

Emco Electrodyne Pvt. Ltd.



ELECTRICAL ROTATING MACHINES REPAIR REDEFINED



www.emcoelectrodyne.com



Emco Electrodyne Pvt. Ltd.

ACTIVITIES

REPAIR, REFURBISHMENT AND REWINDS

- Rewind AC Motors and Generators from 415 volts to 18,000 volts upto 40MW ratings
- Rewind DC Machines upto 7000HP including Commutator replacements
- In works and at-site Failure/ Root cause Analysis and Diagnosis
- Cryogenic (Dry-ice) and Steam Cleaning
- On-site Overhauls of Large Motors and Generators

DIAGNOSTIC AND RESIDUAL LIFE ASSESSMENT

- Complete Condition Monitoring (online and offline)
- Electrical and Mechanical Analysis
- Laser Alignment and In-situ Balancing
- Thermography and heat path tracing

MAJOR OVERHAULING AT SITE AND WORKS

- Overhauling of Machines at works and site
- Rewinding or Insulation Improvement
- Retrofit Bearings, seals, shafts, retaining rings and other components
- Condition Monitoring and RLA studies

LONG TERM SERVICE CONTRACTS

- Comprehensive Maintenance of Rotating machines of the Entire plant
- Maintenance scheduling ranging from Annual, pre-planned and breakdown
- 24 hr urgent response guarantee
- Permanent Deputation of Skilled team at customer's site for round-the clock support



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MAJOR INFRASTRUCTURAL DETAILS:

30,000 sq. ft. RCC shop floor

40 Tonnes safe carrying Electric Operated Overhead Cranes

Vacuum Pressure Impregnation tanks for impregnation of the Wound Rotors and Modular Stator capsules Wound machine of size 2.00 mtr x 3.00 mtr, in a Solvent less Class 'F' resin, with SCADA for trending and recording of vacuum / pressure / temperature cycles.

Computerized Dynamic Balancing Machine (for Jobs upto 5 Tonnes, 5.5mtr lengths and dia 3.5 Mtrs)

Oversized Salient pole winding turntables with synchronized layer settings suitable for weights upto 25 tonnes

TEST BED with complete SCADA for testing of machines under rated conditions with V/I, speed, vibration, temperature online measurements of Motors upto 6000 KW.

Air circulatory Oven for curing of winding of size 10' x 10' x 12'.

Vertical Core stacking and Shaft fitment/extraction Press (1000 Tonnes, Daylight- 3800mm and Bed size- 2 x 2 mtrs.)

Centre Lathes with ABC – 4500mm (02 nos.) with grinding/polishing attachments and keyway making facility.

Induction heater for mounting of bearings upto 250mm ID

Cryogenic (dry ice cleaning) for efficient and non-destructive cleaning of Windings at site and at works.

Steam Cleaning equipment for efficient cleaning of Windings etc.

TIG welding/ Induction brazing equipment for making of armature connections, jumpers and series connections.

Hydraulic Pulling and extraction equipment

Radial Drill, Milling machines, shapers, grinders, saws etc.

3D SOLID WORKS software for drawings and data representation.



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INFRASTRUCTURE FOR MANUFACTURING ROEBEL BARS & FORMED COILS

10,000 SQFT of Completely Clean, Dust-free, Air Conditioned Pressurised Coil-Shop Area produces Bars and Coils of World-Class Quality With Back-Up Support From Major Insulation Providers, M/s ISOVOLTA AG, AUSTRIA.

CONDUCTORS :

- Copper/Stainless Steel, Solid OR Hollow
- Dual Coat Enamelled/ Dacron/mica

STRAIGHTENING, CUTTING AND STRIPPING MACHINE

- CNC machine with high repeatability and accuracy
- Max. Insulated Conductor Sizes (Solid) : 15x4 mm
- Max. Conductor Size (Hollow) : 10x6 mm, 1.8 mm thickness
- Conductor length : 1100mm (min.) and 12000mm (max.)
- Accuracy : ± 2 mm in skinning and overall length

TRANSPPOSITION BRIDGES

- For two plane bending for transposition upto 720°
- transposition inlays, stack separator, non-conductive / conductive mastic/fillers can be provided as per customer's requirement.

TAPING MACHINE

- CNC 6-AXIS TAPING MACHINE for taping of RESIN RICH and RESIN-POOR TAPES IN ROEBEL BARS & COILS.

