

November 16, 2006

## POWER PLANTS: THE NEW AMERICAN HERO!

### *How do you save American resources & reduce global warming?*

Advice abounds. Television news stories, newspaper columns, magazine articles and even relatives all dispense valuable ways for us to conserve energy. These personal methods of saving heat, electricity, air conditioning, energy, fuel and gas are for the most part effective. However, a virtually untapped method of saving much larger amounts of energy on a national scale exists. Yes, it is more complicated than techniques passed on by “unofficial channels”. But it is doable and understood by a large segment of the mechanical engineering community. Representing the Performance test Codes Standards Committee of the American Society of Mechanical Engineers (ASME), an organization that has promoted engineering standards for over 150 years, we propose a new, simple, and effective energy-saving strategy.

By testing and determining the efficiency of a population of power-producing equipment, appropriate and effective steps can be taken to improve the efficiency of these huge power plants. That is, once the base generation efficiency of an existing plant is determined with reasonable accuracy, the owners can tailor subsequent minor improvements to their station as a part of a national effort.

### *Increase efficiency, reduce cost!*

We know that over time most of the power-producing equipment in our country has become somewhat worn and is running at a reduced efficiency. An old power plant, like an old automobile, consumes more fuel than is necessary. The objective here is to point out that losses in efficiency have occurred that are now likely to be 5% or less, but this is an enormous amount of wasted energy that can be largely conserved by ordinary engineering efficiency tests and subsequent improvements. Besides reducing dependence on oil, the individual family cost of electric power, the air pollution and heat discharged from the plant into the local waters and the air are reduced by a corresponding percentage, and those are significant benefits to society. As a plan, first we can take advantage of the natural thermodynamic magnification factor between a power plant’s electrical generation and its fuel consumption such that a reduction of 1% in fuel use requires less than a ½ % improvement in its generation. Link this engineering fact with the annual US power-plant fuel use that is now equivalent to 40 quadrillion BTUs and it is a realistic national goal to propose improving the generation efficiency of only a small portion of these plants. As an example, since fuel costs may be approximated by the value of \$4 per million BTUs, when the generation of just one out of every two plants is



improved by ½ %, the yearly power-plant fuel consumption is lowered by ½% and the US would save \$1 billion in fuel costs.

***Turn to the Industry Standard: ASME***

The ASME is the engineering society where engineers are encouraged to get further information on the efficiency tests required. ASME test codes are known throughout the world as the impartial standard of the highest quality. During its years of altruistic service to society, ASME has developed uniform performance test procedure standards, which encompass each type of power and industrial equipment. These ASME Performance Test Codes (PTCs) can provide the highest level of accuracy of test results to ensure the performance of the new equipment satisfies contractual guarantees. Recently, these test standards have been broadened to include sections that define routine performance tests and performance monitoring. The latter tests are much less expensive to conduct, less elaborate, less esoteric, less prescriptive and will supply an accurate efficiency snapshot of the power equipment. They could be used to conduct the routine tests of moderate accuracy that are proposed as the lynchpin of this national conservation program. Contact ASME at [www.asme.org](http://www.asme.org) for further information and the particular Performance Test Codes for application to all types of power plant equipment.