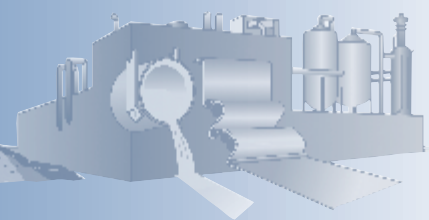


Energy Matters

INDUSTRIAL TECHNOLOGIES PROGRAM



Spring 2004

ISSUE FOCUS: Energy Savings

IN THIS ISSUE

- Don't Miss Out on Energy Savings 1
- California Compressed Air Users Go to CAMP 4
- Insulation Improves Economic Returns in Manufacturing 4
- DOE Announces Plant-Wide Assessment Financial Opportunity 6
- DOE Launches NxEAT Tool to Help Industry Assess NOx Emissions . . . 6
- Look for These New BestPractices Titles From the Industrial Technologies Program 6
- Coming Events 8



DOE Launches NxEAT Tool to Help Industry Assess NOx Emissions page 6.

Don't Miss Out on Energy Savings

Some large manufacturers are saving a bundle, often at minimal capital expenditure, thanks to cost-shared, federally sponsored energy assessments at their plants.

By Wes Iversen, *Automation World*

Energy expenditures typically account for anywhere from 5% to 15% of operating costs of U.S. manufacturers, making prudent energy management an important bottom-line consideration. In some cases, just a fraction of a percentage point shaved from energy costs can amount to millions of dollars in savings.

Yet, by some accounts, energy considerations sometimes get short shrift in the competition for capital at major U.S. industrial concerns. With only limited dollars to spend, top management at many manufacturers may look first toward spending those dollars on process improvements or growth, even when the payback for spending projects aimed at energy savings can be rapid. "We've heard reports lately of some large companies that aren't doing energy projects, even when they can get less than a 1-year payback," laments one U.S. Department of Energy (DOE) staffer who asks not to be named.

At Rutgers University's Center for Advanced Energy Systems, Director Michael Muller confirms that spending on projects with energy savings paybacks are not always at the top of the list for smaller manufacturers either. The Center serves as the field manager for the DOE's Industrial Assessment Center (IAC) program, which provides free, on-site energy assessments for qualifying small to mid-sized manufacturers.

"We tend to get more interest (in energy savings) during down-economic cycles," Muller observes. "What happens in up-economic cycles is that small to medium-sized companies want to grow, so if they've got 50 or 100 grand to spend, they'd rather buy widget makers and not worry too much about cost cutting."

Here's help

As energy prices continue to rise, however, and as U.S. natural gas prices, in particular, remain at painfully high levels, the incentives for improved energy efficiency are stronger than ever. For manufacturers who are looking for opportunities to trim their energy costs, the DOE, through its Industrial Technologies Program (ITP) "BestPractices" program, offers a breadth of assistance—ranging from informational resources and software tools, technical help, and emerging technologies access, to training in energy management practices and hands-on energy assessments.

One major BestPractices activity aimed at large manufacturers is the plant-wide energy assessments program. For a relatively low initial investment, companies that participate in assessments can expect to realize a minimum of \$1 million in savings annually from energy costs, waste reduction, and increased



Glass container manufacture is one industry of interest to the Industrial Technologies Program.

PIX 06984

(continued on page 2) ►



U.S. Department of Energy
**Energy Efficiency
and Renewable Energy**

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

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Don't Miss Out on Energy Savings *(continued from page 1)*

productivity—usually with a payback of 18 months, the DOE says. Further, on average, the findings from a single assessment can be replicated in at least seven other facilities with equivalent systems and energy uses.

To participate in the assessment program, companies must submit proposals in response to a plant-wide assessment solicitation, usually offered in the spring. Eight to 10 proposals are typically selected each year for awards, funded at up to \$100,000 per plant, with a required industrial match of at least an equal amount by the recipient.