- X Axis (Length Wise) : 0-6500 MM max (Servo Axis)
- Y Axis (Width Wise) : 0-1200 MM max (Servo Axis)
- Z Axis (Vertical) : 0-550 MM max (Servo Axis)
- Max. Coil Section : 30x120 MM

SEMI-AUTOMATIC GANTRY TYPE TAPING MACHINE

- X Axis (Length Wise) : 0-3600 MM max (Servo Axis)
- Coil Cross-section : 25x100 mm

HOT PRESSING

- PLC controlled Hot presses (06 nos.) for curing of cell lengths upto 6000mm and cell size of 40x120mm
- PLC controlled Stack consolidation pres (01nos.) for straight length 6000mm.
- Accuracy of achieved moulded size upto 0.2mm over the entire length of 6000mm

LOOPING MACHINE

- Suitable for multi-strand coils with loop lengths upto 4000mm with a bunch of 12 conductors in parallel.
- Facility for turn-taping.

SPREADING MACHINE (03 MACHINES)

- CNC machine for Hydraulic spreading of closed loop coils efficiently and allowing excellent repeatability
- Maximum Straight lengths : 2500mm
- Max. Stack size : 25x65mm
- Span : 940mm
- End-winding forming integral of the machine.
- Cycle time : 45 sec/coil



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STATIC TESTING FACILITIES

A complete section dedicated to testing of coils and wound machines, with calibrated instruments and kits and testing done as per IS: 325, IEC- 60034, VDE-0530, BS: 4999 and also as per customer's specifications.

High Voltage Test kits of AC-60kV (leakage current of 3 amps.) and DC- 50kV (leakage current of 1000 microampere).

Partial Discharge Capacitance and Dissipation Factor measurement kit upto 12kV.

Surge Comparison testers upto 30kV for checking inter-turn insulation of multi-turn coils.

Thermography of Windings, Cores, Bearings etc

Motorized Meggers (upto 5kV), Micro-ohmmeter, Motor-checker, Clamp-meter and other allied instruments, with Print-out facilities.

Magnetic Neutral setting arrangement for rigging Brush holder assembly.

Drop test facility for checking of armatures.

Polarity checks for DC Stators and also Phase-sequence checks for AC windings

Cradles are made for each set of coils, to confirm the proper fit and dimensioning of coils.

Wooden packing, supported with styrene and thermo-col are employed for safe trans-shipment of coils and wound stator packs.

DYNAMIC TESTING FACILITIES

Direct-on-line starting of motors upto 2000KW and start-up thru variable voltage upto 6000KW Motors available in-house.

NO-LOAD testing of High voltage machines at 3.3kv, 6.6kV and 11kV rated voltages and rated speeds.

NO-LOAD testing of DC machines at 1000V DC, including over-speeding tests by field weakening/armature voltage variation.

TEST BED for rigid mounting of machines while testing, with facility for measuring Voltage/Speed and current relationship/graph plot Vibration(Vertical Horizontal and Axial) on both DE and NDE sides

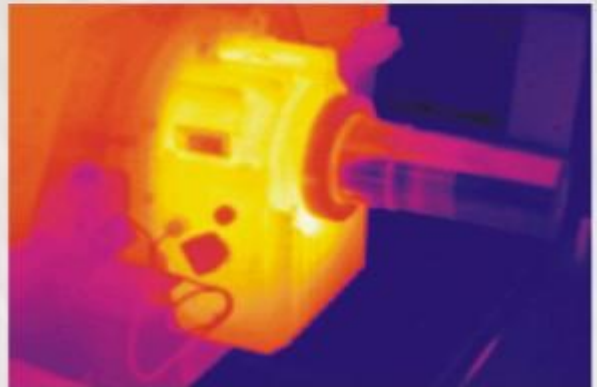
Winding and Bearing temperatures w.r.t Current and Time

Bearing conditions (Shock pulse measurement)

Noise (dB) level at rated conditions

Mechanical fitment flaws

Computerized Dynamic Balancing machine, with print -out facility, with provision of half-key balancing, as per ISO: 1940-73, Grade 2.5.



Indian Register Quality Systems
(A Department of Indian Register of Shipping)
12A, 1st Floor, Naraina Mills, Vignesh Plaza, Connaught Place, New Delhi - 110028 India
ACCREDITED BY THE IRQS

Certificate Of Approval

This is to certify that the Quality Management System of
EMCO Electrodyne Pvt. Ltd.
D-87, Phase-VII, Industrial Area, Focal Point, S.A.S. Nagar,
Mohali - 160 051 (Punjab), India
has been found to conform
to the requirements of the Standard:
ISO 9001 : 2008
with respect to the following scope:

- Repairs, Refurbishment, Overhauling, and Commissioning of Electro Mechanical Equipment
- Design, Manufacture and Supply of Stator, Armature, Rotor Coils, Wound Stator Pack and Rotors of Electrical Rotating Machines

This approval is subject to continual satisfactory maintenance of the Quality Management System of the Organisation to the above Standard which will be monitored by IRQS.

