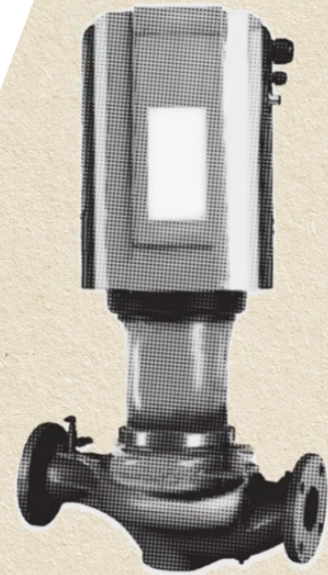


PUMPS FACT SHEET

Smart Pumps

The future of efficient and reliable pump control.



What makes a smart pump so smart?

A smart pump – often termed a ‘self-sensing’ or ‘sensorless’ pump – integrates variable speed controls to automatically optimize pump operation based on system requirements. They come packaged as a pump, motor, and variable speed drive with built-in control strategies. The controls are tested and programmed by the manufacturer and use on-board monitoring to determine the pump load, eliminating the need for downstream sensors.

More than just a variable frequency drive (VFD).

Smart pumps offer advantages over pumps with traditional controls, reducing potential operational pitfalls and enhancing efficiency by streamlining control. Performance mapping eliminates the need for downstream sensors and enables self-optimization. This can eliminate potential sources of error such as sensor failure, poorly tuned control logic, and commissioning errors. Additionally, installing, balancing, and commissioning these pumps is simple and fast, reducing parts and labor costs associated with traditional pumps.

When to consider a smart pump.

Every design or re-design of a hydronic or booster pump system is an opportunity to consider a smart pump. The packaged nature of these pumps can decrease the number of tradespeople engaged in the pump and drive commissioning process.

Consider a smart pump retrofit if:

- Your existing pump does not have variable speed control.
- Your pump is oversized. Replacing an oversized pump or pump system with a smart pump can reduce maintenance, decrease noise, and save energy.
- You control a pump with a balancing valve that is more than 20% shut.
- You are performing frequent maintenance or observing excessive noise. These are hallmarks of poor pump operation that a smart pump can address.
- You are replacing a variable speed pump and the VFD that controls it.

Save on both constant and variable load.

Most pumps are oversized and are balanced using throttling valves. An analysis by the Northwest Energy Efficiency Alliance (NEEA) of 132 pumps in the Northwest showed that pumps were oversized by an average of 24% and could save between 13-38% of electricity use just by slowing the pump down instead of throttling.¹

Availability

Smart pumps have been on the market for several years and manufacturers routinely add more pump types, sizes, and motor types to their lines. **Armstrong’s Design Envelope, Grundfos TPE-3, Taco Self Sensing, and Bell & Gossett e-SVe** are all examples of smart pump model families available in the market today.

¹Source: [neea.org/resources/power-drive-systems-energy-savings-and-non-energy-benefits-in-constant-variable-load-applications](https://www.neea.org/resources/power-drive-systems-energy-savings-and-non-energy-benefits-in-constant-variable-load-applications)