Test furnaces for high-efficiency, ultra-low-emissions, integrated process heater systems.
PIX 11012

For each project awarded, a team of experts is assembled, which may include consultants, University faculty, retired executives and others, who perform a comprehensive energy assessment of the plant, and make recommendations based on current best practices and the adoption of best available and emerging technologies. The recommendations are detailed and specific, including cost and savings estimates for each of multiple projects and initiatives.

The DOE publishes case studies based on the results of these assessments on its Web site. And from the looks of those currently available on the site, the payoffs can indeed be substantial.

Following a plant-wide efficiency assessment, Alcoa Inc.'s Layfayette aluminum extrusions plant saved more than \$1.5 million by reducing its use of natural gas and electricity, for example, and Alcoa has identified

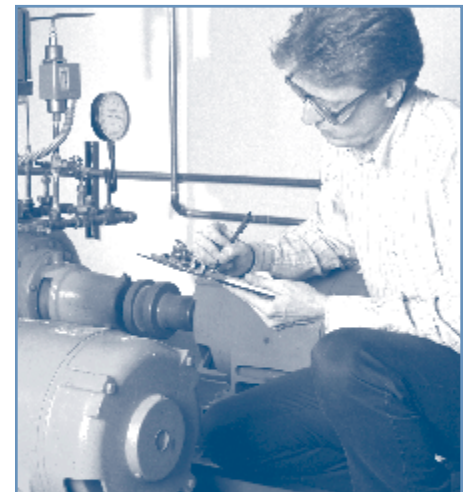
opportunities to save at least an additional \$50 million. ExxonMobil, meanwhile, has reduced annual energy consumption by 11% by upgrading the control system of a recovery unit in its Baton Rouge, Louisiana, site. And at a Vulcan Chemicals plant in Geismar, Louisiana, a four-month optimization project involving two chloromethane production units required no capital investment, yet reduced process demand by 22,000 million British thermal units (MMBtu), for an annual savings of \$42,000.

For a closer look at energy management activities around industry, *Automation World* talked to managers at some companies that have recently undergone BestPractices plant-wide energy efficiency assessments.

Ford Motor Co.

Ford's Cleveland Casting Plant, which produces cast iron engine blocks and other components, underwent a BestPractices plant-wide assessment in 2002 that resulted in 16 specific recommendations for short-term projects. The DOE picked up \$100,000 of the \$300,000 cost of the assessment.

"Our Cleveland plant has always aggressively looked at energy, but with the assessment, we had an opportunity to bring in some fresh eyes to take a look," notes Bill Ziembra, supervisor of energy leadership for Ford's Power Train Operations, in Livonia, Michigan. "And they did uncover some things that, honestly, we'd looked at in the past, but kind of lost sight of," Ziembra allows. "So it was very beneficial."



Replacing old motors with new, efficient models can be a winning strategy for industry.
PIX 01774



Rohm and Haas' Knoxville, Tennessee plant

For an investment of about \$2.3 million, the 16 projects recommended could produce annual savings at the Cleveland plant of about \$3.3 million, the assessment team estimated. The recommendations addressed issues including combustion, compressed air, water, steam, motor drive, and lighting system efficiency. If implemented, the projects could save 18 million kilowatt hours (kWh) and nearly 139,000 MMBtu per year, the team said, while reducing carbon dioxide emissions by about 63 million pounds per year.

Some of the biggest-payoff projects dealt with ways to more efficiently blend air into the Cleveland plant's cupola furnaces. By reducing excess air in cupola blast preheaters, for example—a step requiring no capital expenditures—the operation could reduce natural gas usage by 64,000 MMBtu per year, producing an annual savings of \$361,000. And for an expenditure of just \$10,000, the plant could save an additional \$465,000 yearly by using supersonic oxygen lancing to improve cupola temperature profiles.

