

# Pumping twice the amount while saving energy

A case study from Emotron



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Emotron has supplied pump control equipment for our pumping stations and wastewater treatment plants for many years now.

Piet van Mullem  
Electro-Technical Engineer, Delfland Water Board



*Emotron and Bosman Watermanagement upgraded the pumping capacity of Parksluizen pumping station from 10 m<sup>3</sup>/s to 20 m<sup>3</sup>/s. The IP54 classified Emotron FDU variable speed drive is installed next to the Bosman Beveron 210 pump. Service technician John Derks from Emotron worked on the installation.*

*The new electric drive solution offers more efficient pump control, minimized energy consumption and improved user-friendliness. An Emotron FDU variable speed drive for 690 V with a 12-pulse power supply in combination with a star/delta transformer provides low harmonic distortions.*

When the process control of the pumping station at Parksluizen in Rotterdam, the Netherlands, was automated, an Emotron FDU variable speed drive for 690 V with 12 pulse power supply was included in the installation. The customer now benefits from double the pumping capacity, minimized energy consumption, improved user-friendliness and low harmonic distortions.

### Water level control critical in the Netherlands

In the Netherlands, regulating the water level in streams, lakes, ditches, moats and canals is critical for most activities. For the important shipping industry, a level that is too low will cause large ships to run aground, and one that is too high will make the vertical clearance under bridges insufficient. The Hoogheemraadschap van Delfland, or the Delfland Water Board, is one of 27 water authorities responsible for maintaining dikes and dams and controlling water level and water quality. The Delfland region is one of the most densely populated and highly industrialized areas of the Netherlands with about 1.4 million people and 40,000 businesses in an area of 41,000 hectares.

### 22,000 ships pass through the locks every year

The harbour authorities of Rotterdam manage the Parksluizen locks in Rotterdam, which about 22,000 ships pass through every year. They were completed in 1933 and consist of two locks connecting the shipping route from Delfshavense Schie canal to the Nieuwe Maas river, and the Coolhaven and Parkhaven ports. The pumping station at Parksluizen was built in 1965. Delfland Water Board needed to automate the process control and increase the pumping capacity. They turned to Bosman Watermanagement and Emotron to handle the engineering, dimensioning and commissioning of the pump and drive line.

### Energy savings and improved user-friendliness

Delfland Water Board wanted an upgrade of the existing installation with a diesel driven pump. Replacing it with an automatic electric drive solution would offer more efficient pump control with minimized energy consumption and improved user-friendliness. A 690 V installation would also allow the use of cheaper cabling and a more compact variable speed drive thanks to the lower current.

The new solution is based on a Bosman Beveron 210 pump driven by a Siemens electric motor with an output of 1,375 kW. An Emotron FDU variable speed drive is used for the control. An IP54 classified enclosure meant the variable speed drive could be installed next to the pump. The 12-pulse variable speed drive in combination with a special star/delta transformer provides a low THDI (Total Harmonic Distortion of Current). The pump shaft rotates at a maximum of 135 rpm due to the gearing down from 1,000 to 135 rpm. The pump rotor and wear ring are made from durable and non-corrosive materials. The existing diesel motor has been retained for emergency situations.

“We chose Emotron for the engineering of the drive system and the result is an efficient solution for our customer,” says Arwin de Klerk, Project Manager at Bosman Watermanagement.

### Double the pumping capacity and improved power quality

The Delfland Water Board now benefits from double the pumping capacity, 20 m<sup>3</sup>/s instead of 10 m<sup>3</sup>/s. They have also improved the efficiency and reliability of the electrical power and reduced stress on power distribution equipment thanks to lower harmonic distortions on the mains power.

“We also appreciated having a single company responsible for the complete drive system. Emotron has supplied pump control equipment for our pumping stations and wastewater treatment plants for many years now,” says Piet van Mullem, Electro-Technical Engineer at Delfland Water Board.

