

# Exact Engineering

SERVICING THE ENERGY BASED INDUSTRIES SINCE 1990



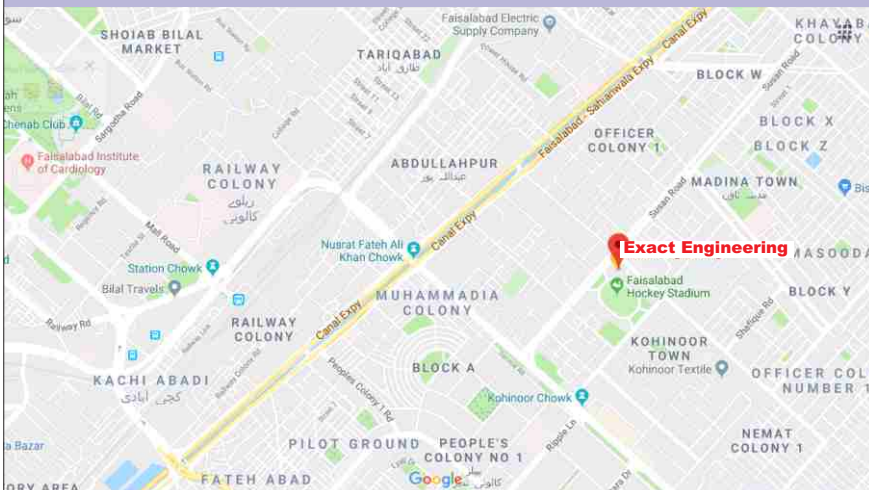
Proud to serve u  
**Usman**  
Engineering

By USMAN Group Of Engineering Companies

## In the name of ALLAH, the soft hearted, the merciful

By The Time, Man Is Surely In Loss, Expect Those Who Believed And Did Good Works, And Exhorted One Another To Truth, And Exhorted One Another To Patience.

Quran, 103 (Surah al-Asr)

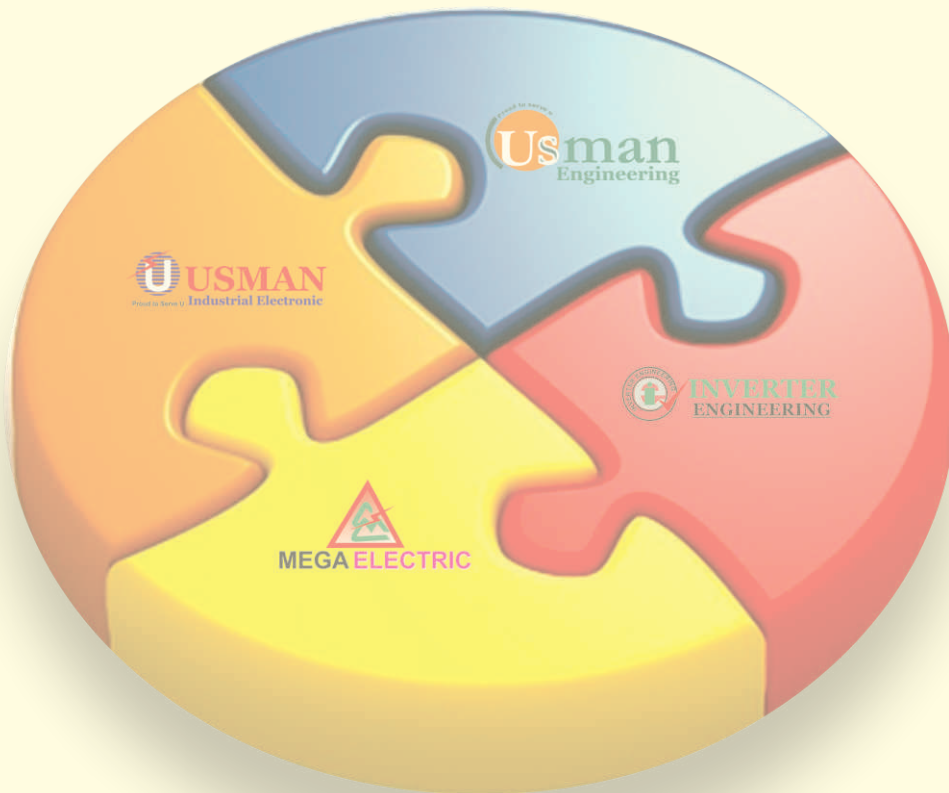


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Engineering

# Exact Engineering

## Exact Engineering Private Limited

Is joint venture company of USMAN Group of engineering companies. our new name reflects our global presence & allows us to recognition into our business activities.



**Exact Engineering Pvt Ltd.**  
Tufail Plaza Hockey Stadium Susan Road,  
Faisalabad, Pakistan.



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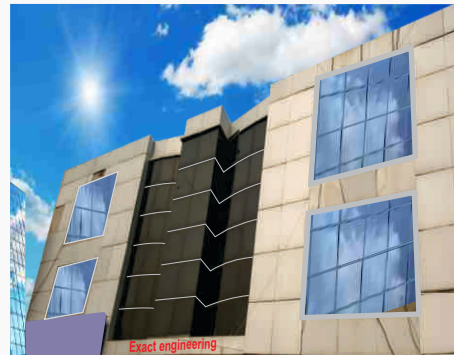


www.exactengineering.com.pk



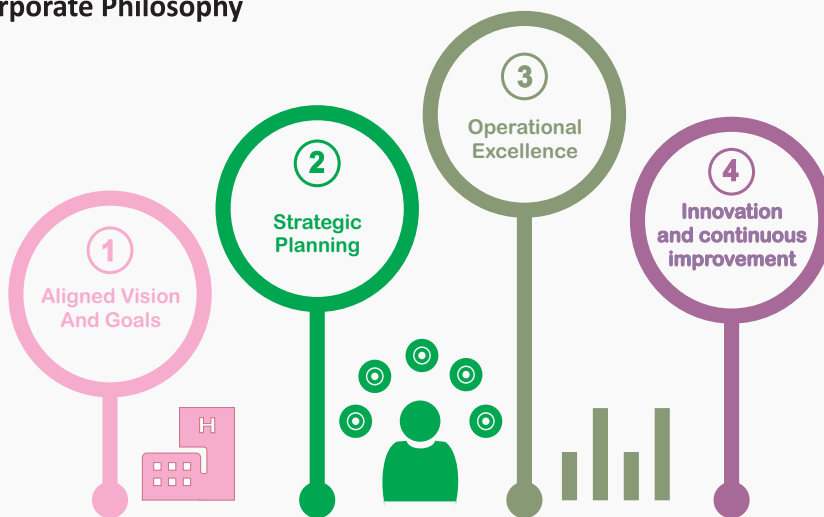
# Company Profile

**Exact Engineering** was established to serve and fulfill the globalized requirements of electrical and industrial electronic industry. We are market leader to supply the power and control solutions all over the Pakistan. till now due to our intelligence infrastructure, advanced and reliable manufacturing, an experienced and high qualified engineering staff, with market insights and applications understanding second to none, today **Exact Engineering** is one and only competitor company with all multinational companies to provide steam turbines, diesel/gas genset controls switchboard instrumentation.



Our solutions provide cost-effective technologies to meet the toughest customer demands and performance needs. we're dedicated to delivering environmentally improved solutions and you'll find that our product and solutions portfolio is unmatched in the industry.

## Our Corporate Philosophy



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**QUALITY  
SERVICE** ✓



**Power Plant Management, DCS, SCADA**



**Steam Turbine Generators Automation Solutions**



**Diesel/Gas Generators Automation Solutions**



**Testing And Calibration Of Generator All  
Protections Relays.**



**Process Control Instrumentation**



**Industrial Electronics Automation Solutions**




**Service Level Agreements/Consultancy**



**Variable Frequency Drives And Dc Drives**

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Engineering



The Only Certified Company And  
Trained By Deif In Pakistan & We  
Have Completed More Than 100  
Projects With Deif Equipment.

## Steam Turbine Generators Automation Solutions



### Turbine Monitoring System:

Complete range of steam turbine monitoring which covers the turbine all temperature, pressure, vibration monitoring, axial displacement and all other instrumentation with real time trending, data logging, and SCADA system (Info U SCADA).



### Turbine Speed Control:

Steam turbine speed control, monitoring and over speed protection with WOODWARD 505 controller. This user-configurable steam turbine controller includes specifically designed screens, algorithms, and event recorders to simplify use in controlling industrial steam turbines or turbo-expanders, driving generators.



### Generation Control & Protection:

Wide range of generation system protections and control which fulfil the international standards of protecting your generation system with easy to operational control.



### Automatic Voltage Regulators:

Automatic voltage regulators for any type of steam turbine alternators such as pre exciting or direct rotor exciting up to range of 1 to 5000 Ampere and 1 to 300 Volts of exciting current and voltage with single, stand by, or redundant mode of operation.

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## Steam Turbine Generators Automation Solutions



### Synchronisation & Load Sharing:

Fully auto and manual static/dynamic synchronisation of generators with other generators and bus bar, load sharing and base load system for complete power house with over 100 of metering parameters, on load synchronisation of generator with other generators and bus bar through bus coupler.



### Import/Export System With Mains:

Highly intelligent solution for synchronisation of power plant with Mains/National Grid, adjustable import and export of electrical energy, special protections for parallel with mains and mains failure/breakdown safeties.



### Neutral Ground Resistance Panel:

Exact Engineering offers a complete line of custom and standard neutral grounding resistors. these resistors are used for grounding of generators and transformers in (y) configurations for ground fault, over voltage, and short circuit protection. resistance grounding is typically applied on transformers and generators where safety and continuity of service are important.



### VCB & C.T, PT Panel:

Vacuum circuit breaker for generators and bus couplers, high voltage current transformers, potential transformers panels for metering, protections and synchronisation.

