



Eaton 9395 UPS ensures continuous uptime for medical manufacturer

Location:

Opelika, Ala.

Segment:

Healthcare

Problem:

Keeping their automated manufacturing process running 24/7

Solution:

Eaton® 9395 and VYCON Flywheel

Results:

Gambro's manufacturing process has remained constant despite four significant power outages since installation

"We've been able to remove the utility transfers; therefore, remove the eight to 10 hours of downtime that we were experiencing prior to the deployment of the 9395 UPS."

David Ganus, facilities engineer

Background

Gambro is a global medical technology company and a leader in developing, manufacturing and supplying products and therapies for kidney and liver dialysis, myeloma kidney therapy, and other extracorporeal therapies for chronic and acute patients. For decades, the company has been the first to market with many groundbreaking innovations. By designing and delivering solutions for dialysis clinics and intensive care units, Gambro not only improves treatment quality, but also efficiency.

Founded in 1964, Gambro currently employs some 8,000 workers in production facilities in nine countries, with sales across more than 100 countries. Since 1999, Gambro Renal Products, a part of Gambro Group, has made investments to increase annual production capacity to 40 million synthetic dialyzers.

Challenge

Because dialysis saves the lives of a growing number of patients every year, innovation in the field is essential. The only current alternative to renal dialysis — kidney transplantation — is not an available option for most patients due to a shortage of donor organs. Technology is now being developed for new applications such as liver dialysis and an emerging field of other extracorporeal therapies that will remove different fluids and toxins from chronically and acutely ill patients.

Gambro is one of only three companies in the world to manufacture filters for dialysis machines, producing tens of thousands of units per day in its Alabama plant. Any disruption in the sophisticated and automated manufacturing process can result in an eight- to 10-hour clean-up and restart process — an unacceptable delay for patients requiring this life-saving device.



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“Uptime is very critical since this is a 24/7 operation,” emphasizes David Ganus, facilities engineer for Gambro Renal Products. “There is no downtime allowed.”

Yet unstable incoming power posed a constant threat to the plant’s manufacturing processes, including the dozens of robotic systems that produce the filters. “Our local utility provider frequently transfers from one power grid to another, causing hiccups in our power supply,” Ganus explains. “Power outages, even momentary ones, can bring our whole production line down, costing us a day’s worth of work to get the line back up.”

As a result, Gambro recognized the need to expand its power protection infrastructure and safeguard the robotic systems that function around the clock. While the company was pleased with an existing Eaton 9315 uninterruptible power system (UPS) that was protecting other equipment, the facility’s frequent power interruptions were causing the batteries to cycle frequently, degrading their useful life. The ongoing maintenance and replacement costs — as well as cooling requirements and space considerations — made batteries a less than optimum solution for the plant’s frequent outages. Yet the company required a solution that could guarantee the highest level of reliability and uptime.

These unique requirements led Ganus to research a combined solution comprised of a UPS with a flywheel clean energy storage system. “Gambro needed power quality protection to bridge the utility transfers,” he explains. “We were looking for a very reliable UPS system and flywheels, as well as a green solution.”

Solution

Gambro was able to achieve all of its goals by combining the Eaton 9395 UPS and VYCON’s VDC-XE flywheel system. Offering an unprecedented level of power performance, reliability and energy savings, the state-of-

the-art 9395 UPS delivers a wide scope of benefits unmatched by any other UPS solution, while the flywheel technology works seamlessly with the unit to provide the extended battery power required by Gambro.

A mechanical device that stores energy as it spins, the flywheel is a highly reliable and environmentally friendly power protection solution that stores energy mechanically instead of chemically. VYCON’s flywheel systems interface with the DC bus of the 9395 UPS just like a bank of batteries, receiving charging current from the UPS and providing DC current to the UPS inverter during discharge.

Since availability is paramount to Gambro’s operations, Ganus values the double-conversion topology of the 9395, which completely isolates output power from all input power anomalies and delivers completely conditioned sine wave output even during the most severe power disturbances. Furthermore, for even greater reliability, the unit can be configured with an inherent redundancy option — a capability that other manufacturers cannot provide without requiring the addition of a more costly second UPS.

“We’ve been able to remove the utility transfers; therefore, remove the eight to 10 hours of downtime that we were experiencing prior to the deployment of the 9395 UPS,” Ganus reveals.

Operating at greater than 94 percent efficiency and offering unmatched green power performance, the 9395 also underscores Gambro’s desire for a green solution. The resulting benefits include reduced utility costs, cooler operating conditions and extended life of UPS components, which increase overall reliability, availability and performance.

Going forward, the company is considering bolstering efficiency even further by implementing Eaton’s Energy Saver System (ESS). ESS enables the UPSs to attain an industry-leading efficiency level of 99 percent,

making it the only technology on the market capable of yielding such results. Using ESS, the UPS intelligently adapts to utility power conditions while supplying clean power to the connected equipment. Even more, because UPSs with ESS maintain 99 percent efficiency even when lightly loaded, the technology can deliver gains of up to 15 percentage points in efficiency over traditional models in the typical operating range.

The small footprint of the 9395 — up to 60 percent less than competitive units — was also essential to Gambro, which had a small amount of real estate available for its power protection solution. “Space was another concern,” Ganus acknowledges. “I was very limited on where I could house the power systems, and multiple battery cabinets wouldn’t fit into our equipment room.”

Unlike some larger and heavier systems, there is no need to dismantle the 9395 in order to fit it on elevators or through doorways, which can cause significant delays while increasing costs. Even more impressive, the 9395 packs a redundant design into the same footprint as a traditional non-redundant UPS.

Another selling point for Gambro was the 9395’s scalable architecture. The flexible, multi-module UPS is capable of expanding with changes in load requirements without requiring the purchase of a new UPS.

Furthermore, the fact that the 9395 offers concurrent maintenance for higher availability was another boon to the company, which strongly desired a low-maintenance solution. With the 9395’s redundant modules, Eaton field technicians can completely isolate and service a module while the other carries the load, without going to bypass. In addition, the unit’s front-accessible design can be installed against walls or back-to-back in multi-module configurations to enhance maximum uptime.

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Eaton 9395

“Since we’ve had the UPS and flywheels in place, we’ve experienced several voltage sags from the utility,” Ganus reports. “The UPS and flywheels have performed exactly how they’re supposed to.”

During a power event, the flywheel provides backup power seamlessly and instantaneously. When used with batteries, it is the first line of defense against damaging power glitches — absorbing all the short duration discharges and reducing the number and frequency of discharges, which can shorten the life of the battery.

Results

Since installing the power protection solution, Gambro has already experienced four significant outages. But the extended cuts were no need for concern. “The solution performed flawlessly!” Ganus enthuses. “We are very pleased with the Eaton/VYCON system.”

With the new solution in place, Gambro is able to:

- Ensure continuous uptime for its robotics systems despite frequent power quality issues
- Rely on a highly efficient UPS that contributes to the company’s green initiatives
- Easily house the solution, thanks to the 9395’s small footprint
- Achieve 99 percent efficiency when the UPS is deployed with Eaton’s ESS

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