In all, the Cleveland plant implemented 13 of the 16 recommendations, says Ziemba. “The three that didn't get implemented fell outside of our parameters when we looked at the rate of return,” he explains. Current Ford guidelines for energy improvement projects require payback within 1 year.

At the corporate level, Ford measures energy improvement on the basis of energy

expended per unit of production, Ziemba says. “We've established the year 2000 as our baseline and we've set some aggressive goals from 2000 forward.” The goal for 2003 was to be 8.5% better than 2000, he notes, and thanks in part to the DOE assessment-recommended projects, the Cleveland Casting Plant was able to exceed that goal, hitting 8.9% last year. The entire Power Train Operations unit, which includes Ford's engine and transmission plants, did even better, recording an 11.7% gain in 2003 compared to the year 2000 baseline, says Ziemba.

“I've been involved in energy for a little over 10 years now,” Ziemba adds, “and Ford has always been very aggressive on energy and the environment. It's just the way we operate.”

Rohm and Haas Co.

Rohm and Haas conducted its first Best-Practices plant-wide assessment at its Knoxville, Tennessee, facility in 2001, and then replicated the assessment methodology at plants in LaMirada, California, and Louisville, Kentucky.

As a specialty chemical producer with more than 100 manufacturing plants in 26 countries, the company saw the assessment as an additional step in its internal benchmarking activities aimed at energy best practices, notes Ray Baker, manager of energy and utility systems at the Rohm and Haas Engineering

Technical Center, in Croydon, Pennsylvania. “Many of our plants use similar processes, so if we can make energy savings improvements at one site, we should be able to replicate that at other sites,” says Baker. “And in fact, that's what we've found.”

The assessment team came up with nine recommendations covering the Knoxville plant's steam generation and water cooling systems, among others, with total energy savings estimated at nearly 47,000 MMBtu in steam and fuel annually, and 11,000 megawatt hours (MWh) per year in electricity. Annual cost savings were estimated by the team at almost \$1.5 million. When the assessment was replicated at LaMirada and Louisville, combined additional estimated cost savings totaled more than \$500,000 per year. The \$166,900 cost of the assessments was 50% DOE funded.

To date, about three quarters of the Knoxville assessment recommendations have been implemented, with additional actions taken at the LaMirada and Louisville plants, Baker says. Savings opportunities identified during the assessments have been put in place at other plants as well.

The DOE assessments and other energy savings activities at Rohm and Haas are part of an ongoing corporate program launched by the company in 1999 aimed at actively reducing energy usage and costs, Baker says. The company's largest plant, based in Deer Park, Texas, in fact, has been aggressively focused on energy management since 1997—an attentiveness that has led to more than a 26% reduction in that plant's energy intensity, Baker adds.

Among other activities, Rohm and Haas participates in the DOE's Allied Partner program, which provides access to BestPractices information and software tools, including training modules. The Deer Park plant has hosted DOE training sessions for its own staff, and for those of nearby companies, Baker says.

As a way to more easily share energy savings best practices among all of its plants, Rohm and Haas is developing an internal Web site that is expected to go live by mid-year, says Baker. The site will include energy

ENERGY MATTERS GOES ELECTRONIC!

The content is the same, it publishes just as often and it's still yours for the asking. The all-electronic version of *Energy Matters* makes it even easier for you to stay current on the latest energy efficiency topics from the Industrial Technologies Program. By converting your subscription to our all-electronic version, we'll send you an e-mail when the newsletter is published and provide a clickable link to the newest issue! Plus, you'll enjoy full access to the *Energy Matters* article library, putting its archive of energy efficiency information just a mouse-click away! Sign up today at www.oit.doe.gov/bestpractices/energymatters/energy_matters.shtml

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Don't Miss Out on Energy Savings

(continued from page 3)

databases and will provide a place for plant personnel to post their energy savings ideas, including those garnered through the Best-Practices plant-wide assessments. Energy savings are a "high level corporate objective" at Rohm and Haas, Baker asserts, and the company has found the DOE to be a valuable partner in that effort. "They're an organization that is really out there to do whatever they can to encourage energy reduction and savings," he concludes.

