

CASE STUDY

Management of Emergency Shutdown Valves

Centrica were experiencing a number of failures of ESD riser valves installed in its North Sea pipeline network, and so immediately began to look for potential causes of the problem. When the preliminary investigation failed to resolve the issue, Centrica commissioned Genesis Oil & Gas Consultants to conduct a detailed investigation and make recommendations for improvement.

After reviewing relevant documentation and interviewing maintenance personnel, Genesis narrowed the problem down to ambiguities in the fault reporting and remediation procedures and the lack to clear guidance on the application of ESD valves in general. Genesis' solution to the problem was to prepare a reporting checklist to improve the quality of fault reporting and to create a standard for the application and management of ESD valves for future use.

The Challenge

Centrica operates a complex network of pipeline systems in the North Sea to direct the flow of oil and gas between its various assets.

During a short period of operation, Centrica experienced a number of random failures of pipeline emergency shutdown (ESD) riser valves. A preliminary investigation into the incidents failed to identify any particular causes of failure, which prompted Centrica to consider a more detailed investigation.

Centrica commissioned Genesis Oil & Gas Consultants to investigate the ESD riser valve failures by conducting a thorough 'root and branch' examination of the testing regime and the process for remediation.

Given that the testing of this equipment is a statutory requirement and therefore mandatory, Centrica were keen to ensure the procedures and practices in place were consistent with current best

KEY BENEFITS

- A REPORTING CHECKLIST TO IMPROVE THE QUALITY OF ESD VALVE FAULT REPORTING
- A STANDARD FOR THE MANAGEMENT OF ESD VALVES REPRESENTING CURRENT BEST PRACTICE
- A BASIS FOR TRAINING MAINTENANCE PERSONNEL IN THE USE OF THE LATEST INDUSTRY STANDARDS.

practice in the industry (i.e. IEC 61508 and IEC 61511).

Genesis began the investigation by gathering the following relevant information together for review.

- ESD riser valve test result sheets
- Maintenance fault report records
- Maintenance work orders

The documentation review, supplemented by interviews with maintenance personnel completed the analysis of the problem and enabled Genesis to begin formulating conclusions and recommendations.

The Solution

Genesis attributed the cause of the problems to ambiguity in the fault reporting and remediation process and the lack of clear guidance on the design, specification, operation and maintenance of ESD valves in general.

To address these findings, Genesis recommended the introduction of a reporting checklist to improve the quality of reported failures and the creation of a standard for the application and management of ESD valves.

Genesis presented the recommendations to Centrica and advised that the current industry best practice standards, IEC 61508 and IEC 61511 provided an ideal framework for both the checklist and the standard.

Centrica readily accepted the recommendations and immediately saw the benefits of embracing current best practice standards in the drive to reduce maintenance failures and at the same time train its maintenance staff in the use of the latest industry standards. Centrica saw these improvements as consistent with their ongoing efforts to ensure high standards in the operation and maintenance of safety instrumented systems.

Results / Benefits

Genesis developed a reporting checklist for use in cases where an ESD valve failed to close in response to a demand on the safety instrumented system or when the valve is found to be faulty during periodic testing.

The reporting checklist will be an integral part of a suite of standards for the management of ESD valves that Centrica plan to develop. In accordance with Genesis recommendation, the standards will be lifecycle based and reflect a holistic approach to the design, specification, operation and maintenance of ESD valves that aligns with current legislation and industry best practice.

About Genesis

Genesis is a wholly owned Technip company operating on a global stage providing clients with leading edge Engineering solutions in the oil & gas market sector.

Genesis has more than 1000 employees operating from 15 locations around the world. Its aim is to add value to Client projects by applying world class expertise to each assignment.

About Centrica

Centrica plc is a British multinational utility company with its headquarters in Windsor, Berkshire. Its principal activity is the supply of electricity and gas to businesses and consumers in the United Kingdom, the Republic of Ireland and North America. It is the largest supplier of gas to domestic customers in the UK, and one of the largest suppliers of electricity, operating under the trading names Scottish Gas in Scotland and British Gas in England and Wales. It owns Bord Gáis Energy in the Republic of Ireland. It is also active in the exploration and production of natural gas and electricity generation.