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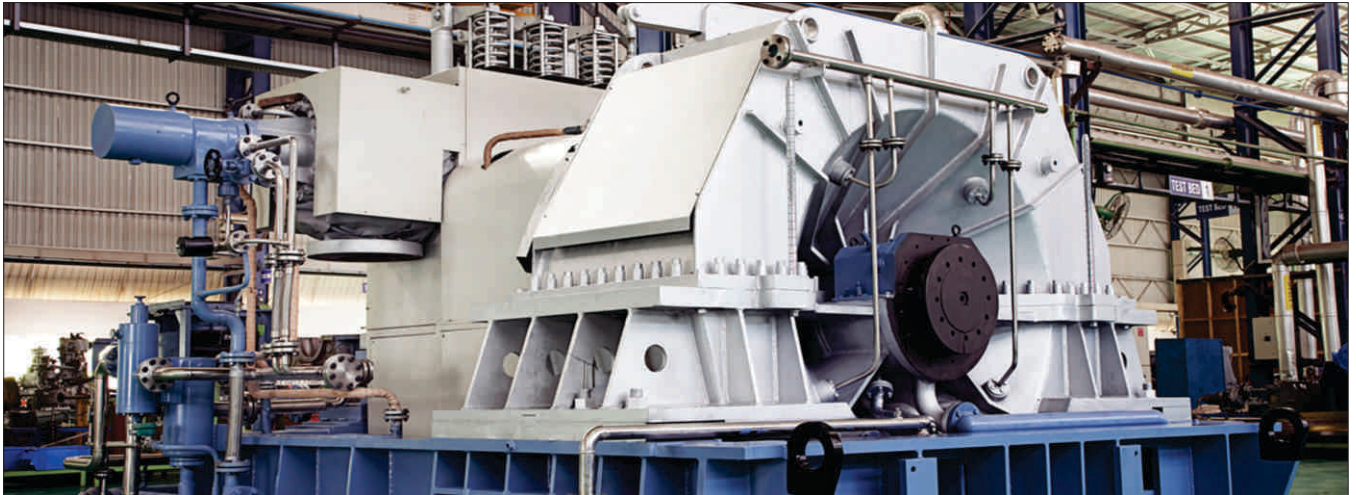
## Deif Solutions For Chinese Steam Turbines & Generator

There is new trend of import of Chinese Steam Turbines Generators in different industries across the PAKISTAN. In these projects most of times only steam turbine generators is imports without any type of electrical or instrumentation panel. In these projects we are providing all the control, protection, synchronisation and turbine monitoring, speed control panels with complete automation solution. Some of our successfully completed projects are listed here. This paretics will reduce the 30% cost of overall project.

### Our Some Projects

<b>HAMZA</b> SUAGR MILLS 15+12+30 MW	<b>LAYYAH</b> SUAGR MILLS 16 MW	<b>SHAKARGANJ</b> SUAGR MILLS 15+3 MW	<b>ALLIANCE</b> SUAGR MILLS 7.5+6 MW
<b>BANDI</b> SUAGR MILLS 6+6MW	<b>ASHRAF</b> SUAGR MILLS 15 MW	<b>HUDA</b> SUAGR MILLS 3 MW	<b>OYLMPIA</b> CHEMICALS 5 MW
<b>DEWAN</b> DISTILLERY 3 MW	<b>S.W</b> SUAGR MILLS 6+6 MW	<b>SERENA</b> TEXTILE 4 MW	<b>MADINA</b> SUGAR MILLS 15 MW
<b>FATIMA</b> SUGAR MILLS 10 MW	<b>TOTAL</b> PROJECTS 19		





## DEIF solutions for TRIVENI Turbines

Exact engineering is only company which is providing there steam solutions in the industry where steam turbines are supplied from TRIVENI INDIA



### Layyah Sugar Mills

Successfully complete the project of **26 MW 11 KV** steam turbine alternator in LAYYAH sugar mills. Providing the compete control, protections, synchronisation with other turbine generators and national grid, electrical energy import and export system with fully protection of parallel to mains.



### AL-MOIZ Industries

Successfully complete the project of **26 MW + 16 MW 11 KV** steam turbine alternator in AL- MOIZ industries. Providing the compete control, protections, synchronisation with other turbine generators.



### Al-Arabia Sugar Mills

Successfully complete the project of **10 MW 6.6 KV** steam turbine alternator in AL- Arabia Sugar Mills Providing the compete control, protections, synchronisation with other turbine generators.



### Gulf Sugar Mills

Successfully complete the project of **8 MW + 8 MW 11 KV** steam turbine alternator in Gulf Sugar Mills Providing the compete control, protections, synchronisation with other turbine generators.



### Allahdin Steel & Power

Successfully complete the project of **4 MW 11KV** steam turbine alternator in Allahdin steel & power providing the compete control, protections, synchronisation with mains

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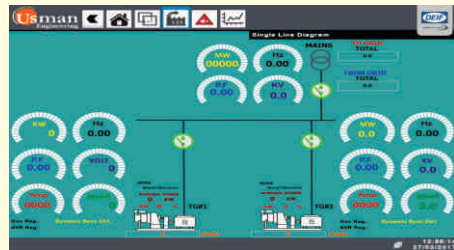


## Co-Generation Power Plants Automation:

Exact Engineering is the only certified company in Pakistan which is providing complete protections, synchronisation, load sharing, Import/Export to Mains, Mains failure/breakdown protections, power management and SCADA control system for Co-Generation power plants of sugar industry.

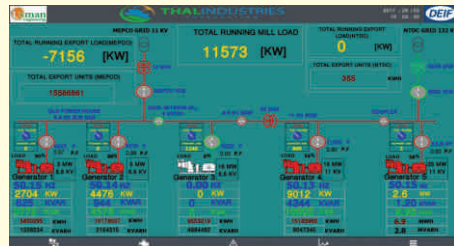
### Hamza Co-Generation Power Plant

15+15+30 MW



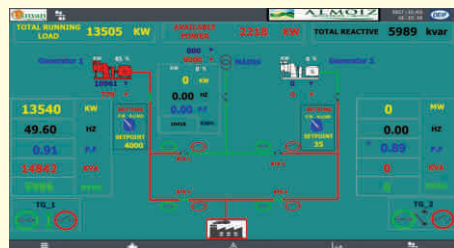
### Layyah Co-Generation Power Plant

16+26 MW



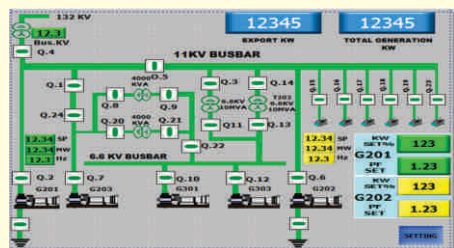
### AL-MOIZ Co-Generation Power Plant

16+26 MW



### RK Co-Generation Power Plant

15+12 MW







## Complete Power Plant Automation Solutions

### Power Management System

Data-sharing ability via ethernet connections effectively enable to be used as a SCADA system. built-in ethernet port switch functionality lets you connect the panels to small control systems without incurring extra costs for external switches. connect to multiple serial devices with the multi-standard serial port or use the USB host to provide access for external storage devices.

### Applications

#### Power Management Systems Control & Supervision

One point management, control and supervision of multiple gensets and bus-tie breakers.

#### Alarm Handling & Monitoring

View historical alarm data and accept active alarms.

#### Energy Monitoring System (EMS)

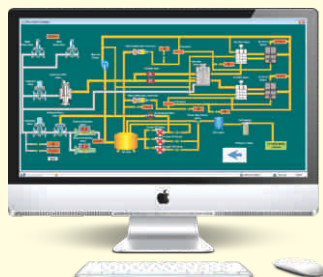
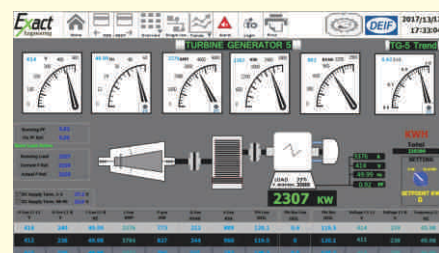
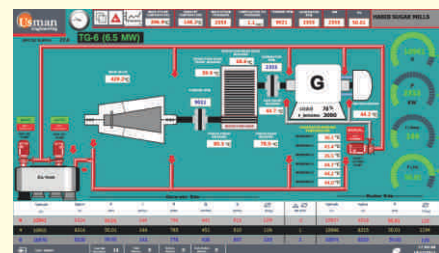
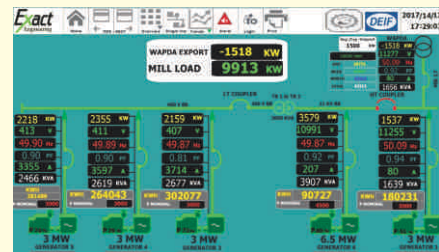
Track your energy consumption to optimize and implement the energy awareness on board your vessel.

#### Graphical Interface Mechanical & Electrical Systems

System overviews for mechanical and electrical equipment, trend measured values to monitor operation performance or when carrying out fault finding procedures.

### Features

- State-of-the-art Hmi
- Unique Design Tool
- Control And Monitor Your System
- Data-logging And Alarm Handling
- Designed For Harsh Environments



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## Protection Testing:

### Ensuring Reliability

Exact Engineering is now offering services for generation system protection relays testing, calibration and also supply of all protection relay tester.

## The Purpose of Tests:

Secondary injection tests are always done prior to primary injection tests. The purpose of secondary injection testing is to prove the correct operation of the protection scheme that is downstream from the inputs to the protection relay(s). Modern test sets are computer based. They comprise a PC (usually a standard laptop PC with suitable software) and a power amplifier that takes the low-level outputs from the PC and amplifies them into voltage and current signals suitable for application to the VT and CT inputs of the relay.