Submit a proposal

For companies that may be interested in submitting a proposal for a DOE plant-wide assessment during fiscal year 2005, beginning October 2004, information can be found on the ITP BestPractices Web site, at www.oit.doe.gov/bestpractices/solicitations.shtml. Solicitations for proposals were issued some time this spring. Individuals may also subscribe to the E-Bulletin—an electronic newsletter from the DOE's Industrial Technologies Program that will contain information and links on solicitations when they are issued—by requesting a subscription via e-mail, at itpebulletin@ee.doe.gov, or by calling the ITP office at 202-586-7547 or 202-586-9232.

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California Compressed Air Users Go to CAMP

*Aimee T. McKane, Program Manager,
Lawrence Berkeley National Laboratory
Robert B. Lung, Senior Associate, Resource
Dynamics*

Compressed air systems are found throughout industry and can consume a significant amount of the electricity used by manufacturing plants. Many industrial end-users do not realize how costly their compressed air systems can be. For example, a 400-horsepower compressed air system operating 6,000 hours a year can consume about 1.8 million kilowatt-hours (kWh) of electricity. If the plant's electric power costs are \$0.10/kWh,

the annual compressed air energy costs are \$180,000.

Maximizing such a compressed air system's efficiency by optimizing it in accordance with industry best practices allows for better system performance, greater reliability, and typically yields annual compressed air energy savings of 20% to 30%.

In 1999, the Compressed Air Management Program (CAMP) was inaugurated to offer free, system-level assessments of industrial customers' compressed air systems using AIRMaster+, a free software tool that helps identify compressed air system improvement opportunities. AIRMaster+ provides a systematic approach for assessing the supply-side performance of compressed air systems. Using plant-specific data, the software evaluates operational costs for various equipment configurations and system profiles. It provides useful estimates of the potential savings to be gained from selected energy efficiency measures, and calculates associated simple payback periods.

CAMP is funded by the California Public Utilities Commission and is available to PG&E industrial customers. Customers that register for CAMP are expected to take steps to increase the efficiency of their compressed air systems in exchange for the evaluations. In addition to assessing system efficiency, CAMP provides technical support to help participants implement compressed air system optimization projects, and adopt best practices for ongoing system maintenance.

CAMP participants also receive a measurement-based verification of their compressed air energy savings using AIRMaster+, along with a one-time incentive payment of up to \$0.04 per annual kWh saved, up to 60% of project costs.

SBW Consulting implements CAMP on behalf of the state utility commission. The firm has audited 55 PG&E customers using AIRMaster+ since the audit program's inception. To date, the total annual energy savings opportunities identified for these customers are 27 million kWh and just under \$2.7 million. The main industrial sectors benefiting from CAMP are the food processing and forest products industries where savings opportunities account for approximately half of all the identified energy savings.

One recent participant is Lockheed Martin Space Systems of Sunnyvale, California. The Sunnyvale facility produces a wide range of satellites and space systems for military, civil government, and commercial communications organizations. In 2003, the Sunnyvale plant implemented a project that achieved annual compressed air energy savings of 722,000 kWh and \$71,600. Because both the system evaluation and project implementation costs were subsidized under CAMP, the project achieved an immediate payback.

To learn more about CAMP, contact the program's consultant, Ben Wildman, at 425-827-0330, via e-mail at bwildman@sbwconsulting.com, or visit www.sbwconsulting.com/CAMP.htm.

Training is recommended for anyone interested in using AIRMaster+. An overview presentation (1 to 1 ½ hours) and short courses (4 ½ hours) on the software are available through a network of Qualified AIRMaster+ specialists. These specialists have passed a rigorous qualifying exam conducted under the auspices of DOE and the Compressed Air Challenge®. Find a specialist to assist your facility by looking under Training at www.oit.doe.gov/bestpractices.

