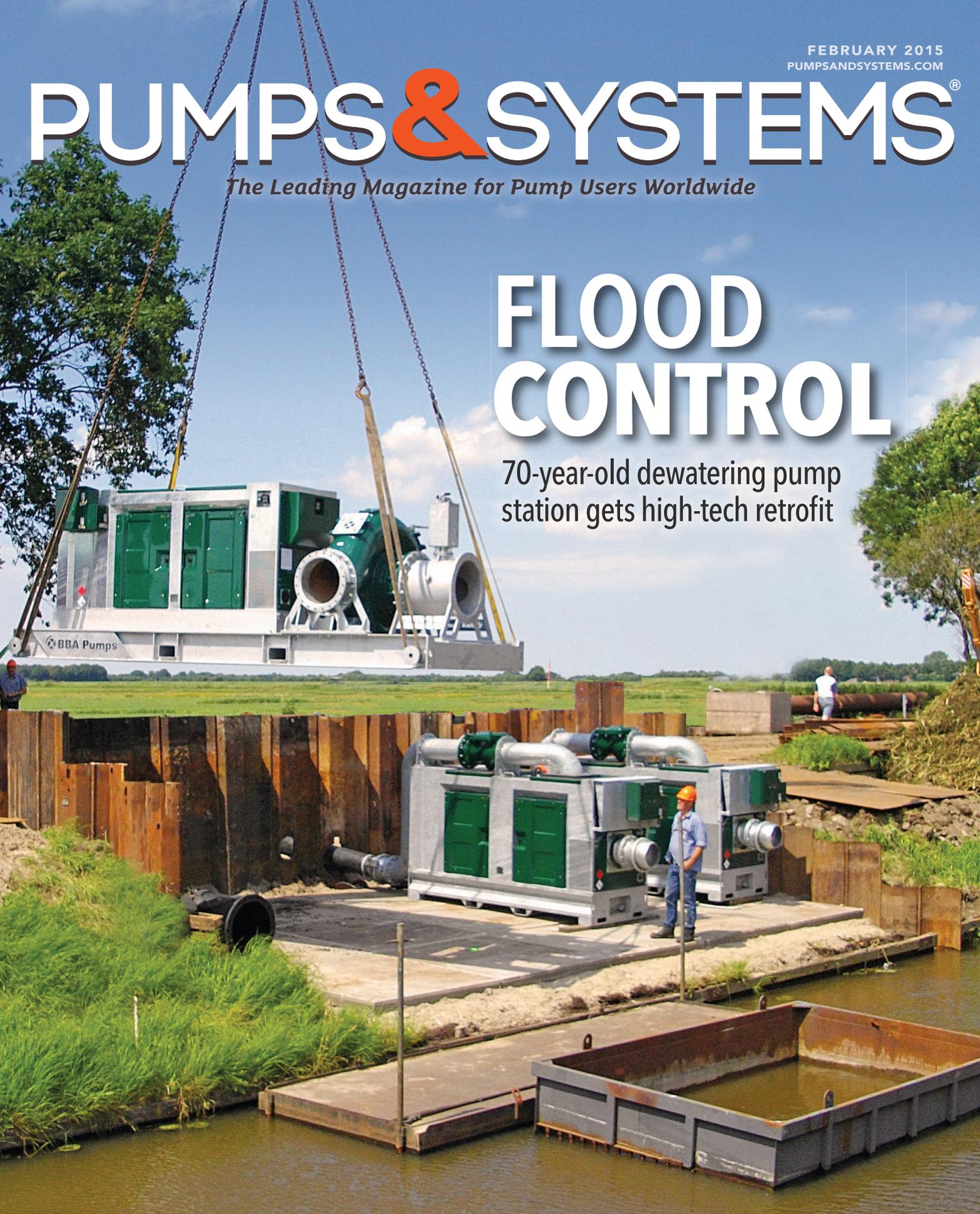


# PUMPS & SYSTEMS®

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## FLOOD CONTROL

70-year-old dewatering pump station gets high-tech retrofit



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# Temporary Pumps Ensure Flood Protection During High-Tech Retrofit

The installations manage heavy rainfalls in the Dutch countryside with a capacity of more than 100 cubic meters per minute.

BY **HENNO SCHOTHORST**  
CORNELL PUMP

**A** global problem affecting millions of people, flooding causes more than \$25 billion of damage per year. Floods pose a threat to infrastructure that even advanced technologies have difficulty resisting. The most aggressive estimate puts the potential worldwide damage of flooding at nearly a trillion dollars per year by 2050.

Flood protection and water level management are critical in the Netherlands. Large parts of the country are below sea level and under constant risk of flooding. The Dutch water councils have the vital task of handling the day-to-day water level management and ensuring that the country is well-protected against any flood.

