

Why install Air Relief inlet guide vanes?

Inlet guide vanes when throttled create a pre-swirl of the air entering the eye of the first stage impeller thus reducing the amount of horsepower required. Typically when in a fully throttled mode, inlet guide vanes will lower the amperes consumption by an average of 3% to 7% compared to a butterfly valve.

AMPERES SAVINGS:

- Unit A with a butterfly inlet valve.
 - 2500 ICFM
 - 450 HP
 - Compressor uses 420 amps at full load.
 - At max throttle using a butterfly valve the compressor uses 340 amperes.
- Unit B with an Air Relief Inlet Guide Vane.
 - 2500 ICFM
 - 450 HP
 - Compressor uses 420 amps at full load.
 - At max throttle using an IGV the same compressor now uses only 323 amps.
 - 5% or 17 amperes savings.

ENERGY \$ SAVINGS:

- Using the above values, let's say that a compressor with an IGV runs in the full throttle mode for 12 hrs per day, 365 days per year. The annual \$ savings can be calculated as per the following formula.

Volts = Line voltage.

Δ Amps = Amps saved by IGV ver Butterfly valve.

Cost = Cost per kWh in dollars.

Time = Hours per year that the machine run at full throttle.

$$Volts = 460 \cdot V$$

$$\Delta Amps = 17 \cdot A$$

$$Cost = 0.054 \cdot \frac{\$}{kWh}$$

$$Time = 4383 \cdot h$$

$$Savings = \frac{Volts \times \Delta Amps \times 1.73}{1000} \times Cost \times Time$$

$$Savings = \frac{460 \times 17 \times 1.73}{1000} \times 0.054 \times 4383$$

$$Savings = \$3201.98$$

- Savings will vary depending on throttle range turndown, cost per kWh compressor performances etc.