

The Power of Remote Visibility

Using Telemetry for
Remote Site
Environmental and
Equipment Status

By Derek Johnson and Pete Pesetski

YOU GET WORD THAT A STORM IS COMING. YOU'RE NOT TOO WORRIED SINCE YOUR TURBINES ARE RATED TO HANDLE GUSTS OF UP TO 110 MPH. YOUR STAFF HAS RECENTLY CHECKED THE TURBINES AND SPENDS MORE TIME THAN YOU CARE TO ADMIT METICULOUSLY CLEANING IT. UNBEKNOWNST TO YOU, ONE OF THE TECHNICIANS WAS HAVING AN OFF-DAY AND FORGOT TO PROPERLY CLOSE A FEW OF THE ENCLOSURES. IT SHOULDN'T COME AS A SURPRISE SINCE YOU HAD TO REDUCE YOUR WORKFORCE AND EVERYONE IS NOW DOING MORE WITH LESS.

THAT NIGHT, THE STORM HITS WITH A VENGEANCE. THE WIND GUSTS NEVER GET ABOVE 90 MPH BUT THE RAINS HIT HARD AND FURIOUSLY. THE ENCLOSURES THAT WERE LEFT OPEN DIDN'T FARE TOO WELL. WITHIN A FEW HOURS OF THE RAIN HITTING THEM, THE ELECTRONICS INSIDE THE ENCLOSURES START TO FAIL FROM THE WATER SLOWLY SEEPING INTO THE CIRCUITS. ONE BY ONE, YOUR TURBINES FAIL AND YOUR NETWORK MANAGEMENT SYSTEM SENDS OUT ALARMS. YOU FEVERISHLY CALL YOUR TECHS TO SCRAMBLE OUT TO THE FAILED TURBINES ASAP TO SEE WHAT IS GOING ON.

BY THE TIME THEY MAKE THE DRIVE INTO THE REMOTE AREA WHERE YOUR WIND FARM IS LOCATED, YOUR WORST FEARS ARE REALIZED. EACH ENCLOSURE THAT WASN'T PROPERLY CLOSED HAS BEEN HIT HARD BY THE RAIN. NOT ONLY ARE MANY OF YOUR TURBINES OFF-LINE, BUT FROM THE LOOKS OF THE DAMAGE, THE ELECTRONICS INSIDE ARE COMPLETELY RUINED. IT'S A CATASTROPHIC FAILURE THAT'S GOING TO COST YOU HUNDREDS OF THOUSANDS OF DOLLARS TO REPLACE. HEADS ARE GOING TO ROLL FOR THIS, AND YOURS MAY BE THE FIRST LOPPED OFF!

Sadly, the described scenario can happen to any service provider. That's why finding an effective telemetry solution is crucial. Every time you roll a truck out to physically check a turbine, it's costing you between \$100 and \$200, depending on the distance to the wind farm and the skill set of the technician you're sending out.

During this election year cycle, wind power has been dragged into the fray and has suffered a few black eyes. Despite the fact that Solyndra has nothing to do with what you do in the clean energy generating business, it has now become the poster child for all green energy projects. It's because of this that professionals in the renewable energy industry must do everything in their power to run the most efficient and effective wind farms possible. Let's face it, we're under a microscope and room for error is almost non-existent.

Those ever-increasing pressures to squeeze every iota of efficiency from operations are why a move to edge devices with telemetry can pay dividends. Telemetry is defined as a technology that allows measurements of critical functions to be made at a distance, the data carried back to the control center using cables, radio wave or IP network transmission and this data reported to service personnel. The word telemetry is derived from Greek roots "tele" which means "remote" and "metron" which means "to measure."

The beauty of a telemetry system is that it provides complete visibility into remote site environmental and equipment statuses, and it brings situational awareness beyond standard simple network management protocol (SNMP) information to system operators and managers.

Going back to the unfortunate scenario: If you had hardened switches in your network with built-in telemetry, you would have been immediately alerted

that the enclosure door had not been properly shut, and you would have been alerted to this dangerous fact before water seeped onto the switch and adjacent equipment. Having telemetry capabilities is like hiring an extra person on your staff who never calls in sick, never takes vacation and always puts in 24 hours of work every day.

Because telemetry gives users the ability to access key data in real-time, they can often avoid unnecessary, expensive truck rolls in these geographically dispersed or remotely located points on their wind farm network. In addition, users may save space as well as capital expenditure (CAPEX) dollars by using a hardened switch with built-in telemetry capabilities inside, as the bundling of telemetry with Ethernet eliminates an additional piece of equipment at the remote site.

Adding telemetry can also enhance IP security solutions by augmenting video/video management systems (VMS), access control and other IP solutions with additional situational awareness, such as burglar alarms, flood sensors, temperature monitoring and other triggered alerts. Physical security professionals can use this telemetry application to draw immediate attention to situations at remote sites for follow-up with other solutions or personnel. Outputs can be set to trigger external alarms or alarm contact devices such as buzzers or lights, providing a physical alert to personnel near the switch location.

All this means one thing: peace of mind. And some would say that's priceless. ▮

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REMOTE MONITORING

Westell's Ethernet edge switch shows connected devices and its telemetry input sensor.

