CUSTOMER SUCCESS STORY

FAAST FLEX™ AND VESDA SENSEPOINT XCL SOLUTION IN BATTERY ROOM (CHIFENG POWER STATION CHINA) CASE STUDY

About End User (CHIFENG Power Station China)

CHIFENG Power Station is the largest thermal power generation enterprise directly managed by State Power Corporation Northeast Company. The total installed capacity is 1800MW and there are currently 2018 employees.

The Challenge

The deployment of smoke and gas detection in battery rooms is critical for the protection against fire events and elimination of explosion risks from flammable gases released during the charge / discharge cycles of lead-acid batteries. The following parameters should be considered for effective smoke and gas detection in a Battery Room:

- **System Design Flexibility:** Air ventilation will dictate how smoke and gas will move in the space. A flexible detection system able to accommodate various ventilation configurations will be best suited to provide complete protection (ceiling, battery racks, air vents).
- **Early Smoke Detection:** Batteries store large amounts of energy – a battery on fire will generate significant amounts of heat that will impact adjacent batteries. Early smoke detection and intervention will ensure the fire threat is contained to a single battery.
- **Management of Nuisance Alarms:** For ventilation purposes, outdoor air introduced in the battery room might carry pollutants which can lead to nuisance alarms (false positives). It is essential, detection systems are able to distinguish genuine fire events from nuisance sources.
- **Maintenance and Servicing:** Due to the high-risk nature of battery rooms, maintenance/ servicing of detection systems may pose access and safety challenges when located inside the battery halls.

PROJECT:
Chi Feng Power Station Battery Room

END USER/LOCATION:
CHIFENG Power Station, China

INDUSTRY:
Power Station

SOLUTION:
FAAST FLEX and VESDA Sensepoint XCL

"We are highly satisfied with the ease of pipe network design and installation provided by FAAST FLEX and VESDA XCL. These products have enabled convenient placement of sampling holes at ceiling level above the battery racks, greatly simplifying the design and the installation process.
Furthermore, the setup and evaluation of FAAST FLEX and VESDA XCL have been streamlined through their respective apps. This allows for monitoring and data collation from a single location externa; to the battery room where detectors are installed, enhancing user convenience.
We appreciate the excellence of your products and hope that our feedback will contribute to further improvements. We look forwards to continued collaboration for a better future."

Peiguolli
Director, Electric Grid Fire Management Center

The Solution

The FAAST FLEX and VESDA Sensepoint XCL solution delivers combined smoke and gas detection using the same pipe. Prior to installation, the FAAST FLEX pipe network was modelled in the ASPIRE pipe modelling software and comprised two pipe branches with detection locations at ceiling level:

Installation

- FAAST FLEX channel 1 (Battery Room – incorporates VESDA Sensepoint XCL): 9 x 3mm sampling holes, 41.5m length.
- FAAST FLEX channel 2 (Data Room): 18 x 2mm sampling holes, 44.3m length.

FAAST FLEX and VESDA Sensepoint XCL detectors were configured via their respective apps as follows:

FAAST FLEX

- Action Alarm: level 3 (0.164 % obs/m)
- Fire Alarm: level 4 (0.328 % obs/m)
- Aspirator Speed: High
- Flowrate 77 l/m

VESDA Sensepoint XCL

- Alarm 1 (H_2): 200 ppm
- Alarm 2 (H_2): 400 ppm

The Outcome

Smoke tests were conducted with a smoke gun whereas hydrogen gas (calibrated to 3000ppm) was used for the gas test. Both smoke and gas were introduced at the furthest sampling holes of the pipe network.

Both FAAST FLEX and VESDA Sensepoint XCL detectors responded and issued alarm notifications to smoke and gas exposures respectively. The following were noted:

- The performance of the installed system (smoke transport time) was within the regulatory requirement (<120 sec) and matched exactly the modelled design (ASPIRE).
- VESDA Sensepoint XCL issued an alarm notification to less than 10 %LEL (lower explosive level) Hydrogen gas, demonstrating effective detection of low concentrations of flammable gas for the purpose of initiating ventilation to prevent a flammable atmosphere.
- VESDA Sensepoint XCL issued an alarm notification while supporting 8 x sampling holes, demonstrating effective multi-hole sampling and the ability of a single aspirated gas detector to protect the entire battery room area.

The Conclusion

FAAST FLEX and VESDA Sensepoint XCL detectors were shown to respond and issue alarm notifications to the localised presence of smoke and gas at the furthest sampling holes of the pipe network – considered the worst-case scenario of detection performance.