



ANNULAR CAPACITOR SHRINKS MOTOR

A round motor should have circular controls

A new capacitor design may bring smallness to motor users. The design may be especially useful to builders of electric motor drive applications, according to SBE Inc., whose circular Power Ring Film Capacitor fits perfectly around a motor shaft, where it blends into the design rather than sticking up on the top of a machine like an ill-fitting hat.

By housing the power electronics and capacitor closer to the motor windings, the design increases efficiency over traditional Electrolytic Capacitor Banks, while generating less heat and EMI, says SBE Engineering Manager Terry Hosking. The company uses a special winding machine and manufacturing process to wrap a metallized polypropylene or polyester dielectric in any of several "standard" motor sizes, with IDs of 4½ or 5½ inches and ODs of 7, 10, and 15 inches. SBE engineers work closely with inverter designers to insure correct thermal management and connectivity for the device, Hosking says. The company can make the Power Ring in practically

any ID and OD to meet the needs of specific applications.

Since the form factor of a motor is circular, it makes sense for the electronics of the inverter and control system to be circular too, Hosking explains, since that represents the best use of space.

The company's manufacturing process maximizes reliability of the device in ripple current environments of hundreds of amps.

"Integrating a custom bus structure with this capacitor will result in the lowest ESR [Effective Series Resistance] and ESL [Effective Series Inductance] capacitor configuration," he says.

CONTACT: Electric motor and drive designers should contact Terry Hosking, engineering manager, SBE Inc. at 802-476-4146 or terryh@sbelectronics.com to discuss Power Ring benefits in their applications.

View an animated Power Ring, inverter and motor assembly at <http://rbi.ims.ca/4917-539>.

Capacitor in the round

The concept of a round inverter is nothing new, says SBE Inc., but a single-unit annular capacitor was not available until now. Dc power goes to the capacitor (orange) and inverter electronics (blue) where it's converted to three-phase ac power to drive the motor (gray). A need for a separate inverter box disappears.

