

How to buy right, not cheap when it comes to solids-handling pumps

Companies using solids-handling pumps as part of their processes know that even though the pumps are typically moving trash and other waste products, the type of equipment used can be a huge business decision. Most applications warrant more attention than simply choosing the first pump that pops out of a catalogue. Choosing the right one can save up-front costs, but, more importantly, it will save energy and maintenance costs, and extends the life of the unit. The end result will be significant savings over the life of the pump, resulting in lower total cost of ownership (TCO).

While there may be any number of pumps that will do the job, choosing the best fit will give you the best return on your investment. The following tips will help you make the right choices.

1. Purchase a pump from a dependable company with experts readily on hand.

Before you begin to choose a pump, develop a system head curve of your application. Many engineering firms have their capability, but if you're working on your own, a good pump company or its distributors can help you with the process.

The system curve will allow you to see what options you have. Beware of steep system curves as they usually mean the piping size should be larger. In Figure 1, note how increasing the pipe size from 4" to 6" significantly reduces the speed necessary to get the same flow. At 550 GPM, a 4" line will require 22 HP, and you would usually supply a 25 HP unit to ensure non-overloading. Compare that to a 6" discharge where you would only need 7 HP, saving 15 horsepower, or 11kW for every hour the pump operates over its lifetime, and you will be buying less costly motors and controls.

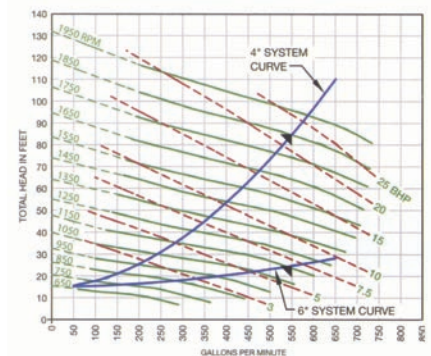


Figure 1. Increasing pipe size by two inches reduces the speed necessary to get the same flow.

Sometimes you can't increase the pipe size when you're working with an existing system. A dialogue with your pump-savvy distributor or manufacturer could still save many dollars in the initial cost and/or during the life of your pump. In Figure 2, note that by sacrificing only 50 GPM, the speed can be reduced approximately 300 RPM, saving about 7.4 HP or 4.58 kW ($5.5 \times .83$), since it will need to run about 16% longer. Additionally, a slower speed reduces wear and tear on the pump and increases the life of all components. However, this scenario only works for intermittent duty pumps. Applying the pumps properly from the beginning, and dealing with company professionals who can help select the proper size for your particular situation saves time and money over the long run.

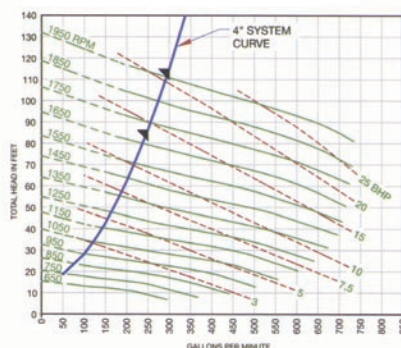


Figure 2. Sacrificing only 50 GPM allows speed to be reduced significantly, thus saving horsepower.

2. Invest in a type of self-priming pump that can be quickly unclogged.

Cleaning up natural water resources has created a demand for reliable solids-handling pumps. Included in the reliability issue is the serviceability debate regarding submersible and self-priming pumps. While great strides have been made to reduce clogging in both, the fact remains that any pump can clog. Although the submersible is usually less costly to install, over the life of the pump many man-hours can be consumed pulling and unclogging it. Because of the unpleasantness of the job, a partially clogged pump may be tolerated for long periods of time, causing it to be less efficient and run longer to accomplish the same flow before it is pulled and cleaned. Both the pulling of a pump and the tolerating of a partial blockage add to its TCO.

A self-priming pump, on the other hand, sets in a conveniently serviceable area above the water level. Quality self-priming trash pumps can be easily unplugged by using simple tools to drain and remove a clean-out cover, which exposes any blockage in the pump and allows easy removal of it.

Since any pump installed above the water level has the potential to lose its prime (loss of water in the suction line), it is important to choose a quality pump that has excellent re-priming capabilities. Typically, this pump will only need to be filled with water at installation or if it is intentionally drained. For trouble-free, unattended operation, the pump should be able to re-prime if it loses the suction leg because of debris under the check valve. The more unattended a cum can be, the lower its TCO.

3. Acquire a pump that affords adequate and easy face-clearance adjustment.

Efficiency can be preserved over the life of the pump by maintaining the face clearance. Wear, due to re-circulation, will also be minimized.

Pumps designed with an open-faced impeller should have an easily adjustable wear plate to maintain recommended clearance between the impeller and the wear plate as abrasive particles remove material from them. In addition to maintaining optimum efficiency, the re-prime capability is also assured. Ideally, face clearance should be adjustable with out disturbing the mounting of the pump or drive assembly. When looking at pump construction, consider ease of adjustment in the formula to reduce cost of ownership. Pumps in severe applications, where debris must be frequently removed, should also have the capability of being able to lock in the face clearance so time is not lost resetting clearances each time the clean-out cover is removed. Purchasing a pump with two adjustment locations also opens up the opportunity for twice the adjustment capability, doubling the life of the pump (Figure 3).

