

EntelliGuard® TU Trip Unit Conversion

Energy consumption is a major cost component for paper mills. In an effort to allocate energy costs per business unit, a corrugated cardboard manufacturer had installed a power management control system (PMCS) to understand its true cost of manufacturing. To take advantage of the system, the company needed a trip unit that could communicate real-time power consumption data via Modbus. It chose the EntelliGuard TU Trip Unit Conversion from GE Energy not simply for its communications channel, but also because of its smooth integration with switchgear from a variety of manufacturers.

The Challenge: Gaining Insight into Power Consumption

It had become clear to a large cardboard manufacturer that its existing trip units were falling short. The company had experienced a series of disruptive trip unit failures, and lack of communications capabilities on existing units was keeping it from realizing the potential of its power management control system (PMCS). All data gathering was being done by hand, hardly the most efficient method. The company wanted new units that could communicate via Modbus with the PMCS as well as such features as Reduced Energy Let-Through (RELT) for use during scheduled maintenance.

There were other requirements. The company had breakers from a variety of manufacturers, including Allis Chalmers, I-T-E, Siemens, as well as GE. It needed a trip unit conversion kit that would work well with this diverse equipment.

Equally important, it required trip units that could be installed with a minimum of disruption. Cardboard production is a continuous process—and stopping and starting the line is a labor-intensive, expensive procedure. And, of course, the cost of the equipment itself was another consideration.

The Solution: The EntelliGuard TU Trip Unit Conversion

GE Energy made a presentation to the paper mill on the EntelliGuard TU Trip Unit—and the company was impressed by the full set of features it offered. Clearly the EntelliGuard TU Trip Unit could provide the power consumption data it needed for cost center accounting. As an added benefit, the outstanding selectivity and arc flash protection it gained by upgrading to the EntelliGuard TU Trip Unit enabled the company to reduce its arc flash rating from category 4 to category 2. The unit also offered RELT for safer maintenance.

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EntelliGuard TU Trip Unit Conversion kits extend the life of mechanically sound breakers. At the same time, they:

- Eliminate costly downtime due to nuisance tripping, thanks to Instantaneous Waveform Recognition.
- Allow greater coordination between upstream and downstream devices and improve system protection
- Permit communication with Power Management Control Systems (PMCS) through the open Modbus RTU protocol
- Enable the implementation of Reduced Energy Let-Through (RELT) and Instantaneous Zone Selective Interlocking to reduce arc flash energy levels.



case study

But those advantages, however persuasive, didn't seal the deal. It was critically important to the manufacturer that the conversion kit would accommodate breakers from other manufacturers. As the company realized, the EntelliGuard TU Trip Unit Conversion fit the bill.

The reputation of GE Energy's field engineers also played a role in the company's decision. Converting breakers is an exacting process that takes a minimum of several days. The company wanted to work with a supplier that would check the breaker mechanics to make sure they were working properly while conducting the tear down and the necessary rewiring as efficiently as possible.



The Takeaway: Extending the Lifetime of Your Existing Equipment

GE Energy's service team worked closely with the client to develop a plan to minimize disruption and downtime at the mill. It began by converting a spare breaker and then swapping out that breaker for one requiring conversion. Once it rewired the second breaker, it substituted it for a third, and so on, moving from substation to substation. This procedure limited downtime to just the time it took to replace a single breaker.

As a result, the paper mill has new, modern trip units that provide a level of selectivity and protection unattainable before, while automatically generating the data it needs to manage its energy consumption. In the process, the conversion has given its current switchgear a new lease on life.

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