

Current Pool Pumps

Old Technology: AC induction motors

Typically run 50% efficient

65% best case

At half speed, efficiency drops off to about 25%

New Pumps

Permanent Magnet Synchronous Motors

The same technology as electric motor vehicles

- Controllable – can vary the speed
- 90% efficient (at all speeds)
- Quiet as a whisper

Key Concept: Slower is Better

You can save money with a more efficient pump

But the real savings is slowing the pump down

Pump Affinity Law

$$\text{SPEED (rpm)} = \text{FLOW (gpm)}$$

$$\text{SPEED (rpm)} = \text{Power}^3 \text{ (kW)}$$

EXAMPLE: Reduce Speed (50%)

$$1/2 \text{ SPEED (rpm)} = 1/2 \text{ gpm}$$

$$1/2 \text{ SPEED (rpm)} = 1/2 \times 1/2 \times 1/2 = 1/8 \text{ kW}$$

The Cost Savings

$$\text{kWh} = \$$$

$$1/2 \text{ speed} = 1/2 \text{ gpm} = 1/8 \text{ kWh} = 1/8 \$$$

You need to move the same amount of water, so you will need to run the pump twice as long.

$$1/8\$ * 2 = 1/4\$ \quad \text{That's a 75\% savings!}$$

If you are spending \$120.00 per month, you can reduce it to \$30.00 per month. That's \$1080 per year!