Pool pump efficiency is profitable

by Scott Webb

In some states, efficient pumps and circulation systems are a mandate. Elsewhere, they're just a great idea, profitable for sellers, consumers and the country as a whole.

They profit consumers by dramatically lowering their utility bills, providing them a quick return on their investment and then a handsome, ongoing bonus. They profit the seller with a nice margin on the item itself, plus, in some places, a fat rebate check. And they profit the country by defusing its energy supply crisis and lowering pollution levels.

Everybody wins with efficient pumps. But even the best ideas go nowhere without a good salesperson to get the point across. It's the pump customer that must agree to the deal to make these sunny projections a reality, and consumers can be balky, especially in an iffy economy.

They're often unaware. Many of them don't even read AQUA Magazine. Mention Title 20 and they'll probably shrug. They don't even know what they don't know, but they do have a clear idea of what they're paying for electricity each month, and they can be made to understand how much of that might be saved with a little investment up front.

Now, getting someone to buy something — even if it is to their advantage — is not as easy as the business articles in AQUA often imply. Especially if the customer believes his or her pool is fine just the way it is.

But that's the lucrative and important mission for the industry. What follows are some points which may help convince a pool owner to pay for a cost-saving, energy-efficient solution for circulating water, whether you are a service pro urging an upgrade, a retailer talking replacement or a builder offering options.

Selling Takes A Salesperson

The industry is still in transition toward its inevitable energy-efficient future. It only recently took an interest in the topic at all.

In a sense, the pump efficiency movement began when the industry discovered the centuries-old-but-still-new-to-us affinity law.

Before that, before anyone cared about efficiency, good pump selling meant getting the customers to spring for the biggest, strongest pump they could afford. More was good, and too much was great.

Thankfully, due to a diligent education effort spanning decades, the industry as a whole has begun to discover the affinity law — an immutable law of physics, old as creation itself — which tells us that when it comes to forcing water into a conduit, more is rarely good, and too much is an efficiency disaster. The harder you cram that water into the pipe, the harder it fights you; it's a loser's battle which drives energy costs through the roof.

The affinity law says that when you cut pump speed in half, flow drops to half, but power usage drops to one eighth. Sure, you have to run it twice as long to move the same amount of water, but that still leaves you using one fourth (2 x 18) the energy. You've filtered the same volume, but you've saved 75 percent of the energy and cost, obviously a huge number. (Actually, that 75 percent is the result you get in the lab; in the real world, the energy savings are huge as well, but due to some energy losses in the system, the savings are slightly lower.)

Fast water transit is the problem. The faster water moves through plumbing, the more friction is created and the more obstinate the plumbing becomes. To make this concept as straightforward as possible, the industry is moving toward a flow speed limit of 6 feet per second. This speed limit is included in the new California pool regulations, and will soon be picked up by Florida, Texas, and no doubt, a good number of the other 47 states.

Price To Fit

A good way to slow the water down is by slowing the pump speed or rpm, which a consumer can do with a variable-speed pump, notes Rodney McCall, national IntelliFlo field applications specialist, Pentair Water Pool and Spa.

"With variable-speed pumps you've got several things working for you. Not only can you reduce the speed by half, run it twice as long, and you are still only paying a quarter of what you did before for electricity, but by running the pump longer, you distribute chemicals longer, you skim the pool longer, and you end up with cleaner water," he says.

"Or you can use a two-speed pump," says Steve Gutai, pool products manager at Jandy in Petaluma, Calif. On a two-speed pump's lower, 1,725-rpm setting, flow is cut in half compared to the standard 3,450-rpm setting, and provides cost savings approaching 75 percent as mentioned in the affinity law example above.

In the past, two-speed pumps lost some internal pump efficiency at the lower setting, but dramatic improvements have been made in recent years, Gutai says. "There are new two-speed motors coming out from A.O. Smith, for instance, that are much higher in efficiency in the low-speed setting."

The two-speed provides a crucial price point for consumers who may gag at the outlay necessary for a variable-speed pump, he adds. "You can buy a two-speed pump and control it for about half the price of a variable-speed pump.

"On the other hand, when you sell a basic variable-speed pump, $750 out of distribution, by the time it reaches the customer's pool, it's at least $1,500 to $2,000.

"The two-speed pump will get you a good amount of power consumption savings for about half the cost."

At the lowest price point, even a low-horsepower single-speed pump can provide savings. It's true that all single-speed pumps operate at the same rpm, but lower-horsepower single-speed pumps have smaller-diameter impellers, which results in lower exit velocity and friction loss.

Watt Is A Kilowatt?

