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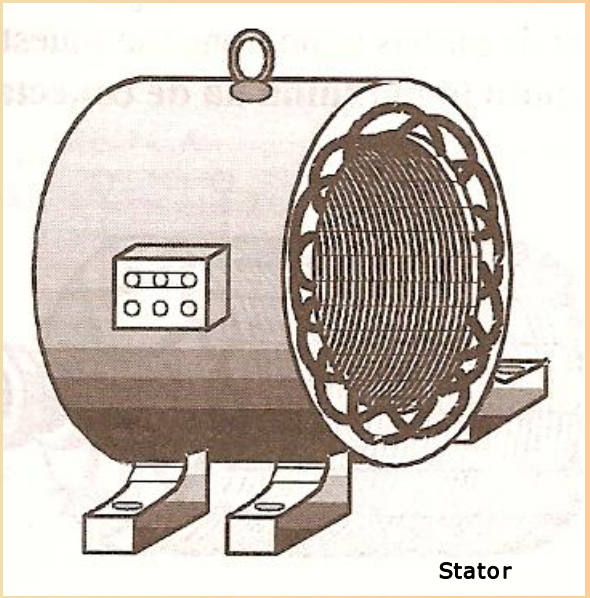
BASQUE COUNTRY

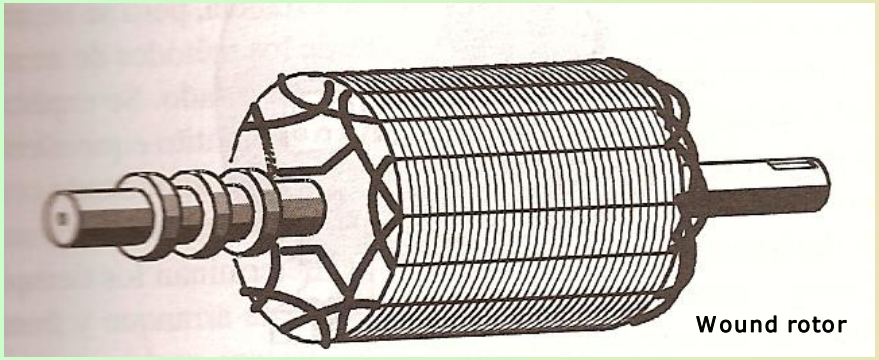
Asynchronous motor

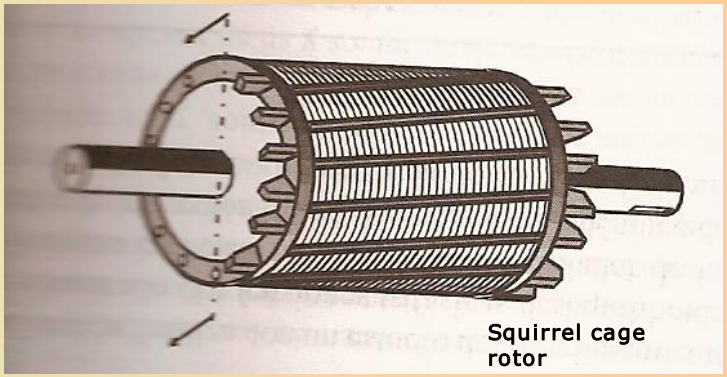
Structure

An asynchronous motor (by induction) works as follows : the coils placed at the stator are connected to an alternate current (1-phase or 3-phase) and they work as inductor. The changing magnetic field induces a current in the rotor and a force is exerted on it. As a consequence, the rotor rotates.

In an ansynchronous motor you find these main elements:
•a stator
•a rotor, that can be a) wound rotor or b) squirrel cage rotor.


