Productivity Plagued By Power Quality Problems

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As manufacturing continues to fight back from years of stagnation; productivity has once again become  the center of attention. Recent Bureau of Labor Statistics benchmarks indicate that industry-wide productivity is beginning to rebound, with manufacturing productivity increasing 2.3 percent over the last four quarters. These results — while good news to the overall economy — only add to the pressure on individual businesses to optimize productivity in order to stay competitive.

Unfortunately, big leaps in technology will be difficult to achieve. Most manufacturers have implemented “game changing” productivity tools like ERP systems and CAD tools, however new technologies that have the potential to drive a spike in U.S. productivity are likely out of reach for most businesses for at least 5-10 years. Instead, plant managers, engineers and even production component providers must look at every square inch of the shop floor to find opportunities to maximize productivity and drive competitiveness.

Nothing affects productivity as dramatically as essential equipment downtime. Industry analysts estimate that downtime costs factories at least 5 percent of their productive capacity, with many factories losing as much as 20 percent of their productivity. A recent Oracle Corporation study estimates that equipment downtime can cost large businesses an average of $100,000 per hour. Oracle shows that for a large company, reclaiming just one percentage point of equipment can be worth as much $7,358,400 per year. At average size companies, Oracle estimates the opportunity to be close to $1,000,000 per year — both significant opportunities in

an era where every dollar of productivity is vital.

And while most manufacturers have comprehensive equipment maintenance and service programs in place to minimize downtime and quickly restore equipment to service when downtimes do occur, the vast majority of manufacturers pay much less attention to a problem that, according to Electric Power and Light Magazine, causes 30 to 40 percent of business downtime: power quality fluctuations.

Power is the lifeblood of manufacturing. The U.S. Energy Information Administration estimates that industrial energy consumption will increase from a level of 191 quadrillion Btu in 2010 to 288 quadrillion Btu in 2035. In fact, industrial operations consume about one half of all electricity generated worldwide, largely due to the massive and constantly moving mechanical operations that take place in plants in the form of industrial motors, pumps and fans. However, the integration of sensitive electronics into most logic assemblies has made the circuitry (and therefore productivity) of the equipment that drives industrial automation much more susceptible to power quality fluctuations.

Power quality fluctuations take many forms, including sags, surges, brownouts and overages, and over the course of time they take an enormous toll on productivity. A single voltage dip lasting only 100 milliseconds — a relatively common occurrence on our aging and stressed power grid — can have the same effect on an industrial process as a power outage lasting several minutes or more. One study estimated that industrial plants experience between 10 and 40 power disturbances a year, with over half of these events likely to impact equipment and processes. Collectively, the U.S. Department of Energy estimates that the U.S. economy loses more than $120 billion in productivity every year to poor power quality and reliability.

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