DC Motors Offer Enhanced Customization Capabilities

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PITTMAN Motors, a unit of AMETEK Precision Motion Control, offers customized motor designs for high-end motion control applications. Customized motors create exceptional value for OEMs and result in solutions that are able to meet extreme engineering specifications.

With PITTMAN customized motors, design and automation engineers are not limited to an off-the-shelf motor that may not completely meet application requirements, especially in applications where the motor is expected to operate continuously in a harsh environment. Highly customized DC motors, such as the one pictured, can be designed to meet strict customer specifications for use in harsh environments or demanding applications.

In the instance of the pictured motor, the customer first gained an understanding of the base-model motors that PITTMAN offers. The customer then worked closely with PITTMAN design engineers to customize a motor to meet the customer’s specific needs. The motor’s outside is built using stainless steel for the housing, flanges, and shaft. The motor’s inside is protected from debris and moisture using a combination of seals, including a dynamic labyrinth seal on the front mounting surface and o-rings between the flanges and housing.

The customized brushless motor design provides a high level of sealing against particulates and moisture as well as splashes from the corrosive environment. A dynamic labyrinth seal provides protection from dust contamination, while allowing the motor to operate at high shaft speeds. A stainless steel cable gland and silicon cable sleeve are used for enhanced ingress protection.

The 4-pole brushless motor also was optimized for 24 hour/day operation at speeds

ranging from 500 RPM up to 15,000 RPM. It is constructed using high-grade, low-loss lamination steel to increase efficiency at high speeds and skewed rare-earth permanent magnets to minimize cogging at low speeds. The motor is electronically commutated using integrated hall-effect devices.

The above example offers just a sampling of the customization capabilities available from PITTMAN. Thousands of application-specific solutions have been designed for a broad range of systems such as medical devices, laboratory instrumentation, semiconductor fabrication equipment, robotics, business machines, and numerous others.

PITTMAN also offers a wide range of standard brush and brushless DC motors that are available in a variety of frame sizes, torque and power ratings. Frame sizes range from 0.375-in (9.5mm) for miniature high-speed brushless DC motors up to 5.25-in (133mm) for high-torque brushless DC motors with integrated controllers.

Output torque ranges from 0.3 oz-in (0.002 Nm) to 1824 oz-in (12.88 Nm) without a gear box. Both planetary and spur gearboxes are available for most brushless DC motors, greatly increasing the available torque output. Gear ratios up to 4732.5:1 are possible. A wide variety of encoder types also are available. For more information, visit www.Pittman-Motors.com [1].

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[1] http://www.Pittman-Motors.com