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M&P
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AMCA Fan Total Pressure & Fan Static Pressure

Total Pressure

- Total Pressure = Static Pressure + Velocity Pressure

This formula defines not only total pressure, but it also defines both static and velocity pressure

- Static Pressure = Total Pressure – Velocity Pressure, and
- Velocity Pressure = Total Pressure – Static Pressure

Everything else is derived from the above formulas:

(Fan Total Pressure) = Total Pressure at the Fan Outlet – Total Pressure at the Fan Inlet

- Fan Total Pressure = (SP outlet + VP outlet) – (SP inlet + VP inlet)

Static Pressure

Since Total Pressure = Static Pressure + Velocity Pressure, then

- Static Pressure = Total Pressure – Velocity Pressure

It follows that Fan Static Pressure = Fan Total Pressure – Fan Velocity Pressure

Then,

Fan Static Pressure = Fan Total Pressure – Fan Velocity Pressure (outlet). Then,

- Fan Static Pressure = (SP outlet + VP outlet) – (SP inlet + VP inlet) – (VP outlet)

And since the VP outlet's cancel each other out, then

- Fan Static Pressure = SP outlet – VP inlet – VP inlet

Summary:

AMCA certified centrifugal fans are normally rated on the basis of Fan Static Pressure, while AMCA certified axial fans can be rated on the basis of either Fan Total Pressure or Fan Static Pressure.