



Case Study

Coming to the Rescue: Customized pump system for rainwater collection in St. Croix

Overview

The Aircraft Rescue and Firefighting Facility (ARFF) at Henry E. Rohlsen International Airport (HERA) in St. Croix, USVI needed a rainwater and reuse system. They planned for rainwater collection and containment for future use as a cost-effective and environmentally friendly practice to recycle precious rainwater. For this project, rainwater would be collected from the building's 12,000 ft² roof and stored in a 50,000 gallon underground concrete cistern.

Since the rainwater was slated for both fire safety and sanitary use, engineers specified two pumping systems. One to supply the airport's utility needs, the other to fill fire trucks for emergency use. Filling the trucks required high pump volume with a maximum flow of 700 GPM. The pumps and systems needed to be corrosion-resistant because of the tropical island climate and salt water exposure. They also had to be lightweight and easy to handle, and have a small environmental footprint. To eliminate the expense of constructing an addition pump enclosure, the pumps would be submersed in the cistern.

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PROBLEM

- Dual pumping system requirement
- Pumping large volumes at 700 GPM
- Potential corrosion from high humidity environment
- Environmental and weight concerns



Solution

HERA, ARFF, and their environmental consultant partnered with Industrial Flow Solutions™ for a customizable and submersible pump system that would meet the specifications and specialized environmental requirements. Industrial Flow Solutions recommended three Stancor® P/S Series dewatering pumps they customized with a high-volume feature to achieve the 700 GPM. These heavy-duty pumps have cast 356 aluminum motor housing and Class F motor insulation for thermal protection to ensure the pumps do not overheat and cease operations.

Stainless steel handles and discharge connections allow for easy handling. The 316 stainless steel impellers are abrasion and corrosion resistant, and ideal for the tropical environment. As an extra custom feature, Industrial Flow Solutions added Teflon® coating for additional corrosion protection.

The P/S Series pumps were sequenced on a guiderail system to move water 500 feet through an underground ductile iron pipeline that connects the cistern to the truck fill station. The system alternates pump usage, verifies flow, and includes a pedestal at the truck fill station to control pumps remotely. The team included redundancies to support operations with life/safety implications.

“This pump system combined conservative practice with the latest technological advancements. We were able to meet the project budget and minimize maintenance costs in a very remote location,” concludes Michael Stark, President of Stark Environmental Consulting.

“The St. Croix airport project required a tailor-made solution that maximized functionality in a limited space,”

Michael Stark, President of Stark Environmental Consulting.



FEATURES

- Heavy-duty, dewatering pump with cast 356 T6 aluminum motor housing
- Stainless steel handle and discharge connection
- Heavy-duty jacketed 50' cable
- 316 stainless steel impeller

APPLICATIONS

- Construction/Rental
- Industrial
- Mining & Minerals
- Oil & Gas
- Power Generation & Utilities

RESULTS

- Pumping large volumes at 700 GPM
- Added Teflon® coating to protect from humidity
- Easy to handle, lightweight
- Project completed on budget and on time



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