### An efficient pumping solution

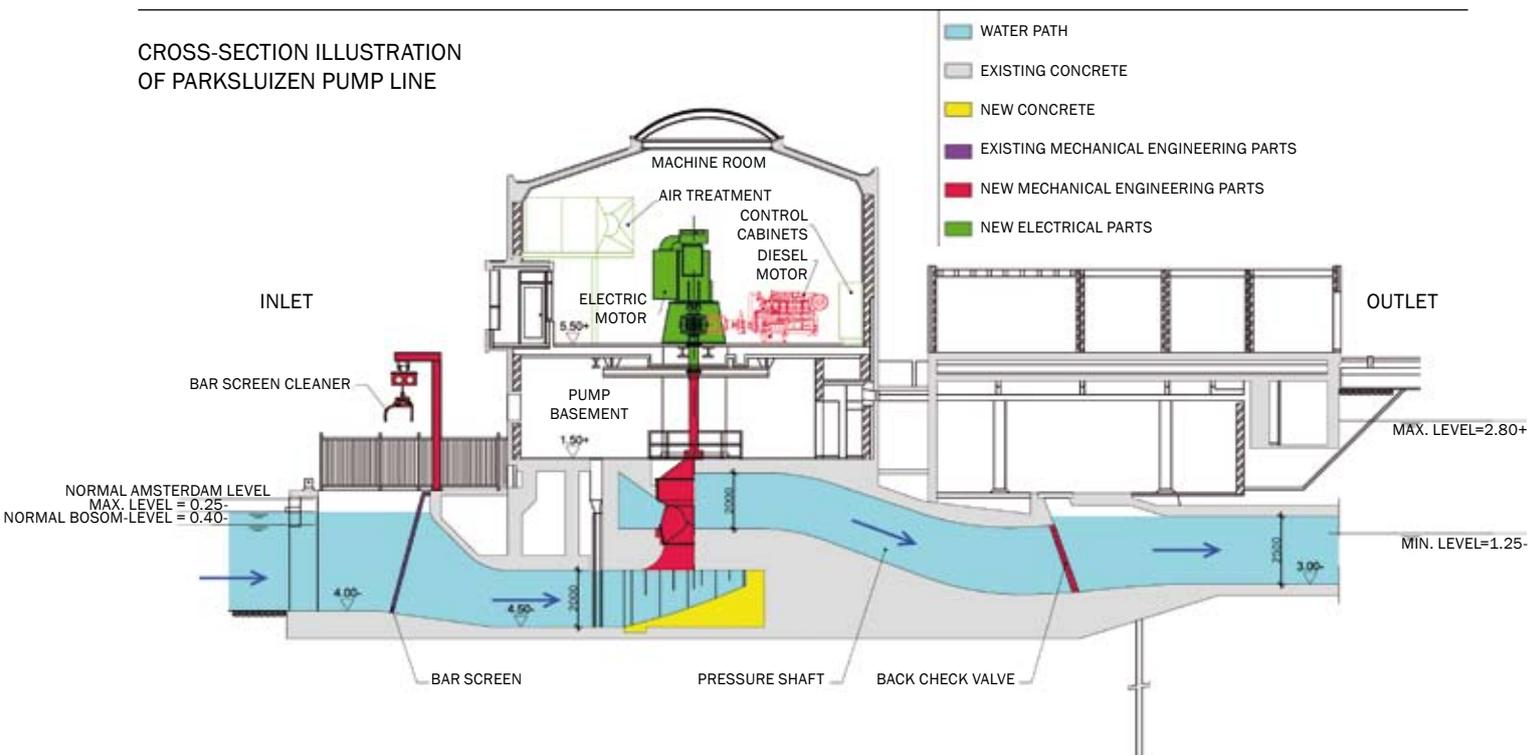
#### BOSMAN WATERMANAGEMENT

- Engineering of the complete installation
- Bosman Beveron 210 pump, pumping capacity 20 m<sup>3</sup>/s

#### EMOTRON

- Engineering of the complete drive system
- Emotron FDU 2.0-69-1400-20CE variable speed drive
- Star/delta transformer 23 kV/690 V, 1,800 kVA
- Siemens motor 1,375 kW/690 V

CROSS-SECTION ILLUSTRATION OF PARKSLUIZEN PUMP LINE



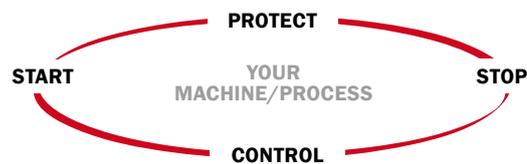
# Dedicated drive

Emotron develops products for starting, protecting, controlling and stopping machines and processes driven by electric motors. Our drive is to create measurable benefits for our customers through reliable, cost-efficient and user-friendly solutions. By focusing on selected applications, such as pumps, cranes and lifts, we can offer functionality optimized for specific needs.

Since 1975 we have established a solid position as an innovative and pioneering company. Research and development takes place at our head office in Sweden and at our subsidiaries in Germany and the Netherlands. Germany is also the location for the Emotron technical centres for lift and crane solutions. We have sales offices in Sweden, Germany, the Netherlands, China and Latin America, as well as a worldwide network of distributors and service partners.



## Products for your specific needs



Our complete product portfolio offers optimum solutions for your specific needs. The products are all based on the same technology platform and can easily be integrated in complete solutions. Wide power range, high protection class and compliance with global standards mean they fulfil the highest demands.

- *Shaft power monitors* – protect your process from damage and unplanned downtime.
- *Softstarters* – ensure smooth starts and safe stops.
- *Variable speed drives* – minimize energy consumption and wear.



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