## Importance of Secondary Injection Tests:

Secondary injection tests are required to ensure that the protective relay equipment is operating in accordance with its preset settings

**The Reliability Of The Protection System Are Discovered Before A Power System Fault Occurs.**

## Maintenance and Commissioning of Protection Relays

For protection relays, testing on site is common practice, whereas the other devices in many cases are sent to a laboratory for calibration, resulting in considerable efforts and costs. With numerical protection relays commissioning and maintenance has become far less complicated as a result of the information provided by the devices as well as the integrated self-monitoring.

## Scope of Work:

1. Analysis of the wiring diagrams to confirm the polarity of connections, positive and negative-sequence rotation, etc.
2. A general inspection of the equipment, physically verifying all the connections, at both the relay and panel terminations
3. Measurement of the insulation resistance of the protection equipment
4. Inspection and secondary injection testing of the relays
5. Checking the operation of the protection tripping and alarm circuits

LAYYAH  
SUGAR MILLS

AL-MOIZ  
INDUSTRIES

HABIB  
SUGAR MILLS

DEWAN  
DISTILLERY  
PLANT

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Engineering





## Generator Protection (ANSI):

### Current Protection Functions

- ANSI 50/51 Phase over current
- ANSI 50N/51N or 50G/51G Earth fault or sensitive earth fault
- ANSI 50BF Breaker failure
- ANSI 46 -Negative sequence / unbalance
- ANSI 49RMS Thermal overload

### Directional Power Protection Functions

- ANSI 32P Directional active overpower
- ANSI 32Q/40 Directional reactive overpower

### Voltage Protection Functions

- ANSI 27D Positive sequence under voltage
- ANSI 27 Phase-to-phase under voltage
- ANSI 59 Phase-to-phase over voltage
- ANSI 59N Neutral voltage displacement
- ANSI 47 Negative sequence voltage

### Directional Current Protection

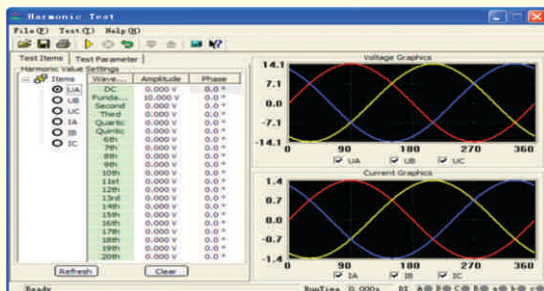
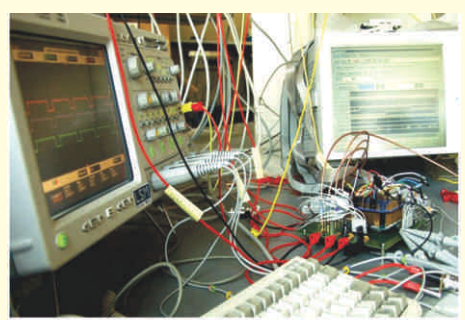
- ANSI 67 Directional phase over current
- ANSI 67N/67NC Directional earth fault

### Frequency Protection Functions

- ANSI 81H Over frequency
- ANSI 81L Under frequency
- ANSI 81R Rate of change of frequency (ROCOF)

### Feeder Protection Functions

- Instantaneous over current
- Time over current
- Earth Fault
- Short Circuit
- Over Load





## Cement Kiln Upgradation

By the grace of ALLAH Almighty Exact Engineering is now offering services for cement Kiln up gradation in cement industry. in this upgrading replacement of electric motors and there drive is included some of the upgraded projects are listed and running successfully in the different cement plants.

### **Zeal Pak Cement:**

Upgraded and replaced 02 no of 450 KW DC electric motors in series with 1500 KW DC drive

### **Dewan cement:**

02 no of 350 kw DC drives replaced with exiting DC Motors.

### **Rohri Cement**

01 no of 1000 kw DC drive replaced with exiting DC Motors.

### **Popular Cement**

01 no of 300 kw DC drive replaced with exiting DC Motors.



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## REGENERATIVE DRIVES

First time in Pakistan Exact Engineering is proud to announce its Regenerative Break Unit which we have successfully installed in Centrifugal refine machine. This Regenerative Break unit is specially designed for use in many applications, including Centrifugal Refines, Lefts, Conveyers and applications where Break is required on high speed.

The resulting energy savings can significantly lower a company's power bills and help meet corporate sustain ability goals. In one sugar production plant, for example, this regenerative power system reduced seasonal energy consumption in Centrifugal Refines applications by 20 to 30 percent.



### Features

- Easy to setup and install
- Safe to use
- Parallel usage of multiple units
- Realize complete current sharing
- It is mainly applied in cases where rapid DEC, positioning and brake is needed eg mine hoist, elevator, textile machine, paper-making machinery, centrifugal machine, washing machine, draw bench, proportional action and crown block.



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## BMA & GZSM (CHINA) Centrifugal Refine Machine

Centrifugal are the most dynamic type of machinery used in sugar production. At high rotational speeds, the sugar crystals are separated from the mother liquor. In the design of our upgrading solution, our top priorities are excellent performance, as well as a long service life and outstanding reliability.

**We** offer up gradation & complete automation system of BMA Refine machine, with latest technology & energy saving Frequency inverter.

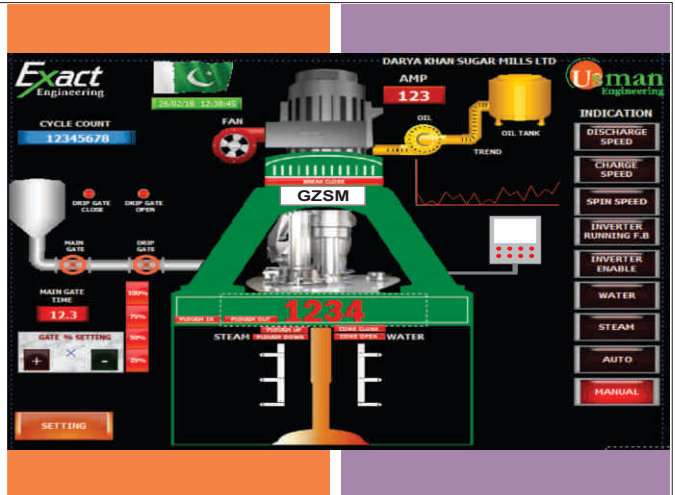
### Features

- Operator Panel with 15 inch screen with all parameters of BMA refine machine.
- High efficiency push button and selector switches for operator panel.
- High efficiency, energy saving frequency inverter specially designed for Refine Machine.
- Fully auto manual functions.
- Future up grading option.
- No sudden high torque, always smoothly accelerate & smooth load on Power House.



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## Projects

### BMA Refine machine automation upgrading

We have successfully upgraded the 03 no of BMA centrifugal refine machines in Fatima sugar mills Ltd KOT ADDU

#### Project Upgraded items

##### VFD Motor:

Specially designed VFD Motor for refine machine application imported from China Electric, China. (250 KW 380v) Directly replacement with original fittings

##### Variable frequency drives (VFD):

High efficiency vector control Variable frequency drives (winner brand) technology of YASKAWA JAPAN assembled in china (315 KW 380v)

##### PLC control Panel:

World class plc control panel, LS (KOREA) PLC with branded components and high standard programming for excellent performance.

##### Operator panel:

User friendly operator control panel with 15 inch LS HMI

### GZSM Refine machine automation upgrading

We have successfully upgraded the 02 no of GZSM centrifugal refine machines in Darya khan sugar mills & Sheikhoosugar mills

#### Project Upgraded items

##### Variable frequency drives (VFD):

High efficiency vector control Variable frequency drives (winner brand) technology of YASKAWA JAPAN assembled in china (315 KW 380v)

##### PLC control Panel:

World class PLC control panel, LS (KOREA) PLC with branded components and high standard programming for excellent performance.

##### Operator panel:

User friendly operator control panel with 15 inch LS HMI

WATER SETTING				1234
NAME	RPM	TIME (SEC)	DISPLAY	
SCREEN WASH	x	12.3	12.3	
FIRST WASH	123	12.3	12.3	
SECOND WASH	123	12.3	12.3	
THIRD WATER WASH	1234	12.3	12.3	
SPINNING SPEED				
MAIN GATE CLOSE	x	12.3	12.3	
FEED WASH				
DRIP GATE CLOSE	x	12.3	12.3	
DISH WASH				
PLOUHG DOWN		12.3	12.3	
CUTTER WASH				

SCHEDULE WASHING STEAMING DISCHARGE CHANGE VALVE SYSTEM FLOW



FATIMA Sugar Mills	DARYA KHAN Sugar Mills
SHEIKHOO Sugar Mills	Total 5 Refine Machine

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## TSK Centrifugal Refine Machine

Centrifugal are the most dynamic type of machinery used in sugar production. At high rotational speeds, the sugar crystals are separated from the mother liquor. In the design of our upgrading solution, our top priorities are excellent performance, as well as a long service life and outstanding reliability.

We offer up gradation & complete automation system of TSK refine machine, with latest technology & energy saving frequency Inverter.



### Features

- Operator Panel with 15 inch screen with all parameters of TSK refine machine.
- High efficiency push button and selector switches for operator panel.
- High efficiency, energy saving frequency inverter specially designed for Refine Machine.
- Fully auto manual functions.
- Future up grading option.
- No sudden high torque, always smoothly accelerate & smooth load on Power House.