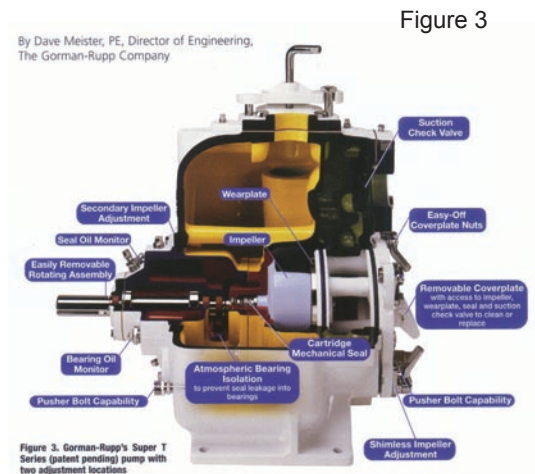


Figure 3

4. Buy with ease of maintenance in mind.

A properly designed pumping system will give years of maintenance-free service. Because not every application can be ideal, though, look for ease of maintenance when selecting a new pump.

In addition to ease of adjustment, look for ease of replacing check valves, wear plates, impeller, seals and rotating assemblies. Pumps that can be readily repaired without removing them from the plumbing system will save many maintenance hours. In some super critical applications, keeping a spare rotating assembly could save untold loss in production downtime.

5. Purchase from a manufacturer that is well equipped with parts and smarts.

Purchase pumps from a well-equipped manufacturer that has committed to keeping a large inventory of spare parts on hand for the expected life of their pumps. Also, be sure they have a staff committed to meeting customer needs and that they are proficient at troubleshooting problem applications.

The ability to get service and parts is critical. If a pump breaks down, knocking out a line for an hour or a week the total cost for that pump can rise exorbitantly. Today, far too many counterfeit pumps are made outside the United States, adding further doubt to the ability to quickly resolve problems. Receiving parts from foreign shores also can take longer than the overnight service many of us are accustomed to and frequently need.

To be a value-added partner to your organization, your selected pump supplier should be able to track all changes to form, fit and function. If you call with a model and serial number, you should be able to get repair parts that fit, even if the pump is 20 years old.

Purchase from a company with a good distribution network. This will ensure that you not only get personalized service when applying new pumps, but that you receive quick response when ordering repair components, since many distributors also keep a good supply of parts.

6. Buy from a company that believes in the importance of research and development.

Look for product improvements that a company has to offer. That's an indicator the company is not satisfied to stand on its laurels, and is constantly researching new ways to give you a better product to improve your TCO. Research and development and extra features can add more cost to the pump. That's money well spent when you compare the cost difference and features gained over a lesser product during expected service life. A \$1,000 premium for a top-quality pump is only \$50 a year with a minimum life expectancy of 20 years.

7. Lastly, check reputation.

Knowing a company's reputation is as important when buying a pump as it is in any business decision. Today, more than ever, it is very important for pump customers to know that the company they are buying from is going to get it right the first time. Furthermore, were problems to arise in the future, you would want to know that the company you were buying from would still be around, able to respond quickly, expertly and with knowledgeable service.

One of the easiest ways to determine a company's reputation is to talk to others in your industry at trade shows or conferences, about the pros and cons of vendors. In addition, don't forget to get an opinion from the mechanics or technicians that work with the pumps on a daily basis. They are among the best sources for helping to uncover the hidden life cost that's incurred by skimping on quality when buying a new pump. The "word on the street" can whittle down your prospect list considerably—and quickly.

To Summarize

1. Determine your true pumping needs either through your consulting engineers or through the pump manufacturer or their distributor. If possible, make adjustments to lower the performance to save on initial cost and, more importantly operating and maintenance costs over the life of the pump.
2. Consider the advantages of the easily accessible self-priming pump.
3. Be sure to factor the cost of holding face clearance for optimum efficiency over the life of the pump into your total cost of ownership.
4. Allow for ease of unclogging the pump, particularly if you will be handling solids-laden product.
5. Deal with a company that can keep you in operation for the life of the pump by always having spare part immediately available, and one that has the staff to help you troubleshoot any problems you encounter.
6. Choose a company that is constantly offering product improvements to help you reduce your operating costs
7. Get references. Check the experience of others, including the people who work with the pumps on a daily basis.

About The Gorman-Rupp Company

The Gorman-Rupp Company is a leading manufacturer of pumps and pumping systems for the municipal, water, wastewater, sewage, industrial, construction, petroleum, fire and OEM markets. Pumps include self-priming centrifugal, centrifugal, submersible, trash, priming assist, rotary gear and air-driven diaphragm pumps. In addition, The Gorman-Rupp Company manufactures a complete line of packaged lift stations and booster stations, which include pumps, motors, controls, piping, accessories and enclosures. The company prides itself on manufacturing and delivering the right pump for the job.