

Case Study

Non-Utility Infrastructure



AVK COMPANIES COMBINE TO REFURBISH DRY DOCK PUMPING STATION



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The River Clyde is synonymous with shipbuilding. It is estimated that the shipyards on the Clyde have collectively built 30,000 ships in the 175 years since Robert Napier built the first steamships there. Today, the Clyde remains a centre of shipbuilding excellence.

The work was focused on refurbishing the Dry Dock. The refurbished dry dock - also referred to as a 'graving dock' will increase the operational capacity to compete for global refurbishment contracts.

The main contractor contacted us when the engineering team conducting a survey had noticed the Glenfield Invicta name on the valves on the Dry Dock pumping station.

Glenfield Invicta's Engineering Team, visited the site to carry out a full audit. The valves and pipework were almost a hundred years old and had not been used for over half of that time.

A collective decision was reached that the existing valves and cast iron pipework were beyond economical repair.

Glenfield Invicta was awarded the contract to manage the refurbishment of the pump discharge. The project required the removal of the existing steelwork access platform, valves and pipework and the supply and installation of a modern equivalent replacement.



Existing Gate Valve being removed



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The replacement knife gate and check valves were sourced from Orbinox and ACMO respectively. **Orbinox (Spain) and ACMO (Italy) are both AVK Group companies.**

The exact specifications of the replacement valves were as follows:

AVK Orbinox

DN1000, EB, actuated knife gate valve, PN16 (x2)

AVK ACMO

DN1000 221SD, slanted seat, tilting disc check valve PN16 (x2)

The logistics of the project were far from straightforward. The pumping station is 8m below ground, in line with the base of the dock. This is common practice with dry docks as it optimise's pump efficiency. Once a ship is in place and the dry dock gates are closed the water is pumped out and returned to the Clyde at low tide.



Extraction of the old pipework, gate valve and check valve



Entry to the pumping station is via a 2.6m² access hatch at ground level. All materials had to leave and enter the pumping station via the hatch. The pipework reached DN1500 diameter at one point so great care was needed to ensure the work was completed without damage, both to the structure and to the live 11kV power cable located very close to the hatch. A further complication was that no welding was allowed on site and burning gear could not be used.

Engineers from Glenfield Invicta's Kilmarnock and Maidstone site locations were used over the period of the programmed work ensuring a coordinated and authorised team of service engineers

were present throughout duration of the planned works. Site Health & Safety and security were extremely important and all Glenfield Invicta personnel had to undergo a strict vetting process, in addition to completing confined spaces training, an emergency response team was also located on site at all times.

After the cast iron pipework was removed from site it was reassembled and detailed dimensional measurements were made to create a template. A duplicate carbon steel pipework system was then fabricated in sections. Many of the pipework fittings were bespoke including a DN1500 to DN1000 reducing tee and a 40 degree bend.



Installation of new pipework, electrically actuated knife gate valve, flange adaptor, and slanted seat check valve



Close working relationships

For Glenfield Invicta, the success of the project was primarily down to the close working relationships within the four AVK companies involved:

'Glenfield Invicta secured the work and our team of specialist engineers proved invaluable work throughout. The support received from our sister companies, Orbinox in Spain and ACMO in Italy was excellent and contributed to a really effective project delivered on time and to budget. Rebuilding the pump discharge system with only minor site adjustments was a testament to the professionalism of the AVK team.'

Wilson McPhail - Business Development Manager



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