mbar
7	Temperature difference between day and night (Mean, Max.)	10 / 17 □
8	Rainfall – Average annual (Max., Mean,Min.)	78 / 25 / 6.8 mm
9	Rainfall – Heaviest fall in 24 Hours	332 mm

6.2.1 Construction and structure of turbine

Adopt reinforced concrete structure for the main power building and column space can be 6m and 7.5m respectively Span of turbine house, deaerator room, coal bunker room and boiler house shall be 18m, 9.5m and 23m respectively.

There are 5 column spaces for turbine house and total length is 31.5m. Adopt light steel roof truss with color-coated steel sandwich board roof. Set a hook bridge type crane of

20/5t. There are 5 column spaces in deaeration coal bunker room and total length is

31.5m. Adopt reinforced concrete flooring and roof and roof elevation is 32.0m. Total length of boiler room is 25.5m and it is required to adopt reinforced concrete slabs for boiler platform whose elevation is 7.0m.

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

6.2.2 Auxiliary System Buildings and Structures

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

VFD room adopts 7.5x14m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof.

Compressed air station adopts 7.5x12m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof。

Screen and crusher building adopts 15x15m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof.

Ignition oil pump house adopts 4x9m reinforced concrete structure, concrete floor, cast-in-place concrete roof, rolled material water-resistant roof.

Circulating water pump house adopts 9.5×43.5m steel structure, concrete floor, and color steel plate water-resistant roof.

Dry coal shed adopts 30x60m steel structure, concrete floor, retaining wall, and color steel plate water-resistant roof.

7. Heating, Ventilation and Air Conditioning Part

7.1 Design Basis

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

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

7.1.3 Basic design documents provided by owner

7.1.4 Design requirements provided by various specialties

8. Living Water Supply

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

8.1 Drainage in Plant Zone

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

9. Fire Prevention System

9.1 Fire Separation Distance

Fire separation distance and the minimum gap between various buildings (or structures) of power plant shall be in accordance with "Code of Fire Control of Building Design" (GBJ16-87) of version 2001, "Code of Design on Fire Control of Cogeneration Power Plants and Transformer Substation" (GB50229-96) and "Code of Design on Small Cogeneration Power Plants" (GB50049-2011) .

