



June 1997

## Greenville Tube Corporation Saves Money and Energy with Motor System Upgrades

A simple payback of less than six months is what Greenville Tube Corporation (GTC) captured with its Showcase Demonstration project. In addition to the rapid payback, many other benefits, such as electrical savings and improved productivity, are being realized.

"We're saving money on power, generating less scrap, bypassing steps because of more efficient production, and we're achieving greater control over our finished product," reports David Dietz, GTC plant engineer. Material and labor savings alone exceed \$70,000 annually.

The manufacturing plant, located in Clarksville, Arkansas, was experiencing



No. 6 Tube Drawing Bench

frequent overload trips from its No. 6 drawbench. This drawbench is used by the company to meet customer-specified, high-precision diameter and/or wall thickness stainless steel tubing. The process requires the tube stock to be pulled or "drawn"

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### Introducing MotorMaster+ Version 2.0

The popular *MotorMaster+* energy-efficient motor selection software has been enhanced to make it an even more powerful motor and motor-driven equipment energy management tool. *MotorMaster+*'s internal catalog now includes close-coupled pump, IEEE 841 (Petroleum and Chemical duty), two-speed, IEC (metric, 60 Hz), washdown duty, and NEMA Design D (oil well pumper) motors. The software also has expanded motor inventory management, maintenance log tracking, conservation analysis, savings evaluation, energy accounting, and environmental reporting capabilities. Specifically, you can:

- Store and display utility billing and plant production data;

- Summarize the energy and dollar savings from all motor and motor-driven equipment energy conservation or efficiency improvement actions (taken over a specified date range);
- Display the monthly and annual "rolling average" energy use and cost per unit of plant production;
- Store the results of common predictive and preventative maintenance tests;
- Create a list of motor or motor-driven equipment maintenance actions;
- Illustrate energy use by load type (at the facility level);
- Conduct Batch "upgrade" analyses (where existing U-frame or standard *(continued on page 3)*)

## Allied Partners' Success Catches On



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The word continues to spread across the Nation about the benefits of using energy-efficient motor systems. Likewise, the number and actions of Allied

Partners continues to jump as these organizations attain education on Motor Challenge software tools and materials that are helping them help their customers save money. There are currently 127 Allied Partners. These Partners have ordered and distributed over 5700 copies of *MotorMaster+* software (*MM+*) and have participated in more than 95 workshops, trade shows, or seminars. Below are examples of how some Allied Partners are applying Motor Challenge tools to help customers improve energy efficiency and save money.

Applied Industrial Technologies in Charlotte, North Carolina, held an all-day workshop with Account Manager Bill Orthwein for employees and end-user customers. The workshop provided hands-on *MM+* training and covered topics on Motor Basics, Motor Repair/Replace policy, and Motor Systems Management. The training provided attendees with the knowledge necessary to put *MM+* to use in the field. Applied Industrial Technologies already is working with its customer Hoechst Celanese on a motor systems management program that will use *MM+*. Up to 12,000 motors from 11 plants of Hoechst Celanese's Fiber and Film Division will be surveyed and inputted into *MM+*.

Allied Partner Eastern Utilities is plugging into the Motor Challenge and its software tool *MM+*. "This software is going to be a major addition to our package of value-added services that we offer our commercial and industrial customers," explains Ted Schnell, Supervisor of Conservation and Load Management Services. Eastern Utilities, an electric utility serving 300,000 customers, has trained their Key Account Managers in *MM+*, who are demonstrating it to large commercial and industrial customers on frequent site visits. "We anticipate more and more of our customers asking for the software and then

using it to maintain and manage their motor-related operations. It will help them improve their bottom line and that's good for everyone," adds Ted Schnell.

Public Service Electric and Gas Company (PSE&G) of New Jersey is using Motor Challenge materials in its motor rebate and technical assistance program to promote the sale of premium efficiency motors to its industrial and commercial customers. PSE&G is distributing Motor Challenge fact sheets such as *Buying an Energy-Efficient Motor* to motor vendors, who use the information to help sell motors that qualify for the rebate and technical assistance program. *MM+* software is also available to motor vendors and PSE&G's large customers to help them in selecting and specifying program-qualifying motors.

