

# Lazer<sup>®</sup> Automation Solution for Premium Power Data Center

## 24/7 Premium Power Delivery Requirements

A major investment firm hired two of the leading consultants and contractors of Data Centers to deliver a turnkey Data Center solution, located in Omaha, Nebraska. The consultant designed the system and the contractor installed a microgrid to provide a continuous power supply to the data center if the main utility feeds are interrupted.

## Proven Reliable Automation Solution

The contractor evaluated major suppliers of automation solutions and selected G&W Electric's Lazer Automation solution, based on system design (See Figure 1), product quality, reliability and service.

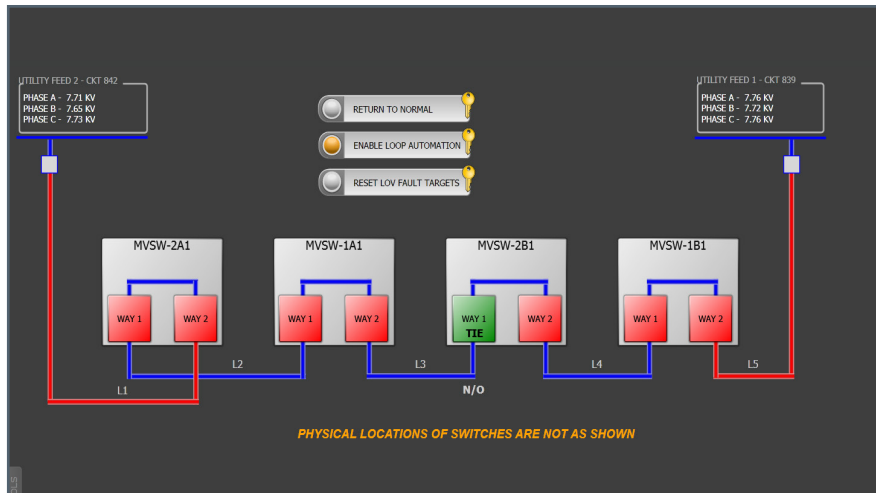


Figure 1: System One Line for Premium Power Data Center

## Advanced Communications

The contractor required fast, robust system communications to achieve the shortest reconfiguration times. They also wanted complete remote monitoring and control of the system. They specified fiber optic cable over DNP-IP (see Figure 2), recognized as one of the best communication mediums in the industry, to achieve their goals.

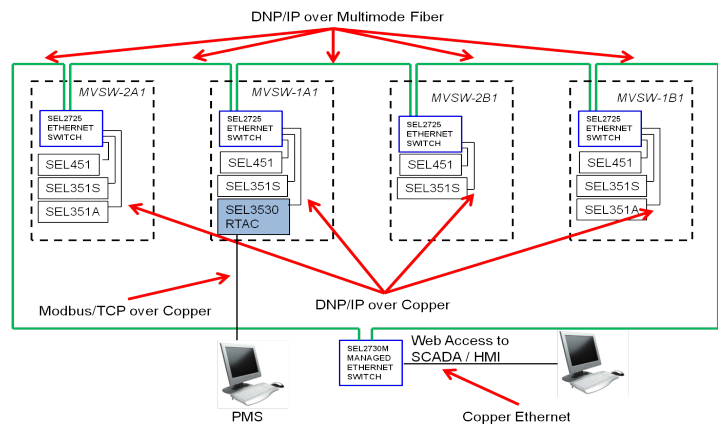
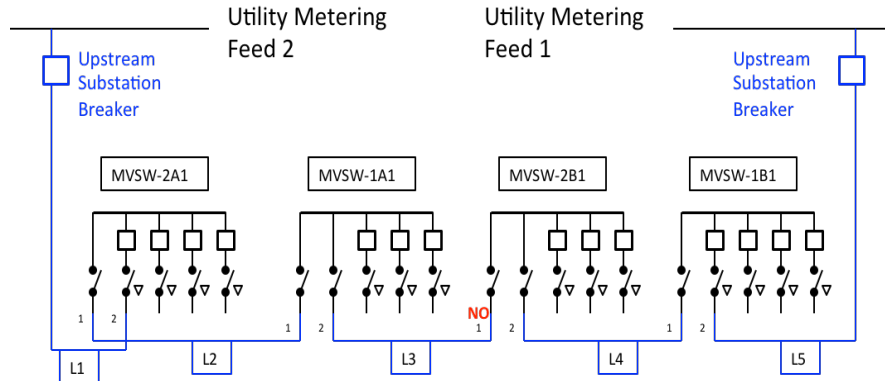


