



# POWER IN THE PUMP

*Georgia water resources streamlines lift station performance*

BY JIM MCMAHON

From left to right: Chris Thornhill, Maintenance Superintendent – Gainesville, Georgia, Department of Water Resources, Jimmy Murphy, Southeast District Manager – Gorman-Rupp Pumps Engineered Systems and Jarrett Nash, Sales Representative – Templeton & Associates worked closely in developing custom Auto-Start solutions for the city.

The Gainesville, Georgia Department of Water Resources has been systematically upgrading the performance of its seventy lift stations to state-of-the-art custom-engineered, manufactured and assembled ReliaSource® Auto-Start lift stations. The plug-and-play lift stations, from Gorman-Rupp, minimize installation time and costs by matching pumps, motors, controls, valves, pipes and accessories for maximum compatibility and performance. The lift stations eliminate the need for an engine/generator set by utilizing a modular combination of pump, electric motor, and engine to minimize maintenance and improve uptime reliability.

Located approximately fifty miles northeast of Atlanta in the foothills of the Blue Ridge Mountains, the city of Gainesville, Georgia, sports a population of nearly 45,000 residents. The city's Department of Water Resources is responsible for managing the quality and distribution of drinking water and treatment of wastewater for the community. To service these needs, the department operates more than 1,600 miles of underground water and sewer pipelines, and seventy lift stations, scattered throughout Gainesville and its surroundings in Hall County, to move wastewater from users to its wastewater treatment plant.

Population growth, resulting in new housing and neighborhoods, is continually driving the need for new pipelines and lift stations. Because Gainesville is so close to the mountains, new lift stations are required to manage elevation changes of 50 to 200 feet. This results in the need for additional lift stations to handle the increase in wastewater.

"All the flat land in the county is gone, so if a contractor wants to build it usually means cutting into a mountain," says Chris Thornhill, maintenance superintendent with the Gainesville, Georgia Department of Water Resources. "This new building requires additional lift stations to move wastewater though

the elevation changes and into our wastewater treatment plant. We have seventy lift stations in operation, with another eight in progress and expected to come online by the end of the year."

## LOOKING FOR A MORE EFFICIENT LIFT STATION SOLUTION

"With this rate of growth, we needed to look at how to operate our lift stations with better efficiency," adds Thornhill. "Keeping the lift station generators serviced, and everything that goes along with maintenance has been challenging. Particularly when a storm comes through and knocks out the power, adverse weather and road conditions make it difficult to bring diesel out to the stations daily to keep the generators running."

For many years Gainesville has relied on Templeton and Associates Engineering Sales to provide water and wastewater treatment solutions. Templeton works with more than

fifty top manufacturers to deliver a complete selection of the best equipment in the wastewater and water industry, along with aftermarket parts and service throughout the life of the equipment.

"Early on in Gainesville's water treatment evolution, they used a variety of Gorman-Rupp lift station styles," says Jarrett Nash, sales representative at Templeton and Associates. "Increasingly, the city's focus with its lift stations has been to minimize maintenance requirements and move from diesel to a cleaner energy source."

"The Department of Water Resources also wanted to standardize its lift stations to optimally manage installations, servicing and parts replacement," adds Nash. "One of the early lift stations adopted by the city was manufactured by Gorman-Rupp, installed as early as 1979. It was the reliability of their lift stations and the service support the company has provided that prompted Gainesville

to select Gorman-Rupp as their sole provider of lift stations in residential developments."

Gorman-Rupp has manufactured more than 17,000 lift stations over the last fifty-six years for thousands of municipalities worldwide.

## RELIASOURCE AUTO-START LIFT STATIONS—PLUG-AND-PLAY INSTALLATION

Effective wastewater handling requires lift stations with valves, controls, pipes and pumps that all work together to meet sewage handling needs. If any one of these components fails, it can put the lift station's operation at risk.

This is the central theme behind Gainesville's selection of Gorman-Rupp's lift stations. Specifically, the company's ReliaSource Auto-Start lift stations, which are custom-engineered, manufactured, assembled and tested at Gorman-Rupp's facilities. Precision-matched pumps, motors, valves, pipes,

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*Gorman-Rupp ReliaSource Modular Above-Ground Auto-Start lift stations are available in a variety of visually pleasing enclosure options to blend in with the surrounding environment.*

NEMA-rated controls, enclosures and accessories are integrated for maximum compatibility and performance. The lift stations are ready for installation on location, plug-and-play.