Stator


Wound rotor


Squirrel cage rotor

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Asynchronous motor

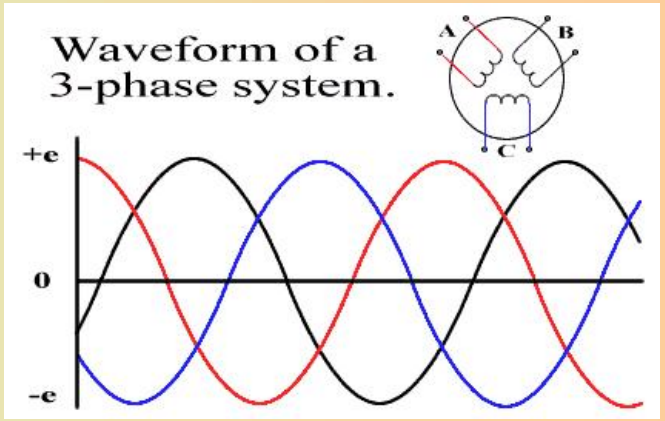
Polyphase connections

In three-phase induction motors the separate coils of the stator are connected to an 3-phase alternate current in which every phase has a 120º desplacement from each other.

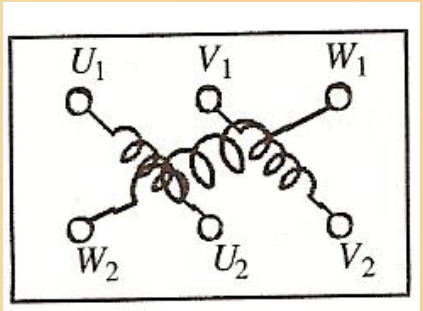
There are two possible connections among them:

- delta (Δ) connection
- wye (Y) connection

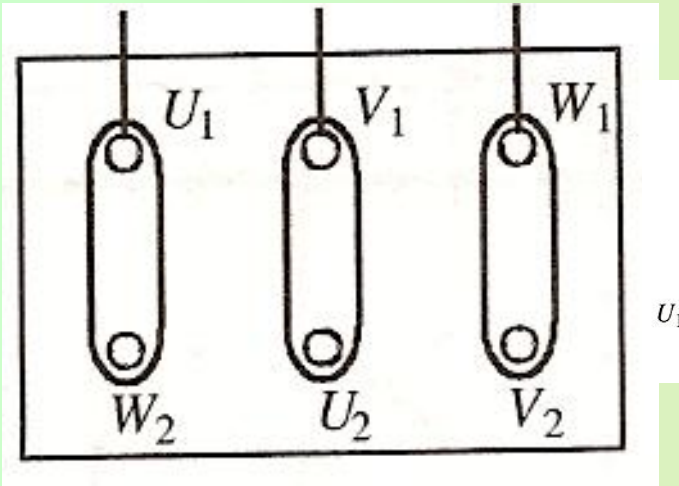
The terminals of the coils are prepared in order to facilitate the previously mentioned connections.

