

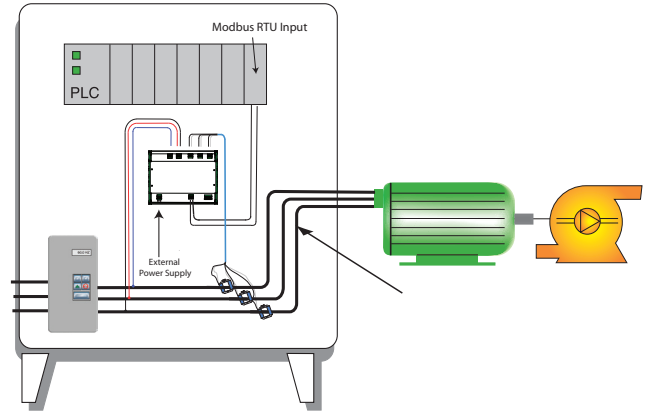
## Power Monitoring Using Power Transducers

Approximately 60% of the electrical power used in industry worldwide powers electric motors. Monitoring the amperes used by a motor will usually provide enough information to the operator to ensure the equipment runs as designed and to avoid break downs caused by overheating, since excess current is the primary cause of most electrical failures.

Measuring current alone is very useful as a part of a predictive maintenance program (PdM), but to relate energy use of a process or a machine in dollars means measuring the real power consumption. A power supplier does not bill for current or kVA (kilo volt amperes) but for wattage consumed. The difference between kVA and KW is that power factor and efficiency are taken into account when calculating watts.

A standard squirrel cage AC induction motor draws 25-35% of the full load current (FLA) with no load driven (open shaft condition), and the power factor may be as low as 0.30 at no load, rising to 0.85 or better at full load. Usually the only time no load conditions are encountered is when a drive belt has broken or has come off of the sheave, or a shaft coupling has broken leaving the motor shaft turning but no work accomplished.

Conditions where the motor draws less than full load are commonplace. Depending on the application this may indicate a major problem. If the drive motor is oversized for the application, the motor may never draw full load current. Monitoring a load using an oversized motor will likely require measuring power (watts) rather than just current as power factor will be poor, and current rise or fall will be less dramatic than if the current draw is closer to full load ratings. If the actual cost of operation is needed, wattage must be known.



## Measure Wattage Reliable with APT Power Transducers

The NK Technologies APT series power transducer are a simple and reliable way to measure wattage, whether for one motor, one machine, or an entire building. Using three current transformers and connected directly to the primary circuit voltage up to 600 VAC, the APT transducer produces an industry standard analog signal of 4-20mA, 0-5 or 0-10 VDC in direct proportion to the watts consumed. The choice depends on what your programmable logic controller, panel meter, or data acquisition system can understand.

The output signal allows you to monitor the power used and report the use to a website, a local display, or to be used to send alarms when the power rises to abnormal levels or falls to unexpected levels. Using too much power is never good, and too little can point to other problems, like a blocked intake or outflow from a pump, a broken or slipping coupling or belt, or a brown out (under-voltage) condition or phase loss.



APT Power Monitor with Analog Output