Matching the price point to the customer is a matter of asking questions and listening — basic sales techniques that are honed over time. For builders and retailers, these skills are part of the job, but it's tough for a service professional who has made a living fixing and cleaning pools to suddenly acquire the savvy of a good pump merchant.

As Jeff Farlow, program manager for energy initiatives at Pentair, a man who trains service techs to do this very thing, puts it, "It takes a salesperson with some seasoning to approach customers with the concept of taking a perfectly functional pump and throwing it away and giving up maybe $2,000 to upgrade their pool pumps.

"Selling energy efficiency really means communicating to customers how they can replace their pool pump and make money on the deal. In doing so, you have to talk utility bills, which have a language all their own."

It's important to understand the difference between a kilowatt-hour and a kilowatt, Farlow says. "That's a big one, because everything builds on those two terms."

Kilowatt consumption tells you the rate of energy usage, and a kilowatt-hour is the quantity of energy consumption. It helps to use a speedometer-odometer analogy.

The speedometer in your car tells you how fast you're going — say, at 50 mph at a particular instant — while your odometer tells you how many miles you've driven.

The speedometer reading is like the number of kilowatts a pump is using at a single instant, and the odometer reading is analogous to the number of kilowatt-hours you've used. Of course, just as odometer mileage is a good way to measure the fuel your car has consumed, kilowatt-hours measure total electrical consumption, and they're what the utility charges you for.

So you can consume a lot of kilowatts for a short amount of time, or a small number for a long period of time, and you will have consumed the same quantity, Farlow says. "And that's what lets you calculate the cost of operation for a consumer. And with the cost of operation of an existing piece of equipment contrasted with the cost of operation of a new one, that's where you start to see your annual savings and return on investment."

The Cost Of Doing Nothing

Return on investment, of course, is the main interest of customers, and the key to convincing them to cough up the money for an energy-efficient retrofit. If the pump is to replace a functioning existing pump, the customer is often resistant to the idea, preferring to wait until the current pump fails.

That's where Farlow gets into what he calls "the cost of doing nothing."

Take an existing pump consuming $1,000 worth of electricity per year, he says. In five years it will cost $5,000 to run that pump.

That's the cost of doing nothing — versus a new pump that may only cost $200 a year to operate.

"So, just looking at energy costs, you're looking at $1,000 over five years with the new pump compared to $5,000 with the old one. That's a $4,000 difference, offset by the upfront retrofit cost of perhaps $1,500."

Clearly, if it's saves the customer $800 a year, and it costs $1,500, it will take less than two years to repay the investment; after which, the customer is coming out ahead.

"It all depends on your electricity rate," Farlow says. "If somebody's spending 20 cents a kilowatt-hour, it's going to pay him back twice as fast as somebody spending 10 cents a kilowatt-hour. It's hard to put national averages on it, but there is quite a variance. The highest cost of electricity is probably in California, especially during peak use. They offer tiered rates, where the more you use, the more it costs. They have some rates that approach 50 cents."

The Great Rebate

Depending on utility rates, a customer's ROI on a new pump will come very quickly in comparison with other products such as windows, refrigerators and furnaces. In addition to that strong incentive, a number of states

and utilities offer very healthy rebates, some that provide money for both the homeowner and the installer.

These seem to run about $200, although some are considerably higher. For instance, Gainesville Regional Utility in Florida offers up to $350 to the consumer and another $50 to the dealer or installer that puts it in.

Why are states and utilities pushing pumps so hard? It prevents them from having to build new power plants. If they can reduce demands on the existing infrastructure, economic growth can proceed without large new investments.

“After the other five major fuels, energy efficiency is sometimes called ‘the sixth fuel,’ and it’s a much more cost-effective one,” Farlow says. “It’s just so expensive and political to build new power plants now. Nobody wants a power plant in their backyard anymore. There’s so much opposition. So there’s significant motivation to avoid that.”

Farlow notes that the utility may have to pay up to $10,000 for the infrastructure to add a kilowatt of output, depending on the type of plant they build. It makes much more sense to pay a consumer $200 to obviate the need for it.

Making The Case

With such incentives and commitment to making the transition to efficient pumps, it’s clear that sooner or later, that’s where the industry will end up.

The pace of change depends on the ability of our salespeople to make a clear and persuasive case.

Some are clearly doing just that.

“When you see somebody that really gets it, it’s amazing what they can do,” Farlow says. “I’ve seen folks just abandon their whole service business to focus on pumps. One guy I talked to said the rebate program has become his own little ATM machine.

“When you get it and you can make a compelling case, and the pump delivers on your promise, it’s a good deal for everybody.”

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