



Dietz Electric Releases Updated Guide to the Types of Electric Motors

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Dietz Electric, a Milwaukee-based supplier and service provider of industrial electric motors, has published an updated version of its guide explaining the different types of electric motors and how they operate across industrial applications. The revised resource, available on the company website, expands on motor design principles, common configurations, and the selection factors that engineers and facility managers weigh when specifying equipment.

The guide addresses a category of technology that plays a substantial role in global energy use. Industry estimates cited in the resource indicate that electric motors account for roughly 45 percent of worldwide electricity consumption, a figure that underscores the importance of proper motor selection and maintenance in industrial settings. The updated material is intended to help readers understand the mechanisms behind motor operation before evaluating options for a given application.

At its foundation, the guide explains that an electric motor converts electrical energy into mechanical energy, most often producing rotational motion through the principle of electromagnetism. It describes how core components such as the armature or rotor, the stator or field magnet, the commutator, brushes, and the

power supply interact to generate torque along a shaft. These elements vary depending on the design, which forms the basis for distinguishing among the primary motor families.

Much of the updated resource focuses on the distinction between direct current and alternating current designs. The guide outlines how DC motors, powered by a direct current source, are commonly divided into brushed and brushless variations. Brushed DC motors use carbon-based conductors to deliver charge to the commutator, offering a comparatively simple and cost-effective design suited to alternators, generators, and certain appliances. Brushless DC motors, by contrast, rely on embedded controllers and sensors to achieve higher performance and greater durability in applications such as electric vehicles, cordless tools, and HVAC equipment.

The guide gives equal attention to alternating current designs, which it separates into synchronous and asynchronous, or induction, categories. Synchronous AC motors maintain a constant speed regardless of load, making them well suited to clocks, timers, robotics, and metering pumps where precision is essential. Induction motors, described as among the most widely used designs in service today, operate through electromagnetic induction and appear in fans, water pumps, air conditioners, and a broad range of everyday equipment.

Beyond the primary AC and DC classifications, the resource reviews specialized designs that support more demanding tasks. It covers servo motors, which use feedback sensors to position actuators and robotic arms, and stepper motors, which divide a full rotation into discrete steps for precise positioning in robotics, hard disk drives, and telescopes. The guide also describes universal motors capable of operating on either DC or single-phase AC power, a versatility that has made them common in power tools and railway traction systems.

The updated version continues to address motors built for demanding environments, including hazardous location motors designed for safe operation where explosive or ignitable gases, vapors, or dust may be present. The guide explains that such motors must comply with the classes, divisions, and group classifications defined by the NFPA 70 National Electrical Code and the Canadian Electrical Code, and that each unit carries a label identifying its suitability for a specific environment.

"The goal in revising this guide was to give engineers and buyers a clear, accurate reference they can return to when they are weighing options," said Mark Henson, Owner of Dietz Electric. "Understanding the differences between the various types of electric motors is the first step toward selecting equipment that will perform reliably in a given environment."

Henson added that the update reflects questions the company encounters regularly from customers across manufacturing and processing industries. "We spend a great deal of time helping clients match a motor to the

demands of their application, and much of that conversation starts with the fundamentals," he said. "Putting that information in one place is meant to make those decisions easier and better informed."

Dietz Electric supplies custom electric motors, drives, and power transmission systems from a range of manufacturers, and the company also modifies and repairs motors for industrial customers. Drawing on more than four decades of experience, the company works with clients to identify equipment suited to specific operating conditions.

The updated guide to the types of electric motors is available now on the Dietz Electric website. For more information, visit www.dietzelectric.com.

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