

(UNDER JURISDICTION OF KOLKATA)  
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Notice Inviting Tender No.: ENGG/MSD/VFD & MOTOR/PM/15-16

Dated: 11/08/2015

**Revised due date & time of submission of offer: 03rd October, 2015 up to 3.00 PM**

**Revised date& time of opening of Techno-commercial bid: 03rd October, 2015 at 3.30 PM**

**Revised technical specification of VFD System and Motor has been attached below; earlier specification is to be ignored.**

**Rests remain unchanged.**

## ANNEXURE-I

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### TECHNICAL DETAILS OF VFD SYSTEM: (REVISED)



#### DRIVE SYSTEM SPECIFICATIONS

i) TOPOLOGY : VSI SYSTEM, Voltage source DC link Multi cell Converter.

ii) Semiconductor Devices: Diodes & IGBT (Mainly)

iii) Switching: Micro processor based multi level PWM

#### TRANSFORMER data sheet:

- 1) 700KVA
- 2) AIR COOLED ISOLATION TRANSFORMER
- 3) DRY TYPE
- 4) TAPPING INCLUDED
- 5) SUITABLE FOR USE WITH VARIABLE SPEED DRIVE WAVEFORM.
- 6) THERMOSTAT INCLUDED
- 7) GROUND FAULT PROTECTION



#### CONVERTER data sheet.

Rated Input Voltage: 11000 volt.

Rated Frequency: 50hz

Auxillary voltage: 415 volt AC is suitable but 230volt also applied.

System control voltage: 230volt AC or whatever given by manufacturers.

Rated converter output voltage: 6600 volt.

Rectification by: Diode.

Inverter device: LV IGBT.

Input Power factor across speed range: 0.95

VFD efficiency: 95 to 98%

<b>Voltage cut ride through Duration:</b>	<b>5 to 6 cycles.</b>
<b>Speed Range:</b>	<b>25% to 100%</b>
<b>Speed control accuracy:</b>	<b>0.5% +/-</b>
<b>Torque Pulsations Across speed:</b>	<b>% &lt; 1</b>
<b>Cooling:</b>	<b>Forced Air Colling</b>
<b>Degree of Protection:</b>	<b>IP42</b>
<b>Cell type &amp; Cell Numbers depends on vendor's Design.</b>	
<b>Max ambient temp:</b>	<b>50°C</b>
<b>Min ambient temp:</b>	<b>5°C</b>

**Required Standard Feature of VFD system**

- 1) Input Air cooled Isolation Transformer.
- 2) Distribution class surge arrestors.
- 3) Easy, Modular, trouble free Design.
- 4) Key interlock should provided with mechanical key interlocks.
- 5) Door Mounted E-Stop & operator Interface display.
- 6) Short circuit, single phasing, ground fault protection.
- 7) Catch spinning load restart capability. The VFD system is able to catch & take control of a spinning load if started while rotating equipment is already spinning
- 8) Critical speed avoidance circuitry.
- 9) Acceleration/deceleration time depends on load, like 0.5-3200 sec.
- 10) Motor friendly PWM output.
- 11) Proper Sinusoidal output
- 12) Electronic motor & VFD Overload protection
- 13) Motor inherently protected from high voltage stresses for cable distance.
- 14) Vendors should provided input circuit breaker on the VFD.
- 15) Multi cell topology & ensuring total harmonics distortion within IEEE 519 limitations.
- 16) Multi level o/p voltage. (The higher the number more sinusoidal will be the o/p voltage.)

### Software & Protection System

DIAGNOSTICS FUNCTIONS: 1) User Friendly local operator panel with text messages.

2) Non Volatile memory for reliable diagnosis when the power supply Fails.

DETECTION OF ACTUAL MOTOR SPEED: Control algorithm Calculates actual motor speed from currents & voltages measured at the converter output.

EMERGENCY STOP BUTTON: Emergency button should fitted in the cabinet door, the contacts of P.B are connected in parallel to the terminal block so they can be integrated in as protection concept on the plant side.

THERMAL OVERLOAD PROTECTION: Motor thermal O/L protection algorithm prevents the motor from being exposed to excessive temperatures.

CLOSED LOOP CONTROL: The converter can be controlled by means of vector control algorithm with an encoder.

★ Bidder should have executed similar projects in the past.

## ANNEXURE- II

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### REQUIRED MOTOR DATA SHEET (REVISED)

#### TEFC/CACA motor.



#### ELECTRICAL DATA

Rated Motor Power: 750 KW

Rated Motor voltage: 6.6KV.

Voltage Fluctuations: +/- 10%

Frequency: 50HZ.

Rated Motor speed: 750 RPM

NO of poles: 08

Rated motor current: 98 Amps.

Efficiency: 95%

Power factor: 0.85

Type: SQ cage induction motor.

Degree of Protection: IP55

Duty Type- S1

Coolant Temp: 50°C

Installation Altitude: 1000m

#### MECHANICAL DATA:

Bearing Design: Roller Bearing.

Bearing cooling: Rolling contact bearing ,Oil Content D.E /N.D.E Bearing

1 m Sound pressure level- 85dB

Coating: Standard.