The University of Florida Energy Extension Service used *MM+* for two major Florida theme parks to show the economic advantages of energy-efficient motor replacements. As a result, one theme park upgraded four 150-hp motors, used for pumping chilled water for the district cooling system of the park's buildings, with premium efficiency models. Four months of data measurements are showing a 2.5 year payback for this retrofit. At another theme park, *MM+* was used to show the proper use of load matching techniques, resulting in the upgrade of a 100-hp and 75-hp motor to two 50-hp motors. These motors are used to operate spray nozzles and water falls. Tests measuring the kW power input before and after the upgrade were conducted, showing a reduced demand of more than 20 kW. As the system operates nearly 4000 hours a year, the potential energy savings amount to 80,000 kWh annually.

In addition, the Extension Service is currently working on the Florida Energy-Efficient Water project to help water and wastewater treatment plant operators in 14 rural systems. All motors at selected facilities will be entered into *MM+*. Furthermore, the Energy Extension Service is incorporating *MM+* into the training requirements for electrical contractors to maintain their license. These projects have

been made possible through funding from the Florida Energy Office.

Cleveland Electric in Georgia and the Municipal Electric Authority of Georgia (MEAG) cosponsored motor systems workshops in March, in which Account Manager Bill Orthwein provided hands-on *MM+* training to technical sales people and customers. At Cleveland Electric's workshop, *MM+* was used to demonstrate how a 450-hp motor from Southwire Company could be replaced with a premium efficient motor. The results indicated that the company could save 36,279 kWh in annual energy savings, with a payback of .43 years and a net present value of \$5,529 after 15 years of motor life.

The workshop cosponsored by MEAG was one of the most successful events ever conducted by the company. Each attendee received customized copies of the *MM+* software with MEAG Power's logo. During MEAG's workshop, *MM+* was used to demonstrate how a 50-hp winding motor from Maybank Textile could be replaced with a premium efficient motor. The results indicated that the company could save 10,679 kWh in annual energy savings, with a payback of .63 years and a net present value of \$2,500 after 15 years of motor life. "We are very pleased about the benefits of the software and the exposure that it provides us," states Doug Moore of MEAG Power. "Motor maintenance is a persistent issue with most of our industrial customers, and the seminar materials and software have made it easy for us to support them in this critical area."

This informative workshop was repeated the week after at the City of Griffin, Georgia, a MEAG Power member and a Motor Challenge Allied Partner.

*If your organization works with industry, you too might be interested in learning more about how Allied Partners are using Motor Challenge materials to provide increased information and support to their customers. Call the Motor Challenge Hotline at (800) 862-2086 for information on becoming an Allied Partner.*



## TECH TIP

### Optimize Your Motor Efficiency

We all maintain and monitor our car engines to obtain full potential out of them. Why should it be any different for your company's electric motors? Preventive maintenance maximizes motor reliability and efficiency. By simply performing periodic checks, controlling temperatures, lubricating, and maintaining records, you can avoid many mechanical and electrical problems. Here are some tips to help you get the most out of your motors.

- Develop a monitoring and maintenance program for all three-phase motors based on manufacturers' recommendations and standard industrial practices.
- Check motors often to identify potential problems. Inspections should include daily or weekly noise, vibration, and temperature checks. Approximately twice a year, test winding and winding-to-ground resistance to identify insulation problems. Periodically check bearing lubrication, shaft alignment, and belts. A variety of specialized instruments is available for monitoring purposes.
- Keep motors cool because high temperatures reduce insulation life and motor reliability. Ensure that motors are shaded from the sun, located in well ventilated areas, and kept clean, since dirt acts as an insulator.
- Lubricate motors according to manufacturers' specifications. Apply high-quality greases or oils carefully to prevent contamination by dirt or water.
- Maintain a separate file on each motor to keep technical specifications, repair, testing, and maintenance data. Maintain time-series records of test results, such as winding resistance. This information will help you identify motors that are likely to develop mechanical or electrical problems. In addition, these records may be necessary for the proper repair of a failed motor.

## Allied Partner Union Electric Revs Up For Motor Challenge

Union Electric (UE) in Missouri sees its job as being a value-added electric company that works hand-in-hand with all types of customers to manage energy use. "We hope we can bring about a win-win solution that meets energy needs of every company that must have an economical source of reliable electric power," said Don Gulley, Manager, Program Development and Implementation, Division Marketing. DOE's Motor Challenge Program is one of several programs UE offers to assist its customers who want to use energy as efficiently and effectively as possible.



UE not only provides no-cost training to its customers who are users of MM+ software, but also will install and support MM+ to make sure each interested customer has a fully usable motor system management tool up and running.