"These lift stations come from Gorman-Rupp as a complete unit, basically plug-and-play," continues Nash. "They are set in place at the site within in a fiberglass enclosure, minimal connections are needed, and

the lift station is in service. It really simplifies the installation process for the contractor."

### **ELIMINATES NEED FOR AN ENGINE-GENERATOR SET**

The Auto-Start lift station incorporates a modular combination of two pumps. Each is driven by an electric motor with one coupled to a natural gas- or propane-driven engine, thus eliminating the need for an engine generator set.

If power fails, liquid levels rise, triggering a control that automatically converts the system to 12-volt DC, which starts the standby engine and runs one of the pumps during the power failure, and AC motor operation is automatically restored when the power resumes. The lift station meets all standby requirements and can utilize a variety of fuels.

"The engine can run on propane or natural gas, cleaner fuel sources instead of diesel," continued Thornhill. "With seventy lift stations, should the power go out because of a storm, diesel fuel does not have to be supplied to the newer stations. The maintenance required to keep the generators serviced is no longer a factor with the Auto-Start stations."

### **SELF-PRIMING PUMPS**

"Gainesville's lift stations are equipped with self-priming centrifugal solids-handling pumps specifically designed for sewage and industrial wastewater handling applications," explains Nash. "The heavy-duty line of Super T Series, from Gorman-Rupp is not submersible. The self-priming, suction-lift design of the pumps allows the design engineer to physically locate the pumps where access is a non-issue and routine maintenance can be completed quickly and easily."

The large volute design of Super T Series pumps allows for automatic repriming in a completely open system without the need for suction check valves, even with the pump casing only partially filled with liquid and a completely dry suction line. The pump's two-vane, semi-open solids handling impellers handle up to 3-inch diameter solids. Pump out vanes on the impeller shroud reduce foreign material buildup behind the impeller and reduce pressure on seals and bearings.

"With Super T Series pumps, the incidence of clogging is reduced compared to most other heavy-duty solids-handling pumps," says Nash.



*In the event of a power outage, Auto-Start stations can be driven by alternative, cleaner fuel solutions. This eliminates the delivery of diesel fuels commonly associated with traditional generators.*



*The enlarged size of modular enclosures provides added space for performing routine pump maintenance while shielding operators from external conditions. Oversized roll-up doors allow access to station components should heavier-duty lifting equipment be required.*

"The unique impeller design and the ability to adjust clearances between the impeller and the wearplate help to reduce clogging. If a clog does occur, the maintenance time is much less—the front cover plate can easily be opened to remove the jammed debris."

### LIQUID-LEVEL CONTROLS

The lift stations are integrated with Integrinex® liquid level controls, designed to handle basic pump station requirements such as pump alternation and level alarming.

The controller comes installed with four normally-open mechanical relay outputs, analog input capability for either 0-5 VDC or 4-20mA, air bubbler, submersible transducer or radar input and operating voltage requirements of either 12 or 24 VDC. The option of assigning an output for a non-alternating pump allows the user to set an individual pump to operate at the same level settings every time it runs.

Gorman-Rupp programmed the control panels for job specifications and was available to assist the customer with SCADA integration.

### COLLABORATION

"The concept of these prepackaged lift stations, and the fact that each station is similar, has made the ReliaSource Auto-Start lift station a very attractive solution for the city of Gainesville," says Thornhill. "We now have six Auto-Start lift stations, one Auto-Start pressure booster station and a variety (fifty-four) of other Gorman-Rupp lift stations in operation, from our total of seventy lift station installations."

The Gorman-Rupp team of electrical, mechanical, and hydraulic engineers have worked closely throughout the development of Gainesville's lift systems to ensure that the entire hydro-electrical system worked in harmony to meet the system requirements.

"Both Templeton and Gorman-Rupp have done a really good job of matching the pumps to the different elevation conditions we have encountered," adds Thornhill. "Anything we have asked they have been able to provide a solution to ensure we have the most optimum performing lift stations in place." ■

Founded in 1933, The Gorman-Rupp Company is a leading designer, manufacturer, and international marketer of pumps and pump systems for use in diverse water, wastewater, construction, dewatering, industrial, petroleum, original equipment, agriculture, fire suppression, heating, ventilating and air conditioning (HVAC), military and other liquid-handling applications. For more information, visit [www.grpumps.com](http://www.grpumps.com).