TECHNICAL WHITE PAPER

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The Merits of Variable Speed Pool Pump Motors

REDUCE THE COST OF POOL OWNERSHIP AND HELP THE ENVIRONMENT BY UPGRADING TO A VARIABLE SPEED PUMP MOTOR

BELOIT, Wis., September 14, 2017 — In-ground residential pools in the United States consume around $1.5 billion in energy costs per year, making pool pumps one of the biggest energy users in a home. Single-speed pumps typically run at high RPM's and around the clock, over-circulating water and wasting precious energy and money. A variable speed pump motor can circulate water at the minimum turnover rate for water quality at a lower RPM, thereby greatly reducing the energy needed by up to 80%.

Variable Speed Motor Energy Consumption	
RPM	Max Power Consumption
3450	1500W
3100	1175W
2850	930W
2600	720W
2350	540W
2100	395W
1850	280W
1600	195W
1350	130W
1100	80W
850	45W
600	35W

Table 1.1

ENERGY SAVINGS

For a relatively small investment, a variable speed pool pump motor can pay for itself in energy savings alone. The Pump Affinity Law can be used to explain the relationship between motor speed, flow rates, and energy consumption. As motor speed is reduced, the flow rate is as well. This relationship to energy consumption (watts) is not linear, though. When motor speed is cut in half, the flow rate is cut in half. However, the power consumption is reduced to 1/8 of the original consumption. Table 1.1 shows the dramatic energy savings associated with running a motor at lower RPM's.

States, such as California through its Title 20, have recognized the energy saving impact that variable speed motors can have on the environment. Variable speed motors are increasingly preferred by regulatory agencies, over single and two-speed motors, for their ability to conserve energy.

CONVERTING FROM SINGLE SPEED TO VARIABLE SPEED

Variable speed pump replacement motors can be installed on existing single-speed pumps. Upgrading to a variable speed motor is all that is necessary to convert pools into high-efficiency systems. Service technicians should select the variable speed motor that is appropriate for the size of pool, plumbing and pump. Installation is simple without the need for additional plumbing or wiring.

OTHER BENEFITS

The slower circulation rates of a variable speed pump equate to a noticeably quieter motor. Operating at lower speeds also lowers the temperature of the motor, extending the life of the motor. A variable speed motor's totally enclosed fan cooled (TEFC) construction equates to a longer life and less maintenance compared to a traditional open drip proof design.

The **VGreen®** line of variable speed replacement pump motors offer premium energy savings along with an integrated user interface with fully programmable schedules and overrides. The VGreen motors are available in 0.85, 1.65 and 2.70 total horsepower in square, C-face (round) and through bolt flanges. These energy savings can be quantified using the **VLink®** Wireless User Interface that connects the VGreen motor to mobile devices to set, adjust, and monitor pump motor schedules. The program flexibility allows the user to monitor and manage energy consumption as well as set custom overrides for parties and cleaning. The VLink Wireless User Interface works with both Android and iOS mobile devices. Energy conscious pool owners have the ability to wirelessly monitor and manage their VGreen pump motor anytime anywhere.

Upgrading to a variable speed motor will lower the cost of pool ownership through energy savings of up to 80% without replacing the pump. These motors run cooler, quieter and last longer. Owning a pool with a variable speed motor just became more affordable and better for the environment.

About Regal Beloit Corporation

Regal Beloit Corporation (NYSE: RBC) is a leading manufacturer of electric motors, electrical motion controls, power generation and power transmission products serving markets throughout the world. The company is comprised of three business segments: Commercial and Industrial Systems, Climate Solutions and Power Transmission Solutions. Regal is headquartered in Beloit, Wisconsin, and has manufacturing, sales and service facilities throughout the United States, Canada, Latin America, Europe and Asia. For more information, visit RegalBeloit.com

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Release No. MCWR17036E