



### 3E Plus® Computer Program

The customized 3E Plus® computer program calculates how much insulation is necessary to reduce NO<sub>x</sub>, CO<sub>2</sub> and Carbon Equivalent (CE) emissions. It also calculates how much energy is saved through applying a range of insulation thicknesses, as well as the dollar cost savings realized through prevention of energy waste. The information is provided in the appraiser's final report.

Company Name & Address

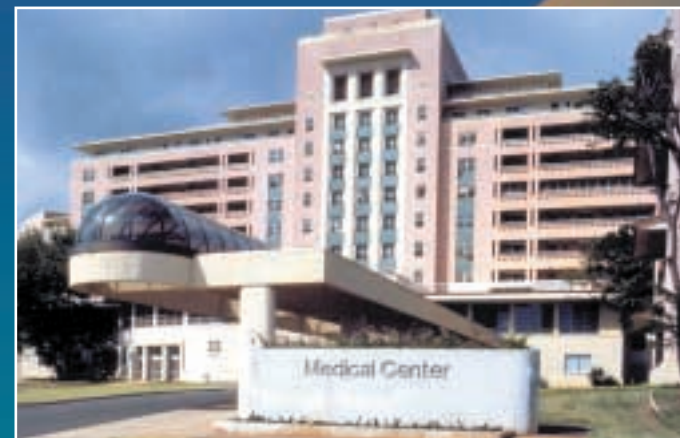
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insulation  
energy  
APPRAISAL

# Insulation Energy Appraisal Program

### Disclaimer

While certified insulation energy appraisers receive training through the insulation energy appraisal certification program sponsored by NIA, certified insulation energy appraisers are not otherwise connected to NIA, are not employees of NIA, and are not subject to the control of NIA. NIA sponsors the insulation energy appraisal certification program as a service to the commercial and industrial insulation industry. As such, NIA is not responsible for certified insulation energy appraisers' performance of insulation energy appraisals, the appraisal results and/or any subsequent use of or performance of any insulation system. Also, NIA is not responsible for any tools a certified insulation energy appraiser may use, including, but not limited to, the 3E Plus® computer software program.

- Evaluates the Thermal Performance of Insulated Versus Uninsulated Piping and Equipment in Your Facility
- Translates Btu Losses into Actual Dollars
- Calculates Greenhouse Gas Emissions

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3E Plus® is a registered trademark of the North American Insulation Manufacturers Association

► *Insulation is a seriously under-utilized, but proven technology solution that can save energy, reduce fuel costs and a facility's impact on the environment. The role of insulation in energy efficiency and environmental preservation is clear. Every time a system is insulated it improves the energy efficiency of a facility and reduces the level of emissions of greenhouse gasses into the atmosphere. From an economical point of view, thermal insulation simply makes good business sense. A properly selected, specified and installed thermal insulation system can, in many cases, provide an excellent return on investment through cost savings.*



*An appraiser utilizes the information supplied by a facility's engineering staff as well as data gathered during a facility walk-through.*

# insulation energy APPRAISAL

The Insulation Energy Appraisal Program is a major industry initiative designed to give facility/energy managers a better understanding of the true dollar and performance value of an insulated system. Developed by the National Insulation Association (NIA), the program is a tool that quantifies the amount of energy and actual dollars a facility is losing with its current in-place insulation system — and demonstrates how a more efficient system can:

- Save hundreds of thousands of Btu.
- Improve process control and efficiency.
- Reduce fuel costs.
- Contribute to a cleaner environment through the reduction of emissions into the atmosphere.

## HOW DOES AN APPRAISAL WORK?

Through visual inspection, interviews and analysis, an appraiser conducts a thorough evaluation of your facility's existing in-place insulation systems. The thermal performance of insulated piping and equipment will be compared to that of any uninsulated, or underinsulated, piping and equipment in your facility. Based on the analysis findings, the appraiser will document the actual Btu/dollars/emissions you are saving/losing with your current system and the potential savings and reductions in emission levels possible with an insulation upgrade. Your final customized report will identify recommendations based on analysis findings and will calculate the potential return on investment through insulation optimization.