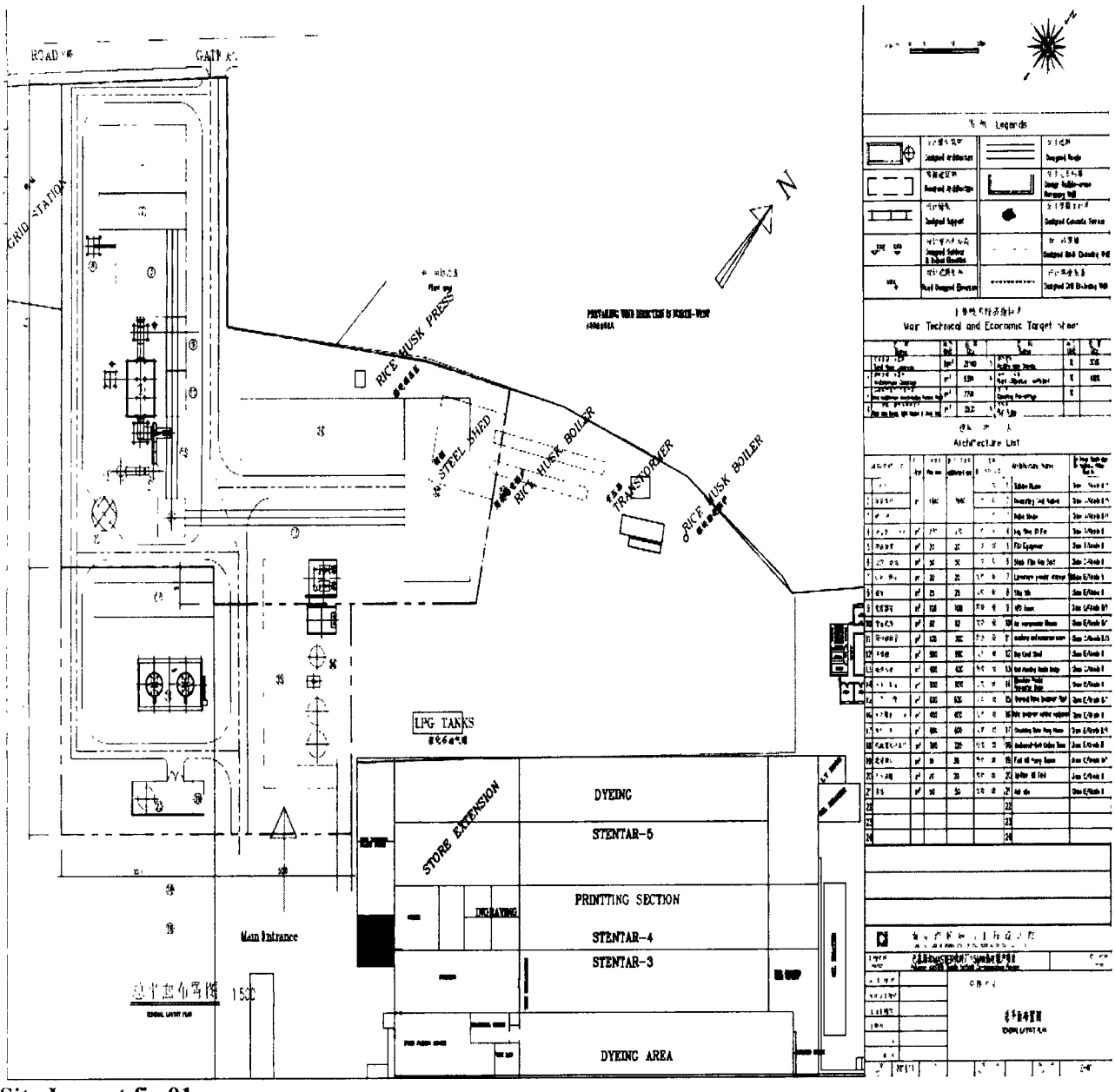
9.2 Fire Fighting Access

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

