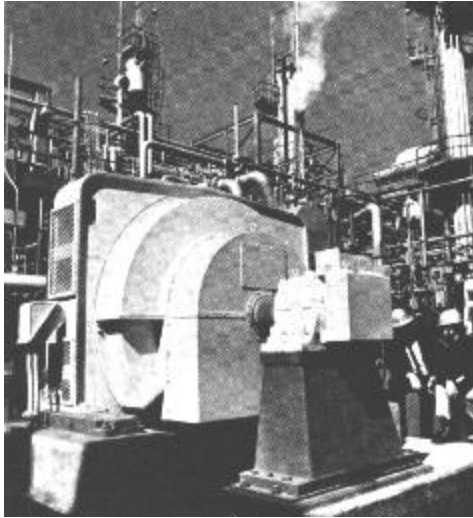


2000 Horsepower Synchronous Motor In Refinery Service



Electric Machinery Photo

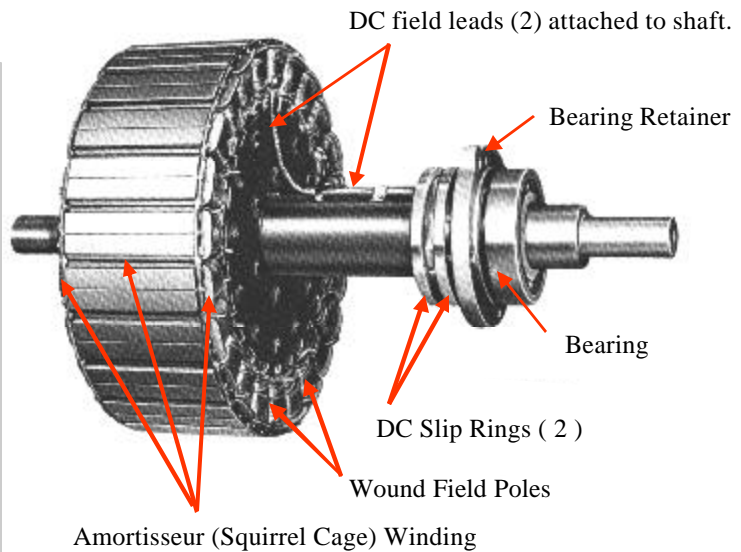
Characteristics and Features

- The rotation of a synchronous motor is established by the phase sequence of the three-phase AC applied to the motor stator. As with a three-phase induction motor, synchronous motor rotation is changed by reversing any two stator leads. Rotor polarity has no effect on rotation.
- Synchronous motors are often direct-coupled to the load and may share a common shaft and bearings with the load.
- Large synchronous motors are usually started across-the-line. Occasionally, reduced voltage starting methods, such as autotransformer or part-winding starting, may be employed.

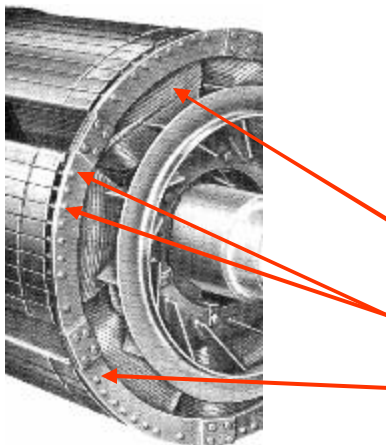
Sync Motors

Synchronous Motor Rotors

- The Salient-Pole unit shown at the right is a brush-type rotor that uses slip rings for application of the DC field current.
- Low voltage DC is used for the rotating field. 120 VDC and 250 VDC are typical.
- Slip ring polarity is not critical and should be periodically reversed to equalize the wear on the slip rings. The negative polarity ring will sustain more wear than the positive ring due to electrolysis.
- Slip rings are usually made of steel for extended life.



Electric Machinery Photo



Electric Machinery Photo

Detail of Amortisseur Winding

Synchronous motors start as an induction motor utilizing the Amortisseur winding which is a squirrel-cage-type winding with short-circuited rotor bars.

Wound Field Pole - Energized by separate source of DC for synchronous operation.

Squirrel-Cage Rotor Bars

Shorting Ring - One on each end of rotor.