Comparison of the two technologies (AC)

Synchronous and Asynchronous

The range of AC motors uses permanent magnet **synchronous** and **asynchronous** single-phase or three-phase technologies.
AC motors are often used in fixed-speed, fixed-torque drives powered directly from the network tension. They offer the long life required for most applications.

Synchronous motors

Synchronous motors enable rotate at a fixed and precise speed, independent of load and voltage variations.

General characteristics

- The rotor consists of a magnet or electromagnet.
- The motor rotates at the same speed as the magnetic field. The rotor is said to rotate at synchronous speed.

Benefits

- Better efficiency than asynchronous motors.
- Fixed speed, whatever the load.

Disadvantage

- Stalls when maximum torque is exceeded

Asynchronous motors

Asynchronous motors are characterised by a rotation speed that depends on the load applied to the shaft. The speed is linked to the frequency of the singlephase or three-phase supply network (230/400V-50Hz).

General characteristics

- The rotor is made up of rings that form a squirrel cage.
- The shaft speed and the magnetic field are out of phase. The rotor rotates more slowly and never reaches synchronous speed.

Benefits

- Highly resistant.
- Easy to maintain.
- Cheaper and smaller than synchronous motors.
- These are the motors most commonly used in industry.

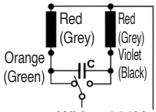
Disadvantage

- Lower efficiency than synchronous motors.

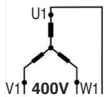
Service life

- It depends on the application and is limited by the life of the motor bearings

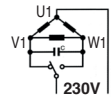
Wiring diagram



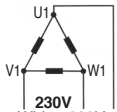
Wiring 230V
1 phase
Diagram 2



Wiring 400V
3 phases
Diagram 3



Wiring 230V
1 phase
Diagram 4



Wiring 230V
3 phases
Diagram 5