

Topic: → Cycloconverter.

- 1) Basic of cycloconverter.
- 2) Need of cycloconverter.
- 3) classification of cycloconverter.
- 4) Step up & step down cycloconverter.
- 5) Application of cycloconverter.

1) Basic of cycloconverter →

- It is AC to AC Converter without using any DC circuit.
- It convert AC signal of Fixed frequency to AC signal with variable frequency.

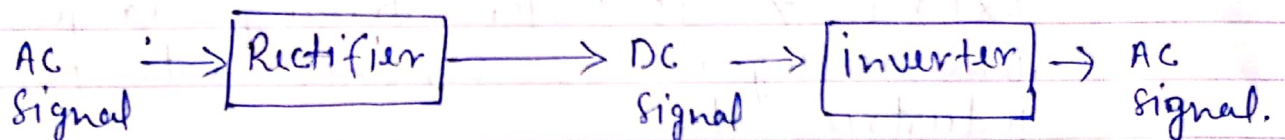


Fig: ①

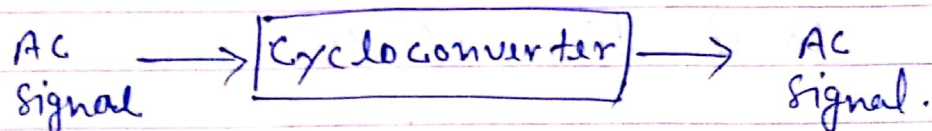
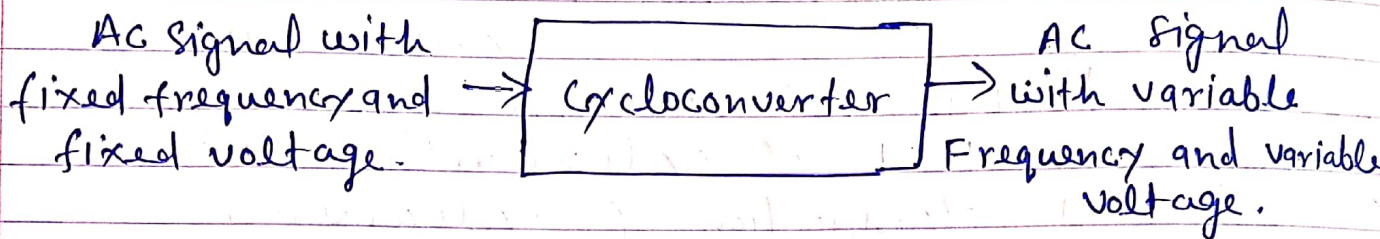


Fig: ②

- It is also referred as frequency changer.

→ This conversion is done by using switches like thyristor and controlling mechanism of it.

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* Need of Cycloconverter →

- To control the speed of motor.
- Frequency can be reduced to drive heavy load.
- Frequency can be increased to drive light load.
- Extensively used for driving large motors like rolling mills, cement, water pump industries etc.

* Classification of Cycloconverter →

⇒ Based on output Frequency.

- 1) Step up cycloconverter.
- 2) Step down cycloconverter.

\Rightarrow Based on Phase input and Phase output:

- 1) 1 Phase to 1 Phase cycloconverter.
- 2) 3 Phase to 1 Phase cycloconverter.
- 3) 3 Phase to 3 Phase cycloconverter.

* Basics of step up cycloconverter \rightarrow

\rightarrow In step up cycloconverter, output frequency is higher than input frequency.

\rightarrow It is not used widely as it does not have much practical application. In India and USA, most applications are there with less than 60 Hz frequency.

\rightarrow Step up cycloconverter, require forced commutation, which increases the complexity of circuit.

* Basics of step down cycloconverter \rightarrow

\rightarrow In step down cycloconverter, output frequency is lower than input frequency.

\rightarrow It is most commonly used cycloconverter, as it has many practical applications.

\rightarrow Step down cycloconverter, require natural commutation, which is easy to build and easy to operate.

* Application of cycloconverter →

→ Cement mill drives.

→ Rolling mills.

→ Water Pumps.

→ washing machine.

→ Mine winders.

→ Many industrial Applications.