

Flowserve CVP Pumps Serve a Crucial Role in Dallas' Updated Levee System

Challenge

Gulf Coast hurricanes, severe storms and a surge in rainfall have increased the flood risk for the city of Dallas' business and citizens. The U.S. Army Corps of Engineers assessed the city's aging flood management facilities and recommended upgrading its existing pump stations with more reliable, higher-capacity pumps.

Solution

Flowserve CVP concrete volute pumps offered the city of Dallas a reliable, efficient and cost-effective solution to upgrade its aging infrastructure. The Dallas Floodplain Management Team selected Flowserve CVP pumps for their pump station upgrades because of the pump's history of reliability and proven performance in large-scale European flood management projects. This project marks the first time concrete volute pumps were used for flood management in the U.S.



Beginning in the 1930s, the city of Dallas constructed seven pump stations to protect against large-scale flooding. These pump stations moved storm water away from residential and business districts, depositing it into the Dallas levee system.

After decades of reliable service, in 2003, the U.S. Army Corps of Engineers assessed the facilities and determined they no longer provided sufficient protection against the rising threat of severe storms and increased rainfall. Their preliminary report recommended upgrading several existing pump stations and adding a new pump station to safeguard its citizens and businesses from catastrophic flooding.

The Trinity River Corridor Project

The city of Dallas launched the Trinity River Corridor Project to implement the recommended updates within the U.S. Army Corps of Engineers' report. The project included a variety of improvements to Dallas' interior drainage system.

To ensure proper drainage of storm water into the levee system, the city began updating its existing pump stations. This entailed selecting new pumps that were more capable of quickly moving storm water away from the city. These pumps had to be efficient, reliable and cost-effective.

Finding a solution in Europe

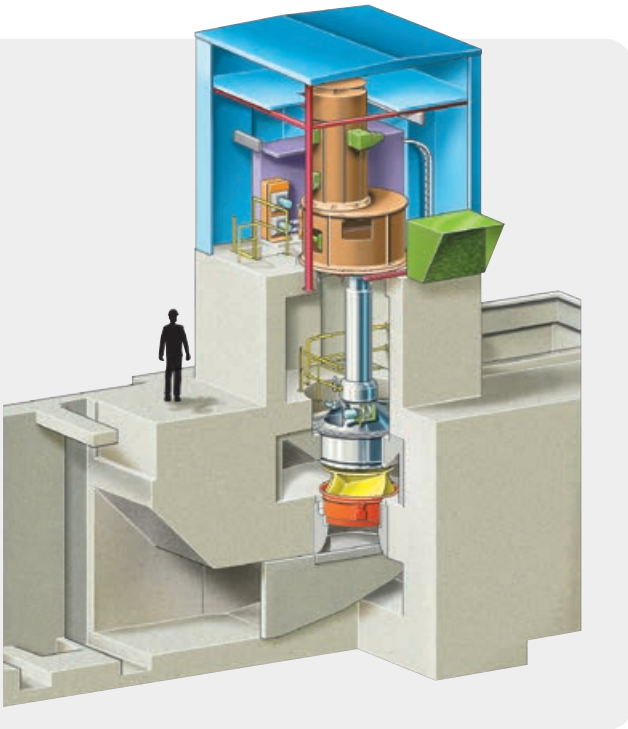
When it came to selecting the pumps for its redesigned pump stations, the Dallas Floodplain Management Team looked across the Atlantic Ocean for a solution. The team researched pump stations in the Netherlands, France and Scotland, all known for their innovative water management techniques and technologies. The team discovered a common theme when evaluating flood management solutions in these countries: many of the projects used Flowserve CVP concrete volute pumps.

First developed by Flowserve in 1929, CVP pumps are vertical, single-stage, dry-pit units with pre-fabricated concrete casings. These enormous pumps are built into the site infrastructure and can quickly move staggering amounts of water. Known for their reliability, efficiency, corrosion resistance, reduced vibration and overall low maintenance costs, these pumps have earned a worldwide reputation for their trouble-free operation and dependability.

After seeing firsthand how the Flowserve CVP pumps performed in Europe, the Dallas Floodplain Management Team determined they were the ideal solution for the city's pump station upgrades.



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Dallas adds 11 Flowserve CVP pumps

The Dallas Floodplain Management Team has thus far incorporated 11 Flowserve CVP pumps in its upgrades of the Pavaho, Baker and Able Pump Stations. Since every CVP pump application and operating environment is different, Flowserve collaborated with the Dallas Floodplain Management Team to ensure each pumping station's specific needs were met to optimize the city's flood management system.

The city made the following updates:

New Pavaho Pump Station. The new Pavaho Pump Station was built alongside the existing Pavaho Pump Station, which had a capacity of 80,000 gpm. The new Pavaho Pump Station includes three Flowserve CVP pumps, each with a capacity of 125,000 gpm, bringing its total drainage capacity to 375,000 gpm. The pumps installed at Pavaho Pump Station are the first concrete volute pumps to be used for flood management in the U.S.

Baker Pump Station. The original Baker Pump Station consisted of two stations built in 1932 and 1975 with a combined pump drainage capacity of 600,000 gpm. During the upgrade, the city added four Flowserve CVP pumps, each with a capacity of 175,000 gpm, which brought the pump station's total drainage capacity to 1.1 million gpm.

Able Pump Station. The Able Pump Station consisted of two pump stations, built in 1932 and 1954, with a combined drainage capacity of 220,000 gpm. The new station features four Flowserve CVP pumps with a total drainage capacity of 880,000 gpm — four times what the original two stations could manage.



CVP pump features and benefits

Flowserve CVP pumps offer a variety of benefits and advantages, including:

Compact design and prefabrication reduce construction time and costs. Prefabricated elements, such as the suction bell and volute, significantly reduce on-site construction time and costs. The compact designs of the prefabricated elements and the pullout unit reduce excavation work as well as lifting heights and weights.

Installation and maintenance are simplified. The pump's pullout design simplifies installation and makes the unit easier to remove for maintenance. It enables installation once the civil work is completed and can be inspected without dismantling the impeller.

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

Less vibration minimizes maintenance labor and costs. The CVP pump's concrete casing and suction bell substantially reduce vibration, provide excellent corrosion and erosion resistance, and significantly increase pump life, while lowering material costs and minimizing maintenance.

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



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Improved safety and operating costs

Flowserve CVP pumps will protect the city of Dallas from flooding, help to prevent loss of life, and alleviate infrastructure and environmental damage. Specifically, the city has experienced:

Increased pumping capacity by 117%. Before adding Flowserve CVP pumps to its pump stations, the three stations had a combined pumping capacity of 900,000 gpm. By upgrading the stations with 11 new CVP pumps, these pump stations can now move 1,955,000 gpm.

Lower cost of ownership. Traditional metal pumps require annual refurbishing, but Flowserve CVP pumps can operate for years with minimal maintenance, reducing the city's total cost of ownership. Lower maintenance requirements stem from the pump's design, which limits vibration and resists corrosion and erosion.

Greater reliability. Pump reliability is crucial in flood management projects. Unexpected repairs and downtime can not only drive up operating costs but can put citizens at risk. With its continuous operation and minimal maintenance requirements, the Flowserve CVP pumps can achieve 100% uptime.

For more information on our CVP pumps for large-scale, critical infrastructure applications, contact your local Flowserve representative.



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