

MOTOR CHALLENGE

Project Fact Sheet



A Motor Challenge Success Story

BENEFITS

- Over \$200,000 per year in motor energy costs savings
- Enhanced operations
- Avoided maintenance

“It was a giant project. A complete plant change-out performed by a combination of their plant maintenance personnel, ourselves, and the utility working hand-in-hand. And in course of this project, Cummins became very aware of not only the savings, but the fact that they were, in effect, going to wind up with a better, more reliable plant.”

—Bob Campbell
Vice President of Sales
McBroom Electric

McBROOM ELECTRIC TEAMS WITH CUMMINS ENGINE COMPANY TO SAVE AN ESTIMATED \$200,000 PER YEAR IN ANNUAL ENERGY COSTS

Between 1996 and 1998, McBroom Electric Company Inc. initiated and successfully completed the biggest and most complex project in its 66-year history. The project, a million-dollar installation of nearly 800 energy-efficient motors, totaling over 13,000 horsepower, at the Cummins Engine Company in Columbus, Indiana. This installation save Cummins an estimated \$200,000 per year in motor energy costs.

McBroom put some Motor Challenge tools to use while managing the installation of the energy-efficient motors in Cummins' existing and new machining lines. As a participant in Cummins' joint Energy Committee, McBroom was invited to perform a comprehensive audit of the motors in Cummins' manufacturing process. Based on what Cummins had in place, they were able to project a very short payback period for energy-efficient motors versus the standard unites the were using.

Decision

As a result, Cummins decided to change-out an initial 296 existing motors ranging from 1 to 125 horsepower on it engine block, rod , and insert machining lines and replace them with energy-efficient T-and U-frame motors. Specifically, the energy analysis performed by McBroom using MotorMaster+ software

ENGINE BLOCK MACHINING LINE AT CUMMINS ASSEMBLY PLANT



showed that Cummins could expect to save nearly \$80,000 per year in energy costs.

Motor replacement on the existing machining line took place over almost twelve months. The process was performed gradually so that most of the work could be done during weekends and planned shutdowns, to avoid shutting down the line. The gradual pace also allowed Cummins to look at other factors that improved operations and revealed the need for Cummins to take a systems view of the plant's motor operations. According to Howard Stogdill, maintenance manager of the Columbus assembly plant during the retrofit, "Doing this replacement was a major maintenance process for us, and it brought up other issues like couplings, belts, and pumps..."

At the same time, Cummins Engine also decided to go with energy-efficient motors on two new machining lines that were being constructed for the Columbus plant to manufacture the new signature 600 engine. The two new machining lines used a total of 500 motors ranging in size from 1/2 to 200 horsepower. McBroom electric's analysis showed that Cummins could save \$128,000 in energy costs per year on their new lines by using energy-efficient motors

SUMMARY OF ENERGY-EFFICIENT MOTOR INSTALLATIONS AND ENERGY SAVINGS

Machining Lines	Motor Size (hp)	Motor Quantity	Total Horsepower	Total KW	Savings
Existing	1 - 25	245	2,385	1,779	
	30 - 100	49	2,420	1,805	
	125	2	250	187	
	Totals	296	5,055	3,771	\$79,869
New	1/2 - 25	372	1,354	1,010	
	30 - 100	119	5,450	4,066	
	125 - 200	9	1,300	970	
	Totals	500	8,104	6,046	\$128,042
Grand Totals		796	13,159	9,817	\$ 207,811

U.S. Electrical Motors Plays a Role

Motor manufacturer, U.S. Electrical Motors (USEM) has been involved in the Motor Challenge Program since 1993. Over the years, USEM has participated in various Motor Challenge activities that have provided an opportunity for them to forge new business relationships. One such activity was the 1995 Motor Challenge Efficient Motor Systems teleconference, hosted at the Indiana University and Purdue downlink site by McBroom Electric (a USEM distributor). A Cummins Engine company employee attended the teleconference and initiated discussions with McBroom Electric and USEM that eventually lead to the million-dollar installation of energy-efficient motors at Cummins' assembly plant in Columbus, Indiana. USEM worked through McBroom Electric, the lead on the project. "It was a wonderful opportunity to attend a jointly sponsored event by one of our distributors and have it ultimately result in a total order value for USEM of over a million dollars. Cummins also benefitted by choosing the most energy-efficient motors available for the job," explains Rob Boteler, USEM.



Motor Challenge, administered by the Office of Industrial Technologies, is a voluntary partnership program with U.S. Industry to promote the use of energy-efficient electric motor systems. Thousands of industrial partners have joined Motor Challenge and are improving their, and in turn, the Nation's competitiveness and efficiency.

Motor Challenge assists the OIT Industries of the Future by identifying near-term gains in energy efficiency these industries can achieve by adopting existing technologies.

PROJECT PARTNERS

McBroom Electric Company, Inc.
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Cummins Engine Company
Columbus, IN

U.S. Electrical Motors
St. Louis, MO

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

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