Hands-on training has been done at the UE Computer Training Facility, and UE has also arranged one-on-one training sessions at customer work sites. Dave Steimel, UE's primary contact for the Motor Challenge and UE's Motor Program Coordinator, conducts the classroom training. Dave received his training credentials on MM+ by completing Certified Professional training via the Motor Challenge on-line virtual classroom.

The initial training class was presented to UE's Division Marketing group by Jonathan Stine (UE's Motor Challenge Allied Partner Account Manager). The training was presented in a morning session at UE's computer training facility in their General Office Building. An afternoon

session was conducted by Dave Steimel to a group of customers consisting of manufacturing professionals and managers of municipal wastewater facilities. The training sessions introduced MM+ software features and worked through list, compare, and life-cycle cost functions. A sample company database was created as a learning tool to tie all the features together. Another recent class was presented to area architects and engineering consultants.

Training participants said they anticipated realizing substantial savings with installation of select high efficiency motors. Many also said they could see the benefit of establishing a motor system inventory and management program using features available in the MM+ program.

At press time, UE had distributed and installed MM+ software at about 50 customer locations. One of those firms, GE Motor Supply, is partnering with UE to provide a St. Louis business with MM+ software and quick access to high efficiency motors on a continuous basis in the event of failure and need for rapid replacement.

Motor Challenge resources as well as information on the how, when, and where of adjustable-speed drives are presented at UE's regularly scheduled Energy Management Conferences. "Energy management conferences are a way for UE to assist its customers to use energy more efficiently," explained Don Gulley. "When they manage energy more efficiently, UE customers can compete more effectively in today's economy. At UE we know that the success of our customers is our success."

### MotorMaster+ Version 2.0

*continued from page 1*

- motors are replaced by T-frame, severe duty, or IEEE 841 motors);
- Create or expand your in-plant motor inventory through importing existing databases or copying nameplate values from catalog or other inventory motors; and
- Generate a Greenhouse Gas Emissions Reduction report.

*MotorMaster+ Version 2.0* is also equipped with improved report preparation and graphics features. This new version, available in June 1997, is one of many tools provided by Motor Challenge to assist industrial plant personnel in selecting energy-efficient motors and successfully implementing a comprehensive motor energy management program. Call the Information Clearinghouse at (800) 862-2086 for more information.



## THE MOTOR CHALLENGE REGIONAL REPRESENTATIVES

The Motor Challenge Program has six regional representatives throughout the United States who support the program and its Partners. These representatives often coordinate regional and local Motor Challenge workshops and spearhead local outreach efforts. Also, these representatives are highly aware of other federal and state energy initiatives within their area that can help private sector companies leverage their energy dollars.

In the last issue, we highlighted Sharon Gill of DOE's Chicago Support Office and Tim Eastling of the Atlanta Support Office. Below are profiles of two more regional representatives.



Barbara Alderson is the Motor Challenge regional representative in the Department of Energy's (DOE) Denver Regional Support Office. This office services twelve Mid-and Southwestern states: Colorado, Kansas, Louisiana, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming. Barbara began her career with DOE in 1990 with the Office of Nuclear Energy in Germantown, Maryland. She transferred to the Dallas Regional Support Office later that year, where she assisted with the administration of several DOE energy conservation programs. She later served as Program Manager of DOE's schools and hospitals energy efficiency program for the five states in the Dallas Region. After closure of the Dallas office in 1996, she joined the Denver Regional Support Office as Information Manager of the Center of Excellence for Sustainable Development. This spring, Barbara accepted the position as the lead regional program manager for the Motor Challenge, NICE<sup>3</sup>, and Climate Wise programs. Barbara can be reached by phone at (303) 275-4816, by e-mail at [barbara.alderson@hq.doe.gov](mailto:barbara.alderson@hq.doe.gov) or by mail at U.S. Department of Energy, Denver Regional Support Office, 1617 Cole Boulevard, Golden, CO 80401.



Roxanne Danz, the Motor Challenge regional representative at DOE's Boston Support Office, has worked for DOE for more than 10 years. In August 1996, she joined the Boston Regional Support Office, which services Connecticut, Massachusetts, Maine, New Hampshire, New York, Rhode Island, and Vermont. Roxanne has been the region's lead program manager for the Climate Wise and Motor Challenge programs since November 1996. Roxanne supports various Motor Challenge workshops and events within the region. She is also working on DOE's Biomass program. Prior to joining the Boston Regional Support Office, she worked on Defense Programs at DOE's Idaho Operations Office; the Civilian Radioactive Waste Management Program at Yucca Mountain, Nevada; Defense Programs at the Rocky Flats Field Office in Colorado; and the Environmental Restoration Program at the Nevada Operations Office. Roxanne can be reached by phone at (617) 565-9714, by e-mail at [roxanne.danz@hq.doe.gov](mailto:roxanne.danz@hq.doe.gov), or by mail at U.S. Department of Energy, Boston Support Office, One Congress Street, 11th Floor, Boston, MA 02114.

