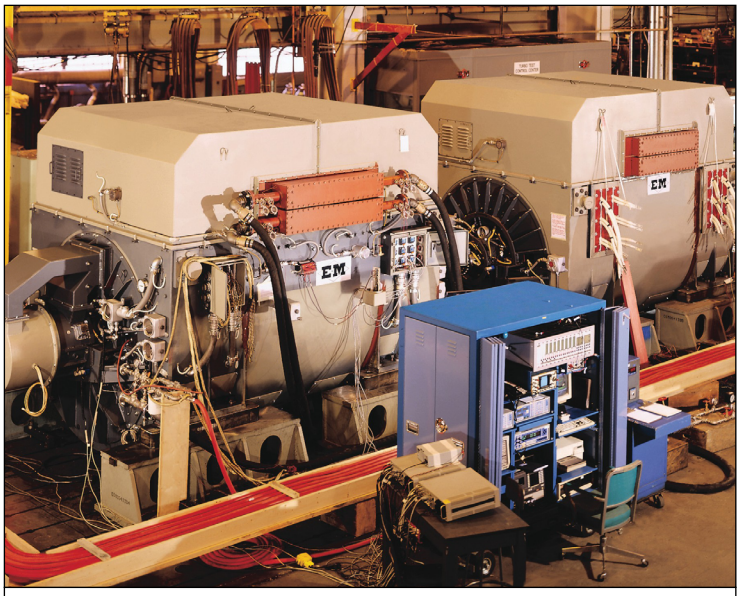
Synchronous Motors

Industrial Applications

WEG Electric Machinery, WEM, synchronous motors feature rugged designs well-suited for a variety of industrial applications.



Back to Back Load Test of Variable Speed Synchronous Motors

Ranges

Output: 400 to 150,000 HP
Speed: 150 to 3,600 RPM
Voltage: 2,300 to 13,800 VAC
Power Factor: 0.8 leading to 1.0 unity

Brushless Excitation

The brushless excitation system eliminates periodic brush and collector ring maintenance and replacement. Solid state excitation components are rated conservatively to provide dependable service and long life. WEM's Sync-Rite™ system applies the field automatically at the proper rotor angle to ensure smooth synchronization.

Industry Standards

WEM manufactures synchronous motors to meet all current industry standards including NEMA MG 1, IEEE 115, IEC 60034, API 546, and ISO 9001 standards. Motors can be designed to match your existing machines space limitations, shaft heights, and mounting foot locations to minimize installation costs.

Experience

WEM has over a century of experience in designing, manufacturing and servicing large synchronous motors.

Service, Support & Upgrades

- Installation, commissioning and start-up
- Maintenance and field support
- Spares/replacement parts
- Rebuilds and rewinds
- Refurbishment/replacement
- Technical support

Bearings

- Roller, Sleeve or tilt pad bearings are designed to match the application
- Lubrication of sleeve bearings is achieved through either ring lubrication or a combination of ring and forced lubrication
- Extra large bearing oil reservoirs ensure a clean oil supply to the bearings. Special bearing designs available for vertical applications.

Enclosures

Typical motor enclosures include DPG (IC01/IP22), WP I (IC01/IPW23), WP II (IC01/IPW24), TEWAC (IC817/IP54), and TEAAC (IC611 or IC616/IP54).

Applications

Typical motor applications include compressors, pumps, blowers, and MG sets.

Synchronous Motors

Industrial Applications

Variable Speed Municipal Pump Drive


Compressor Drive in a Petrochemical Plant

Rotor

High Efficiency

Synchronous motors have a unique and merited position as the most efficient electrical drive in the industry and are often 1-2% more efficient than induction motors.

Power Factor Correction

Synchronous motors can operate at leading power factors, providing VARs to the power system, reducing demand charges often caused by induction motors.

Constant Speed

Synchronous motor speed is unaffected by line or load conditions, providing greater operating flexibility. Starting and pull-in torques are designed to accommodate electrical system requirements and load limitations.

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-later to hold the windings firmly.

Rotor Construction

The rotor consists of a spider on which the field poles, amortisseur (care) windings and brushless exciter armature are mounted. All material used in the coil insulation system will be Class F material. Field coils consist of a cooper conductor or rectangular wire or copper strap with each layer treated with a suitable filled epoxy resin or aramid fiber.

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

The 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 and IEEE 115.

Abrasion-resistant coating is available for protection in demanding environments.

Rotor Shaft

The shaft will be forged steel or rolled steel, accurately machine and smoothly finished where required.

Rotor Cage Bars

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

For more information, please contact:
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