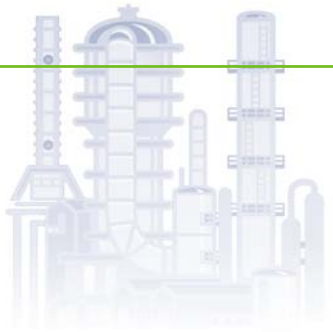

Tools to Boost Steam System Efficiency

Scope Out the Hottest Opportunities for Savings

The **Steam System Scoping Tool** quickly evaluates your entire steam system operation and spots the areas that are the best opportunities for improvement. The tool suggests a range of ways to save steam energy and boost productivity. It also compares your system against identified best practices and the self-evaluations of similar facilities.

The software asks 26 questions about different areas of your steam system, including system profiling, steam system operating practices, boiler plant operating practices, and distribution and recovery operation practices. Based on your responses, it provides a score indicating opportunities for improvement. The software is available in Microsoft Excel or Visual Basic formats.

Learn About Steam System Strategies

The ***Steam System Survey Guide*** explains many of the opportunities available for improving your steam system. It is particularly helpful for learning more about the improvement options available or the calculations required to determine savings opportunities.

The *Guide* addresses five areas—steam system profiling, steam properties, boiler operations, resource utilization, and steam distribution. It can help in assessing fuel costs, the combustion efficiency of various boiler fuels, boiler blowdown, vent steam, backpressure turbines versus pressure-reducing valves, condensing turbines, steam leaks, insulation, and condensate recovery.

*Steam system improvements can **save 20% in fuel costs** at a typical industrial facility. If such improvements were adopted **industry-wide**, **benefits** would include:*

- ***$4 billion** reduction in fuel costs*
- ***32 million metric ton** reduction in emissions*

Explore Your Options with System Modeling

The **Steam System Assessment Tool** models various improvement scenarios and provides energy bill estimates. The tool contains all the key features of typical steam systems—boilers, backpressure turbines, condensing turbines, deaerators, letdowns, flash vessels, and feed water heat exchangers.

The model analyzes boiler efficiency, boiler blowdown, cogeneration, steam cost, condensate recovery, heat recovery, vent steam, insulation efficiency, alternative fuels, backpressure turbines, steam traps, steam quality, and steam leaks.

*"DOE has some fantastic programs that can...help us understand how to use our equipment more efficiently—**how to save some money in terms of steam production, steam use**, and the way we insulate* the equipment."*

Jeff Utley, Manager, Flying J Refinery

** For help in assessing insulation thickness, check out DOE's 3EPlus software tool.*

Download free tools from the U.S. Department of Energy to improve the productivity of steam systems. Visit www.oit.doe.gov/bestpractices.

Steam Tools Get Results

Steam System Scoping Tool

In 2001, six of the Department of Energy (DOE) Industrial Assessment Centers used the Steam System Scoping Tool to assess steam systems at 18 small and mid-sized facilities. Those assessments successfully identified 89 steam system improvements with an average payback of 7 months and an average fuel bill savings of 12.5%. Collectively, the improvements yielded a **total savings of $2,800,000 per year**.

Steam System Survey Guide

The *Steam System Survey Guide* is used as the technical basis for DOE's targeted steam assessments and Steam End User Training Program. As of January 2003, DOE had conducted 13 targeted steam assessments in large industrial plants.

The assessments revealed opportunities for large plant improvements, including—

- Improved blowdown heat recovery
- Use of backpressure turbines for power production
- Recovery of thermal energy from wastewater streams
- Replacement of missing insulation on piping systems
- Reduction of steam leaks resulting from failed steam traps and pipes

These improvements offered potential for significant cost savings, as shown in the table below.

Steam System Savings Identified by Industry

Industry (No. of Assessments)	Average Energy Savings (Million Btu/year)	Average $ Savings (Annual)
Chemicals (1)	330,000	$1,565,000
Forest Products (5)	199,500	$366,000
Mining (2)	20,100	$102,500
Petroleum (3)	98,500	$466,000
Steel (2)	226,700	$690,000

Steam System Assessment Tool

Within three months after its release in December 2002, over 1,000 steam users and service providers downloaded or obtained a copy of the *Steam System Assessment Tool*.

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.

Office of Industrial Technologies
Energy Efficiency
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