



Issue 2

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Bedford Pumps News

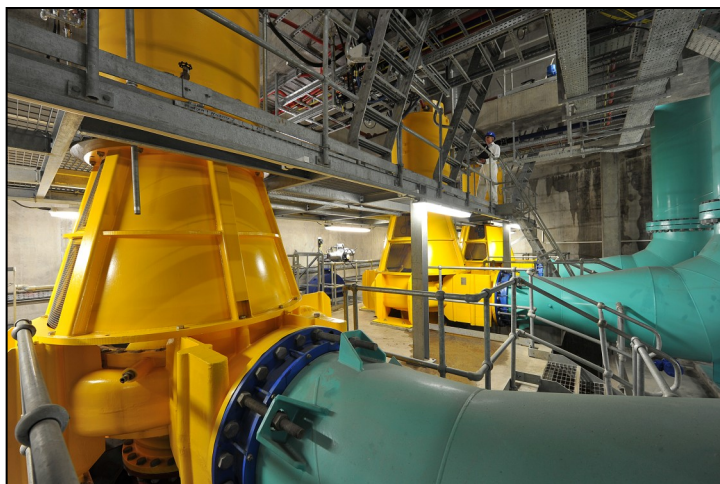
Bedford Pumps Delivers Ground Breaking Technology in Deep Shaft Project

Bedford Pumps Ltd. in collaboration with Morgan Farrans JV, recently contributed to the success of one of the biggest infrastructure projects in Northern Ireland with the installation of six 15 tonne Storm Water pumps.

The pumps, among the largest in Northern Ireland, are a crucial part of Northern Ireland Water's £160 million Belfast Sewers project, commissioned to overhaul the mainly-Victorian sewer system. The extreme weather conditions Belfast has been experiencing, in conjunction with the city's effluent on overburdened sewers, has resulted in major issues with flooding and pollution.

Bedford Pumps, a manufacturer of large, bespoke water and wastewater pumps, have made their installation 40 metres below ground level at the project's Terminal Pumping Station located within the Duncrue Street Wastewater Treatment Works.

The station lies at the end of a 10km network of new storm tunnels which have been under construction over the past three years. The main stormwater tunnel will provide the city with protection against a one in 30 year storm event. The pumps are fundamental to the whole project to alleviate storm conditions and reduce the risk



Belfast Wastewater Treatment Works

of flooding in the city.

Bedford Pumps were chosen for their knowledge and expertise in the field, as well as their unique design specification.

Each Storm Pump has the capacity to deliver 3,500 l/s which means that when all six pumps are running they could empty an Olympic sized swimming pool in less than two minutes. They are driven by 950 kW, 3.3 kV immersible, flameproof motors.

In addition to the six large Storm Pumps the station also includes two smaller FFT (Forward Flow to Treatment) pumps which will be used to discharge the lower, base load flows

to the treatment works. These pumps are also driven by immersible, flameproof motors.

As FFT pumps always had to pass flows to the treatment works irrespective of the sump water levels, the following design criteria had to be met:-

- The ability of the pump to maintain a constant flow of 750 l/s over a static head range of 10 m to 36 m whilst remaining hydraulically stable and operating efficiently.
- Ensure a minimum self-cleansing velocity greater than 1.8 m/s.
- Minimise the possibility of valve slam by strategic positioning of the NRV.
- Construction materials to be

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Belfast Storm Pumps (continued from page 1)

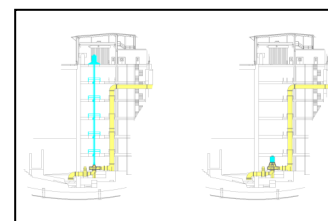
capable of resisting severe abrasion due to the high levels of grit present in the pumpage.

Bedford Pumps used an innovative new technique when designing their pumping solution, moving away from the traditional arrangement adopted for deep well stations. The norm for this type of application would be to install the drive motor at ground level thereby ensuring that it is kept dry in the event of a flood. This type of installation would add cost to both the mechanical and civil installation in addition to the ongoing maintenance requirements on long drive shafting needed to couple the motor to the basement-mounted pumps.

Bedford Pumps effectively “cut out the middle man” with a revolutionary concept. They eliminated the

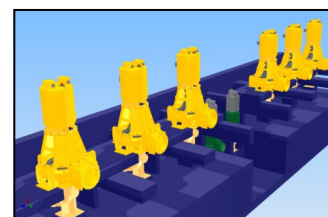
need for drive shafts, bearing and supporting structures by incorporating a motor fitted directly above the pump. The direct drive motor, manufactured by Bedford Pumps, is floodproof (IP68), flameproof and fully immersible. This was close coupled to the pump, minimising the overall cost of the installation whilst ensuring optimum reliability.

Both the FFT and the Storm Pump shaft sealing arrangement is of the conventional packed-gland type which affords the client low capital and maintenance cost.



Traditional pumping method

Bedford Pumps' solution



Bedford Pumps keep up the tradition at Welches Dam P.S.

