HAVEN FIRE AND SAFETY, SUPPLYING THE ABU DHABI NATIONAL OIL COMPANY (ADNOC)/TOTAL WITH HIGH TEMPERATURE H_2S DETECTION

CASE STUDY

Haven was asked to provide fire and gas devices for the Ruwais Diyab project, an unconventional gas exploration and development programme spanning more than 6,000 km2. The system called for sensors to detect hydrogen sulphide (H_2S).

HAVEN FIRE

أدنوك
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Detecting Gas Saving Lives

HAVEN FIRE AND SAFETY IS A LEADING FIRE PROTECTION, ENGINEERING, SUPPLY AND SERVICE COMPANY THAT PROVIDES A ‘ONE STOP SHOP’ SOLUTION FOR ITS CLIENTS.

The Background

Haven Fire and Safety, a Crowcon distributor, was selected by Woodland Energy Services (EPC) to support and supply them with fire and gas devices for the Ruwais Diyab unconventional gas project in Abu Dhabi.

Haven Fire and Safety is a leading fire protection, engineering, supply and service company that provides a ‘one stop shop’ solution for its clients.

The firm has bases throughout the United Arab Emirates (UAE) and operates across the Gulf region, serving a wide customer base in multiple sectors.

ADNOC is among the world’s leading energy producers. Founded in 1971, ADNOC is committed to finding innovative approaches and technologies to meet the demands of an ever-changing energy market; the Ruwais Diyab concession is an example of this.rental, which can make tracking and the scheduling of calibration pretty complex.’

The Requirement

H_2S is an extremely toxic gas that can be lethal at just 0.1%. It is common in the Middle East, with high levels reported in Oman, Muscat and the UAE, and ADNOC was keen to protect its workers.

The project site is in the Middle East, where H_2S is an increasingly significant threat within gas production. However, the climate of the region makes it among the most challenging environments for any kind of electronic equipment, including gas detectors. At Ruwais Diyab, temperatures can range from 10°C to 65°C with wide fluctuations in relative humidity (RH).

Standard electrochemical sensors find it hard to cope with these conditions, because a combination of high temperature and low humidity dries out the electrolyte, impairing sensor performance and necessitating frequent sensor replacement which can be costly in terms of labour, time and money.

Metal Oxide Semiconductor (MOS) sensors have been touted as an alternative, because they do not have an electrolyte, but these also have drawbacks. They are prone to 'falling asleep' when they have not encountered gas for a while and must be protected by a sinter which can delay the sensor's response. Also, moisture can gather behind the sinter and impair sensor performance.

Despite their relatively high cost, MOS sensors have not provided the level of H_2S protection that is needed in Middle Eastern gas fields. Therefore, Haven and Crowcon had to find a better solution for the Ruwais Diyab project.

CROWCON'S NEW HIGH TEMPERATURE (HT) H_2S SENSOR FOR THE XGARDIQ HAS BEEN DESIGNED TO IMPROVE ON ELECTROCHEMICAL SENSOR TECHNOLOGY, EVEN IN TOUGH ENVIRONMENTAL CONDITIONS LIKE THOSE OF THE MIDDLE EAST.

The Approach

The new sensor includes innovative adaptations to prevent evaporation, including a more hygroscopic electrolyte, which avoids the drying-out problem seen in conventional electrochemical sensors, and reduced pore size to restrict water entry.

The **XgardIQ** HT sensor for H_2S is based on reliable and well-proven electrochemical technology but unlike traditional models **can operate reliably in temperatures of up to 70°C even in harsh conditions**. It has a life expectancy of up to 24 months and short response time.

The **XgardIQ** is a SIL-2 certified, intelligent and versatile gas detector that works with all of Crowcon's sensor technologies, including the HT H_2S. It has non-intrusive calibration with no need for a hot-work permit or special tools (which save on downtime), and auto-sense and auto-configure functions.

The Outcome

Haven and Crowcon proposed the installation of 27 **XgardIQ** HT H_2S detectors within Haven's fire and gas system for the Ruwais Diyab unconventional gas concession in the UAE, and an order was duly placed. Crowcon's solution to the climate-related challenges of H_2S detection in the Middle East, along with Haven's one-stop service, provided a superb solution in a tough environment.

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