

# Wastewater Utility

## INTRODUCTION

A city in Virginia has 411 waste water lift stations. During a partial power outage 200 stations were left without power. Each station requires a visit to determine if the power company needs to be called or if the station can be reset. Since testing was required to determine presence or absence of voltage, two persons were required to meet at the station; one lift station technician and one electrician. A restart of the lift station was required if utility power was available.

After the power outage it was necessary to confirm incoming voltage. The problem is this normally requires removing the front panel of a switchgear or opening the motor control cabinet and testing for utility power with both a technician and an electrician present. Grace's representatives teamed with local distributors for a solution and suggested using the Grace PESD® Voltage Test Station (VTS); our combination unit of the Safe-Test Point® Voltage Portal & R-3W voltage indicator mounted within a protective housing. They also put forward the idea of shipping the unit installed on its own enclosure. This allowed the wastewater facility to install the VTS without modifying the switchgear or motor control centers. With the help of our representatives, Grace was able to create a new product application.



## THE SOLUTION

Mounting the VTS onto its own enclosure allowed for installation without modifying the face or side of the switchgear or motor control center. The assembled unit could be mounted beside the switchgear or motor control center on the wall or with conduit nipples. This allowed for a quick installation and verification that the unit was working well.

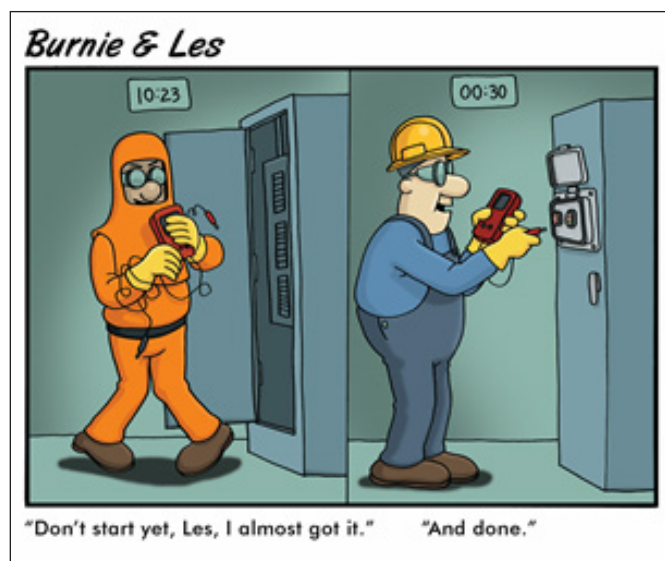
Second, the testing and reset of a station could be accomplished by a single lift station technician in much less time than was normally required for two persons, electrician and technician, to coordinate arrival and verify utility power and reset the station. Since the hazard of exposure to

voltage had been mitigated a technician could be trained to verify utility power then do electrical Lockout/Tagout (LOTO) then reset the lift station.

A VTS mounted on a suitable enclosure provides testing for LOTO with only one person and takes less than 5 minutes where previously two persons had to coordinate a visit to each lift station and perform LOTO testing as well as reset the station. This was usually a 45 minute to 1 hour time frame reduced to a mere 5 minutes. Cost savings were realized very quickly on man hours saved. More importantly, when using the VTS, the danger of exposure to energy was mitigated. Safer access and cost savings is driving installation of the VTS on all 411 lift stations in the Virginia city.

In many applications of the VTS the voltage indicator and Safe-Test Point® are both connected to load side. In this application the utility power needed to be verified, so the voltage indicator was wired to the line side, while the Safe-Test Point® was wired to the load side. This allowed any operator to verify that utility power was present or absent without testing.

While the VTS is typically installed onto the panel doors of switchgears and motor control centers; the pre-installed version on its own enclosure helped solve several problems. First, installation and verification of the units operation is simplified. Second, time saved performing LOTO far and away exceeds a fully suited, open door operation. Lastly, exposure to electrical energy is mitigated, creating an electrically safe work environment for the technician.



## GRACESENSE™ HOT SPOT MONITOR

Another viable solution for wastewater facilities to consider is the GraceSense™ Hot Spot Monitor (HSM); a predictive and preventative maintenance device capable of 24/7 remote temperature monitoring on critical potential failure points. In the case of the city in Virginia, power outages can sometimes be unavoidable and while our Grace PESD®

Voltage Test Station minimizes risk to personnel and time spent performing LOTO, it does not offer the predictive capabilities of the HSM.

Identifying faults before they occur saves money when unplanned outages, service interruptions, and equipment failures are avoided. This non-conductive temperature monitoring and alarming device identifies potential hot spots and enables users to predict failures in electrical equipment, allowing them to be repaired before an otherwise unexpected shut down. Plant-wide integration is made simple when the device is connected via MODBUS TCP/IP or Ethernet IP and stand-alone application is made possible with GraceSense™ web interface to configure temperature thresholds, monitoring intervals and relay outputs.

Current flowing through electrical connections (lugs, screw terminals, circuit breaker stabs, busbar joints, etc.) is the main cause for electrical hot spots. Furthermore, some critical hot spots are inaccessible by infrared thermography, and therefore, go unnoticed because an infrared camera cannot obtain an acceptable temperature measurement. The integrity of internal bolted connections and potential hot spots can be compromised when electrical equipment is subjected to wide load fluctuations or high harmonics.

Once the device is configured, user can monitor temperature logs, warning alerts, and download the data for further analysis and trending.

**For more information on the GraceSense™ Hot Spot Monitor, visit [www.gracesense.com](http://www.gracesense.com) or call 1.800.280.9517**