## APPRAISERS ARE CERTIFIED

All certified appraisers are professionals. They receive intensive training through the fully accredited Insulation Energy Appraisal Program sponsored by NIA. They can provide you with an accurate appraisal of your current insulation systems and recommend the steps necessary to make improvements.



"At the Department of Energy (DOE) our goal is to work closely with U.S. manufacturing plants and facilities on energy efficiency programs that can help them operate more efficiently. We at DOE have reviewed and embraced the National Insulation Association's Insulation Energy Appraisal Certification Program as an example of one of these programs. We have jointly agreed to an Allied Partnership relationship to promote its use. An insulation energy appraisal performed by an NIA certified appraiser can provide an energy user with a comprehensive assessment of the piping and equipment in a facility and provide recommendations that will help save energy, reduce fuel costs and greenhouse gas emissions."

**Denise Swink, Deputy Assistant Secretary**  
Office of Industrial Technologies, U.S. Department of Energy

## THE APPRAISAL PROCESS

*The appraisal is a five-step process and may take two to four hours or longer, depending on the size of a facility and the scope of the appraisal.*

### 1. Meet with Facility/Energy Manager

The first step is an interview and discussion with the facility/energy manager and other engineering staff who know the facility well. This will determine the scope of the appraisal, the scope of a facility's energy usage and energy distribution systems, and the cost to operate. The appraiser will also want to review the facility layout, facility drawings (if available), and determine the major sources of energy serving the facility.

### 2. Walk-Through of Facility

Very often this step of the process takes place on a follow-up visit. During a walk-through, the appraiser will measure and document all applicable pipes, ducts and equipment including both insulated and uninsulated sections.

### 3. Customized Software Calculates Data

Once the appraiser has completed all documentation, he or she returns to the office and enters accumulated data into the 3E Plus® computer program. This program was developed by the North American Insulation Manufacturers Association to put an actual dollar value to Btu losses, and calculate greenhouse gas emissions such as CO<sub>2</sub>, NO<sub>x</sub> and Carbon Equivalent (CE).

### 4. Final Report

Based on the calculations derived from the 3E Plus® computer program, a full, customized report is generated which documents:

- The fuel cost savings with your current insulation systems and your potential savings with an insulation upgrade.
- The environmental impact in terms of reduced combustion product gases (CO<sub>2</sub>, NO<sub>x</sub> and other greenhouse gases) resulting from increased energy savings and reduced fuel consumption.
- The amount of energy (Btu) loss or gain from uninsulated surfaces in your facility.
- The amount of energy (Btu) loss or gain from insulated surfaces in your facility.
- The amount of Btu or energy loss or gain from a pipe or vessel if the pipe or vessel is insulated to the most thermally efficient, yet cost effective, thickness determined by the 3E Plus® computer program used in the appraisal.

### 5. Presentation of Report

Within a brief period of time, the appraiser will present a customized report to the facility/energy manager. All financial savings information as well as energy and environmental data will be thoroughly explained at that time. The appraiser may identify recommendations based on analysis findings and discuss the potential return on investment from an insulation upgrade. If requested, the appraiser can provide a professional estimate regarding any insulation recommendations.



## ► An Insulation Energy Appraisal Looks At:

- Pipe & equipment sizes and location.
- Piping and equipment geometries.
- Types of installed insulation.
- Installed jacketing materials.
- Ambient temperature.
- Process temperatures.
- Wind velocity.
- Design relative humidity values.
- Annual number of hours of operation.
- Scheduled down times.
- Different thicknesses of insulation.
- Energy sources.
- Efficiency of each energy unit.
- Type of energy used.
- Cost of energy.
- Current insulation thicknesses.
- Process & instrument drawings, if available.
- Insulation specifications.

