

## Case Study

### Trusted for the Interconnector IC2BordGais Project

#### Background

Driven by spiralling demand and economic growth, Bord Gais, the company responsible for the supply transmission and distribution of Natural Gas in Ireland, decided to construct the second interconnector (Interconnector 2) as the most reliable and effective solution for the much needed additional gas supplies into Ireland.

#### The Route

Interconnector 2 links Beattock in SouthWest Scotland and Ballough, north of Dublin in Ireland. It includes three associated above ground infrastructure developments at Beattock and Brighthouse Bay in Scotland and Gormanston in Dublin.

#### About the Pipeline

Interconnector 2 comprises of a subsea, high-pressure pipeline. The main component, the subsea pipeline is 195km in length and 30" in diameter. It operates at pressure of approximately 150 bar.



#### The process

Gormanston AGI, at Gormanston, is the receiving terminal for Interconnector 2. It ensures that the pressure of the gas, which is transported at 150 bar across the Irish Sea, is reduced to 85 bar, the maximum pressure permitted on land.

On arrival to the station the gas is heated to counteract the cooling down that will take place as a result of letting down the pressure. The gas is then metered; following that the gas pressure can be reduced.

In addition to the very large pressures, the large range of flow and the high energy make the potential for damage immense if the process control were to fail. It is therefore imperative for the process to never shut down.

#### The Integrator

NeoDyne is the engineering company responsible for putting together and maintaining the pressure letdown at Gormanston AGI.

For the station to function safely they needed a process control system to control the three flow streams used for letting the pressure down as well as a system for ESD protection.

#### The Solution

ICS Triplex provided NeoDyne with an integrated Station Control and Emergency Shutdown System (SCS/ESD) encompassed within a single Trusted TMR safety system as a solution to all of Gormanston AGI's control and safety requirements. This included the Trusted TMR Processor, a PLC capable of hot swapping modules without interruption to the process. In addition the system included the valve test module necessary for controlling the pulse regulated electric actuated control valves.

The Trusted TMR system provides the overall control, monitoring and ESD protection of the entire process through the Gormanston AGI station. This process entails the heating of the import gas, passing through dual fiscal metering streams and triplicated pressure regulation streams before passing into the supply grid.

**" ICS Triplex had the ready made solution in the form of a valve test/control module that runs with a one millisecond cycle."**

**Ger Hellen**  
CEO, NeoDyne



"ICS Triplex are value for money when the final costs are accounted."

Ger Hellen  
CEO, NeoDyne

**The End Users Comments**

"80% of the Irish gas supplies are being imported through a single pipeline from the UK. I would like to thank everyone involved for their support and input which resulted in the completion of this key project on schedule whilst preserving the environmental integrity of the pipeline route."

Gerry Walsh  
Chief Executive, Bord Gais

This is achieved either through direct connection with the field devices or from information presented via package systems (for example fiscal metering). The Gormanston AGI is designed as a not normally manned station. A dual communication link with Bord Gais in Cork, therefore provides the ability to monitor and control the station remotely.

**The Integrators Comments**

"The Station Control System application is a mix of safety, PID control, relay logic and sequence control and it is an unavoidable single point of failure since the operation of the whole station is dependent on it. For this reason extremely high levels of Availability and Reliability are required."

"What makes the Trusted TMR safety system stand out from its competitors is its Trusted TMR

Processors hot swap capability. Other PLC's offer arguably comparable levels of redundancy but when you analyse the offerings closely no other system can truly live hot swap any module in the PLC rack without risk of interruption to the process."

"We wanted to control pulse modulated regulating electric actuated control valves. The minimum pulse resolution sought was 5 milliseconds, much shorter than the typical PLC cycle time of a normally loaded CPU. ICS Triplex had the ready made solution in the form of a valve test/control module that runs with a one millisecond cycle."

"We found the ICS Triplex engineers experienced enough in the gas industry to make great suggestions and get things right first time round."

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