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## Projects

### TSK Refine machine automation upgrading

We have successfully upgraded the 10 no of TSK centrifugal refine machines in different sugar industries

#### UpgradProjected items

##### VFD Motor:

Specially designed VFD Motor for refine machine application imported from China Electric, Chine.Directly replacement with original fittings

##### Variable frequency drives (VFD):

High efficiency vector control Variable frequency drives (winner brand) technology of YASKAWA JAPAN assembled in china

##### PLC control Panel:

World class plc control panel, LS (KOREA) PLC with branded components and high standard programming for excellent performance.

##### Operator panel:

User friendly operator control panel with 15 inch LS HMI



HABIB SUGAR MILLS	ABDULLAH SUGAR MILLS	DIGRI SUGAR MILLS	KASHMIR SUGAR MILLS
HASEEB WAQAS SUGAR MILLS	CHAUDHRY SUGAR MILLS	AL-ARABIA SUGAR MILLS	NEW DADU SUGAR MILLS
	KHOSKI SUGAR MILLS	BAWANY SUGAR MILLS	Total 13 Refine Machine



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## Broadbent Centrifugal Refine Machine

Centrifugal are the most dynamic type of machinery used in sugar production. At high rotational speeds, the sugar crystals are separated from the mother liquor. In the design of our upgrading solution, our top priorities are excellent performance, as well as a long service life and outstanding reliability.

We offer up gradation & complete automation system of Broadbent refine machine, with latest technology & energy saving frequency inverter.

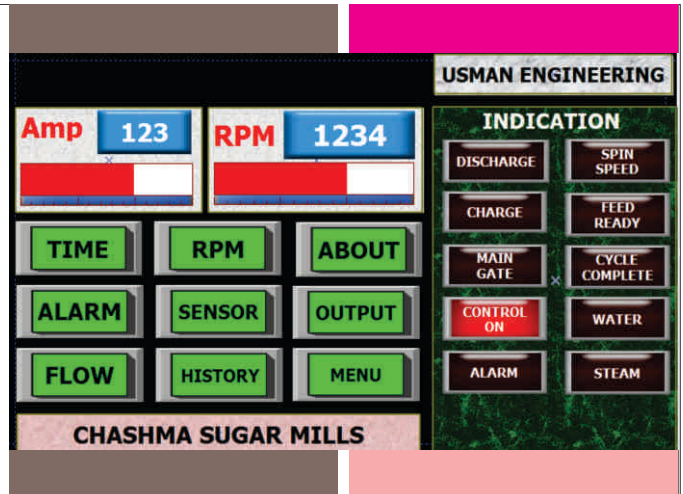
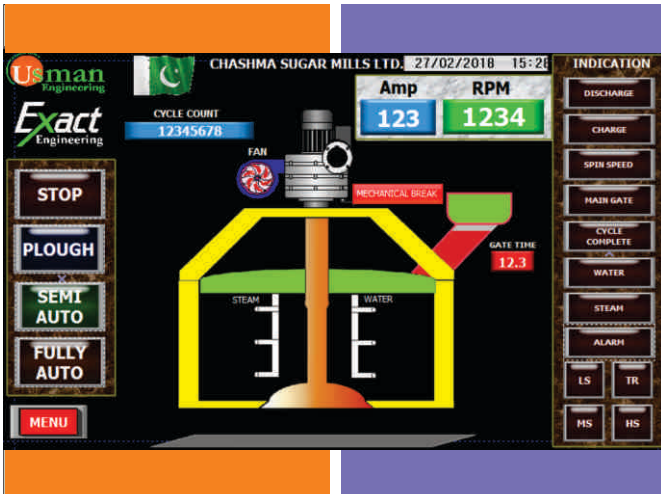
### Features

- Operator Panel with 12 inch screen with all parameters of Broadbent Refine machine.
- High efficiency push button and selector switches for operator panel.
- High efficiency, energy saving frequency inverter specially designed for Refine Machine.
- Fully auto manual functions.
- Future up grading option.
- No sudden high torque, always smoothly accelerate & smooth load on Power House.



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## Projects

### Broadbent Refine machine automation upgrading

We have successfully upgraded the 36 no of Broadbent centrifugal refine machines in different sugar industries

Project Upgraded items

#### Variable frequency drives (VFD):

High efficiency vector control Variable frequency drives (winner brand) technology of YASKAWA JAPAN assembled in china

#### PLC control Panel:

World class plc control panel, LS (KOREA) PLC with branded components and high standard programming for excellent performance.

#### Operator panel:

User friendly operator control panel with 12 inch LS HMI

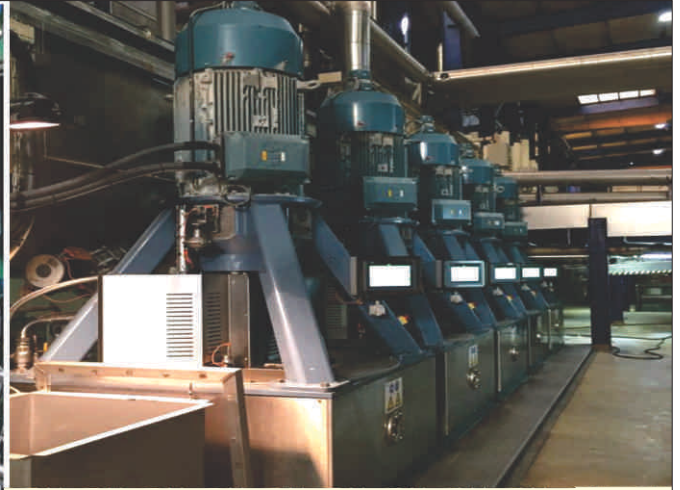


### Our Some Projects:

TANDLIANWALA SUGAR MILLS	MIRPURKHAS SUGAR MILLS	POPULAR SUGAR MILLS	CHAMBER SUGAR MILLS
NAUDERO SUGAR MILLS	RANIPUR SUGAR MILLS	PANGRIO SUGAR MILLS	CHASHMA SUGAR MILLS
MEHRAN SUGAR MILLS	ASHRAF SUGAR SUGAR MILLS	BROTHER SUGAR MILLS	Total 37 Refine Machines



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## Silver Weibull & FCB Centrifugal Refine Machine

Centrifugal are the most dynamic type of machinery used in sugar production. At high rotational speeds, the sugar crystals are separated from the mother liquor. In the design of our upgrading solution, our top priorities are excellent performance, as well as a long service life and outstanding reliability.

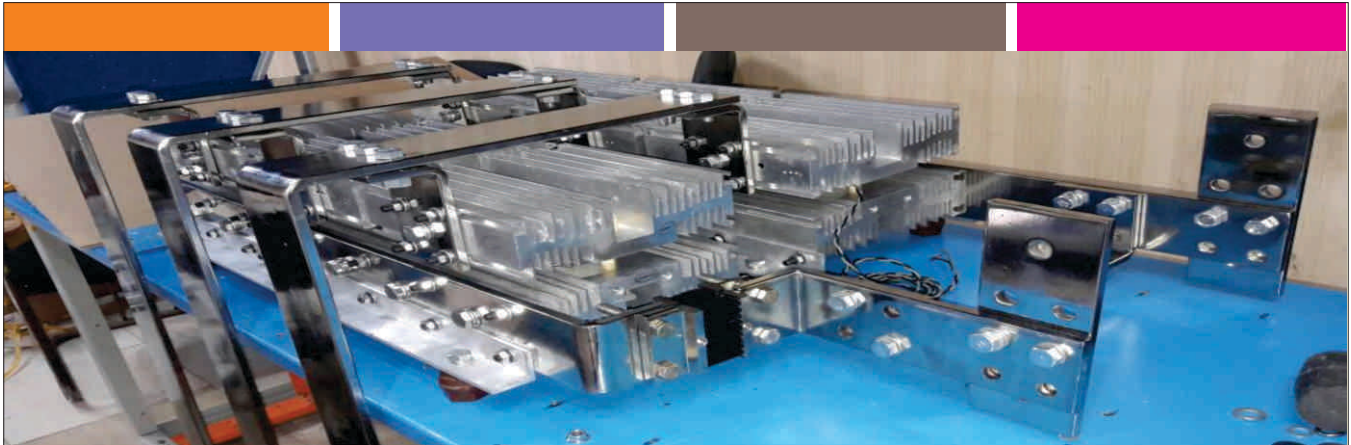
We offer up gradation & complete automation system of tsk refine machine, with latest technology & energy saving frequency inverter.

### Features

- Operator Panel with 12 inch screen with all parameters of TSK refine machine.
- High efficiency push button and selector switches for operator panel.
- High efficiency, energy saving frequency inverter specially designed for refine machine
- Fully auto manual functions.
- Future up grading option.
- No sudden high torque, always smoothly accelerate & smooth load on Power House.







## Projects

silver weibull & FCB Refine machine automation upgrading

We have successfully upgraded the 34 no of silver weibull & FCB centrifugal refine machines in different sugar industries

Project Upgraded items:

**3 PHASE DC DRIVE UNITS**

3 phase dc drive units six thyristors with current control for sugar industries refine machine with reverse break system. The controlled (thyristors) rectifier provides a low-impedance adjustable 'd.c.' Voltage for the motor armature, thereby providing speed control.

**PLC control Panel:**

World class plc control panel, LS (KOREA) PLC with branded components and high standard programming for excellent performance.

**Operator panel:**

User friendly operator control panel with 12 inch LS HMI



Our Some Projects:

TMK SUGAR MILLS	ANSARI SUGAR MILLS	SAKRAND SUGAR MILLS	SERI SUGAR MILLS
FARAN SUGAR MILLS	KIRAN SUGAR MILLS	NAJMA SUGAR MILLS	NOON SUGAR MILLS
SAFINA SUGAR MILLS	MEHRAN SUGAR MILLS	AL-BBAS SUGAR MILLS	Total 35 Refine Machines



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Exact Engineering is the only certified and trained company in PAKISTAN by Deif DENMARK & we have completed more than 100 projects with Deif equipment.