Certificate No.: **IRQS/1010256** issued at Mumbai on: 16th April 2010
Original Approval Date : 12th March 2010
Current Certificate Expiry: 11th March 2013

S. Kumar
Managing Director

The use of the Accreditation Mark indicates accreditation with respect to activities covered by the certificate with accreditation no. 0.011
Certificate number



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8 MW, 11 KV, STATOR REWIND



10MW,11KV MOTOR STATOR REWIND



7000 HP DC ARMATURE REWIND (AT SITE)



METAL SPRAYING



1500KW, 415V STATOR REWIND



6000 HP DC FIELD FRAME OVERHAUL



8 MVA, 8 P SYNCH ROTOR REWIND



7000HP FIELD POLES



3250 KW WOUND ROTOR REWIND



10MW,11KV HYDRO-STATOR REWIND (AT SITE)



8MW,11KV STATOR REWIND (AT SITE)



4300 KW, 11KV, 2P STATOR REWIND



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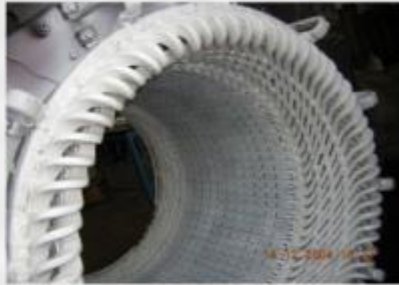
25MW,11KV STATOR AFTER REWIND



25MW,11KV,2P ROEBEL BARS FOR ON-SITE STATOR REWIND



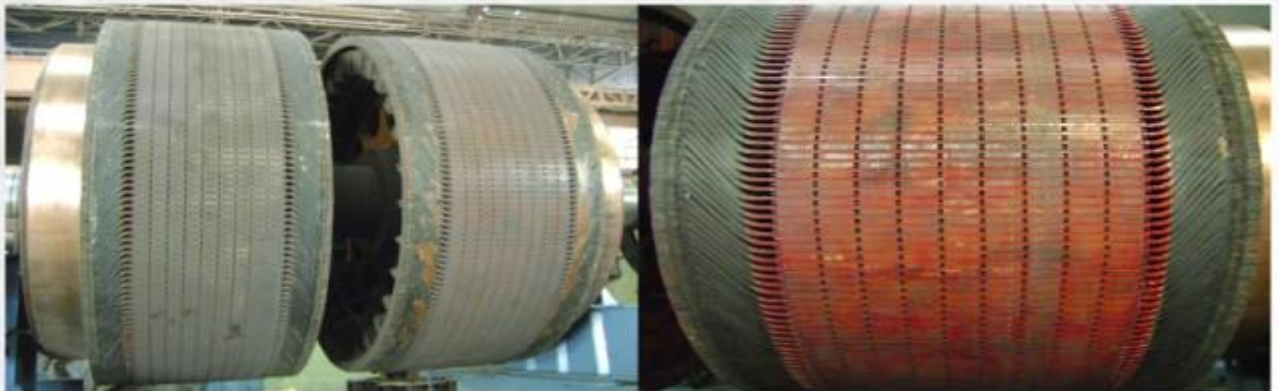
2900 K.W., 6.6 KV, 2P
CAPSULE UNDER REWIND



4000 KW, 11 KV, 4P STATOR REWIND



12MW, 6.6KV, 8P STATOR REWIND



7000HP DC ARMATURE DRY-ICE CLEANING (BEFORE & AFTER PHOTO)



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Emco Electrodyne Pvt. Ltd.

D- 87, Phase-VII, Focal Point,
S.A.S. Nagar, Mohali- 160051,
Punjab, INDIA
Phone : +91-172-5093070, 2236070
Fax : +91-172-2236801, 5093070
E-mail: info@emcoelectrodyne.com

Emco Switchgears Pvt. Ltd.

210, Industrial Area, Phase-I,
Chandigarh, India
Ph.: +91-172-2655195, 2640349
Fax : +91-172-2650443

Emco Electrodynamics India

Vill Khanpura Beed, Tehsil Bassi Pathana,
Distt. Fatehgarh Sahib, Punjab (India)
Ph.: +91-9814658674

24 Hours HELPLINE : +91-98140-11108