## HYDRAULIC INSTITUTE ROLLS OUT ENERGY VIDEO EDUCATION PROGRAM

The Hydraulic Institute is debuting the first in a nationwide series of video-based education training workshops, entitled *Energy Reduction in Pumps and Pumping Systems*, at the upcoming Interflow Expo'97 in Rosemont, Illinois, on June 24. This new video training program, developed by the Hydraulic Institute in cooperation with DOE, was featured in detail in the April issue of *Turning Point*. If you are interested in finding out about the Interflow Expo workshop, call (203) 840-5618 or call (888) 786-7744 to order the video.

## Greenville Tube Saves Money and Energy

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through dies which shape the tube. Because each tube that undergoes large diameter or wall thickness changes must pass through this process, this drawbench is key to maintaining efficient plant operations.

Prior to the completion of the Showcase Demonstration project, the No. 6 drawbench was causing production slowdowns because of nuisance tripping. These slowdowns stemmed from an antiquated power distribution system and an inefficient eddy current clutch drive that was in need of repair. To address these problems, GTC turned to distributor Evans Electric Motors, Inc., of Ft. Smith, Arkansas, for help. In turn, Evans Electric tapped Baldor Motors for assistance in completing this project. GTC replaced their older 150-hp standard efficiency motor and clutch system with a Baldor 200-hp high efficiency motor and vector controller and line reactor.



*Motor Challenge Showcase Demonstration Team: (left to right) Ted Atkins, Advanced Motor Technologies (formerly of Baldor Motors); Harry McArthur, Flowcare; David Dietz, Greenville Tube; Reggie Holstead, Greenville Tube; Phil Jaullouk, Oak Ridge National Laboratory; Paul Anderson, Greenville Tube.*

This Showcase Demonstration offers valuable lessons learned for other industrial sites in power distribution systems, high efficiency motors, and controls. To obtain the case study for the Greenville Tube Corporation project, or for more information on Showcase Demonstrations, call the Motor Challenge Hotline at (800) 862-2086.

## Richard Labrecque Applauds the Power of Partnership

Richard Labrecque, President and CEO of ITT Fluid Technology Corporation (FTC) and Chairman of the Hydraulic Institute (HI), delivered the keynote speech at Developing Industry Partnerships on May 13. Labrecque's speech, entitled *The Power of Partnership—Competencies for 21st Century Leadership*, presented the partnership between the Motor Challenge Program, HI, and ITT FTC. "This partnership program lines up with best practices going forward in industrial management," explains Labrecque.

In his speech, Labrecque described how one of the ways to become the "fastest with the mostest" in today's dynamic business world is to work through partnerships. Through partnerships, government and industry can be stronger in working towards a common objective than they could be independently. Labrecque states, "The key is that we are united together in a common purpose for our mutual benefit...with enlightened self interest...in the true American spirit of volunteerism. I believe that, given a reasonable chance, people will draw together for a common purpose, through teamwork."

HI is the national trade association for industrial pump manufacturers, representing about 80 percent of the total liquid pump sales in the country. ITT Fluid Technology Corporation is the largest U.S. based fluid products company and after completing the merger with Goulds Pumps, Inc., will be the largest pump company in the world. When Motor Challenge initially contacted HI about partnering in 1993, Labrecque expressed skepticism about working with the government because previous attempts by the U.S. Congress in the 1970s to mandate pump efficiencies, although unsuccessful, were too narrowly focused on equipment components. However, Labrecque soon realized that the systems approach advocated by Motor Challenge was far different and prone to success. Together, HI and Motor Challenge have developed a video-based educational package, cosponsored workshops, and