AGI-400



Energy Analyzer



Multi Differential Relay



Earth Fault Relay



Differential Current Relay



Annunciator



AGC-4  
For Steam Turbine



Automatic Genset Controller (AGC-4) is the most comprehensive and flexible power management and protection unit on the market today. Suitable for a wide range of applications, the AGC-4's standard sequences include back-up power, start/stop, synchronization, and load sharing.





Ideally suited for critical power applications, the ALC-4 integrates load handling into your power management system, eliminating the need for traditional PLC solutions.



Automatic Load Controller



Mains failure

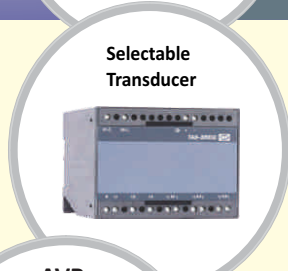


Multi Transducer

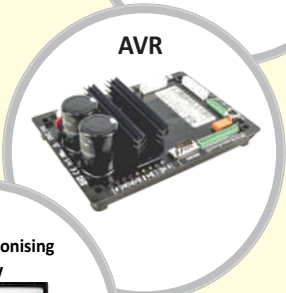


AGC-200

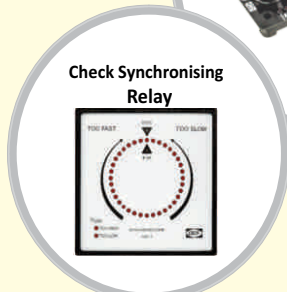
DEIF has released a new version of its acclaimed Advanced Genset Controller, AGC 200, to meet and surpass OEM needs for synchronization. A cost-effective, compact, scalable and all-in-one product, the AGC 200 comes in several variants.



Selectable Transducer



AVR



Check Synchronising Relay



## Woodward Governor 505 Turbine Control

First time in Pakistan Exact Engineering is proudly announce that we have trained and experienced engineers for Woodward 505 turbine control system. Trained application engineers with unsurpassed experience are available 24/7, nationwide for on-site woodward 505 turbine control service and troubleshooting. our engineer and technicians are available for installation commissioning service and troubleshooting.



### Services And Support

- 24/7 nationwide service and support
- Emergency services
- Electronic governors to complete control systems
- On-site system troubleshooting for unscheduled shutdowns
- Governor/Actuator calibration & troubleshooting in the field

### Feature

- NEMA D control
- Over-speed trip over-speed trip test circuitry
- Critical speed avoidances (2)
- Speed control
- Load sharing
- KW droop w/speed droop backup
- Isochronous/ droop
- Idle/rated
- Remote process control
- Cascade control

Faisal  
Fabrics

4 MW

Hunza  
Sugar Mills  
DEWAN  
DISTILLERY PLANT

5 MW

Habib  
Sugar Mills

7 MW

Bandhi  
Sugar Mills

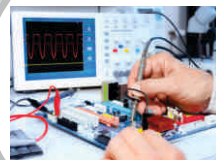
6+ 6 MW

Alliance  
Sugar Mills

6+7.2 MW

Husein  
Sugar Mills

4 MW



**Exact**  
Engineering



## Process Control Instrumentation

Exact Engineering offers a complete range of process control instrumentation equipments for all type of industry.



- Temperature Sensors/Indicators
- Pressure Transducers/Gages
- Level Indicators
- Motion Sensors
- Limit Switches
- Vibration Sensors
- Instruments Vessels/accessories
- Control Valve
- Pneumatic Valve
- Precess Equipments



### Services:

we provide Services and solutions for all kind of single loop and complete projects

**Exact**  
Engineering



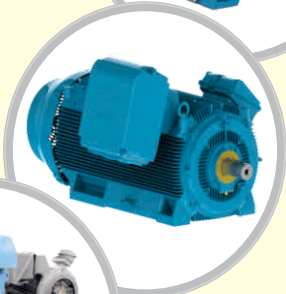
## Electric Motors

SHINGHAI CHINA ELECTRIC is specialized in manufacturing and exporting electrical machines. China Electric is established since 1960s. It located in Shanghai the most important international financial and business center of China. China Electric is one of the biggest manufacturer and exporter for high voltage motor and machine DC motors.



### Applications

YRKK series medium size three phase asynchronous high voltage slip ring motor, also called as high voltage wound rotor motor is used to drive windlass, press machinery, crusher, stock-removing, draw benches and other general-purpose machinery. they can serve as the prime movers in steel, mines, mechanical industries, blower, compressor, transportation, building materials industry, sugar industry, ID fan, FD fan motors can cutter motors, fibraizer motors on both ends.



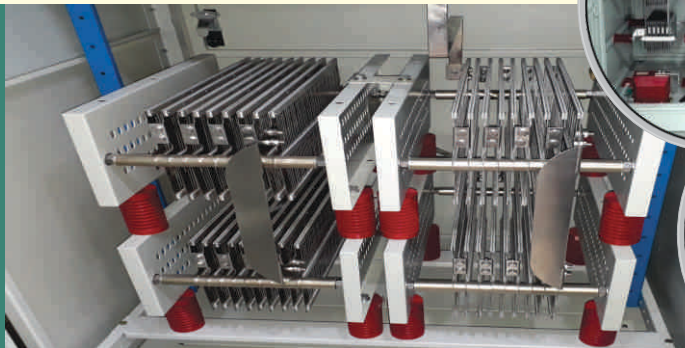
<b>MIRPUR KHAS</b> SUGAR MILLS 700 KW	<b>TANDLIANWALA</b> SUGAR MILLS 250 KW
<b>NEW DADU</b> SUGAR MILLS 250 KW	<b>Habib</b> Sugar Mills 600 KW





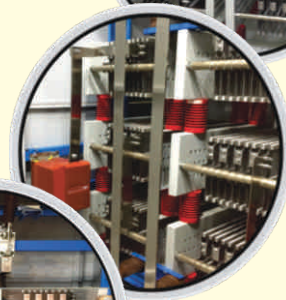
## Neutral Grounding Resistors (NGR)

Exact Engineering offers a complete line of custom and standard neutral grounding resistors (NGR). these resistors are used for grounding of generators and transformers in (Y) configurations for ground fault, over voltage, and short circuit protection. Resistance grounding is typically applied on transformers and generators where safety and continuity of service are important.



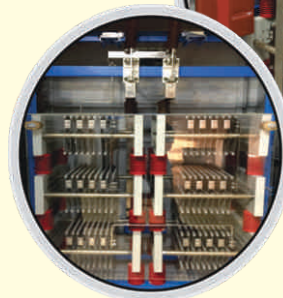
### Applications

Mainly used for 11kv cable line consists of the following major, single-phase ground fault capacitive current large electrical transmission and distribution systems and capacitive current is small, but in order to prevent the resonance over-voltage auxiliary power system. at present, the neutral grounding resistors are widely used in urban distribution network, large-scale industrial parks, power plants, offshore platforms and distribution systems, large-scale chemical enterprises.



### Features

- Tied Live Design So That There Are No Floating Voltages In The Assembly
- Lifting Eyes Allow Safe And Easy Installation
- High Thermal Capacity To Absorb High Currents
- Can Be Designed For Specific Applications
- Custom Design On Demand
- The Series Is Produced By Foreign Imports Of Stainless Steel Alloy Resistive Element, Low Temperature Coefficient.
- Double Insulation, High Stability;
- Bolt Connection, Easy Disassembly, Reliable Connection;



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Engineering

## DIGITAL EXCITATION CONTROL UNIT DECU-18

Analogue and digital Automatic Voltage Regulators (AVR's) are designed and built to achieve maximum performance of brushless alternators. Self-excited and separately excited with shaft mounted Permanent Magnet Generator (PMG) types are available. These potted regulators are economical, small in size, and incorporate solid state technology with frequency Compensation, automatic voltage build-up



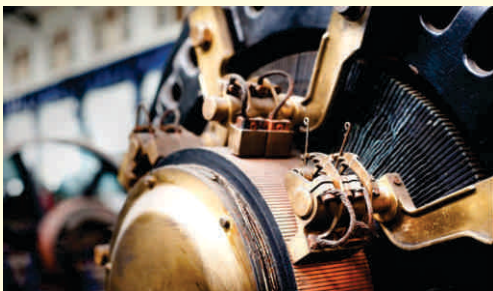
### Features

- Integrated circuitry for compact size, simplicity, high reliability.
- Exciter field current 100% continuous, 120% forcing.
- Regulation accuracy better than  $\pm 1.0\%$  no load to full load.
- Fast response.
- Frequency compensation.
- Over excitation shutdown.

