

Section 6. Bill of Quantities

Name of Works: Rewinding, Installation, Testing, Commissioning and Transportation of Natural Gas Booster Compressor Motor-1 for 400MW CCPP East Plant of APSCL.

IFT No.: As per Tender Notice; **Package No. 01; Lot No. 01**

Item No.	Description of Item	Unit	Qty.	Cost in foreign Currency (FC)		Cost in Bangladesh Taka (BDT)	
				In figures	In Words	In figures	In Words
1	2	3	4	5	6	7	8
1	Rewinding including all types of test and 6.6kV Gas Booster Compressor (GBC) Motor Stator of Ashuganj 400MW CCPP (East) including supply of materials: Type and Rating of the Motor: 1SL1560-2HJ70-Z, 3000KW, 6.6KV/50H2, 2P, Serial Number: ZY-LD3005351486001000001/2019, Brand: Siemens COO: China.	Lot	01				
2	Both way Freight with inland transportation costs (To and from)	Lot	01				
3	Charges for Re-assembly, installation, alignment, testing and commissioning of motor.	Lot	01				
4	C&F charges, Customs related duties and taxes etc.	Lot	01				
5	Supply of 02 nos Sleeve Bearings (Driving End and Non Driving End) from OEM	Lot	01				
(a) Total=							
(b) Price of existing motor old coil copper =		kg	1000 (Approximately)				
[(a) -(b)] Net Total Price (without price of old coil copper)=							

In a word:

- N.B.:**
- a. Price includes - VAT & Tax, mobilization & de-mobilization cost, manpower, tools, equipment, container, residence, daily allowance, tool container, consumables, logistic and insurances etc.
 - b. Column no. 1 to 4 should be filled up by the Employer & Column no. 5 to 8 should be filled up by the Tenderer.
 - c. This Bill of Quantities contains (insert number) corrections duly initialled and signed by the authorised person of the Tenderer.
 - d. It is suggested that the Tenderer uses these sheets of the BOQ in order to avoid any manipulation, distortion and inadvertent mistakes or omissions in course of preparing the Tender by the Tenderer.
 - e. 02 Nos old bearing will be handed over to APSCL during delivery of motor.

1. Scope of Work

- a) All kinds of transportation of the 3000 kW, 6.6 kV, 2974 RPM of our existing Motor will be done by Contractor
- b) Inspect stator & stator winding and carry-out all incoming tests on the stator and provide report.
- c) Remove one good coil from the stator as a sample, record rewind data and prepare coil data sheet.
- d) Contractor will use F class insulation materials, copper, resin rich coils and winding kit suitable for the above Motor stator.
- e) manufacture one complete set of to Class F insulation
- f) Rotor Dynamic Balancing and Bearing House Calibration.
- g) Any goods which may require replacement, any work or any services related to motor stator transporting, rewinding, reinstalling including compressor coupling and alignment, testing and commissioning including 1 set (02 Nos old driving and non-driving) new bearing for motor supply and installation will be done by the contractor within the offer price.
- h) Coil must be same type or specification of our existing motor coil.
- i) Insulation must be same type (F Class) or specification of our existing motor insulation.
- j) New Replacement for Motor Auxiliary Instrument winding temperature sensor (RTD) 6 nos., Bearing temperature sensor 2 nos, need to install.

2. Following Tests to be carried out on each Coil or As Per IEC Standards

- a) Surge Test shall be carried out for Inter-Turns Insulation at U kV.
- b) Slot section of individual coil shall be tested at $2.5U+3$ kV for 60 seconds, overhang section of individual coil shall be tested at $U+3$ kV for 60 seconds, leakage current would be measured and recorded for your ready reference.
- c) Tan-Delta (Dissipation Factor) would be measured for all coils (5 steps in multiples of 0.2 times the rated voltage.).
- d) D.C. Resistance will be measured for each coil.
- e) I.R. test with 5000V megger before and after H.V. test. Polarization Index shall be recorded.

3. Carry out core loss test/flux loop test of above stator to determine condition and provide report accordingly.
4. Rotor Dynamic Balancing and Bearing House Calibration, Bearing Change.
5. **Carry out following tests on above rewound stator and provide report accordingly and values must be within IEC Standards.**
 - a) IR values including Polarization Index (PI) of Winding test at 5000V
 - b) Winding resistance test and values must be identical with motor specifications.
 - c) High Voltage test at $2U+1$ kV for 60 sec tests
 - d) Short Circuit Test, No Load Test
 - e) Winding temperature detectors must be calibrated and must be identical with motor specifications.
 - f) Heater capacity must be identical with motor specifications.
 - g) check of accessories including Cooler Leak Detector test, direction of rotation must be identical with motor specifications.
 - h) Motor Vibration Test, visual check etc.
 - i) A report must be submitted to APSCL after completion of commissioning.
6. **RE-ASSEMBLING AND COMMISSIONING:**
 - a) APSCL will support re-assembling and shift the motor onto ground from existing position if required.
 - b) Contractor will Re-Assemble the Motor with rewound stator using the new 2 Nos. Driving End and Non Driving End bearings (The new set of bearings must be same model as per old bearing) and 02 Nos old set motor bearings will be handed over to APSCL during delivery of motor.
 - c) Contractor will Perform necessary tests and commissioning of the Motor.
 - d) APSCL will run reliability test for 7 days to the Motor in part load & Full load conditions.
 - e) Contractor will make a report of Conditions and measurement electrical and mechanical data and handover the report before and after the motor rewinding.
 - f) Contractor will Hand over the machines for continuous operations (if all measured parameters are found satisfactory).
7. **BEARINGS SUPPLY:**

