Patterson Manufactures Massive Pumps for Levee Protection

TOCCOA, GA—A giant, 52-foot-long, 260,000-gpm Axial Flow Pump will leave Patterson Pump Company's Toccoa manufacturing facility on Monday, June 19, for installation as part of a \$33-million expansion of pumping stations for the Velasco Drainage District in Clute, TX.



The massive Axial Flow Pump, which weighs approximately 110,000 lbs, has an 11-foot diameter suction bell and a 14.5-foot-square motor stand. It is driven by a 2,000 hp Caterpillar engine and moves water at the equivalent of seven average 35,000-gallon swimming pools every minute.

The district comprises industrial coastal floodplain on the Gulf of Mexico that has sustained storm-surge flooding during hurricanes in recent years. Two of the district's watersheds are located behind 53 miles of levees, ranging from 15- to 22-foot elevation, that protect the cities of Freeport, Lake Jackson and Oyster Creek. The first levees were built in the 1940s to protect chemical plants vital to the war effort in World War II.

The two watersheds cover 15,500 acres and contain 60,000 people and nine industrial plants. This giant Patterson pump is the first of four to be installed in the Lake Jackson Watershed, and two others will be installed in a pumping station expansion for the second watershed.

Levee failure and flooding in the New Orleans area during hurricanes Katrina and Rita have made all Gulf Coast municipalities and utility companies keenly aware of drainage system designs, particularly where they are partnered with aging levees.

Advancing development has altered the hydrology of Velasco's watershed areas. A number of surveys have shown that expanded pump capacity would be necessary to protect the areas from massive flooding in a Category 3 or higher hurricane. The District authorized the \$33-million project to expand two of its pumping stations, adding 1.5 million gallons per minute to the existing 1.69-million gpm capacity.

Cajun Constructors, Inc., Baton Rouge, won a \$13-million contract to add four 260,000-gpm Patterson Axial Flow Pumps to one of the stations, and CSA Construction Inc., Houston, won a \$10.2-million contract to expand the second station with two of the 260,000-gpm pumps and three expansion bays.

The Velasco pump stations were built in the 1970s. Pump motors were placed on pedestals almost one foot above levee elevation. By contrast, many of the older pump stations of New Orleans had pumps sitting just four feet above sea level, which caused them to be swamped when the levees breached.

Design and construction management on the Velasco expansion project are by Baker Lockwood Joint Venture, composed of Angleton, Texas-based Baker & Lawson Inc. and Lockwood, Andrews & Newnam Inc., Houston.

The Patterson Axial Flow Pump is engineered, built and tested to move large volumes of liquid at moderate heads dependably, efficiently and economically. Its rugged, simple design contributes to extended service life, reduced maintenance costs and minimum power consumption.

Patterson Pump Company, with headquarters and state-of-the-art manufacturing facilities in Toccoa, GA, is a subsidiary of The Gorman-Rupp Company.

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