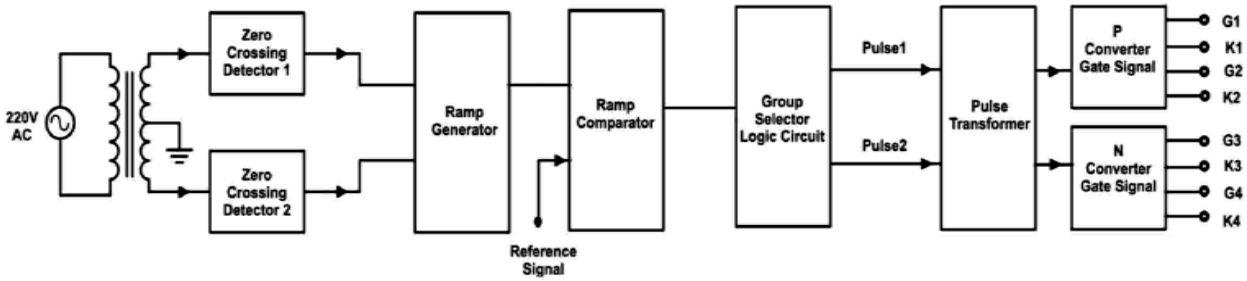
Cycloconverter Firing Scheme:

The function of the control circuit is to deliver correctly timed, properly shaped, and firing pulses to the gates of the thyristors in the power converter so as to generate a voltage of the desired wave shape at the output terminals of a cycloconverter. The control circuit can be arranged in eight functional blocks:



Cycloconverter Firing Circuit

1. Synchronizing circuit.
2. Zero cross detectors.
3. Ramp generator.
4. Ramp comparator.
5. Group selector logic circuit.
6. Pulse transformer.
7. P converter gate signal.
8. N converter gate signal.

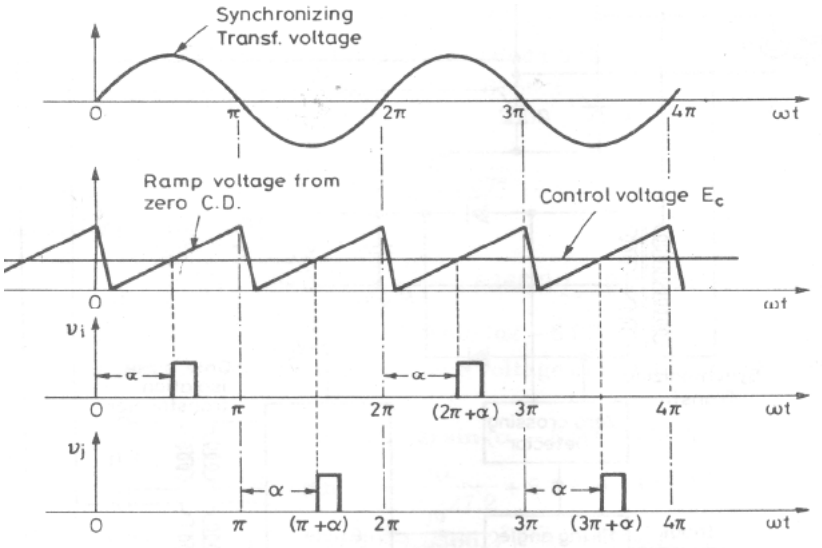


Figure 1

Synchronize signal:

The main function of the synchronizing circuit is to derive low voltage signals to the control circuit which operates at low voltages. These low voltage signals must be synchronized to the voltages supplied to the main power circuit. Step down transformers may be used for this purpose with filter circuit to avoid waveform distortion if any.

Zero cross detector:

The main function of the zero cross detector is to convert synchronize signal to square wave signal.

Ramp generator:

The main function of this section is to generate the ramp signal using the zero cross detector output.

Ramp comparator:

The main function of this section is to compares the ramp signal with the reference voltage signal and generates the gate signal with variable angle.

Group Selector Logic Circuit:

The main function of this section is to select the group of the gate signal for P and N converters.

Pulse Transformer:

The pulse transformer section provides isolation between firing circuit and the cycloconverter circuit.

P & N converter gate signal:

These sections provide the gate signal for P & N converter thyristors.