To download your copy of the AIRMaster+ software, visit the Compressed Air Challenge web site at www.compressedairchallenge.org/. For a CD version, call the Energy Efficiency and Renewable Energy Information Center at (877)-EERE-INF (877-337-3463).

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Insulation Improves Economic Returns in Manufacturing

*By Christopher Russell, Sr. Program Manager
for Industry, Alliance to Save Energy*

If purchased fuel is the "currency" of an industrial plant's energy budget, then mechanical insulation is one of its "savings" components. Just as savings have a specific place in a financial plan for creating wealth, so does insulation play a role in optimizing a plant's valuable energy resources.

According to the U.S. DOE's BestPractices Steam program, mechanical insulation should be used on any surface over 120°F.¹ Boiler

(continued on page 5) ►

Insulation Improves Economic Returns in Manufacturing (continued from page 4)

surfaces, distribution mains, condensate return pipes and vessels, and hardware fittings should all be properly insulated to conserve thermal resources. Two tip sheets, part of a series of BestPractices Steam tip sheets that currently numbers 19, discuss the benefits of mechanical insulation and demonstrate the calculation of energy savings that it provides.

The value proposition is not the steam itself, but the heat that the steam provides. Steam can efficiently and safely dispatch thermal resources from the boiler to multiple locations within a plant, usually to locations appreciably distant from the steam source.

Plant managers depend on insulation not only to conserve thermal resources throughout a steam system, but to enhance process stability, ensure personnel safety, and to attenuate noise.

Two prime considerations are whether the insulation is dry and snugly fitted, and whether there is enough of it. Moisture drastically reduces insulation's heat retention capabilities. But if the insulation system (insulation and protective jacketing) is properly specified and installed for the steam application, moisture penetration will be reduced and the insulation system will remain effective indefinitely.

Specifying the correct thickness for the application maximizes the insulation system's performance. Energy savings justify insulation up to a certain thickness, beyond which any additional economic or energy savings may not be worth the cost. One indication of potential savings comes from a review of DOE Industrial Assessment Center energy assessments covering 713 fabricated metals plants. From this group, 54 opportunities to improve steam system insulation were noted. In aggregate, the payback times for these insulation projects were only 0.6 year.²

Insulation results are sometimes dramatic.

- A Georgia-Pacific plywood plant in Madison, Georgia, upgraded the insulation on steam lines to its dryers. This allowed the plant to reduce its steam load by 6,000 pounds per hour and cut its fuel bill. The investment paid for itself in 6 months.³
- Carastar Industries Baltimore, Maryland, received a DOE plant-wide assessment in 2000. Among the recommendations was

an upgrade of insulation on steam system piping. The estimated implementation cost was \$3,200, with annual projected savings of \$6,100. This is a 6-month payback.⁴

- An Oklahoma manufacturer of plastic floatation devices installed fiberglass insulation measuring 1 inch thick to 133 feet of previously uninsulated pipe. Heat loss was reduced 89%. The cost of insulating material was \$1,800, saving \$4,460 per year in natural gas costs. The payback was 0.4 year.⁵

By conserving thermal resources, insulation not only saves money, but improves plant productivity. In this sense, insulation makes money for the plant. In addition, the expense relief becomes a new source of cash that can be invested elsewhere at the plant. These benefits make insulation a priority for manufacturers in a competitive marketplace.

Insulation is only one opportunity described by BestPractices Steam, a DOE initiative. This program generates references, diagnostic software, case studies, and industry outreach events for the benefit of the industrial steam community. A series of 19 steam tip sheets is available. Each is one page in length, provides an overview of a steam improvement opportunity, and offers an example for calculating its economic impact.