Bedford Pumps Ltd has replaced pumps originally installed by W H Allen, the company that facilitated their existence, at Welches Dam Pumping Station in the Cambridgeshire Fens.

Bedford Pumps was formed in 1987 by former members of the Pump Department at NEI (W H Allen) after the company closed their pump manufacturing facility within the town. Since then BPL have re-established themselves as the UK's leading manufacturer of pumping plant for the Land Drainage and Flood Defence industries, in addition to which gained an enviable reputation for M&E project management in this field.

The Welches Dam pumping station, situated on the Old Bedford River, south of Manea, was constructed in 1948 to provide land drainage in the notoriously flat and boggy marsh land of the Cambridgeshire fens. Sixty years on maintaining this obsolete equipment had become prohibitively expensive and the decision was made to upgrade the station with modern plant.

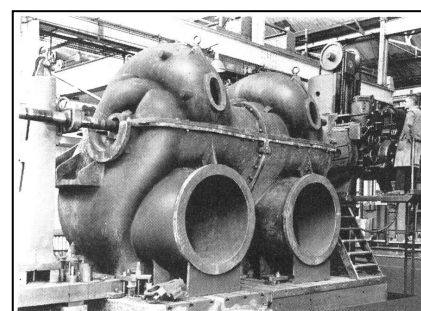
The project, let by the Environment Agency, was awarded to Jackson Civil Engineering Group Ltd, supported by Halcrow and using Bedford Pumps as their M&E partner. The work involved taking the station out of commission whilst all of the existing plant was removed from the station—not an easy task given that the existing pump volutes had been cast into the concrete floor. By pooling expertise the partners arrived at a pipework design which

utilised the benefits of siphonic recovery and housed the siphon loop within the station, thereby benefiting this environmentally sensitive area and minimising installation and running costs.

In addition to manufacturing the four new 2.5 cumec Axial Flow pumpsets and siphon breaking valves, Bedford Pumps have supplied the discharge pipework, control panel and instrumentation, site cabling and standby generating set.

In a statement the company said it was delighted to be able to continue the long standing relationship Allen Gwynnes had enjoyed with the Flood Defence/Land Drainage industry and it sought to emulate the reputation gained by its predecessor.

Bedford Pumps provide full design, manufacture, testing and service capability for all of its products as well as a full M&E installation of drainage



Original pumps installed by W H Allen



Bedford Pumps' installation at Welches Dam P.S.



Exclusive United Utilities Framework Success

Bedford Pumps Ltd have recently signed an agreement with United Utilities Water Plc to be their exclusive supplier of mixed-axial flow bowl type pumps for the water and wastewater sectors.

This agreement will ensure that Bedford Pumps will supply all new and replacement mixed and axial flow pumps, spares and associated equipment throughout the United Utilities area for a 5 year period.

The water application requirements include:

Dry well vertical and wet well vertical;

raw water bulk transfer; treated/drinking water bulk transfer and filter backwash.

The wastewater applications include:

Dry well and wet well vertical; sewage transfer pumping; stormwater pumping; interstage pumping and final effluent.

Bedford Pumps are delighted to enter into this exclusive agreement with United Utilities Water Plcs' networks and process plant and look forward to continuing the long relationship for mutual benefit to both parties.



Made in ~~China~~ Great Britain

It is a sad fact that many British Engineering companies have fallen by the wayside in recent times and that the phrase "made in China" is commonly found in the small print of many different products. Well not at Bedford Pumps, they are bucking the trend and have just received their first contract to supply their own manufactured pumps into China, finding themselves in the rare position of being able to state "Made in Great Britain, for export into China".

Bedford Pumps are supplying 6 specially engineered pumps to Siemens Sensors & Communications Ltd, a subsidiary of Siemens involved in production and R & D for the process industry. The pumps will be used to calibrate flow meters in a test bay. These type of pumps would traditionally

be installed vertically but have been configured horizontally to enable maximum space savings. Each pump must be suitable for operating at any speed, from 40% to 110% of rated, with a guaranteed flow of 648 l/s at a head of 8 m.

Bedford Pumps are delighted to be supplying China with pumping solutions and with their previous recent installations in Hong Kong, Brazil and Australia, are delighted to have become a truly global supplier.



Thames Water choose Bedford Pumps for Crossness

Bedford Pumps Ltd, a leading manufacturer of large submersible and conventional pumps to the water and wastewater industry, has secured a major contract with Thames Water for the refurbishment of the Inlet Pumping Station at Crossness in East London.

Crossness is one of Thames Water's largest sewage treatment works, treating sewage from a population of over 2 million. The £220m upgrade will enable

the site to treat 44% more sewage than its current capability.

Bedford Pumps will supply a total of 13 new dry well immersible pumps to replace the existing Allen Gwynne volute pumps installed over 50 years ago.

The new units will pass solids up to 180mm spheres and be fitted with motors ranging between 180 and 650 kW.

The project is due for completion in 2014 and is a significant accomplishment for Bedford Pumps who are working in partnership with contractor Tamesis, an integrated joint venture between Laing O'Rourke and Imtech Process.

