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**Marathon Electric Commercial Motors Introduces the imPulse™
Electronically Commutated Motor:
The Spa Industry's New Programmable, Fully-Variable Pump Motor**

International Pool and Spa Expo 2007—Orlando, FL—Marathon Electric Commercial Motors is set to revolutionize the way spas are designed with the imPulse™ ECM, a programmable and fully variable-speed pump motor. imPulse ECM's wide speed range and integrated electronic control allow manufacturers to create spas that are quieter, more energy efficient, and offer highly customized MyZone™ comfort features. In addition to delivering new and expanded spa features, the imPulse renders dedicated water circulation motors obsolete, thanks to its ability to deliver the minimal flow rates needed for continuous water filtration and avoiding prevention of stagnation.

"The pump motor is literally the heart of a hot tub, providing the volume, pressure and water flow through the system," explains Ed Yager, Pump Product Manager for Marathon Electric. "imPulse ECM gives manufacturers an unprecedented level of control over water flow, which opens up a world of customization options for spa manufacturers."

Reliable, Sophisticated Technology

The imPulse electronically commutated motor (ECM) is more efficient than conventional PSC motors and field-proven to be extremely reliable.

Here's how it works: imPulse ECM is built around a brushless DC, permanent-magnet design that uses a specialized electronic control to actively manage rotation. With no need to electrically charge the motor's permanent-magnet rotor, the design is inherently more efficient than a conventional motor and is capable of operating anywhere between 400-4000 RPM.

Think of it as a motor with a brain. Thanks to the ECM's sophisticated onboard control, the motor can carry out complex programming instructions, monitor and correct its own performance, and talk directly to external equipment through a digital serial interface.

In contrast, PSC motors that are commonly used in spa equipment are purely mechanical devices that operate by inducing a charge into multiple sets of electrical windings. Efficiency losses notwithstanding, this conventional design is limited by design to only one or two operating speeds.

“More than just an incremental improvement to pump-motor capabilities, imPulse ECM’s wide speed range and advanced-control schemes offer a completely new, highly personalized approach to customizing spa products,” says Yager. “It’s a concept we call MyZone™: superior motor control that passes the power of product customization on from the equipment designer directly into the hands of the spa’s end user.”

MyZone: Empowering Users

Where conventional spa-design process creates customization by changing physical product specifications – construction materials, selection of jet nozzles and configurations, or changes to the product’s aesthetic features – MyZone takes advantage of the imPulse ECM’s intelligent controls to let the spa designer decide how the spa operates.

The MyZone concept showcases key comfort benefits offered by imPulse ECM:

Programmability -- allows spa designers to add depth to a spa’s massage features by programming designed massage profiles within the memory of the motor’s onboard control. This will allow the spa user to enjoy a range of profiles from slow to fast speeds, thereby varying their massage.

Variability -- since pump speed has a direct effect on water flow, imPulse ECM’s speed range varies the amount of flow delivered from the spa’s jets.

Quieter Operation -- imPulse ECM’s wide speed range also means that the spa runs with less noise by reducing water turbulence. In its lowest settings, the motor is even more quiet.

Energy Efficiency -- The wide speed range of the imPulse allows the function of the recirculation motor to be duplicated and therefore removed. Testing has shown that the imPulse can provide the same water flow, at a slower speed, and save as much as 64% in energy consumption when measured against an induction circulation motor providing the same flow.

Proven ECM Technology in an Easy-to-Use Package

imPulse ECM is built from the same proven technology that has been providing reliable, efficient speed control to the residential heating and air-conditioning industry for more than 20 years and in millions of installations.

“Our long-standing experience creating ECM technology allows us to offer a number of support tools for designing ECM-driven equipment and servicing the motor in the field,” says Yager.

One such support tool is the ECM Toolbox development kit, which gives system designers a straightforward interface for developing spas with the imPulse motor in a dynamic, real-time programming environment. The Windows-based ECM Toolbox software lets designers quickly and easily create customized motor programming, as well as test and verify motor performance based on the instructions they have created.

“The imPulse ECM does much more than just create a new standard for spa pump motors,” says Yager. “It revolutionizes how manufactures approach creating new products by giving manufacturers unmatched engineering support and exceptional product flexibility with never-before-seen features.”

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