Two steam tip sheets are devoted to insulation use: "Insulate Steam Distribution and Condensate Return Lines" and "Install Removable Insulation on Uninsulated Valves and Fittings." Determining the appropriate thickness for a given mechanical component is addressed by "3E Plus®," a free software tool developed by the North American Insulation Manufacturers Association and distributed by BestPractices Steam. An insulation energy appraisal performed by a certified insulation energy appraiser can provide an energy user with a comprehensive assessment of the piping and equipment in a facility and provide recommendations that will reduce fuel costs and greenhouse emissions while adding to workplace safety.

The National Insulation Association has developed an insulation energy appraisal certification training program. Visit www.insulation.org for more information. You may also want to visit the BestPractices website at www.oit.doe.gov/bestpractices. Steam tip sheets and most other resources are

free of charge and may be downloaded from www.steamingahead.org/resources.htm or may be requested from the Energy Efficiency and Renewable Energy Information Center at 877-EERE-INF (877-337-3463) or via e-mail at eereic@doe.gov.

(Endnotes)

- ¹ U.S. Department of Energy, *Insulate Steam Distribution and Condensate Return Lines*. BestPractices Steam Tip Sheet #2. www.oit.doe.gov/bestpractices/pdfs/insulate.pdf
- ² William J. Clark, Leanne K. Birkmire, *BestPractices Energy Management: Experience with IAC Assessments in the Metals Fabrication Industry*. Proceedings: 1999 ACEEE Summer Study.
- ³ U.S. Department of Energy, *Georgia-Pacific Saves Fuel Costs and Improves Efficiency with Insulation Upgrades*. www.oit.doe.gov/bestpractices/energymatters/jul1998_georgia_pacific.shtml
- ⁴ U.S. Department of Energy, *Carastar Industries Energy Assessment*. A BestPractices Case Study. www.oit.doe.gov/bestpractices/factsheets/carastar.pdf
- ⁵ William J. Clark, Leanne K. Birkmire, *BestPractices Energy Management: Experience with IAC Assessments in the Metals Fabrication Industry*. Proceedings: 1999 ACEEE Summer Study.

INDUSTRIAL TECHNOLOGIES PROGRAM E-BULLETIN: YOUR ONLINE CONNECTION

The Industrial Technologies Program E-Bulletin is your online connection to news and resources from ITP. Each monthly edition keeps you up-to-date on key developments and news of interest to industrial partners. Don't miss announcements about new tools and resources, training, events, and project opportunities.

The Industrial Technologies Program E-Bulletin helps you tap into opportunities to improve industrial energy efficiency today and tomorrow! To view the most recent E-Bulletin and sign up to receive future issues, visit http://www.eere.energy.gov/industry/resources/itp_ebulletin.html.



DOE Announces Plant-Wide Assessment Financial Opportunity



The DOE Office of Energy Efficiency and Renewable Energy's Industrial Technologies Program is seeking public-private partnerships to conduct plant-wide assessments (PWA) for U.S. energy-intensive industrial plants. The solicitation's goal is to gather a suite of energy assessment methodologies that systematically evaluate and assess the energy efficiency of industrial plants and identify cost-effective energy reduction measures.

The project period for each award is generally 1 year. DOE is targeting approximately \$1 million for solicitation funding, which is subject to fiscal year 2005 funding availability. The awards are limited to \$100,000 per awardee, and all awardees must provide at least 50% of the assessment's cost. Priority will be given to sites in the following energy-intensive industries: agriculture, aluminum, cement, chemicals, food processing, forest products, glass, metal casting, mining, petroleum refining, and steel. Proposals from other energy-intensive industries, however, will also be considered.

Help your company save energy and money by conducting a PWA. The solicitation is now open. Proposals are due July 9, 2004. For detailed information, please see the BestPractices Solicitations page at www.oit.doe.gov/bestpractices/solicitations.shtml.

THERE'S MORE TO LEARN AT ENERGY MATTERS EXTRA

Learn more about the topics covered in this issue of *Energy Matters* by checking out Energy Matters Extra. It's our on-line complement to the print publication. Visit the Energy Matters Extra web site at www.oit.doe.gov/bestpractices/energymatters/emextra/.

