

By John Veerling

# Proper pump design

*The city of Sanford, Fla., has used rotary lobe pumps for 20 years. The Sanford North Water Reclamation Facility, a 7.3-million-gal-per-day wastewater facility, has used rotary lobe pumps to pump thickened sludge to the digester and to pump digested sludge to the belt press.*

Rotary lobe pumps are well suited for both applications because the positive displacement design allows thixotropic, dilatant and Newtonian fluids to be moved at consistent flow rates regardless of variable system back pressure. While rotary lobe pumps are capable of operating above 100 psi, they also perform well at low system pressures. The installations at Sanford are below 25 psi.

The applications in Sanford require flow rates ranging from 45 to 55 gal per minute and pumping digested sludge containing 2% to 3% solids. Due to the pumping requirement of having to perform consistently for 16 hours per day, seven days per week, the pumps were fitted with tungsten carbide housing segments and wear plates. These will also protect the pump from any sand or grit which may end up in the sludge.

While rotary lobe pumps are capable of handling higher solids content, this is a very typical application in municipal wastewater treatment. As the existing pumps reached the end of their reasonable economic life, it was clear that the replacement pumps would also be of the rotary lobe design.

## New Pumps

Rich Casella, utility plants maintenance manager, and Terry Alday, maintenance mechanic, researched their list of proven suppliers for a worthy replacement in this critical pumping application. Through the efforts of Scott Thurott of Southeastern Pump, Sanford was introduced to the LobeStar rotary lobe pump.

After considering the operations and maintenance concerns expressed by Casella and Alday, a factory trip was scheduled. It was during this factory trip that Alday became acquainted with the ease of inspection and low maintenance features of the LobeStar pump. Casella was reassured of his proposed project's financial viability when pricing was reviewed and ease of installation confirmed.

The parent company of LobeStar Pumps, Holland Pump, was founded in 1978 to serve the dewatering market. After decades of outsourcing its pump-end manufacturing, the company brought the pump-end manufacturing in-house and now operates from its 40,000-sq-ft national headquarters and manufacturing facility in Brunswick, Ga. LobeStar showcases the quality of the individual parts as well as the finished product—all of which are 100% made in the U.S.

Furthermore, replacement parts are in stock for immediate shipment. "Having replacement parts within driving distance and on the shelf is a huge convenience," Casella said. This ready access to repair parts will allow Casella to minimize his investment in spare parts without reducing the serviceability of the pumps.

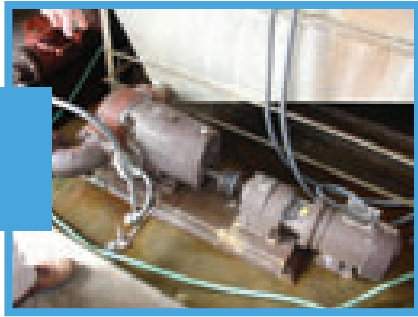


A Florida water reclamation facility preserves its rotary lobe tradition

Before

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After



With the combination of Southeastern Pump and LobeStar Pumps, the city of Sanford was able to address the intangible issues (i.e., correct sizing and application knowledge, local support for startup and continued local support) and decided to purchase LobeStar pumps. The core mechanical design features that set the company apart from other rotary lobe pump producers in the industry included:

- 100% pre-shipment testing to assure quality performance;
- Helical rotor design that minimizes pulsations and reduces bearing loads for smoother system operation and longer bearing and seal life;
- Oil-lubricated mechanical seal design allowing pumps to run dry for extended periods;
- No supplementary seal chamber pressure required when operated below 50 psi;
- Field-replaceable mechanical seals, wear plates and lobes; and
- Repair parts available from the Georgia headquarters within 48 hours.

The LobeStar pumps also proved a viable product alternative when compared to progressive cavity pumps. Significant advantages included:

- Capability to run dry for extended periods without damage;
- Heavy-duty construction, including short span between bearings (progressive cavity pumps use an elastomer stator to support and center the rotor);
- Larger capacities with a smaller, more cost-effective pump;
- Ability to operate with a suction lift, allowing flexibility of installation; and
- Compact size and configuration, allowing more flexibility for installation in new or existing spaces.

#### User Feedback

Ultimately, the success of a project is measured by whether the needs and expectations of the owner are met. Sanford personnel had much to say about this specific project.

"The installation was smooth, and the pumps are performing flawlessly," Alday said. "Just eliminating the need for seal water has saved the cost of the water, eliminated the alarms and solenoid valves and the possibility of ruining an expensive seal. The installation of these LobeStar pumps has freed me up to take care of other matters in the plant. They have made my job a lot easier."

"I appreciate how much cleaner the pump room is now," said Mark Abbott, an operator at the facility. "My working conditions have improved tremendously."

"Scott Thurrott, Southeastern Pump and LobeStar Pumps were great to work with and solved an ongoing problem that was costly, time-consuming and tapped our maintenance resources," Casella said. [www](#)

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