HUSSAIN  
SUGAR MILLS

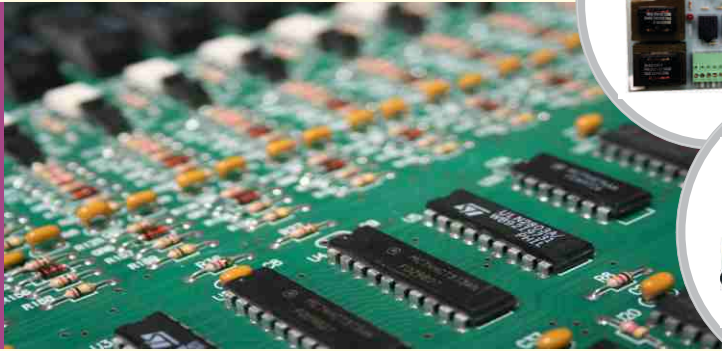
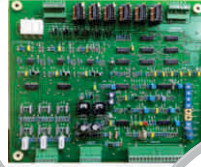
LAYYAH  
SUGAR MILLS

RANIPUR  
SUGAR MILLS



**Exact**  
Engineering

## INDUSTRIAL ELECTRONICS Automation Solutions



### Vs Motor(heenan Drive)

available 5 kw to 200 kw (usman made)

### Eddy Current Motor Control

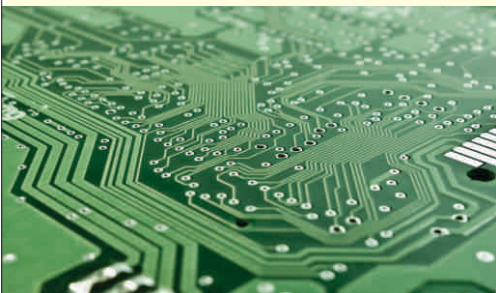
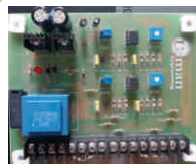
available 3kw (usman made)

### Digital Reference Card

specially design for heenan drive controller,  
dc drive and frequency inverter reference via  
up/down push button

### Digital Yard Meter

microprocessor based, minimum count step 100 mm,  
max count 9999.9 -99999-99999.9 meter, maximum  
counting speed 150m/min, accuracy +/-0.1%, backup  
time ten years, display led types (sharp and high  
intensity), size 66x138x105 mm



**Exact**  
Engineering



# INVERTER ENGINEERING



**WIN-VA Series**

**High Performance Vector Control Frequency Inverter**

Voltage : 380v, Single-unit power: 0.75-1000Kw v/f control



Complete range of LV,ML and HV frequency inverter in WINNER.





**INVERTER  
ENGINEERING**



## Main Feature:

Suitable for large inertia, high accuracy, potential energy load, fast response and other high-end occasion 2 modes of control are available: V/F control V/F control and vector control. And any of the modes can obtain high boost torque and performance.

Rated torque output at low speed under open loop, Range of speed control reaches to 1:100.

The pause function while starting and stopping enable the machine to be suitable for the pulling work of work of variable big inertial load.

Advanced motor auto tuning function enable the motor to work in the optimized state.

Built in function of auto torque compensation.

High performance with built-in function of slip compensation.

Built-in RS-485 communication interface which supports MODBUS protocol.

Built-in PID regulator.

## Keypad and functions:



Key	Function
Local/Remote	Control by keyboard/control by control-loop terminal.
Menu	Options for 2 modes.
ESC	Go back to the previous page
REST	To select the displace of values
DATA/ENTER	To define the mode, parameter and settings.
△	To select the parameter code or increase the setting values.
▽	To select this key for inching operation while the command is given by keyboard.
JOG	Press this key for inching operation while the command is given by keyboard
FWS/REV	To switch the motor's rotating direction in the condition of keyboard operation.
RUN	Press this key to start the inverter in the conditional of keyboard operation, Meanwhile, the light of run will turn on
STOP	Press this key to stop the inverter in the conditional of keyboard operation, Meanwhile, the light of stop will turn on. In the condition of terminal control operation, to enable or disable the function of this key by choosing the parameter o2 or 02.

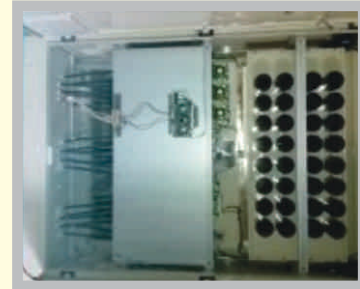






**INVERTER  
ENGINEERING**

### **AL-MOIZ SUGAR MILLS (1250 KW Frequency Inverter)**



### **OUR CLIENTS IN SUGAR INDUSTRY**

- 1.ALLAINCE SUGAR MILLS
- 2.AL-MOIZ SUGAR MILLS
- 3.AL-ABBAS SUGAR MILLS
- 4.ARMY WELFARE SUGAR MILLS
- 5.ASHRAF SUGAR MILLS
- 6.BAWANI SUGAR MILLS
- 7.BADIN SUGAR MILLS
- 8.COLONY SUGAR MILLS PHALIA
- 9.COLONY SUGAR MILLS MIAN CHANNU
- 10.CHAMBAR SUGAR MILLS
- 11.DADU SUGAR MILLS
- 12.FECTO SUGAR MILLS
- 13.SAKRAND SUGAR MILLS
- 14.HASEEB WAQAS SUGAR MILLS
- 15.KHOSKI SUGAR MILLS
- 16.ABDULLAH SUGAR MILLS
- 17.SHEIKHOO SUGAR MILLS
- 18.SAFINA SUGAR MILLS
- 19.SHAKARGANJ SUGAR MILLS
- 20.SAKRAND SUGAR MILLS
- 21.HABIB SUGAR MILLS
- 22.HUDA SUGAR MILLS
- 23.NEW DADU SUGAR MILLS
- 24.NAUDERO SUGAR MILLS
- 25.RYK SUGAR MILLS
- 26.RAMZAN SUGAR MILLS
- 27.MIRPURKHAS SUGAR MILLS
- 28.MATIARI SUGAR MILLS
- 29.KIRAN SUGAR MILLS
- 30.KASHMIR SUGAR MILLS
- 31.TANDLIANWALA SUGAR MILLS
- 32.TANDO ALLAYAR SUGAR MILLS



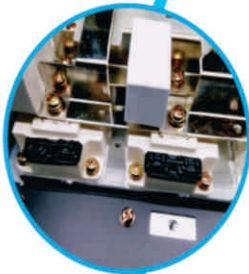
# Focus on craft & quality



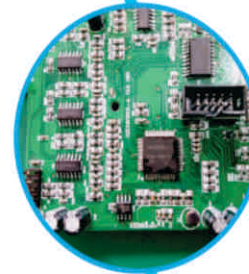
Stable switching power



Multi-circuit protection



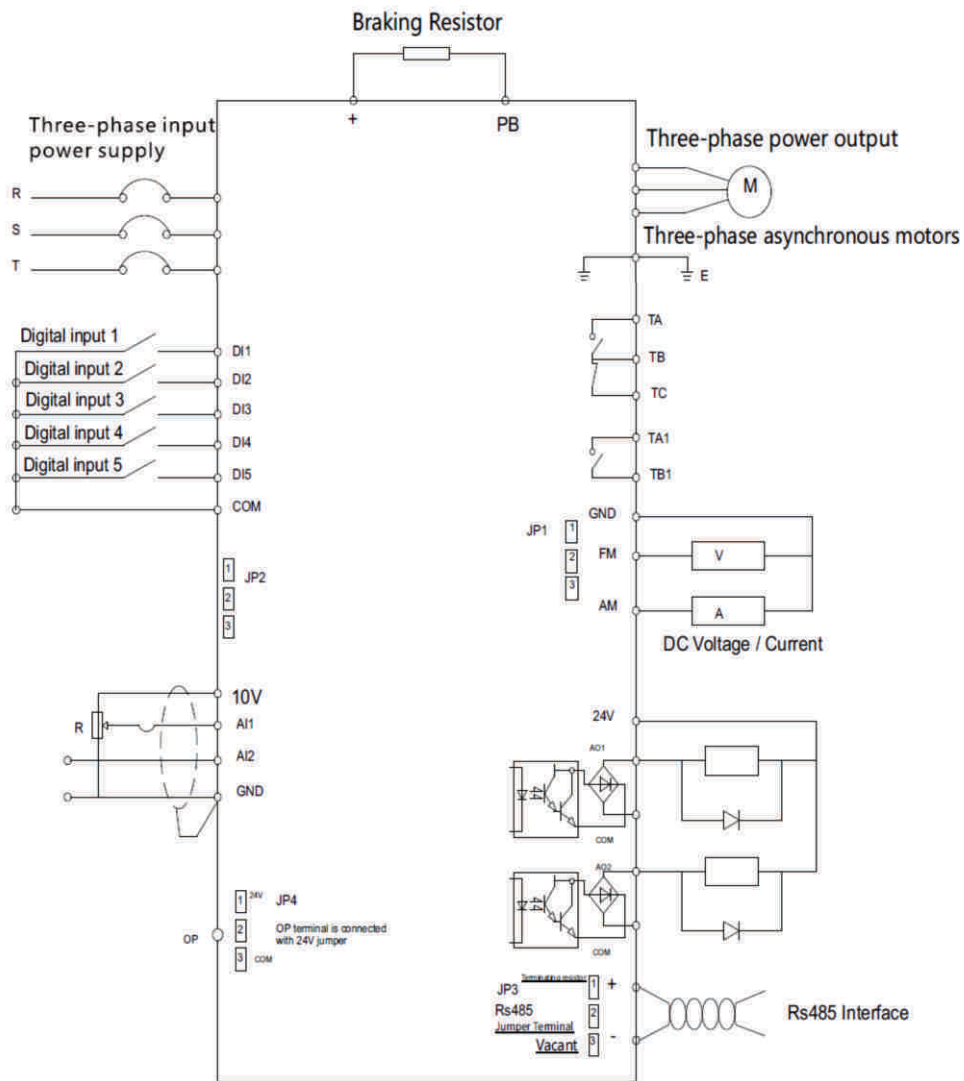
100% Import module



High-performance DSP



Basic wiring diagram



Indvs 500 series

Item		Explanation
The main control functions	Automatic Voltage Regulator	When the grid voltage changes, adjust the PWM output voltage constant (AVR function)
	Automatic energy-saving operation	Depending on the load, automatic optimization of V / F curve, energy-saving operation
	Automatic current limit	During the running current is automatically limited to prevent frequent overcurrent fault trip
No sense of vector control	Torque characteristics	When 1Hz, output 150% of rated torque, Speed stability and accuracy 0.1%
	Identification of motor parameters	Identification can be done from the motor parameters at motor perfectly still, so as to obtain the optimum control results
Run function	Run command channel	Operation panel setting ; Control terminal setting; Serial port setting, can be switched in three ways.
	Frequency setting	Keypad analog potentiometer setting, Keyboard arrow keys setting, Function code numbers setting, setting serial port terminal UP / DOWN setting, Analog voltage reference, Analog current setting, Combination setting.
	Switch input channel	Reversible instruction, 5 Programmable switching input, can set up 30 kinds of functions.
	Analog output channels	2 analog inputs, 0-10V, 4-20MA optional
	Analog output	Analog output 0-10V, 0-20MA optional, enabling set frequency, output frequency and other physical quantities output
	Switch output channel	2 programmable open collector output; 2-way set relay output, enabling a variety of physical output
Operation panel	LED Digital display	It can display setting frequency, output voltage, output current and other parameters
	External meter display	Output frequency, output current, output voltage of the main display physical display
Protective function		Overvoltage protection, overcurrent, undervoltage protection, thermal protection, overload protection.
Choose accessories		Braking resistor member; remote control panel, remote cable, keyboard install base etc.
Environment	Using places	Indoors, away from direct sunlight, dust, corrosive gas, oil mist, water vapor, etc.
	Altitude	Less than 1000 meters (higher than 1000m with derating)
	Ambient temperature	-10°C~+40°C
	Humidity	Less than 90% RH, No frost
	Vibration	Less than 5.9 m / s
Storage temperature		-20°C~+60°C
Structure	Protection class	IP20 (Be using state or the keyboard display state)
	Cooling method	Forced air cooling
Installation way		Wall-mounted, cabinet installation