DOE Launches NxEAT Tool to Help Industry Assess NOx Emissions

DOE's Industrial Technologies Program introduces the NOx and Energy Assessment Tool (NxEAT). This new software tool helps plants in the petroleum refining and chemical industries assess and analyze NOx emissions and application of energy efficiency improvements.

Users can inventory emissions from equipment that generates NOx, and then compare how various technology applications and efficiency measures affect overall costs and reduction of NOx. By performing "what-if" analyses, users can determine optimal and cost-effective methods for reducing NOx from

systems, such as fired heaters, boilers, gas turbines, and reciprocating engines.

NxEAT is the latest addition to ITP's suite of software tool that help users assess and analyze potential energy and cost savings in industrial energy systems, such as compressed air, motors, process heating, and steam. Download NxEAT and the other tools from www.oit.doe.gov/bestpractices/software_tools.shtml.

Look for These New BestPractices Titles From the Industrial Technologies Program

BestPractices offers a variety of resources to help address your company's energy management needs. We offer a range of software tools and databases that can help you self-assess your plant's steam, compressed air, motor, and process heating systems. We also provide an extensive library of publications covering just about every aspect of energy management. Look online for these recently published titles. Or, contact the Energy Efficiency and Renewable Energy Information Center with specific questions and to get assistance in finding the information you need. Call the EERE Information Center hotline at 877-EERE-INF (877-337-3463).

Fact Sheets:

http://www.oit.doe.gov/bestpractices/technical_publications.shtml#technical

Publications offering "how-to" technical detail on increasing system efficiencies.

- *Working with ITP*
- *Best Practices Process Heating Fact Sheet: Metal and Glass Manufacturers Reduce Costs by Increasing Energy Efficiency in Process Heating Systems*

Reports:

<http://www.oit.doe.gov/bestpractices/library.shtml>

Whether you're looking for information on how to recover waste heat from your steam system or wondering about the market potential of efficient motors, the BestPractices library has the publication for you.

- *Partnering for Success*
- *Evaluation of the Compressed Air Challenge^(R) Training Program (Executive Summary and Full Report)*
- *Variable Speed Pumping: A Guide to Successful Applications, Executive Summary*
- *Steam Digest 2003*

Sourcebooks:

http://www.oit.doe.gov/bestpractices/technical_publications.shtml#source

Reference books that provide information on activities, resources, applications, standards, and guidelines for increasing industrial energy efficiency.

- *Improving Compressed Air System Performance: A Sourcebook for Industry*
- *Improving Steam System Performance: A Sourcebook for Industry*

Case Studies:

http://www.oit.doe.gov/bestpractices/case_studies.shtml

See what others in your industry have done to increase their energy savings by reading their case studies.

Corporate Energy Management

- *Alcoa Teams with DOE to Reduce Energy Consumption*

Plant-Wide Assessments

- *Blue Heron Paper Company: Oregon Mill Uses Model-Based Energy Assessment to Identify Energy and Cost Savings Opportunities*
- *Corning Inc.: Proposed Changes at Glass Plant Indicate \$26 Million in Potential Savings*
- *Weirton Steel: Mill Identifies \$1.4 Million in Annual Savings Following Plant-Wide Energy-Efficiency Assessment*
- *Chevron: Refinery Uses Process Simulation Models to Identify \$4.4 Million in Annual Savings*

Technical Case Studies:

- *Techni-Cast: Foundry Saves Energy with Compressed Air System Retrofit*
- *Ohio Aluminum Industries: Compressed Air System Improvement Project Saves Energy and Improves Product Quality*
- *American Water Heater Company: Compressed Air System Optimization Project Saves Energy and Improves Production at Water Heater Plant*
- *Lehigh Southwest Cement Company: Compressed Air System Improvement Saves Energy at Cement Plant*
- *Procter & Gamble: Compressed Air System Upgrade Saves Energy and Improves Production at a Paper Mill*

Tip Sheets:

http://www.oit.doe.gov/bestpractices/technical_publications.shtml#tip

Quick advice on how to keep your systems running at their maximum efficiency.

