

Repair or Replace? The Debate Rages On

A guide to deciding whether to repair or replace submersible pumping systems.

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If you have an aging submersible pumping system, you may wonder: Is it time to replace it? Has it served its useful life? If the system seems to require regular maintenance, this question can become even more challenging: Would a new system provide better overall operation and be more cost effective?

There is no easy answer. In fact, repairing systems is often the easiest solution both in terms of capital expenditures and time, especially considering submersible systems are known for their reliability and extended performance life. Yet, no system lasts forever, and the time and money you put into an existing system can add up. How do you know when it is time to make the investment in a new system? Consider these variables:

How much is maintenance costing you? This question not only gets users to look at maintenance hard costs—like paying for labor and materials—but also other variable costs, like downtime, overtime and reoccurring prescriptive maintenance. All systems will require some level of

preventive maintenance as well as cleaning and an annual inspection, but if this service becomes so regular and predictable that it hinders your maintenance team's productivity, it could be time to consider a new system.

For example, a municipality in Texas noticed an uncomfortable trend with its equipment, including its 3,600 grinder pumps and lift stations. The staff of 13 operations technicians was clocking hundreds of hours of overtime to address system failures, and they had dramatically surpassed their workload capacity. One weekend alone, they recorded 28 hours of overtime on repair work. Another Texas community—located five hours south of the first one—faced similar challenges. They had experienced so many problems with their systems that they employed a new tactic to offset the need for overtime. They chose to vacuum out lift stations every Friday in an attempt to get through the weekend without clogging.

In each of these situations, the repeated and regular maintenance was not sustainable, costs were mounting and

personnel issues became a concern. The only viable long-term solution was to install new systems.

Have the usage needs changed? This is likely the single biggest factor when determining whether to repair or replace a system. In fact, when evaluating whether to repair or replace a system, one of the best rules of thumb is: It's not about the age of the system, it's about the system's use. Systems change over time. Communities grow and their needs evolve. In one situation, a vacation community experienced clogs on a regular basis. Because the homes were only used part-time, the scouring of fats, oils and grease from pipes was not happening with regular use. Often, their 2-inch pipes were only allowing for about one inch of flow.

These types of variables can change the pump's performance. The best way to evaluate the viability of an existing system is to consider the system's pump curve. Is the pump still running at the best efficiency point (BEP)? How have your needs changed in terms of head and flow? Would a pump with an increased head

deliver better performance? You never want to oversize a pump for an application, but in some cases older pumps that were once sized correctly are no longer running at the BEP needed. There are many situations where growth has led to pump failures. For example, in one community, an entire subdivision got added to a lift station that was not designed to handle it. It was impossible for the current pump to run at the BEP. In a hotel setting that was evaluated, additional fixtures were added to the system during a remodel, yet the pumping system was not upgraded to accommodate them.

Investing in preventive maintenance, no matter how old your system is, remains one of the most important tools available to you. At SWPA, here are some best practices we recommend:

- An annual inspection is important. It is always a good idea to have someone who understands the system—like your original manufacturer’s rep. By allowing the OEM to operate the pump in the system, you can receive an operating comparison to the original pump curve. This will identify if there is any performance degradation and will possibly assist in the decision to repair or replace. The inspection should include making sure that all controls are able to move and function without obstruction.
- If you run a duplex, triplex or municipal system, inspection frequency will likely need to be higher. This will help you monitor the station to assure it is running at the BEP.
- If your pump does require a component replacement, make sure the part meets the original manufacturer’s specifications. For example, if you change the vane dimensions of an impeller, it may change the hydraulics (flow, head, horsepower, etc.) which may negatively affect the pump performance and move you off the pump curve.
- If you cannot find the parts anymore from the manufacturer, it is probably a good sign that it is time to replace the pumping system.
- Seek out industry training and webinars. Many industry manufacturers—as well as SWPA—offer a tremendous number of educational tools, including troubleshooting guidance. ■



Submersible Solutions is produced by the Submersible Wastewater Pump Association to inform and educate in the design and operation of

submersible wastewater pumping systems. For more information, visit pumpsandsystems.com/swpa.

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