A common feature in the Netherlands, a polder is a low-lying tract of land enclosed by dikes. After the water is pumped out, the land in the previously unusable marsh land or sea bed is now open to farming and other activities. However, the ground sinks over time. If the polder is placed over marshes, the peat will dry out and the groundwater will subside. This further lowers the level of the land in the polder. Because of the drainage, the polder will be below sea level at least part of the time. The pressure differential between the low-lying area and

the surrounding river or sea causes constant seepage that must be pumped away.

In Overijssel, the local water board governs the water in the agricultural polders around Scheerwolde. One of its refurbishment projects involved a pumping station built in 1933 that was designated as a historical landmark.

The pumps in the Gelderingen pumping station were more than 70 years old and needed to be replaced with new ones. The new pumps not only had to supply increased capacity but also had to be installed almost half a meter lower than the original ones.

Because the polder had settled over the years, the pumps were now higher in relation to the ground. The pumps drew in air as well as water, decreasing their drainage capacity. The last time the pumps had been fully refitted was 30 years ago, so lowering the current pumps was not an option.

The project started with the installation of temporary

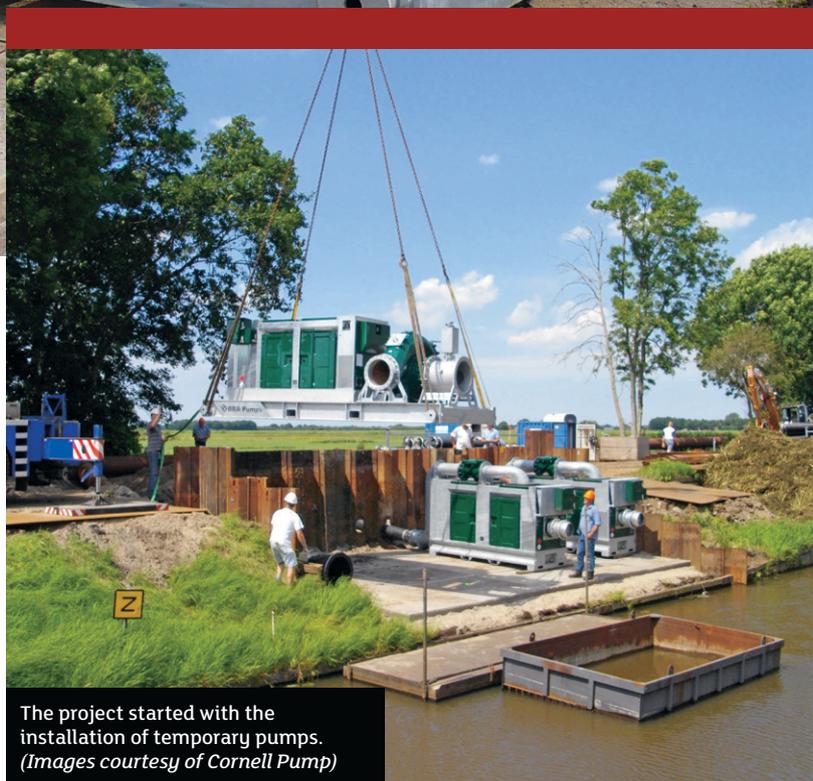




The temporary pumps will continue to remove water from the polders.

pumping equipment, consisting of three new diesel-driven pump units. During the renovation, these pumps will take over from the pumping station without any loss of capacity.

Two diesel-driven pumps, which have a combined flow rate of 46 cubic meters per minute ( $m^3/min$ ), have been set up next to a 20-inch pump set with a capacity of more than 60  $m^3/min$ . A modern operating system connected to the pumps automatically starts and stops them depending on the volume of water flowing in from the polders. The silent pump units can



The project started with the installation of temporary pumps. (Images courtesy of Cornell Pump)

work during the night without noise disturbance to the surrounding environment.

Water board member Hans Fokke emphasizes the importance of a temporary pumping system. "It's not just about the pumping capacity available. It is also important

that the communication between the temporary pumping system and our water level management runs without a hitch," he said. "Fortunately, there is plenty of know-how present, not only within our water board but among our suppliers as well. Using these pumps, we have a

temporary pumping capacity of over 100 m<sup>3</sup>/min at our disposal that we can apply without any worries."

In addition to acting as a temporary pumping station, the flood control pumps effectively handle water levels during heavy rainfalls. They come from a product range that features a mechanical priming system that quickly primes and re-primed, even from dry conditions. The heavy build of the pump and canopy combined with the low noise emissions make this range of pumps ideal for residential areas.

The pumps have several handling options, including trailer-mounted or roll-off skids. This means the pumps can be quickly transported in case of a flooding emergency or heavy rainfalls.

Work on the Gelderingen pumping station began in summer 2014. In addition to replacing the pumps, the pumping station was renovated. The whole project is slated for completion in December. The pumping station will then operate effectively for 30 to 40 years. ■



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