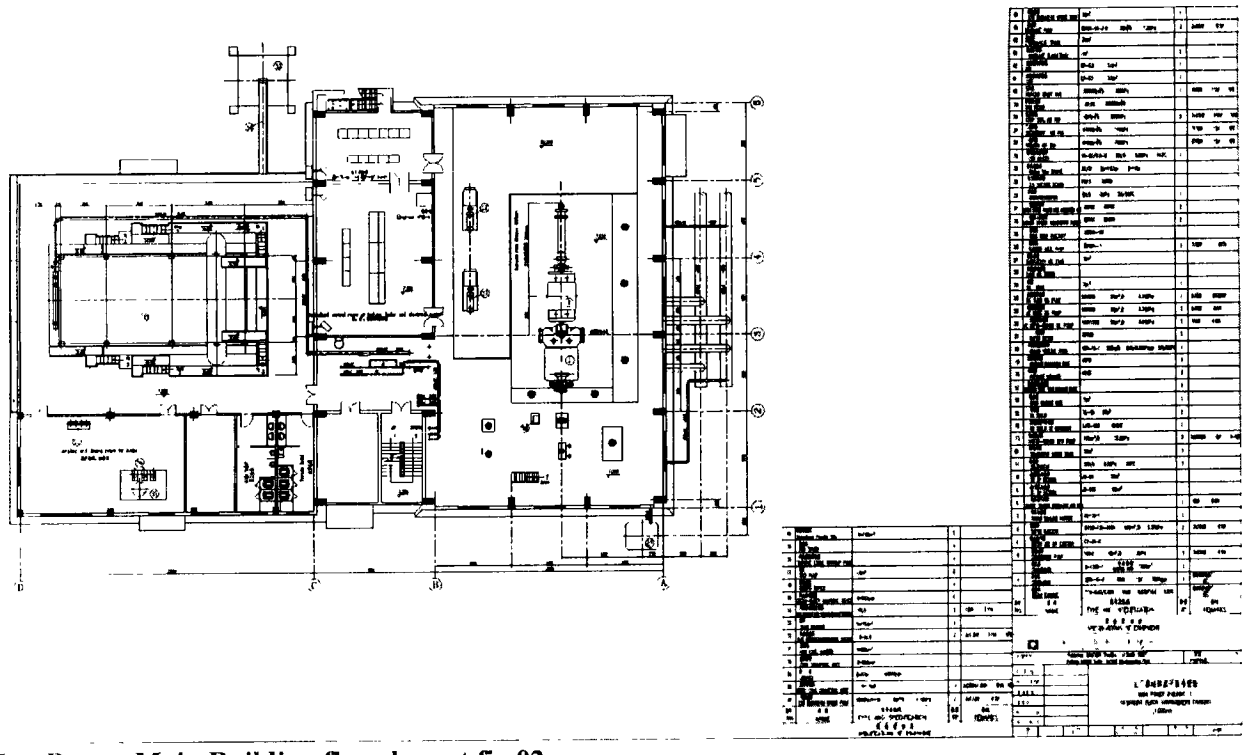
9.3 Fire Control of Main Building

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

