

The Basics of Submersible Pumps

These pumps are used in a wide variety of applications.

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A submersible pump is a device that has a hermetically sealed motor close-coupled to the pump body with the whole assembly submerged in the fluid to be pumped. The pump was originally designed by Armais Arutunoff in 1916 in Russia, with added designs in Sweden in the 1940s. The Hydraulic Institute defines submersible pumps as “pumps that have a single-stage overhung impeller, are close coupled to a submersible electric motor and can either be diffuser type (OH8) or volute type (OH8b).”

Submersible pumps are most suited for use at municipal wastewater and wet well lift stations, where a high number of ragging issues and other contaminants including solids persist. Submersible pumps are also used in drainage/dewatering, wastewater, drinking water and food and industrial markets, but may also be used in processes where the application could require special materials or coatings. It is important to select the right features and

functions for the job at hand. Alongside standard selection criteria such as flow, head and discharge size, considerations towards modern application challenges can ensure the right pump is being used.

Pump failure is rarely caused by the pump. More commonly, it is due to either misapplied or unseen mechanical or electrical issues in the system. Solids handling pumps used in wet wells are designed to pass elongated compressible solids and stringy rag material through the system. Grinder pumps are installed at point sources, such as residential complexes, to reduce materials to a pumpable slurry, and chopper pumps are used in institutional areas where larger and harder solids come, such as hospitals and prisons.

Submersible pumps are designed to be efficient, durable and long lasting. Submersible pumps in a pump station generally take less space and are more cost effective than a standard wet well/dry pit

pump station. With that said, there have been many dry pit pump stations that have been retrofitted with submersible dry pit pumps, especially those prone to flooding.

In most cases, a submersible pump can be used where other types of pumps are typically used. Areas where another type of pump may be better suited would be applications with a high amount of suspended solids content or high temperatures in the fluid being pumped. ■



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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