Synchronous Generators

Diesel Generator Application

WEG Electric Machinery, WEM, diesel generators provide high quality and reliability along with low maintenance and long life. Individual space requirements can be accommodated with custom designs. Accessories and features can be provided to meet demanding customer specifications.

Ranges

Output: 2,000 - 15,000 kW
Speed: 400 - 1,200 RPM
Voltage: 2,400 - 14,400 VAC
Power Factor: 0.8 leading

Experience

WEM has over a century of experience in design, manufacturing and servicing large synchronous generators.

Brushless Excitation System

Field excitation is provided by a standard brushless excitation system which consists of a rotating armature, diode bridge and stationary field. The brushless excitation system eliminates periodic brush and collector ring maintenance and replacement.

Advantages

- Custom built for various engine applications.
- Electrical design characteristics can be tailored to the requirement of the load.
- Special generators are available for Nuclear Class 1E service. These generators are designed, manufactured and test to stringent standards including 10CFR50 Appendix B and ASME NQA-1.
- Various shaft and mounting arrangements are available to suit the installation.
- Stator shift allows for inspection and cleaning of the rotor and stator without disturbing the alignment to the engine.
- Duraguard™ VPI insulation is fully Class F rated and uses a two-part epoxy-mica system which resists chemicals and moisture, and provides long generator life.
- Top air discharge enclosure reduces noise and air recirculation.
- Continuous damper winding has brazed construction to provide smooth operation.
- Tests are conducted on each generator to verify electrical and mechanical integrity.

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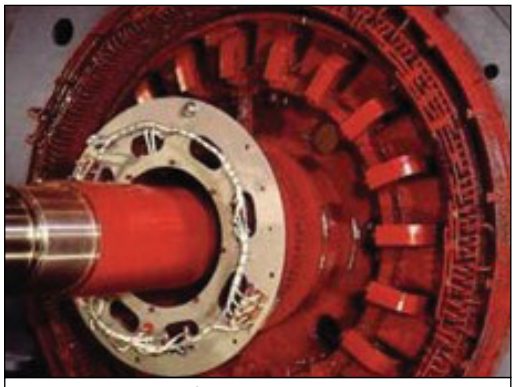
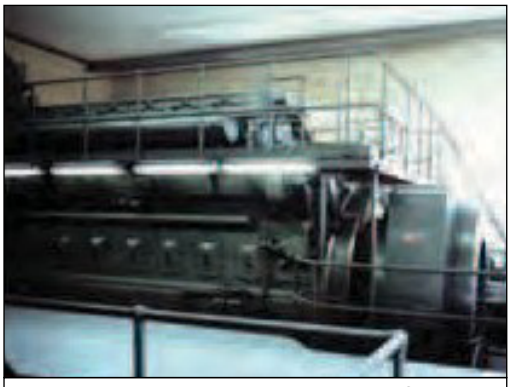


Rotor and Stator in Final Assembly



Typical Installation of an Engine Driven Generator

Rotor

Rotor Construction

The rotor consists of a spider on which the field poles, amortisseur (cage) windings and brushless exciter armature are mounted; providing inertia to minimize current pulsations. Additional inertia can be added as required. Rotor insulation is a Class F system.

Rotor Poles

The rotor poles are comprised of steel laminations pressed and bolted together to withstand rotational and electrical stresses and are mounted to the spider rim by bolts, studs or dovetails. The wire-wound poles are then epoxy bonded layer-by-layer to hold the windings firmly.

Rotor Cage Bars

Phosporous-free brazing of cage bars prevents chemical corrosion which can cause machine failure.

Rotor Shaft

Engine-driven generators are provided without shaft or bearings which are typically supplied by the engine manufacturer. WEM normally presses the shaft into the rotor spider. If desired, WEM can provide the shaft and/or bearing.

Rotors are balanced at our factory to reduce vibration, provide smooth operation, and meet overspeed requirements of the application.

Stator

Stator Construction

The stator is composed of a supporting structure, a core of electrical laminations and insulated windings. High grade silicon steel laminations that build up the core are precision punched from core-plated sheets. Pressed and held between end plates, these laminations are stacked in the support structure and spaced for radial ventilation to ensure even cooling throughout the core. The frame is welded and machined to withstand stresses exerted by electrical and mechanical forces in the core and provide low vibration levels.

Stator Winding Insulation

WEM's Duraguard™ insulation system is a vacuum pressure impregnated epoxy-mica insulation system that provides Class F thermal capability, outstanding dielectric properties, superior moisture and chemical resistance and the superb mechanical integrity of an epoxy resin system. It is a sealed insulation system capable of passing the water immersion test as specified by NEMA MG 1, IEEE 115 and API 546 standards. Abrasion resistant coating is available for protection in demanding environments.

Stator Shift

Stator shift is available on motors with pedestal type bearings to provide easier accessibility. Extra length sole plates provide stator shift to allow internal inspection of the motor.

For more information, please contact:
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