

Elektrotechnik
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Electrical/Electronics

1. A Synchronous Machine when used for power factor correction has two circuits. A stator circuit which is connected to the grid and a rotor circuit which is called Field winding/Excitation winding. The field winding is controlled by a solid state voltage and frequency regulator.
2. Synchronous motors are designed to operate at unity (1.0) power factor or 0.8 leading power factor. By varying the DC excitation of the motor, the power factor of the motor can be varied widely.
3. An over-excited synchronous motor has a leading power factor. This makes it useful for power factor correction of industrial loads. Both transformers and induction motors draw lagging (magnetically) currents from the line.
4. A synchronous motor has better power factors as compared to that of an equivalent induction motor. This is mainly because stator supply is not required to produce magnetic field.
5. The power factor of a synchronous motor is changed with a change in the excitation. When the excitation of the motor is increased, the power factor changes from lagging to unity and then to a leading power factor.

6. A synchronous motor running on no-load with leading power factor will act as synchronous condenser.
7. Synchronous motor can be run on unity lagging or leading power.
8. Efficiency is higher than of an induction motor of the same output and voltage rating because there are neither losses related to slip nor the additional losses due to magnetizing current.
9. Usually such motors are huge and therefore their reactive power causes huge losses. The power factor of a lagging load on the secondary side increases.
10. If it is being operated at leading power factor, it will supply the reactive power (AR).
11. Large synchronous motors have adjustable power factor. They can also have leading power factor.
12. Same Efficiency is higher than of an induction motor of the same output and voltage rating because there are neither losses related to slip nor the additional losses due to magnetizing current.

13. Capacitor run motor operates at high power factor.

14. Power factor is a number which is very small length bells or about the efficiency of an AC machine like induction motor.

15. The power factor of a synchronous motor is changed with a change in the excitation. When the excitation of the motor is increased the power factor changes from lagging to unity and then to a leading power factor.