italtec
Technical Training Systems

Company with Quality Management System
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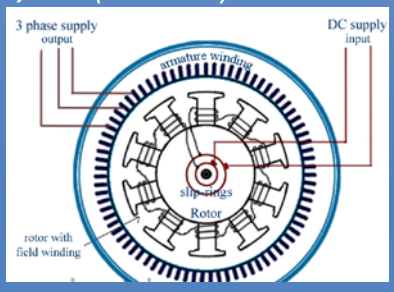
THREE-PHASE SYNCHRONOUS MACHINE

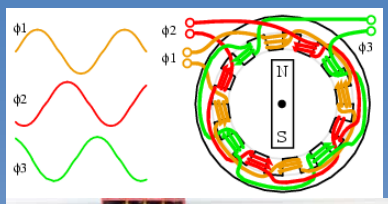
MOD.6070-4

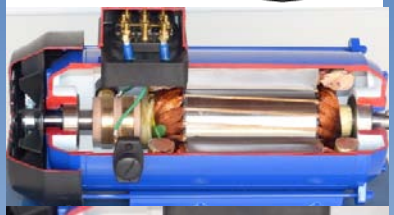
Nominal voltage:
400V (star) 50Hz
230V (delta) 50Hz
Excitation voltage:
0÷210Vdc

Synchronous speed:
1500 rpm

Power:
***3,5kW** (as generator)*
***3,0kW** (as motor)*



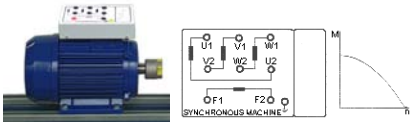




CE

For demonstration and studying AC synchronous machines.
The rotor of this machine is a salient pole rotor with all typical synchronous machines properties.
It is possible to operate this machine as a three phase synchronous alternator or motor. *The stator core is made up of lamination of iron, to minimize the eddy current losses.*
Variable DC excitation is delivered to rotor via slip rings and brushes.

- *optional rail base tabletop*
- *optional rail base with 4 wheels*
- *optional auto-starting motor*



- *Imprinted terminal boards with the synoptic.*
- *With coupling cog for easy engagement with other machines.*
- *Protection against thermal overload*
- *All connections on 4 mm safety sockets included thermal contact.*

- *optional 50Hz 3000rpm*
- *optional 220-240/127-140Volt*
- *optional 60 Hz 1800rpm*
- *optional 60 Hz 3600rpm*
- *optional easy-starting version to be used easily as motor*

Operation as Synchronous Motor.*Synchronous motor is a doubly excited machin.e It's stator winding which consists of a 3 phase winding is provided with 3 phase supply and rotor is provided with DC. The 3 phase stator winding carrying 3 phase currents produces 3 phase rotating magnetic flux. The rotor carrying DC supply also produces a constant flux. Considering the frequency to be 50 Hz, we can see that the 3 phase rotating flux rotates about 3000 revolution in 1 min or 50 revolutions in 1 sec. At a particular instant rotor and stator poles might be of same polarity (N-N or S-S) causing repulsive force on rotor and the very next second it will be N-S causing attractive force. But due to inertia of the rotor, it is unable to rotate in any direction due to attractive or repulsive force and remain in standstill condition. To overcome this inertia, rotor is initially fed some mechanical input which rotates it in same direction as magnetic field to a speed very close to synchronous speed. After some time magnetic locking occurs and the synchronous motor can rotates in synchronism with the supplied frequency.*

This machine needs a prime motor (like the one on the right) to be driven up to the synchronous speed.
In order to use it as motor, it is required to synchronize motor with a prime power source then supply motor with prime power source.

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