



Copyright © 2004

Penton Media, Inc., All rights reserved.

Printing of this document is for personal use only.

[For reprints of this or other articles, click here](#)

Motor controller promises to make appliances more efficient

A new motor controller is said to reduce the amount of electricity used by single-phase acinduction motors found in home appliances, shop tools, and light industrial equipment.

The developer, **Power Efficiency Corp.** in Las Vegas, says the technology is an improvement on a three-phase power factor controller developed by **NASA** engineer Frank Nola in the 1970s. Power Efficiency licensed the technology from NASA and says it has made patented improvements in the technique.

The approach measures motor power factor as an indicator of motor loading and the efficiency at which the motor is operating. The controller has been optimized to work well with modern single-phase motors, says the company. The basic idea is to lower the voltage delivered to the motor during times of light loading. This takes place by damping the motor voltage during some portion of each ac half cycle. The action reduces magnetizing current and the corresponding iron losses.

Reduction of magnetizing current also cuts the inductive component of the total power, thus boosting the power factor.

A phase-balancing circuit smooths out motor voltage signals during phase measurement to head off motor instabilities that can arise under certain conditions. The device also incorporates a fast-response algorithm that applies full power to the motor to handle sudden loads as might arise when a large mass drops on a conveyor. Similarly, a configurable soft-start function lets operators troubleshoot motor problems with the device still in-circuit.

PEC says it will license the technology to makers of refrigerators, shop tools, vending machines, and residential air conditioners. A version of the device for integral-horsepower motors has been successfully tested at a **Boyd Gaming Corp.** casino where it worked with 15-hp motors powering two escalators. There it demonstrated energy savings ranging from 32 to over 40%, says PEC.

MAKE CONTACT

Power Efficiency Corp., powerefficiencycorp.com
