

DET-TRONICS EQP EFFICIENCY AND SAVINGS

HMA Instrumentation supplied a complete fire & gas detection system upgrade to different Shell Todd Oil Services Ltd. (STOS) facilities in the Taranaki basin on New Zealand's North Island. Environmental protection and safety are top priorities for the New Zealand gas and oil operator. They wanted to ensure their new safety systems are advanced, robust, and flexible.

Location	Taranaki, New Zealand
Industry	Oil & Gas
Client	Shell Todd Oil Services

SITUATION

The existing fire and gas detection systems at the sites (see The Sites panel) needed to be updated. The STOS I&E engineer responsible for Fire and Gas systems across the company said "The project was initiated to enhance even further the safety of our people, assets and the environment through increased Fire & Gas detection." STOS enlisted Transfield Worley to undertake a study of the potential systems and detection devices they could use. Both parties carefully considered all factors including technology, flexibility, timeframe, size, and cost, Transfield Worley and STOS concluded that the Det-Tronics product range combined with HMA Instrumentations' expertise and local support was the right solution.

CHALLENGE

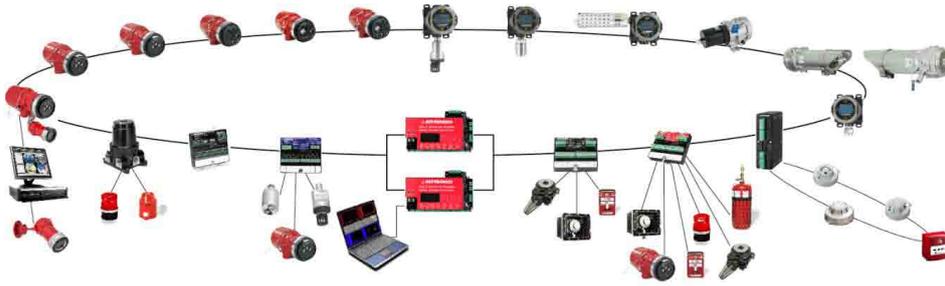
Each location had its own challenge. The sites have various methods of monitoring the plant and use different DCS systems. Each site also had a different layout and different challenges requiring a uniquely designed system. The challenge was to cater for these differences while providing a system that could use a common design philosophy. Another obstacle to overcome was the limited space inside the old control rooms to install the system, meaning the solution needed to have a very small footprint.



SOLUTION

HMA Instrumentation worked with Transfield Worley and STOS on a custom-designed, state of the art, fire and gas safety system, at each of the three facilities. All three solutions centred on the Det-Tronics EQP (Eagle Quantum Premier) addressable system. The EQP system is a scalable solution that operates on a local operating network (LON), onto which new devices can be added easily, according to the client's ongoing requirements.

The EQP critical-safety controller works on an addressable loop system that not only allows for increased flexibility and functionality, but also yields substantial cost savings. Each EQP controller can accommodate up to 256 nodes, with up to eight devices connecting into each node, on a loop of up to 10,000 metres. The bidirectional functionality of the LON allows the control unit to be self-healing and to pinpoint where failures may have occurred or issues arisen, without the circuit being compromised. "The integration of the EQP system to our existing control system (Emerson) was seamless. We are now able to provide operations with a geographical map of the plant on the operator console, showing all our fire and gas detectors. The operators can access all the information and functionality they need from the operator console."



COST SAVINGS

A major cost-saving benefit of the EQP-controlled solution is derived from the equipment and installation.

A traditional PLC system requires point-to-point wiring for every installed device. This entails field wiring from the PLC cabinet to each device – with potentially hundreds of lengths of cable and dozens of trenches across a hazardous site and around existing plant.

The EQP system, communicating on a single fully redundant loop, results in a dramatic advantage in terms of cost-savings on equipment and materials, as well as on labour to install and upgrade the system. This is backed up by comments from STOS confirming “the EQP addressable system provided a large saving on installation cost over a “point to point” architecture.”

Not only is far less cabling needed, but the configuration of the EQP system allows it to be upgraded relatively easily by adding nodes and devices anywhere along the LON.

This allows upgrades to be carried out in stages over an extended period by adding devices as required and so costs can potentially be met from maintenance budgets rather than by capital expenditure.

Additionally, since there are fewer cable terminals, the control cabinetry of the EQP is very compact and much smaller than a traditional PLC system, providing a far smaller footprint in the control room.

EVALUATION

HMA Instrumentation, in collaboration with Det-Tronics & Transfield Worley, delivered the project on time and on budget. All parties are satisfied they

have a high performance, flexible system in place that is state of the art and will reliably protect both people and plant, both now and well in to the future. “We have made a very good investment. The EQP systems are installed and working very well”, commented the lead engineer. “HMA Instrumentation

and Det-Tronics played a major part in the success of the project. The Det-Tronics products are world class and we are pleased to have them on our sites. Because of the successful implementation, we are already looking to expand our systems to incorporate other fire and gas inputs.”

TECHNOLOGY

The following devices were recommended by HMA Instrumentation for the project and accepted by STOS. All carry IECEx hazardous-area equipment international certification.

- EQP controllers: Multi-channel programmable controller, with the logic needed to meet NFPA 72-2010 requirements and perform the functions of a fire and gas detection / releasing system.
- X3301 multi-spectrum IR flame detector: Detects hydrocarbon flames using patented multi-spectrum algorithms. It has long detection range and superior false-alarm immunity.
- PIRECL PointWatch Eclipse IR gas detector: Provides accurate point-detection of combustible hydrocarbon gases and measures in the LFL range. In addition to providing continuous self-testing and immunity to many poisons. It is HART enabled and constructed of 316 stainless steel.
- Open Path Eclipse Model OPECL: The OPECL IR Gas Detector delivers superior open path combustible gas detection for protection of oil/gas and other industrial facilities. The Open Path Eclipse system is especially useful for perimeter monitoring and applications where combustible gas / vapor leaks can happen over a widely dispersed area.