



## 2-Pole Steam/Gas Turbine Driven



- ▲ Ratings range from 6000 kW to 120,000 kW, 0.8 – 0.9 P.F. and include 50 Hz at 3000 RPM and 60 Hz at 3600 RPM.
- ▲ Custom engineered to match your mechanical, electrical and site requirements.
- ▲ Enclosures available include TEWAC (Totally Enclosed Water Air Cooled), room air cooled, and hydrogen cooled to fit various applications requirements.
- ▲ Duraguard VPI insulation is fully Class F rated and uses a split component epoxy-mica system to provide industry-proven long life.
- ▲ Robust design coupled with state-of-the-art, rated speed, dynamic balancing provides the lowest levels of vibration which results in smoother/longer life.
- ▲ Brushless excitation without collector rings or brushes provides maintenance-free operation.
- ▲ High voltage terminal boxes can be top, side or bottom mounted to accommodate customer installation requirements.
- ▲ Fully assembled and tested at rated speed and voltage while running in its own bearings to demonstrate conformance to customer requirements.
- ▲ All designs incorporate the features to meet the rigid requirements of cyclic-duty, rapid loading and peaking applications.
- ▲ Custom designed to match steam or gas turbine drives. Various mounting arrangements are available to match different OEM turbine interface requirements.
- ▲ EM experience...over 900 units built since 1947 representing over 20,000 MW of installed capacity worldwide.

ELECTRIC MACHINERY COMPANY

800 Central Avenue  
Minneapolis, MN 55413-2400  
(612) 378-8000 Fax: (612) 378-8050

TURBO-GENERATORS

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## STATOR

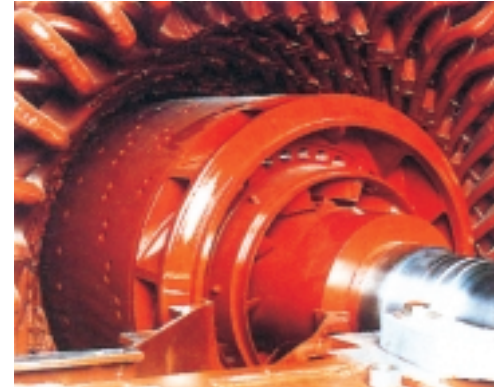
- Frame is engineered, welded and machined to withstand forces exerted by electrical and mechanical stresses in the core.
- A “thin” cylinder support provides flexibility in the radial direction as well as strength in the tangential direction. Above 16,000 kVA, flexible core mounting is used to isolate low frequency vibration from the foundation.
- Core laminations are punched from insulation-coated electrical steel. Spacer laminations are stacked into the core at regular intervals to provide openings for radial ventilation to ensure even cooling throughout the core.
- Stator coils are form-wound and vacuum-pressure impregnated to meet Class F insulation requirements. This system provides outstanding dielectric properties, superior moisture and chemical resistance, superb mechanical integrity, and proven long life.

## ROTOR

- Rotor is forged from high quality, vacuum degassed alloy steel. Forging is tested for ductility, tensile strength, and chemistry. Ultrasonic tests are made to detect sub-surface flaws.
- Rotor coils are formed from silver-bearing strap copper to reduce dimensional changes under various load conditions. Each turn is individually insulated prior to winding.
- After winding, coils are pressed and heated to bond the insulation. A solid configuration is formed which allows uniform movement of the coils under various loading conditions.
- Air is forced into the rotor body, where it passes through the ventilation slots, and is discharged through spacer laminations in the core to provide uniform cooling.
- Rotor shaft journals are precision machined and burnished. Coupled with precision balancing at rated speed, this enables EM to meet the most stringent industry requirements for balance and vibration.

## BRUSHLESS EXCITATION SYSTEM

- Shaft mounted brushless exciter is provided with permanent magnet generators, redundant fused diodes, and ground detector system to provide maintenance-free, reliable operation.
- Voltage regulators by EM or manufacturer of your choice.



Rotor and Stator

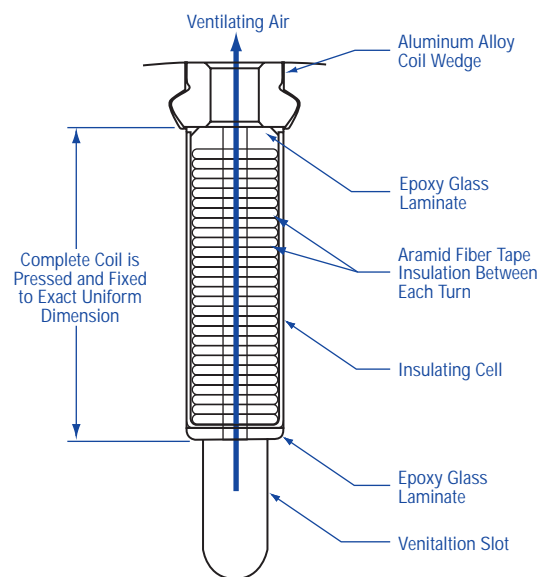
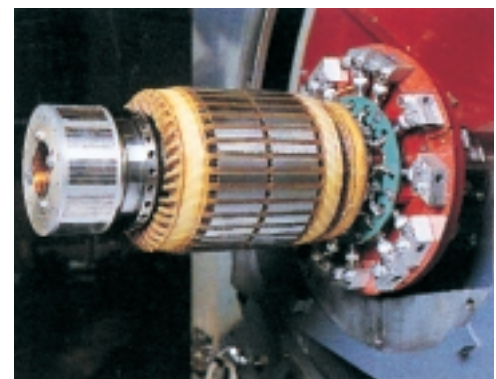


Diagram of “Direct Radial Sub-slot” Ventilation



Brushless Exciter Rotor