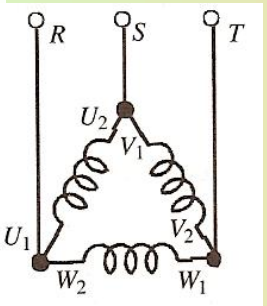


3-phase alternate current

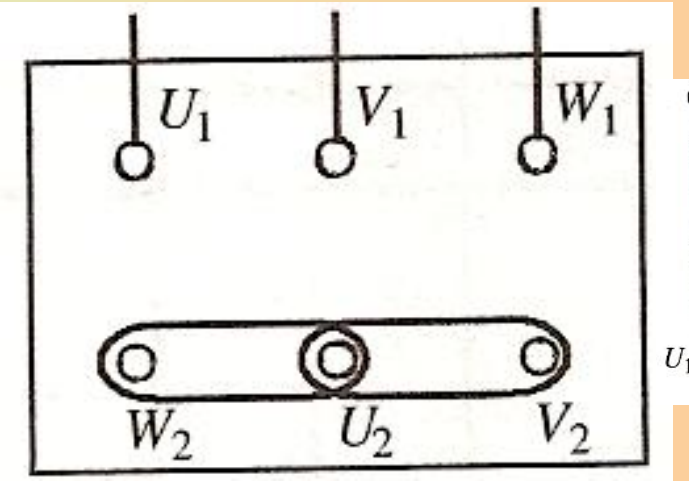


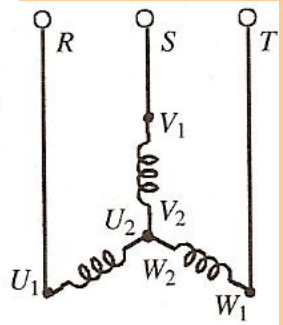
Structure of terminals





Delta connection





Y connection

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Asynchronous motor

Polyphase connections

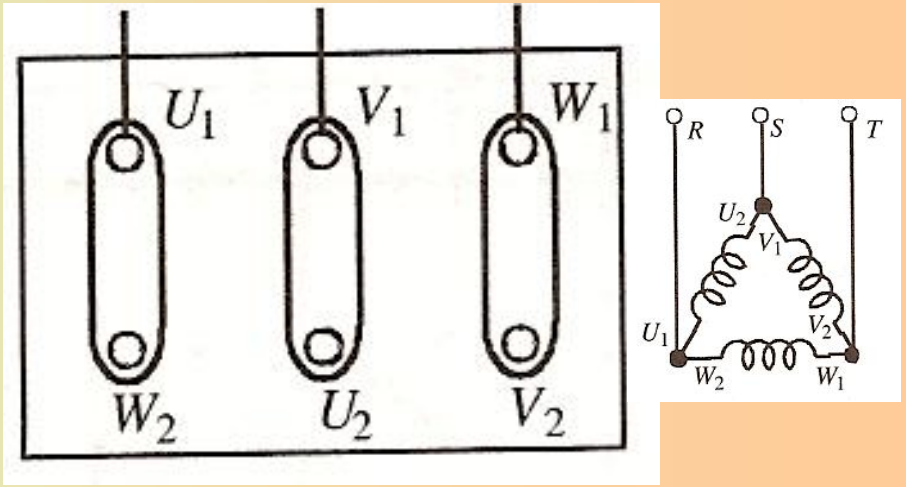
Y connection is implemented when the highest voltage is required (the highest recommended voltage in the specifications).

Let's suppose that the specifications are:

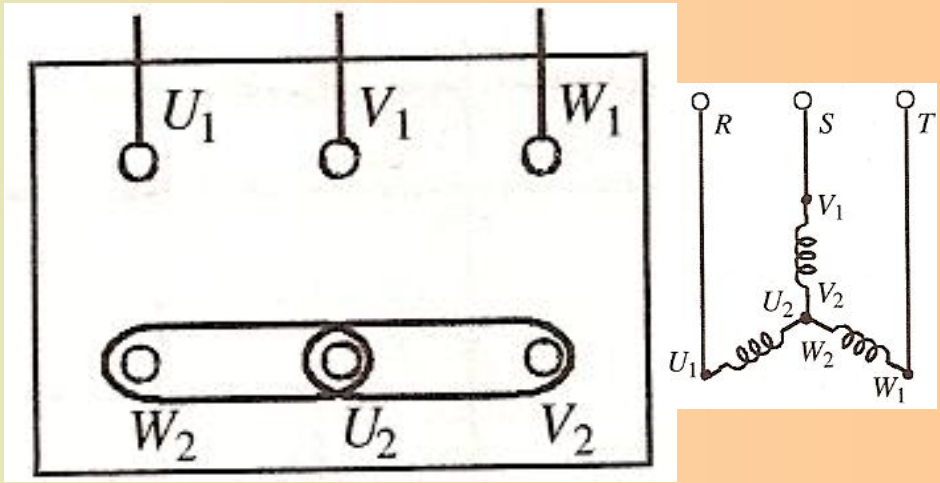
30 CV, 220/380 V, 69.2/40 A, 1450 rpm

It means that the power of the engine is 30 HP working at 1450 rpm. The motor can be connected to a 220 V (delta connection) and will absorb an intensity of 69,2 A.

Also, it can be connected to a 380 V (Y connection) and will absorb 40 A of current.



Delta connection



Y connection

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Asynchronous motor

Reversing the direction of rotation

As you can see in the figure, by swaping the connections of two coils you can reverse the direction of rotation.