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# Liverpool Waste Water Treatment Works

A range of drives and motors from ABB Automation are enabling North West Water to curb the environmental impact of its “sludge to sea” operation from its waste water silos in Merseyside.

Four 500kW motors and two ACS 600 MultiDrives, each with two 630kVA inverters, have been installed at the Sandon Docks waste water pumping station to transfer domestic and commercial waste from the Liverpool catchment area to the newly commissioned Shell Green waste water treatment facility, 18 km away.

ABB's MultiDrive was selected as a more cost-effective solution than the conventional arrangement of one drive per motor. The MultiDrive features a common power supply and DC busbar that distribute energy to multiple inverter units and motors. Each drive controls two motors; under normal conditions, two pumps are used to lift the sludge some 20 metres up to the filtration compartment. During rainy weather, the volume of water to be passed through the system increases and a third pump may be required. The fourth pump is used as stand-by.

As additional pumps come on-line the ACS 600 MultiDrives ensure these are synchronised to avoid potentially dangerous differences in pumping speeds.

The pumps and the waste treatment process are controlled remotely from the Shell Green site, via a connection to a PLC in the Sandon Docks' main control room.

Since the introduction of new environmental legislation at the beginning of 1999, North West Water have had to find an alternative to their sludge-to-sea operation for the 1.9 million wet-tonnes of waste material that was dumped in the Irish Sea each year. This accounts for about 37% of the total sludge produced by North West Water.

“This a big step forward in reducing the environmental impact of dumping waste water in the Irish Sea,” says Bob Godfrey, Commissioning Manager for North West Water. “During the sludge-to-sea operations the fermented sludge was stored in two 9,000m<sup>3</sup> tanks before being transferred onto a sludge ship to be dumped at sea. Now the waste is pumped from the storage tanks to the treatment works at Shell Green.”

At Shell Green, the sludge is pressed and dried and the wastewater is recycled, leaving dry waste products. 50% of the dry waste is used by agriculture as a nitrate and phosphate-rich fertiliser and the remaining 50% is incinerated and the ash buried in landfill sites.

The Sandon Docks Waste Water Treatment Works has a maximum capacity of 950 million litres per day and in normal dry-weather conditions handles about 235 million litres of waste water per day.

The site serves approximately 1 million people dealing with trade and domestic waste from Liverpool city-centre and the surrounding districts.

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**Caption:** ABB motors and drives are enabling North West Water to curb the environmental impact of its “sludge to sea” operation from its waste water silos in Merseyside.

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