Supply of 2 nos bearings as per below: Must be identical with current bearing set of the motor.

 - a) Slide bearing DE:
 - Type: CFZLB14-140
 - Standard: DIN31693
 - Mass: 140 Kg
 - Material No. A5E43072429
 - Brand: Sund/Equivalent, COO: China
 - b) Slide bearing NDE:
 - Type: CFZLQ14-140
 - Standard: DIN31693
 - Mass: 140 Kg
 - Material No. A5E43655061
 - Brand: Sund/ Equivalent, COO: China
8. The Re-Winding motor must be identical in all specifications (Speed, torque curve and other electrical and mechanical parameters), dimensions and drawings with the existing motor.

9. The Contractor is highly encouraged to visit the site before final offer submission.
10. No modifications to the existing civil or mechanical structures, Electrical, I&C system will be permitted.
11. During the delivery of the rewinding motor, the Contractor must submit the manufacturer's delivery chalan, manufacturer Proforma Invoice, Test Reports, Manuals and other Technical Documents for DE, NDE bearing and in order to proof of new bearing any other documents like pictures and videos during the installation of the newly purchased bearing. Both bearings must be identical with the current bearings in all specifications.
12. Motor Auxiliary Instrument like Cooler leak detector, Motor winding Heater, CT and other instrument can be reused at contractor responsibility and in case of replacement contractor must provide identical with the currently installed motor specification.

Not For Submission

Section 7. General Specifications

1. Scope of Work

- a) All kinds of transportation of the 3000 kW, 6.6 kV, 2974 RPM of our existing Motor will be done by Contractor
- b) Inspect stator & stator winding and carry-out all incoming tests on the stator and provide report.
- c) Remove one good coil from the stator as a sample, record rewind data and prepare coil data sheet.
- d) Contractor will use F class insulation materials, copper, resin rich coils and winding kit suitable for the above Motor stator.
- e) manufacture one complete set of to Class F insulation
- f) Rotor Dynamic Balancing and Bearing House Calibration.
- g) Any goods which may require replacement, any work or any services related to motor stator transporting, rewinding, reinstalling including compressor coupling and alignment, testing and commissioning including 1 set (02 Nos old driving and non-driving) bearing for motor supply and installation will be done by the contractor within the offer price.
- h) Coil must be same type or specification of our existing motor coil.
- i) Insulation must be same type (F Class) or specification of our existing motor insulation.
- j) New Replacement for Motor Auxiliary Instrument winding temperature sensor (RTD) 6 nos., Bearing temperature sensor 2 nos, need to install.

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- e) I.R. test with 5000V megger before and after H.V. test. Polarization Index shall be recorded.

3. Carry out core loss test/flux loop test of above stator to determine condition and provide report accordingly.

4. Rotor Dynamic Balancing and Bearing House Calibration, Bearing Change.

5. Carry out following tests on above rewound stator and provide report accordingly and values must be within IEC Standards.

- a) IR values including Polarization Index (PI) of Winding test at 5000V
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- d) APSCL will run reliability test for 7 days to the Motor in part load & Full load conditions.
- e) Contractor will make a report of Conditions and measurement electrical and mechanical data and handover the report before and after the motor rewinding.
- f) Contractor will Hand over the machines for continuous operations (if all measured parameters are found satisfactory).

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Standard: DIN31693
Mass: 140 Kg
Material No. A5E43072429
Brand: Sund/Equivalent, COO: China

- b) Slide bearing NDE:

Type: CFZLQ14-140
Standard: DIN31693
Mass: 140 Kg
Material No. A5E43655061
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8. The Re-Winding motor must be identical in all specifications (Speed, torque curve and other electrical and mechanical parameters), dimensions and drawings with the existing motor.
9. The Contractor is highly encouraged to visit the site before final offer submission.
10. No modifications to the existing civil or mechanical structures, Electrical, I&C system will be permitted.
11. During the delivery of the rewinding motor, the Contractor must submit the manufacturer's delivery chalan, manufacturer Proforma Invoice, Test Reports, Manuals and other Technical Documents for DE, NDE bearing and in order to proof of new bearing any other documents like pictures and videos during the installation of the newly purchased bearing. Both bearings must be identical with the current bearings in all specifications.
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