Steam

- *Install Removable Insulation on Uninsulated Valves and Fittings*
- *Install an Automatic Blowdown Control System*
- *Consider Installing Turbulators on Two- and Three-Pass Firetube Boilers*

Software Tools:

http://www.oit.doe.gov/bestpractices/software_tools.shtml

With the right know-how, you can use these powerful tools to help identify and analyze energy system savings opportunities in your plant.

- *NOx and Energy Assessment Tool (N_xEAT)*
<http://www.oit.doe.gov/bestpractices/steam/neat.html>

Coming Soon!

- Process Heating Sourcebook
- Fan Sourcebook (newly revised and updated)
- Waste Heat Reduction & Recovery for Improving Furnace Efficiency, Productivity and Emissions Performance Technical Brief
- Materials Selection Considerations for Thermal Process Equipment Technical Brief

ENERGY MATTERS EXTRA

Energy Matters Extra Highlights

Log on to Energy Matters Extra to find even more information on the topics covered in this issue of *Energy Matters*. Access the new publication *Evaluation of the Compressed Air Challenge® Training Program*, which tells of the training program's numerous production and cost-saving benefits. Learn about the new NxEAT Tool, a software program that helps petroleum, refining, and chemical plants assess and analyze NOx emissions and application of energy efficiency improvements. You'll also be able to view an array of new BestPractices publications, including fact sheets, reports, sourcebooks, case studies, tip sheets, technical briefs, and other software tools. All these tools and publications can be downloaded to your computer. Furthermore, we provide links to the Industrial Assessment Centers and Plant-Wide Assessments Web sites, so you can learn how your plant might gain from an energy-efficiency assessment. See all this at Energy Matters Extra at <http://www.oit.doe.gov/bestpractices/energymatters/emextra/>.

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

Coming Events

INTERNATIONAL MOTOR SELECTION SOFTWARE (MSSA) INTRODUCTORY TRAINING, WASHINGTON, DC

■ Jun 21, 2004 For more information, contact Chris Cockrill at 816-873-3299

AIRMASTER+ SPECIALIST QUALIFICATION, FENTON, MO

■ Jun 22-24, 2004 For more information, contact Amanda Dosch at 703-748-7099

STEAM SYSTEM IMPROVEMENT, BOISE, ID

■ Jun 29, 2004 For more information, contact Nate Carpenter at 208-384-7434

STEAM SYSTEM SPECIALIST QUALIFICATION, INDIANAPOLIS, IN

■ Jul 13-15, 2004 For more information, contact Tony Wright at 865-574-6878

STEAM SYSTEM IMPROVEMENT, ROCHESTER, NY

■ Aug 12, 2004 For more information, contact Linda Stansberry 865-574-0266

OPTIMIZING STEAM SYSTEM PERFORMANCE, MILWAUKEE, WI

■ Sep 28, 2004 For more information, contact Adam Hudson at 202-530-4356 or Brian Olsen at 312-886-8579

BestPractices

The Industrial Technologies Program's BestPractices initiative and its Energy Matters newsletter introduce industrial end users to emerging technologies and well-proven, cost-saving opportunities in motor, steam, compressed air, and other plant-wide systems.



EERE INFORMATION CENTER

Do you have questions about using energy-efficient process and utility systems in your industrial facility? Call the Energy Efficiency and Renewable Energy (EERE) Information Center for answers, Monday through Friday 9:00 a.m. to 7:00 p.m. (EST).

**HOTLINE: 877-EERE-INF
or 877-337-3463**

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- Brian Olsen, Chicago, IL, 312-886-8479
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- Chris Cockrill, Seattle, WA, 816-873-3299
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