SOFTWARE-CONTROLLED SWITCHED RELUCTANCE “SMART” MOTOR WITH PROGRAMMABLE VARIABLE-FREQUENCY (VFD) DRIVE

< 3 hp smart motors offer greater relative savings

M&V

Where did Measurement and Verification occur?

OAK RIDGE NATIONAL LABORATORY (ORNL) assessed a 10 hp smart motor on a chilled water pump application at the Land Port of Entry in San Ysidro, California. A concurrent National Renewable Energy Laboratory (NREL) assessment of a 1.5 hp motor took place on condenser fans in a refrigeration system at a Walmart in Lakeside, Colorado. Technology was provided by Software Motor Company.

RESULTS

How did the 10 hp smart motor perform in M&V?

MORE EFFICIENT under all circumstances
4% avg. savings compared to premium-efficient motor/VFD;
33% for 1.5 hp motor compared to standard-efficient motor/VFD (NREL assessment)

O&M INSTALLATION COMPARABLE no additional O&M. Drop-in motor replacement

REMOTE MONITORING & CONTROL Possible but not tested. NREL assessment showed successful fault-detection and control

Immediate Payback When Replaced at End-Of-Life

44% less expensive than a code-compliant premium-efficiency motor and VFD

Technology electricity use (kWh/yr)

Technology electricity @ GSA avg. $0.11/kWh ($/yr)

Simple payback (yrs)

END-OF-LIFE REPLACEMENT

RETROSPECT

043 NOVEMBER 2019

SOFTWARE-CONTROLLED SWITCHED RELUCTANCE MOTOR

OPPORTUNITY

Why is GSA interested in smart motors?

38% OF ELECTRICITY IS USED BY MOTORS U.S. COMMERCIAL BUILDINGS³

56% OF MOTORS ARE < 5 HP²

TECHNOLOGY

What are smart motors?

SOFTWARE-CONTROLLED SWITCHED RELUCTANCE MOTOR

END-OF-LIFE REPLACEMENT

Retrofits also worth considering for: fixed-speed motors; motors < 5 hp; and applications with lower installation costs such as motors that control fans.

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