

Just the Facts: Why New York City Chose Centrisys



RIGOROUS ANALYSIS SHOWED A CLEAR WINNER FOR ONE OF THE LARGEST DEWATERING UPGRADE PROJECTS IN THE COUNTRY

As dewatering equipment upgrades go, they don't get much bigger or higher profile than this one.

In the middle of the East River under the Robert F. Kennedy Bridge, the Wards Island Wastewater Treatment Plant is the second largest of the 14 wastewater treatment facilities in New York City, serving about 1 million people with an average dry-weather flow capacity of 275 MGD.

As part of a series of upgrades to improve pollution control and treatment efficiency, the NYC Department of Environmental Protection set out to evaluate available dewatering centrifuge technology to replace 13 existing centrifuges at Wards Island, potentially adding three more machines.

5 competing systems of similar capacity considered

The DEP enlisted CDM Smith, one of the world's foremost water quality consulting firms, for a feasibility study comparing the following models:

- Alfa Laval G2-115
- Andritz CP4-1.2 (a retrofit, using same frame)
- Andritz D6LX
- Westfalia CF 7000
- Centrisys CS26-4

All these models were mid-feed or counter-current designs using AC variable-frequency drives (VFDs) for the main drive motors. All evaluated centrifuges, with the exception of Centrisys, used various gear drive configurations – ranging from two- to four-stage planetary or cyclo-gear reducers. The Centrisys CS26-4 operates using its standard back drive system – the Viscotherm hydraulic scroll drive based on Rotodiff® technology, controlled through a VFD.

On balance of objective criteria, Centrisys system deemed superior

Using a matrix incorporating an array of weighted criteria established to seek the greatest overall value – including design, installation, performance, maintenance and cost parameters – CDM Smith ranked the products and manufacturers by their total scores.



CDM Smith comparison data

Despite being the second highest in capital cost, the Centrisys CS26-4 came out on top due to facts including:

- Highest G-volume of installed centrifuges
- Highest torque capacity
- Lowest power consumption
- Second-lowest operating costs
- Most installations worldwide for machines of this size and capacity
- The only centrifuge using an advanced hydraulic scroll drive instead of a gearbox
- Minimal structural and mechanical modifications needed for installation

The Wards Island project has been approved and purchased, with the first machines scheduled to ship in Spring 2014.

A CLOSER LOOK AT THE CS26-4

The CS26-4's robust design currently has 110 installations worldwide. The scroll and bowl are centrifugally cast or forged of duplex stainless steel to protect against corrosion and increase tensile strength. The bowl design optimizes the cylindrical length and the pool for maximum G-volume. The G-volume of the CS26-4 is equal to or greater than larger centrifuges, with a bowl diameter of 29 inches.

The flights on the scroll are a solid design, from the feed chamber to the solids discharge area. This design optimizes the solids storage, and therefore guarantees the highest solids recovery. The axial flow design on the remainder of the scroll, from the feed chamber to the liquid discharge, maximizes the solids recovery, as well as the clarity of the centrate. Wear protection is provided by tungsten carbide tiles over the full length of the scroll.

The scroll drive is a hydraulic drive-based design using Rotodiff® technology. Hydraulic back drive systems have the highest torque-to-weight ratio, providing the most precise and versatile differential speed control to handle solids and flow capacity. Since the scroll operates independently from the main drive motor, power is not lost or wasted, resulting in low energy consumption and ample power to handle solids feed fluctuations. The hydraulic scroll drive has 100 percent torque at all speeds, including standstill. This is a versatile design used in multiple municipal and industrial applications.

The CS26-4 is the only centrifuge of its size category manufactured in the U.S. for water and wastewater applications.

Dewatering Specs

Flow Rate – 200-400 GPM

G-Force – 3,000

Torque – 30,000 Nm

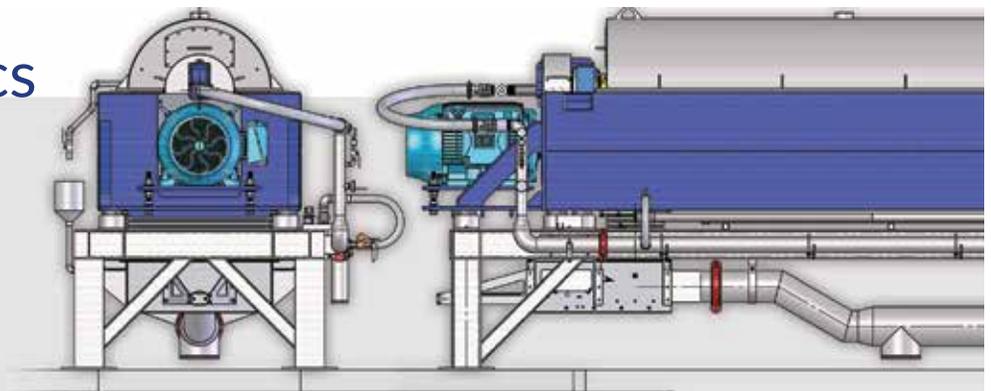
Standard Main Motor HP – 125 HP

Scroll HP – 25 HP

Beach Angle – 15 degrees

Bowl Diameter – 26 inches

Bowl Cylinder Length – 90 inches



Centrisys CS26-4 Dewatering Centrifuge