Low-voltage Frequency Converter Series | High-voltage Frequency Converter Series  
Explosion-proof Frequency Converter Series | Filter Series | System Solutions

# ES Series

## High-performance Vector Low-voltage Frequency Converter



Official Website WeChat public platform

## ESSeries Frequency Converter

### Technical Data

Item	Specification and Technical Data	
Main power connection	Input voltage U1	220...240V; 380...500V; 660V...690V; 220V/380V/660V±20%; signal/three-phase power
	Input frequency f1	50..60Hz ±5Hz
	Output voltage U2	0..U1 (V)(The maximum output voltage equals the input power voltage.)
	Output frequency f2	0-1000Hz (V/Fcontrol); 0-500Hz(vector control)
	Carrier frequency	2-12 KHz (The device can intelligently and automatically make optimal adjustment according to load characteristics and drive temperature.)
	Input voltage unbalance degree	Maximum: ±3% of rated inter-phase input voltage
	Efficiency	≈ 98% (when operating at rated power)
Basic functions	Maximum frequency	0-500Hz(vector control) 0-1000Hz (V/Fcontrol)
	Input frequency resolution	Digital setting: 1RPM Analog setting: 0.025% of maximum RPM
	Control mode	Open-loop V/F control Open-loop vector control (SVC)/close-loop vector control (FOC)
	Startup torque	200% @ 0.25Hz@ OpenLoop(open-loop control) 200% @0Hz@ CloseLoop(close-loop control)
	Speed range	1 : 200 @ OpenLoop(open-loop control) 1 : 3000 @ CloseLoop(close-loop control)
	Steady-speed precision	±0.5% @ OpenLoop(open-loop control) ±0.01% @ CloseLoop(close-loop control)
	Overload capacity	Heavy load application: 60sat 150% rated current @40°C. The time depends on the drive temperature under other conditions. Light load application:60sat 110% rated current @40°C. The time depends on the drivetemperature under other conditions.
	Torque boost	Automatic torque boost. Manual torque boost 0.1%-30%
	V/Fcurve	Intelligent adaptive
	V/Fseparation	Two methods : full separation, half separation
	Acceleration and deceleration curves	straight-line or S-curve-acceleration and deceleration mode Two acceleration time values. The acceleration and deceleration time range : 0.0s-650.00s
	Simple PLCfunction	Achieve operationof up-to-16-stages speed(via built-in PLC or control terminals)
	Built-in PID	Conveniently achieve the process control close-loop control system
	Automatic voltage regulation (AVR)	When the grid voltage changes, the device automatically maintainsconstant output voltage.
Enhancements	Overvoltage and overcurrent stall control	The current and voltage are automatically limited during running to avoid jump faults due to frequent overcurrent and overvoltage
	Fast current limiting	Overcurrent faults are minimized to guarantee normal operation of the frequency converter.
	Torque limiting and control	The torque is automatically limited operating (to avoid frequent overcurrent jumping fault due to too large torque).
Enhancements	Protection function	Output shortcircuit protection, input & output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, brake chopper overload protection, brake chopper shortcircuit protection, brake resistor overload protection
	Non-stop during transient interruption	Keep the frequency converteroperating in a short time (by reducing feedback energy compensation voltageat the moment of power outage). The duration depends on the mechanical inertia of the load at that time.
	Timing control	Timing control function. The time range and precision is 0.0-6500.0(min).
	Switching multiple motors	Support switching among four groups of motor parameters.
	Bus communication	The standard configuration uses the built-in Modbus/CANopen communication, which can be extended to Profibus-DP bus communication.
	Intelligent temperature control	Full cover system temperature testing, intelligent real-time IGBT chip temperature monitoring, and intelligent and optimized adjustment of the carrier and current based on drive temperature changes
Type of encoders supported	Support differential encoders, collector open encoders, U/VW encoders, rotary transformer encoders and Sin-Cos Encoders	

## Technical Data

Item	Specification and Technical Data	
I/O Input Output Interface	Command input mode	Control keyboard input, control terminal input, bus communication input, which can be switched mutually.
	Speed reference mode	Digital giving, analog voltage (current) giving, pulse giving, bus communication giving and PID giving, which are mutually switched.
	Input terminal (input)	The followings are included in standard configuration : 6 (F0) / 7 (F1 and above) digital input terminals, where, DI6 (F0) DI7 (F1 and above) supports the maximum of 50 kHz high-speed pulse input. 2 (F0) / 3 (F1 and above) analog input terminals (where, at least 2 supports 0-10V voltage input or 0-20 mA voltage input) The followings are extended as cards : 5 digital input terminals 2 analog input terminals, supporting input of -10V to +10V voltage
	Output terminal (output)	The followings are included in standard configuration: 1 high-speed pulse output terminal (supporting 0-50 kHz square signal output ) 1 (F0) / 2 (F1 and above) digital output terminals 1 (F0) / 2 (F1 and above) relay output terminals 1 (F0) / 2 (F1 and above) analog output terminals (supporting 0-10V voltage output or 0-20mA voltage output) The followings are extended as cards: 3 digital output terminals 3 relay output terminals 3 analog output terminals, supporting 0-10V voltage output or 0-20mA voltage output
Display and control	Man-machine interface	5-bit 8-shape digital tube (F0) , intelligent sealed LCD control keyboard (F1 and above)
	Parameters duplicating	Rapidly duplicating parameters via the LCD control keyboard
Application environment	Application site	Indoor, free of direct sunshine, dusts, corrosive gases, flammable gases, oil mist, water vapor, drip or salts
	Altitude	At 0-1000m ; When the altitude is 1000-4000m, the capacity is reduced by 1% as the altitude rises by 100m. (consult professionals for more accurate values)
	Operation ambient temperature	-10°C to +40°C (when the ambient temperature is 40°C-55°C, the drive is automatically derated to achieve self-protection)
	Relative humidity	Less than 95%RH. No droplets condensed (condensation)
	Sinusoidal vibration	(IEC 60068- 2/ - 6.TestFc) Max.0.1mm (5 to 13.2Hz) ; max.7m/S <sup>2</sup> (13.2 to 100 Hz) sinusoidal vibration (F0-F7) Max.0.1mm (10 to 57Hz) ; max.10m/S <sup>2</sup> (57 to 150 Hz) sinusoidal vibration (F8-F9)
	Impact	Not allowed (during operation); maximum 100m/S <sup>2</sup> , 11ms (during storage and transportation with packing)
	Free fall (Max.) Storage & transportation temperature	Not allowed (during operation); with packing : 100cm @F0-2,76cm @F0-4,46cm @F5-7,15cm @F8-9 -40°C to +70°C (-40 to +158°F)
Protection grade	IP20 (ULopen type), full closed design for small- and medium-power models. Top/Left and right sides can reach IP41 (the medium cavity with air vents on two sides for some F0** models)	
Cooling mode	Forced air cooling of the interior fan. The air flows from bottom to top. Air-cooled radiator.	
Application standard	IEC 61800-3 (2004), IEC 61800-5-1 (2007) ; GB12668 (see the nameplate for details).	