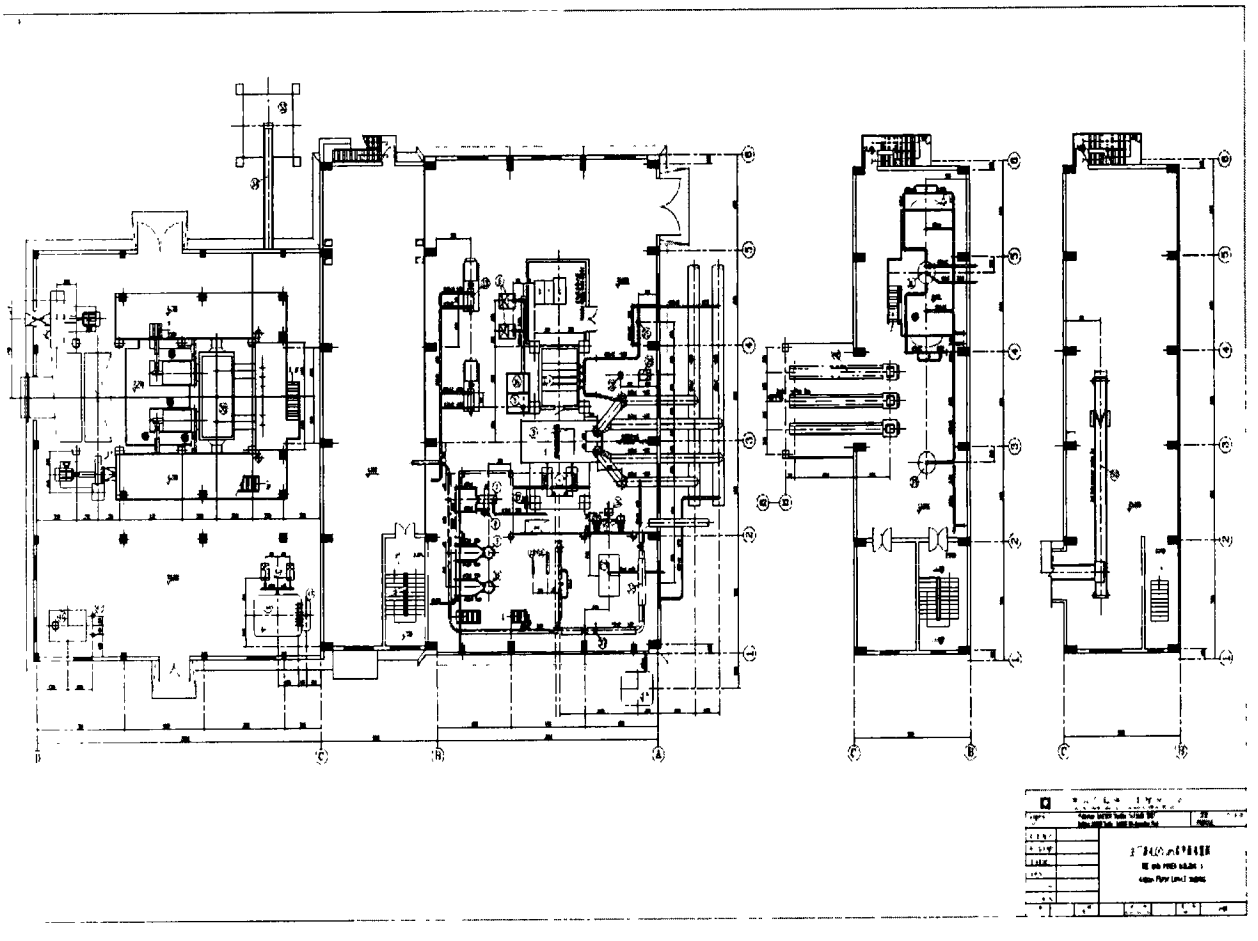
10. Layouts



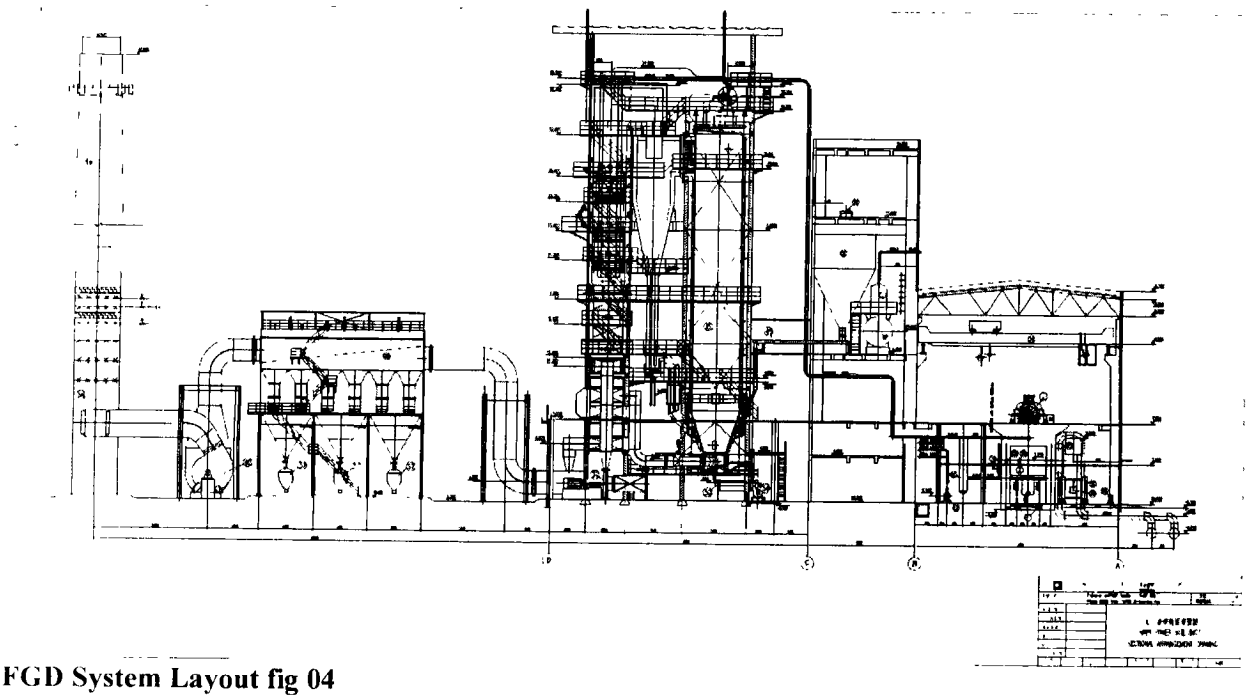