Figure 2: System communication layout

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## System Design



## Superior Equipment Requirements

The consultant and contractor required vendors' equipment to meet all applicable ANSI and IEEE switchgear standards, evaluated the equipment design (see Figure 3) and field performance. G&W Electric meets/exceeds all industry standards, based on its extensive in-house and independent third party equipment testing. G&W Electric is the leading manufacturer of gas-insulated switchgear and has switchgear that's been in service for over 50 years across all market segments and applications.

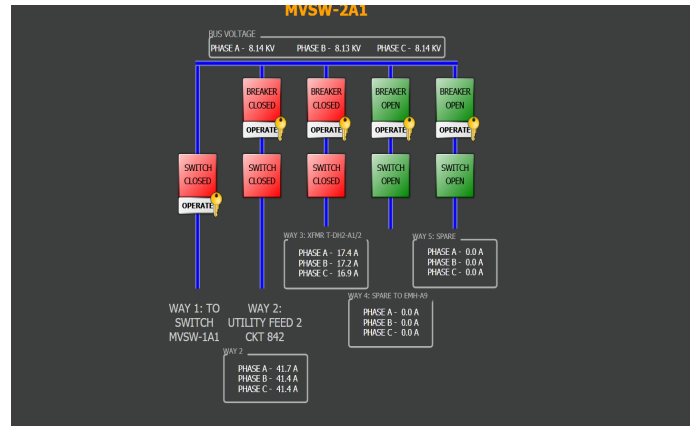


Figure 3: 15kV SF6 3-Position Padmount Switch Diagram

The Open Loop Scheme has two 15kV Utility Sources protected by substation breakers, with the normally open point on switch number MVSW-2B1, Way 1. The 5-Way switches are rated; 15.5kV, 25kA, with 630 amperes continuous load break voltage sensing bushings. Switches MVSW-1A1 and MVSW-2B1 have two switched and three fault interrupter ways. Switches MVSW-1B1 and MVSW-2A1 have one switched way and four fault interrupter ways. Switch MVSW-2B1 transfers load between sources, based on location of faults and voltage loss.

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This Lazer Automation package includes programming for the padmounted switchgear. Each switch is equipped with SEL451-5 and SEL351S relays, SEL-2505 remote I/O modules (if required) and an unmanaged ethernet switch. There is a SEL-3530 RTAC located in one of the switches that provides the logic processing to automate the system, concentrates data from all the switches to serve the customer's Power Management System, and contains a web based HMI for easy access to view the statuses of each switch in one location. To complete the communication loop a managed ethernet switch (SEL-2730M) is mounted inside the customer's building.

### Operation

When a fault or loss of voltage occurs, the RTAC will determine fault location, tell the switches closest to the fault to open and isolate the fault. Then the RTAC will close the normally open point if necessary, to restore power. If reverse power occurs from the utility sources, the appropriate switch will clear the fault, the system will exit automation mode and send alarms/fault targets to all of the devices. The RTAC also communicates with the utility's SCADA system enabling it to monitor the connection points and to initiate a transfer trip by sending a trip signal to the SEL-2505, remote I/O module.

### Factory Acceptance Tests (FAT)

The contractor and their consultant visited G&W Electric to observe operations as well as witness the factory acceptance test of the complete Lazer Automation system solution before approving shipment (see Figure 4). The contractor and their consultant approved shipment after trying to "break" the Lazer Automation scheme. Enhancements to the scheme were also incorporated during the testing phase based on the recognized technical capabilities of the G&W Electric Automation Engineers.



Figure 4: Factory Acceptance Tests