

# Flowserve Pumps at the Core of Europe's Largest Flood Control Project

## Challenge

The Afsluitdijk Causeway and Dike have protected the Netherlands from catastrophic flooding for more than 80 years. However, the dike's aging pumping stations required newer, more advanced pumps to defend against rising sea levels and extreme weather conditions.

## Solution

Flowserve CVP concrete volute pumps offered the Netherlands a reliable, efficient, environmentally friendly and cost-effective solution that will protect the country and its citizens for decades to come.

The Afsluitdijk, a major causeway in the Netherlands, has protected the country from the sea for more than 80 years. At 32 kilometers (20 miles) long and 90 meters (300 feet) wide, it serves as a dike, damming off the Zuiderzee, a saltwater inlet of the North Sea, and turns it into the freshwater lake of the IJsselmeer. Initially constructed between 1927 and 1932, the Afsluitdijk has been an icon of the Netherlands' constant struggle to protect the country from flooding.

After nearly 90 decades of reliable service, the dike is in desperate need of renovation to combat the growing risk of rising sea levels, extreme weather conditions and higher water levels in the main Dutch rivers.

To protect the country from these threats, the Rijkswaterstaat (Ministry of Infrastructure and Water Management) has launched a new project to restructure the dike into the New Afsluitdijk (DNA). Specifically, the Rijkswaterstaat intends to make the dike overflow-resistant and enlarge its drain capacity by installing high-capacity pumps to discharge surplus water from the IJsselmeer into the Wadden Sea.

Once complete, the DNA's new pumping stations will be the largest in Europe.

## Flowserve pumps meet environmental and performance needs

Flowserve was selected to support this vital project because of the company's unrivaled design experience in drainage projects in the area.

Flowserve's first developed CVP pump was installed in the Gemaal Lely pumping station in 1929. By using concrete as the construction material for pump housings of these large drainage pumps, the pump housings are integrated into the civil construction of the pumping station, creating several advantages for the application.

The Lewvel Consortium, the company financing, designing, building and maintaining the DNA through 2050, worked with Flowserve to identify a pumping solution that will not only meet its performance needs, but its environmental requirements as well.

Their solution was Flowserve concrete volute pumps, which combine our most efficient hydraulics and pumping capabilities with a fish-safe design.

To support the DNA project, Flowserve provided six CVP axial flow concrete volute pumps, capable of delivering 846,000 m<sup>3</sup>/h (141,012 m<sup>3</sup>/h per pump) — nearly six Olympic-sized swimming pools per minute.



*CVP pullout unit*

### CVP pump benefits and advantages

Pumps such as the Flowserve CVP pump are part of an entire water management system, and their reliable operation is an essential factor in the dike's success. Pump failures could have far-reaching effects on the environment and the safety of Dutch citizens, which is why reliability is such a critical aspect of the CVP pump's design.

The CVP pump offers a variety of benefits and advantages, including:

**Corrosion-resistant construction increases pump life.**

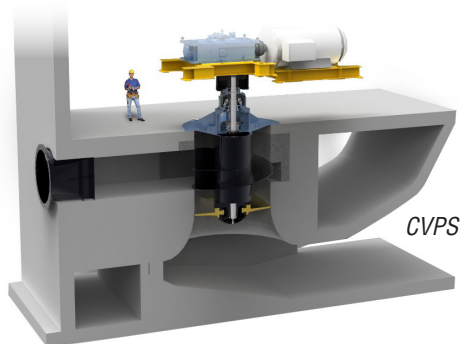
The CVP pump's corrosion- and erosion-resistant design concept minimizes the metal parts coming into contact with seawater, significantly increasing pump life and reliability.

**Less vibration minimizes maintenance.** The pump's rugged, compact construction virtually eliminates vibration problems, reducing maintenance labor and costs.

**Leak-free shaft sealing system increases reliability.**

The pump's shaft sealing system extends pump life, reduces maintenance and improves reliability.

**High reliability.** With its nonstop operation, the pump is capable of achieving 100% uptime.



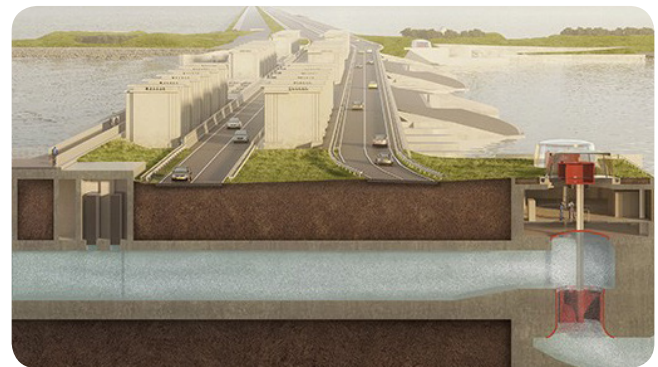
**Reduced construction time and costs.** Prefabricated elements, such as the suction bell and volute, significantly reduce on-site construction time and costs.

**Simplified installation and maintenance.** The pump's "pullout" design simplifies installation and makes the unit easier to remove for maintenance. It also enables installation once the civil work is completed and even inspection without dismantling the impeller.

**Environmentally friendly design.** Flowserve designed its CVP pumps to be environmentally friendly and safe for fish and other aquatic life.

Flowserve always works in close collaboration with our customers to generate solutions that are fully integrated and optimized for the complete system.

With this renewed iconic mega project, Flowserve maintains its lead as the world's most recognized flood protection pumping solutions supplier.



**For more information** on our products for large-scale, environmentally friendly, critical infrastructure applications, contact your local Flowserve representative.

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