Site Layout fig 01



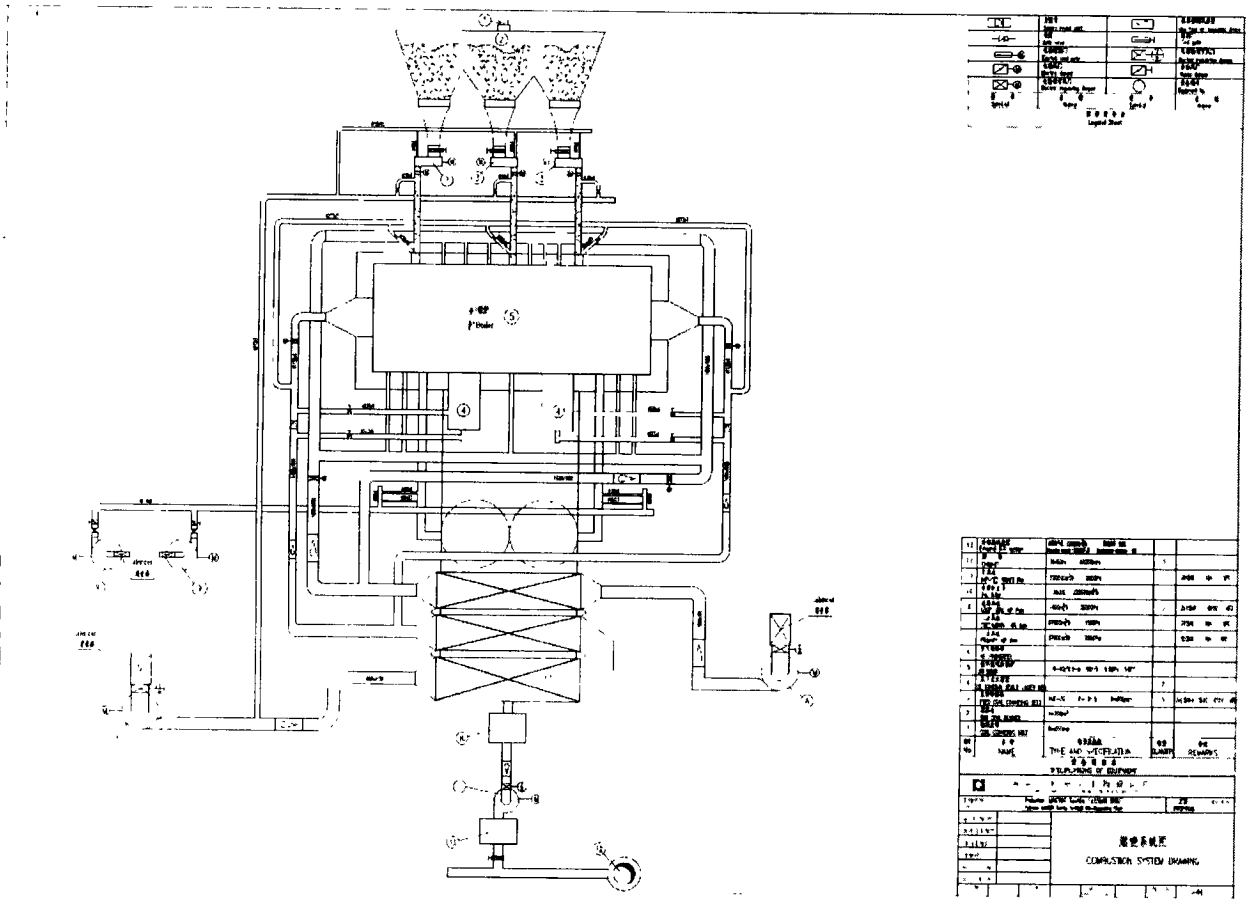
7 m Power Main Building floor layout fig 02



