

# Flygt submersible propeller pumps at LaGuardia Airport, NY

Flygt submersible pumps eliminate flood damage concerns at LaGuardia airport

Hurricane Sandy paralyzed LaGuardia Airport as it rolled through the Northeast in October 2012. After the airport's five stormwater pump stations lost power, an estimated 100 million gallons of water built up to four feet deep at some points, including along the shuttle ramps of this busy hub for Delta Airlines.

## Scope

High water on an airfield always presents a problem, but in the aftermath of the super storm, the Port Authority of New York & New Jersey stepped up the planned replacement of the hydraulic and electrical muscle of its Pump Stations #4 and #6, which drain LaGuardia's two runways.

The Authority sought to replace the extended shaft propeller pumps at Stations #4 and #6 with submersible pumps, which would eliminate any concerns regarding conventional motor units being damaged by flood waters. Submersible pump units have no above-the-ground motors that can be damaged and taken out of service due to impact.

## Solution

To replace the existing pumping units, G. A. Fleet Associates, a full-service Flygt factory representative located in Harrison, NY recommended Flygt brand PL-7101/300-hp electric submersible

Rated as explosion-proof for use in hazardous locations, the Flygt axial flow pumps are ideally suited for the airside upgrade, where they will move large volumes of water at low heads (25 ft TDH).



Installation of Flygt submersible pumps at LaGuardia airport.

**END USER:** LaGuardia Airport, NY  
**CLIENT:** LaGuardia Airport, NY  
**ORDER DATE:** 2013  
**COMPLETION:** 2013

propeller pumps which are designed to operate on the existing 4,160v power supply. Each of these units are mounted in 48-inch diameter steel tubes, have a capacity of 33,000 gallons per minute (gpm) and are of explosion-proof construction, approved for use in hazardous locations due to the possibility of petroleum products entering the wet-wells. The first two pumps were installed at Runway Pump Station #6, and another seven pumps, including one spare, await installation in Runway Pump Station #4, following the completion of a new 5-kV substation.

## The submersible design of the nine identical Flygt propeller-type pumps makes the motors inherently invulnerable to submersion during high-water incidents.

### Result

The replacement pumps function as an engineered system that improves the airport's stormwater control, flexibility, and operational efficiency.

The profile of the replacement pumps also adds clearance, because the new pumps install completely within the collection pit, unlike the taller vertical pumps that protruded approximately 10 feet above grade level. Adopting a standard primary pump for the two runway stormwater stations also enables an exchange with the spare pump in the event a unit is removed for service.

The first two pumps are equipped with modular alarm system panels that detect and identify the specific nature of any malfunction. The alarm is transmitted via fiber-optic communication line to a central station.

In addition to the turnkey engineering developed in collaboration with a Flygt applications engineer, G.A. Fleet Associates supplied the interface for the pump intakes, controls and other components to facilitate the replacement by the installation contractor. Flygt is a brand of Xylem Water Solutions USA, Inc., which also supplied a number of smaller pumps for the airport's upgrade program.



Flygt PL-7101/300-hp explosion-proof electric submersible propeller pump unit awaiting installation.

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