HVVFD | LVVFD | EPVFD | Power Filter | System Solution

## ES9000 High Voltage Variable Frequency Drive

Industrial Drive (250 KW to 20,000 KW)



Stock code: 831251





**INVERTER  
ENGINEERING**



## CLIENTS LIST FOR FREQUENCY INVERTER

### PAPER MILLS

Sr.#	Mills Name	KW	QTY	Sr.#	Mills Name	KW	QTY
1	MIAN ADIBAL BAHAWALPUR	93	3	6	UNION PAPER MILL HYDERABAD	132	1
		75	4			93	1
		37	1			75	2
		3.7	1			37	1
2	SUNNYE PAPER MILL HYDERABAD	110	1	7	HAJI ISMAEEL PAPER MILL (HYDERABAD)	75	1
		18.5	1			55	2
3	QURESHI COTTON MILL MIR PUR KHAS	45	1	8	HAJI SHAFI PAPER MILL (HYDERABAD)	75	1
4	SADAQAT PAPER MILL (HYDERABAD)	93	1	9	LAHORE FEED MILL	200	1
5	S.K PAPER MILLS BAHAWALPUR	93	1			75	1
		75	2	3.7	1		
		55	2	10	SHAUKAT PAPER MILLS MULTAN	93	1
45	1	75	3				
						55	1
						45	5

### SUGAR MILLS

Sr.#	Mills Name	KW	QTY	Sr.#	Mills Name	KW	QTY														
1	AL MOIZ SUGAR MILL	1250	5	12	CHAUDHARY SUGAR MILLS	160	2														
		415	1			13	MIR PUR KHAS SUGAR MILL	355	3												
		400	4					75	2												
		160	11					5.5	2												
		132	17					30	1												
		110	3					93	1												
		93	8					45	3												
		55	21					7.5	2												
		37	1					110	1												
		22	2					14	KOH-I-NOOR SUGAR MILL	55	1										
		1.5	2							15	ARMY WELFARE SUGAR MILL	185	2								
30	4	200	1																		
2	HASEEB WAQAS SUGAR MILL	245	1	110	6																
		3	ABDULLAH SUGAR MILL	200	1	75	1														
				4	MATYARI SUGAR MILL	132	1					45	2								
						5	KASHMIR SUGAR MILL					220	1	132	4						
												75	1	16	CHAMBAR SUGAR MILL	110	4				
												6	SAFINA SUGAR MILL			110	3	17	ALLIANCE SUGAR MILL	315	1
																5.5	5			160	1
																7	SHEIKHOO SUGAR MILL			415	4
								400	2											75	1
								355	1	18	TANDO ALLAH YAR SUGAR MILL									55	3
								245	2											75	1
200	7							19	NAUDERO SUGAR MILL											160	1
160	7	132	2																		
132	4	110	2																		
75	4	93	14																		
55	4	75	6																		
45	3	55	5																		
8	COLONY SUGAR MILL	710	2	22	1																
		355	1	3.7	15																
		245	1	20	SAKRAND SUGAR MILL	710	1														
		200	32			400	1														
		110	12			55	11														
		132	2			55	2														
		110	4			5.5	2														
		93	7			93	6														
		55	6			55	9														
		45	4			75	7														
		30	1			22	2														
18	1	110	1																		
3.7	1	21	ASHRAF SUGAR MILL			260	1														
1.5	1			245	6																
9	HUDA SUGAR MILL			110	1	160	1														
				55	1	75	6														
				10	KIRAN SUGAR MILL	285	1	22	TANDILIANWALA SUGAR MILLS	280	6										
						11	NEW DADU SUGAR MILL			245	1	160	6								
										200	1	132	3								
										160	1	110	1								
										110	2	93	2								
										75	8	75	2								
										55	2	45	8								
		55	2							37	8										
		22	2							30	4										
18.5	2	22	6																		
5.5	5	15	5																		
				7.5	1																
				5.5	6																

Sr.#	Mills Name	KW	QTY
23	FATIMA SUGAR MILLS	280	3
		160	1
24	CHANAR SUGAR MILL	450	2
		300	1
		200	7
		93	2
		55	13
		45	3
		7.5	13
25	SHAKARGUNJ SUGAR MILLS	7.5	7
		110	3
26	DARYA KHAN SUGAR MILLS LIMITED (FORMERLY FECTO SUGAR MILLS LTD)	280	1
27	HABIB SUGAR MILLS	315	4
		280	3
		245	2
		185	9
		160	9
		132	3
		110	14
		75	6
		55	3
		45	8
		30	2
		5.5	3

Sr.#	Mills Name	KW	QTY
28	CHASHMA SUGAR MILLS	355	1
		200	1
		45	2
29	J.K SUGAR MILLS	315	1
		200	1
		132	5
		75	1
		30	6
		45	45
		4	4
30	S.W SUGAR MILLS	200	1
31	KHOSKI SUGAR MILLS	5.5	7
32	BAWANI SUGAR MILL	158	1
		5.5	5
		3.7	6
33	JAUHARABAD SUGAR MILLS	220	1
		200	1
34	JDW SUGAR MILLS	110	2
		2.2	2
		93	2
		4.0	1

### TEXTILE MILL

Sr.#	Mills Name	KW	QTY
1	SNA TEXTILE MILL	45	1
		30	1
		22	6
		18.5	6
		15	4
		11	7
		7.5	8
2	MOTI FABRICS TEXTILE MILL	7.5	14
		18.5	6
		22	1
		55	2
		45	1
5.5	2		
3	KAY & EMMS TEXTILE MILL	1.5	4
		37	1
		30	3
		18.5	2
		22	2
		7.5	3
		5.5	3
		3.7	3
11	2		
15	7		
4	SADAQT TEXTILE MILL	30	4
		5.5	12
		15	7
		3.7	3
		37	1

Sr.#	Mills Name	KW	QTY
5	RASHEED TEXTILE MILL	30	5
		22	6
6	NOOR FATIMA TEXTILE MILL	93	1
		75	1
		45	1
		30	4
		22	2
		18.5	1
		15	23
		11	4
		7.5	12
		5.5	2
		3.7	4
2.2	2		
1.5	1		
7	AL HAMRA TEXTILE MILL	18.5	1
8	GOHAR TEXTILE MILL	11.5	1
9	FIRDOOS TEXTILE MILL	3.7	1
		37.5	2
10	JUBILEE TEXTILE MILL	11	1
		75	1
		22	5
		18.5	1
		11	2
3.7	2		
11	AL RAHEEM TEXTILE MILL	7.5	1
		3.7	1



**TEXTILE MILL**

Sr.#	Mills Name	KW	QTY
12	KAMAL LIMITED	3.7	4
		11	1
		55	9
		37	2
		3.7	1
		55	2
		22	1
		1.5	1
		75	2
		30	1
		18.5	1
		7.5	1
		11	1
13	KAMAL HOSIERY MILL	315	1
		200	1
		45	5
		55	1
		30	1
		22	2
		5.5	1
14	KAMAL TEXTILE MILL	45	1
		55	1
		30	2
		37	2
		22	1
		18.5	4
		15	2
		11	8
		7.5	8
		5.5	2
		3.7	2
		2.2	2
		1.5	2
15	KARACHI DYEING	55	1
		45	2
		30	1
		15	1
		11	1
		5.5	1
		3.7	2

Sr.#	Mills Name	KW	QTY
16	ABU BAKAR TEXTILE	30	2
		22	3
		37	1
		11	1
17	ARSHAD CORPORATION	7.5	9
		11	4
		30	2
		3.7	5
		3.7	1
		11	1
		2.2	2
		93	1
		5.5	4
		1.5	4
		15	1
3.7	1		
37	1		
45	1		
18	RANA TEXTILE	11	2
		5.5	1
		5.5	3
19	LAHORE DYEING & PRINTING MILLS	7.5	35
		11	10
		75	2
		45	6
		37	3
		18.5	2
30	1		
20	KAUSAR PROCESSING INDUSTRIES	22	3
		55	1
		2.2	1
		3.7	13
		30	2
		55	1
		5.5	2
		1.5	2
		37	1
		7.5	1
11	4		
21	ABU BAKAR TEXTILE	30	2
		22	3
		37	1
		11	1

**OTHER FACTORIES**

Sr.#	Mills Name	KW	QTY
1	MADINA ENTERPRISES	132	1
		93	1
		55	1
		22	1
		7.5	1
		2.2	1
2	ZAKRIA EMBROIDRY	3.7	1
3	KOHISTAN PLASTIC	37	1
		15	1
		7.5	1
		5.5	1
		1.5	1
4	FAISALABAD OIL REFINERY	93	1
		75	2
		55	2
		45	4
		30	2
		15	2
5	S.K PAPER MILL	3.7	1
		5.5	1
6	SHAHZADI POLYESTER	132	1
7	MUNAWWAR S.B PIPE FACTORY	22	2
		18.5	2
		15	2
		11	1

Sr.#	Mills Name	KW	QTY
8	NAVEED ADAM G PIPE FACTORY	1.5	9
		15	5
		37	1
		2.2	2
		55	2
		15	1
		11	1
		45	1
9	GAS PROFESSIONAL LTD	3.7	1
		5.5	1
9	GAS PROFESSIONAL LTD	200	2
15		2	
10	CONTINENTAL PLASTIC	245	1
11	MADNI GHEE MILLS	75	1
		45	1
		93	1
12	ALIF PLASTIC INDUSTRIES	93	1
		30	1
		1.5	3
		3.7	1
		37	1
13	CHENAB TRADERS	45	2
14	ZAMINDAR CHEMICAL	75	1
15	ALLIAN FARM FEED FACTORY	37	2

**OTHER FACTORIES**

Sr.#	Mills Name	KW	QTY
16	K.K KHAN PIPE FACTORY	11	1
		1.5	1
		7.5	1
		15	1
17	ALAMGIR GRANITE	37	1
		22	1
		18.5	1
		75	1
		45	1
		55	1
18	LUCKY PAPER MILL	132	1
		110	1
19	S.K PAPER MILL	93	1
		75	2
		55	2
		45	4
		30	2
		15	2
20	SHUKAT PAPER MILL	75	5
		55	2
		37	1
		45	3
21	PUNJAB CERAMICS	7.5	1
22	Zeal Pak Cement Factory Hyderabad Sindh	400	2

Sr.#	Mills Name	KW	QTY
23	G.M AUTOMATION MULTAN	37	1
		55	1
		2.2	5
		5.5	1
		11	6
		160	1
		7.5	5
		3.7	7
		18.5	1
		1.5	1
24	AZHAR CORPORATION	55	1
25	HEAVY ELECTRIC COMPLEX	37	1
26	MIRZA NASEEM PLASTIC	110	1
		3.7	11
		7.5	2
		5.5	2
		5.5	1
27	CHINA PROJECT GILGIT HUNZA	132	1
		110	3
28	PIONEER CEMENT	1.5	2
29	SHAMSI PAPER MILLS	75	1
		5.5	1
30	UNZE TRADING COMPNY	98	1
		15	1
		11	1
		7.5	1
		2.2	5



