



Advocating for Smaller Energy-Efficient Pumps

December 14, 2021

Utilities have long offered incentives for large municipal and industrial pumps. In the Northwest, an alliance of utilities and energy organizations is making the case for smaller pumps for commercial applications.

With more than 140 utilities and energy efficiency organizations, the Northwest Energy Efficiency Alliance is a leader in promoting energy efficiency. With a service area that includes Idaho, Oregon, Montana, and Washington, NEEA seeks to harness the power of markets to make energy-efficient equipment the go-to choice for business.

While utilities often provide incentives for selecting efficient large motors, NEEA's Extended Motor Products (XMP) program takes this one step further: It focuses on pumps and circulators under 50 horsepower used in many commercial and industrial applications.

In this issue, we ask Warren Fish, the XMP program manager, about NEEA's focus on smaller pumps and how the program works.

Let's start with the big picture. Why do utilities offer incentives for customers to improve energy efficiency?



For utilities, energy efficiency is a cost-effective way to stretch their generating resources. It provides a more economical way of managing load growth while reducing the risk of building new capacity. Saving customers money is a way to serve their customers. Also, some regulators require utilities to pursue energy efficiency.

Are pumps a big part of that?

Pumps are a significant energy end-use in industry and municipal systems, and also in agriculture and commercial buildings. The world needs to move a lot of liquids, and they use a lot of energy to do it. If we can lower the amount of energy, that's exciting.

Does NEEA's Extended Motor Products program cover a particular type of pump?

Right now, the program's focus is primarily on pumps under 50 horsepower used in commercial buildings, such as tall buildings, schools, and hospitals. They are typically smaller than pumps used in industrial and municipal applications.

The reason NEEA has a special program for them is that traditional utility programs focus on much larger pumps, custom projects involving lots of money and lots of power consumption. For those projects, utilities can come in with engineering services and site-specific plans and verify the energy savings, so their customers qualify for an incentive.

The challenge has always been bringing energy efficiency to smaller projects. In those cases, the value of the project is not as high, and the energy savings and rebates are not as significant. This program is developing a way to work at scale to achieve fleet-wide efficiency for the thousands of these pumps that are installed every year.

What has changed that makes it possible to go after smaller pumps?

The Hydraulic Institute's energy rating label makes this possible. It builds on new federal standards that required pumps from 1 to 200 horsepower to achieve a minimum level of energy efficiency and set out a methodology for measuring this. The Hydraulic Institute, working with NEEA and other organizations, used this framework to develop a more customer-friendly energy rating label. The institute also ensured that the labs testing those pumps were certified by a third party and followed ISO standards on pump testing and equipment calibration.

This solved a major problem we faced when granting incentives. Pumps are more complicated than most other products, like light bulbs, because their efficiency depends on how they are used. The Hydraulic Institute's labels will never replace the full engineering assessments used to calculate energy savings on large, custom pumps. Nor will pumps deployed in a building operate exactly like they would in a lab test. But across a fleet of pumps in many different buildings, we have confidence that the label reflects the average energy saved by those pumps.

Studies show that energy accounts for 40 percent of a pump's cost over its lifetime, far more than any other factor. So, what keeps people from buying energy-efficient pumps?

The barriers range from lack of confidence and low awareness of energy efficient products to the higher initial price of the pump and lack of understanding the value proposition over a pump's lifespan.

Also, we work in a very conservative industry, and for good reason. People who specify equipment are comfortable with technology they already know how to specify and select. That is important to engineers making potentially multimillion-dollar decisions when they design pump systems. Their professional reputation and client relationships depend on those pumps, so they will often stick with something they know.

It is a well-known fact that specifiers oversize equipment for the same reasons. They want to build in a margin of safety, so they select larger pumps than they really need. That leads to poor energy performance. A better way to achieve the same goal would be to use smart pumps, which identify flow and pressure and adjust their motor speed to the most efficient point on the pump curve.

How does the Extended Motor Products program work?

XMP is a midstream program aimed at manufacturers' representatives and distributors. They are the sales force that educates engineers, contractors, and installers about the value of energy-efficient pumps. The program incentivizes them to buy, stock, promote, and sell high-efficiency pumps and circulators. Participants get a bonus if they are able to increase smart pumps sales, based on what they have sold in the past.

NEEA also supports education and training programs to increase their reach, so they can make more customers aware of smart pumps and how the energy rating label works.

We already see a tangible results. Working directly through distributors in a market transformation-style program, we have successfully incented over 7,500 pumps and circulators worth an estimated 5,000 MWh of energy savings. We think we're on the right track to make an impact on the market.

How do you expect the program to change moving forward?

Right now, the alliance's emphasis is on smart pumps and circulators with embedded controls to improve efficiency. We're trying to understand how to leverage the energy rating label so we can achieve wider adoption among engineers and contractors. We also want to get more manufacturers signed up for the Hydraulic Institute's energy rating program and third-party validation. Also, there are potential opportunities for similar smart pumps in agriculture, industrial, and municipal applications.