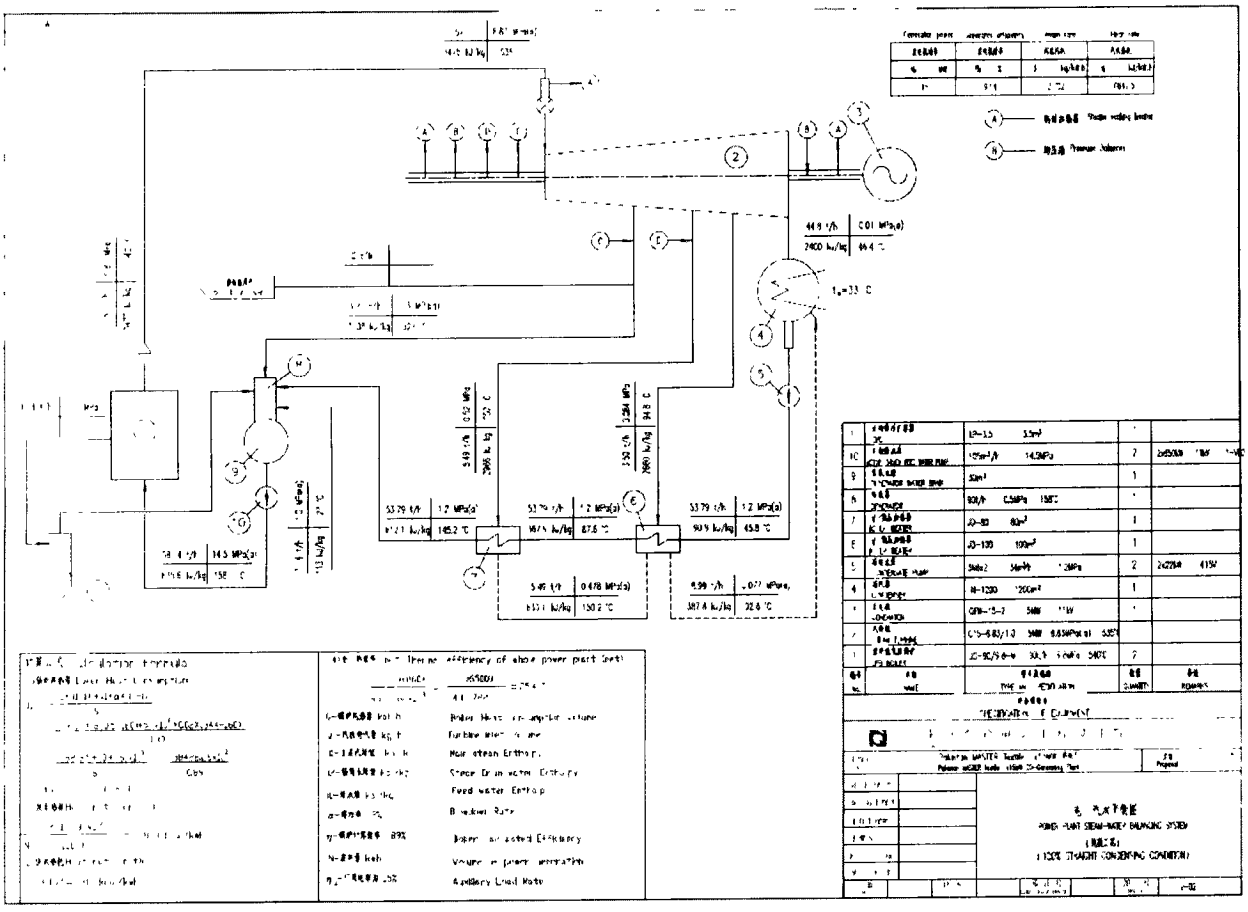
4m Power Main Building Floor Layout fig 03



FGD System Layout fig 04



Combustion System Layout fig 05



Steam Water balancing system fig 06