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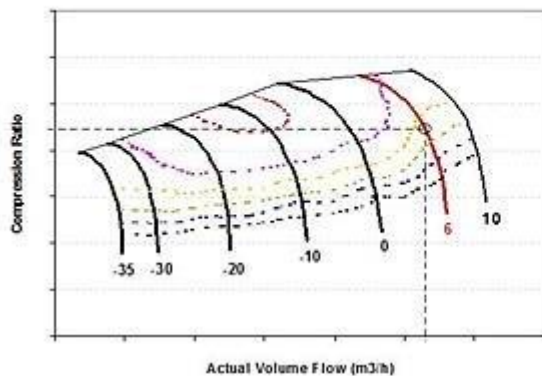
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Axial Compressor VS. Centrifugal Compressor

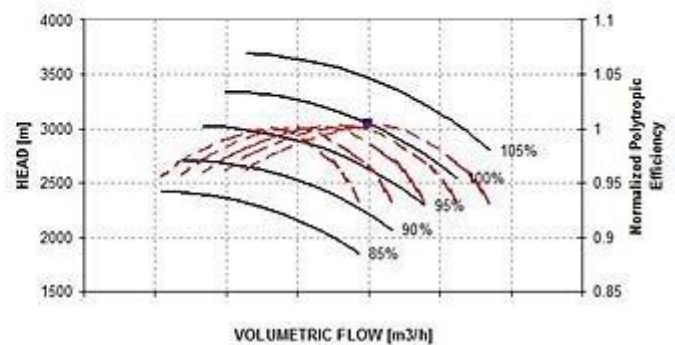
The main differences between axial compressor & centrifugal compressor are in how they operate, and how they are maintained. Several differences play an essential role in choosing the best compressor for your application and your need.

Axial Compressor



- 16 – 28 MW
- up to 5 Kg/m³ inlet density
- up to 300,000 m³/h inlet vol flow
- high efficiency 90%
- flexibility for operation and start up
- fixed speed, VSV, reliability

Centrifugal Compressor



- 16 – 44 MW
- up to 60+ bar disch press
- IGV&speed variation
- good efficiency 86%
- up to 500,000 m³/h (double flow)
- High reliability

- Flow-through centrifugal compressors are turned perpendicular to the axis of rotation, while the air in axial compressors flows parallel to the axis of rotation.
- Typically centrifugal compressors are one solid piece that looks like a turbocharger and axial compressors are a flat disk that looks like a fan with individually manufactured blades inserted.
- Centrifugal compressors are easier to design and manufacture compared to axial compressors.
- Centrifugal compressors can handle much less gas flow compared to axial compressors.
- Centrifugal compressors can often create more differential pressure for efficient combustion with a single compression stage.
- Contrary to centrifugal compressors, axial flow compressors are not easy to fix and maintain.



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- Axial compressors are very expensive while centrifugal compressors are cheaper and have a wider operating range.
- The mass flow rate in centrifugal compressors is less than 15 Kg/s and in the axial compressors is very large (more than 100 Kg/s).
- Axial compressors operate more efficiently (about 94%) than centrifugal compressors (about 87%).
- Centrifugal compressors can accommodate much lower airflow than axial compressors of the same size, and their pressure ratio is generally lower, meaning they are much less effective for creating thrust and less fuel-efficient.
- The pressure ratio per stage in centrifugal compressors is high about 5-7 and in axial compressors is low (less than 1.5).
- Contrary to centrifugal compressors, axial flow compressors do not change the direction of the gas.

