How Do VFD Drives Save Energy?

MiMOTION

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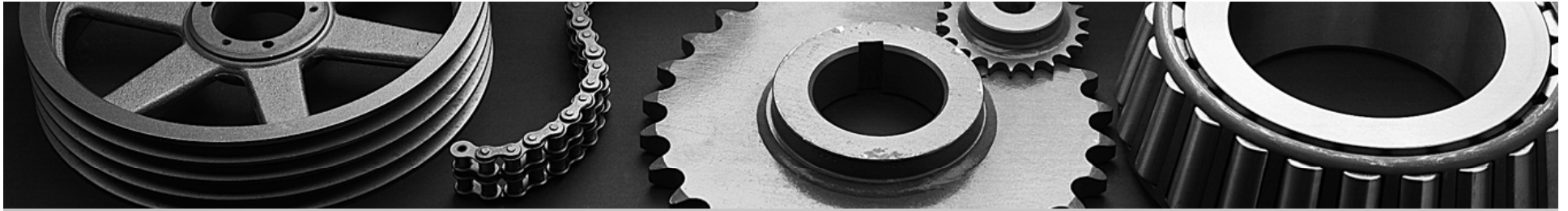Teco VFD's

Lock AV hubs and install VFD's, this saves energy and gives you more control.
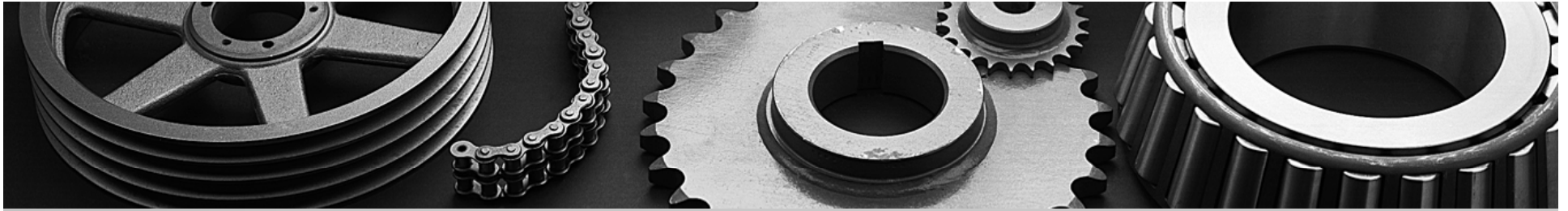
Power Factor Improvement

- Power factor, as it affects the utilities, is determined at plant peak operating load and you are penalized if it is too low.

- Power factor of an unloaded motor is lower than that of a loaded motor, but the total current is also much lower at no load.
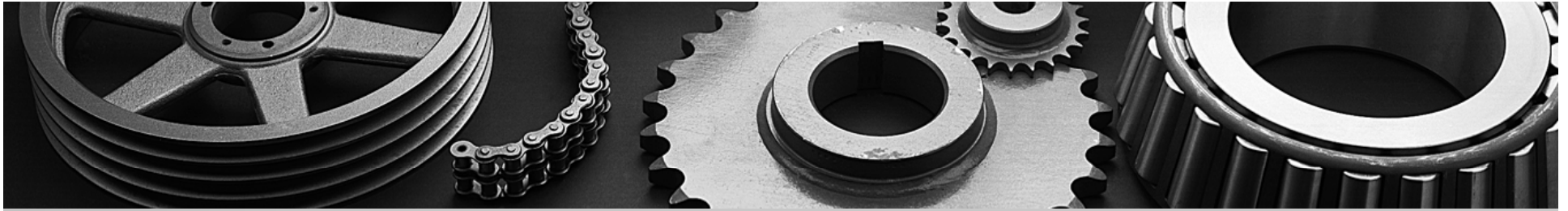
- A VFD corrects for Power factor

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Affinity Laws – Centrifugal Loads

1. Airflow varies in direct proportion to Rpm
   CFM=fan RPM

2. Pressure capacity varies with the square of the change in Rpm's   **SP=fan RPM (squared)**

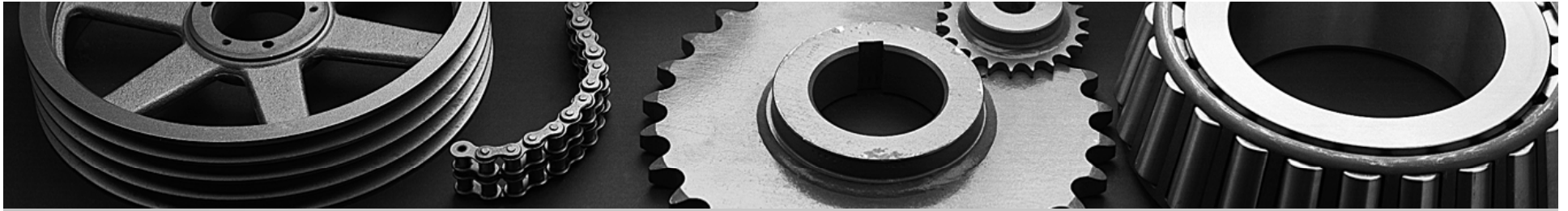3. Power required varies with the cube of the Rpm change.   **HP= Fan Rpm (cubed)**

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Affinity Laws – Centrifugal Loads

%Speed	%Flow	%HP Required
100	100	100
90	90	73
80	80	51
70	70	34
60	60	21
50	50	13
40	40	6

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Formula to calculate energy savings

HP x hours of operation x.746/motor eff = KWH x .0? Cent per KW hour.

Example: 40HP ACHE running 80% all year is using only ½ the HP (so 20HP saved), here is the end result for .07cents per KW hour of power.

Result: 20 x 8736 x .746/.93=140,151KWH x .07 cent = $9.810.00 saved/year/fan of power.