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Electrical Power Monitoring

A Positive Impact on Operating Costs

READING ELECTRIC, a leading supplier of electro-mechanical equipment, services, and problem solver for Industrial and Commercial customers for over 50 years provides technical information to the Region's Residential, Commercial and Industrial Community. This Bulletin provides information on the importance of electrical power quality and its impact on electrical equipment and operating costs.

Much of the electrical equipment in an industrial facility requires high-quality electricity; it will not tolerate sags, swells, transients, or harmonics, and it certainly will not tolerate power outages, no matter how short-lived. **It is important to note that 80 percent of all power quality and reliability problems occur inside end-user's facilities.** These power disturbances are caused by large loads turning on simultaneously, improper wiring and grounding practices, the start-up of large motors, and "electronic" equipment that can be both a source and victim of power quality phenomena. These disturbances can interrupt production lines, cause damage to products and equipment, result in lost orders or transactions, corrupt data communication and storage.

Power monitoring can address these issues in a number of ways:

1. Evaluation of incoming electric supply and distribution throughout the facility to determine if power quality disturbances or variations are impacting, or have the potential to impact, facility operations and/or manufacturing processes.
2. Identification of power quality trends to provide a baseline for establishing predictive maintenance activities and avoiding interruptions of critical business activities.
3. Assessment of energy and electricity issues related to capital investments and new equipment. There are many examples of multi-million-dollar equipment that performed flawlessly at the vendor's test site, but did not operate as specified at the customer location due to poor power quality.



Focus on motor reliability: Electric motor systems account for 65 percent of all electricity consumed by U.S. industries. Motors represent a significant capital expenditure, but more important, a sizeable ongoing expense as the average motor consumes 50-60 times its initial purchase in electricity during its life. Further, motors are sensitive to power quality problems such as unbalance and harmonics, and can produce sags for other equipment on the circuit. When a motor is first energized, a large inrush of current results, typically 6-10 times the normal steady state current running levels. This large current change results in a significant voltage drop across the source wiring impedance and the resulting sag leaves less voltage remaining for the loads connected to the same circuit.

Often overlooked, incoming power quality can have a direct impact on motor performance. Power monitors are used to baseline incoming power, identify any conditions that might contribute to motor failure, trend parameters that could lead to long-term degradation, and provide data to reduce energy consumption. (Information contributed by Maintenance World)

FOR ADDITIONAL INFORMATION contact READING ELECTRIC for electrical equipment efficiency solutions and an opportunity to let READING ELECTRIC's over 50 years of expertise serve you, contact READING ELECTRIC at 80 Witman Road, Reading, Pennsylvania 19605. Phone: 610-929-5777; Fax: 610-929-1670; Visit our Website at www.readingelectric.com