Case Study

Small Size, Big Safety Value

Electric Power Industry Relies on Honeywell Analytics and the Impact Pro To Ensure Safety at Nuclear Plants, Substations and Underground Vaults

The Challenge:

In the power industry, the need to protect personnel, equipment and environment across a wide territory is a continuous safety requirement, as well as a significant cost item. Utility plants and substations must be monitored for potential hydrogen leaks, oxygen diminution, traces of low-level methane gas and other hydrocarbons used in power production. In addition, the utility companies manage a vast network of vaults, or underground electrical areas, where carbon monoxide, sulfur dioxide or other contaminants may be present. Access to equipment at these aboveground or subterranean locations can be tricky or difficult. Service teams typically work in tight, confined spaces.

The Trials:

Honeywell Analytics (formerly Zellweger Analytics) has introduced thousands of its Impact Pro portable gas detectors to utility companies. Recently the company participated in an extensive field test conducted by a major public utility that focused on the features and functionality of portable gas detection instrumentation. These trials were conducted by a third-party evaluation team and extended over an eight month period. Portable units from twelve manufacturers entered the competition, and after the first round of evaluation, three remaining manufacturers, including Honeywell Analytics were invited to participate in an extensive field test. Demo equipment from each manufacturer was provided for use at six utility districts, with each brand rotated every six weeks, in an eight-month process. In a 40-point evaluation study, the testing group focused on four performance criteria: sensor design, user friendliness, dependability and ruggedness. For the competition, Honeywell Analytics was represented by its portable gas detector, Impact Pro.

The Solution:

Safety Begins with Sensor Design

The Impact Pro impressed the testing group with its unfailing sensor performance, ease of calibration and low operating cost. As Honeywell Analytics' National Sales Manager (Portables) Ken Schmidt said, "Analytics held a distinct advantage over competing manufacturers in relation to sensor performance because we manufacture our own sensors, to a high level of quality control." In fact, Honeywell Analytics has manufactured more than eight million electrochemical sensors since 2000. This perspective has enabled Honeywell Analytics to capture a significantly large database on end user experiences with the performance and lifetime of electrochemical sensors, leading to improvements such as extended cell lifetime and the sensor's ability to generate strong signal outputs while remaining more immune to poisons.

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The Electric Power Industry and Gas Detection

More than 3,170 traditional electric utilities in the United States are responsible for ensuring an adequate and reliable source of electricity to all consumers in their service territories at a reasonable cost. Increasingly, the use of fixed and portable gas detection instrumentation has become an integral part of ensuring the safety, productivity, and reliability of their operation - as well as protecting the environment for the public good.

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The Solution: Safety Begins with Sensor Design

The testing group noted the Impact Pro's wide detection capabilities and convenient design. Serviceable or disposable cartridges are available, with sensors built into the cartridge itself. Oxygen and flammable sensors are always supplied and up to two toxic sensors may be chosen to monitor any of 24 common and exotic industrial gases. Sensor exchange and calibration proved so simple to electrical, mechanical and maintenance crew members that it was sometimes carried out by the person wearing the unit (instead of two or three technicians assisting with the process, as is usual)—in a single minute or two.

Low Cost of Ownership

Although safety, not price, was the chief focus of the project, the testing group also carried out a time/cost study on sensor exchange and the Impact Pro led in this category, too. Schmidt attributes this economic advantage to the Impact Pro's unique sensor cartridge design in which four sensors are housed within a single cartridge. When one sensor needs to be replaced, the entire cartridge is exchanged, ensuring a continuous set of fresh sensors. Because of the economies of scale that stem from Honeywell's sensor manufacturing operation, the 4-in-1 cartridge can be replaced for about the cost of a typical single sensor.

A Tool for Everyman: Feature Rich, User Friendly

The evaluation study identified many user-friendly features of the Impact Pro: its simple, one-touch calibration; do-it-yourself sensor exchange, noted previously; oversized, brightly lit LCD that displays gas concentration, battery and other indicators; oversized menu navigation buttons; multi-language support; and user selectable field options. Utility company technicians reported that little maintenance was required, a feature that extends over the product's entire lifetime. The Impact Pro is pre-calibrated at the factory and ready to go from the box.

Utility company technicians performed routine re-calibration with the Enforcer, a simple-to-operate calibration tool for use with the Impact Pro. The convenience of the Enforcer meant that technicians did not have to rely on specialist knowledge and equipment, or third parties, which can delay maintenance schedules and add costly service calls. The training provided to power technicians on use of the Enforcer went so well that Honeywell Analytics has since hosted training sessions on Safelink, a two-way communications device that links two or more Impact Pro models for confined space communications.

Accuracy and Dependability: the Fail-Safe Formula

In measuring performance, the testing group looked closely at reliability factors. Portable gas detectors used in the power industry must be built to withstand intensive, day-to-day use, indoors or outdoors, in all conditions—hot and humid, cold and wet, bright or dark. The Impact Pro offers durable housing to shield against physical shock and is IP67 rated for ingress protection against water, dust, grime and other pollutants. In the humid environments typical of confined spaces, this is a real advantage—in fact, the Impact Pro is built so rugged it can be submersed in water and then put back into action—without harmful effect on its gas-detecting capability. For the field trials, the gas detector was housed in a water-resistant pelican case equipped with battery charger, 110-volt power supply, rechargeable batteries, Enforcer calibration kit and 16 feet of extension hose—a complete kit containing everything a worker needs to safely enter a confined space and get the job done. Uptime was ensured with a fully charged instrument always ready to use.

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The Results:

During the entire testing schedule, the team reported zero product failures with the Impact Pro, an impressive record when compared with other gas detectors. Because of this perfect record, the Impact Pro alone offered a virtual assurance of safety compliance. Based on the product performance record and technical support team, the testing team recommended that confined space technicians be equipped with Impact Pro gas detectors at all power locations.

The Conclusion:

Utility companies across the United States have added the Impact Pro to their line of life safety equipment. The benefit to this is that they have realized a significant bottom line contribution and assurance of safety compliance in the area of gas detection. Any development that can be shown to both reduce the overall cost ownership of the gas detection system while actually improving safety is welcomed by all who work at a utility company, from the safety manager to the CEO.

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