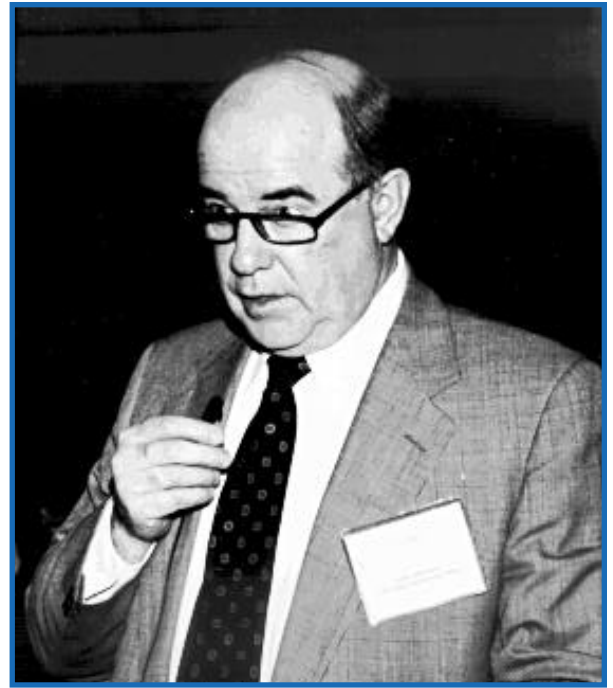
co-authored technical articles. In addition, ITT Flygt (a division of ITT Fluid Technology) worked with the Cities of Milford and Trumbull, Connecticut, to establish the cities as Motor Challenge Showcase Demonstration sites for energy-efficient pump systems in communal sewage pumping stations.

Why Do We Do It?

"We fully expect to gain a competitive edge from our active involvement in this," explains Labrecque. The trade and professional associations, such as HI, gain high recognition and visibility, which helps recruit more members. The company, ITT Fluid Technology, and its operating divisions become better known as the systems experts and market leaders. In addition, participating with the Motor Challenge Program to improve energy efficiency helps ITT Industries fulfill its environmental responsibilities, as called for in the corporation's mission statement.

*"...our participation reinforces and extends our leadership position with all our important publics. It allows us to face our clients and potential customers with a much deeper and broader value equation. Furthermore, our partnering with the Department of Energy and the professional societies adds an ethical dimension to our technically valid commercial value propositions," explains Mr. Labrecque.*

*In turn, partnerships such as the one with HI allows DOE to leverage scarce budgetary resources and make measurable progress towards goals and objectives. And, the country benefits from improved quality of life through more efficient use of energy resources and delivery of better, longer-lasting equipment and services to customers.*



*Mr. Richard Labrecque delivers keynote speech at the Motor Challenge Developing Industry Partnership Forum.*

### The Next Steps

In conclusion, Labrecque described six key leadership attributes that he believes will be required for success in the future. These are:

- Vision—ability of an organization to articulate what future success will look like when it is achieved.
- Intuition—experience of knowing something important in the absence of empirical evidence to its correctness.
- Recognizing Opportunity—defining what is emerging from this rapidly changing environment that can be turned into advantage in support of your vision.
- Risk Success—stretching the boundaries of our imagination and trust to reach for higher peaks of achievement.
- Understanding Complexity—ability to understand social, organizational, and technological systems and their interrelationships.
- Agility and Speed—forming alliances and partnerships in areas of mutual benefit for optimum agility.

## Coming Events

June 24-26	Interflow Expo, International Expo and Conference for Flow Technology, Rosemont, IL; call (203) 840-5618
June 26-27	National Energy Forum, New Orleans, LA; call (770) 381-9865
June 28-July 2	EASA National Conference, Denver, CO; call (314) 993-2220
July 8-11	ACEEE Summer Study on Energy Efficiency in Industry, Saratoga Springs, NY; call (202) 429-8873
July 10	Technologies 2000 Conference, Western Area Power Administration, Steamboat Springs, CO; call Peggy Plate at (800) 472-2306
September 7	AWWA, Performance Optimization for Pumping, Norfolk, VA; contact Rick Merrell (303) 794-7711
July 1 September 5	Motor Challenge Program for Alabama Industries, seminars on "How to Reduce Energy Cost of Industrial Electric Motor Systems." Birmingham, AL Mobile, AL Contact Bob Quick, University of Alabama at Huntsville, at (800) 874-3327 for more information.



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### INFORMATION CLEARINGHOUSE

*Do you have questions about using energy-efficient electric motor systems? Call the Motor Challenge Information Clearinghouse for answers, Monday through Friday 9:00 a.m. to 8:00 p.m. (EST).*

**HOTLINE: (800) 862-2086**

*Fax: (360) 586-8303, or access our homepage at [www.motor.doe.gov](http://www.motor.doe.gov)*

# TURNING POINT



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