

ENVIRONMENT

ENERGY

3E Plus®

Insulation
Thickness
Computer
Program

Makes It Easy To
Calculate the Savings
for a Range of
Insulation Thicknesses

3E plus®

ECONOMICS

A Comprehensive Energy Management Tool for:

- Facility Managers • Energy/Environmental Managers
- Industrial Process Engineers • Industrial Plant Managers

Program Details

- Performs calculations for most types of insulation materials and the user can add custom insulation materials using the thermal performance data.
- Has all the latest thermal curves contained in the ASTM material standards.
- Provides calculations for many fuel types and 11 different types of surfaces.
- Uses calculations and default values from independent sources. Contains updated methodology in the most recent version of ASTM C 680 (*Standard Practices for Determination of Heat Gain or Loss and the Surface Temperature of Insulated Piping on Equipment Systems by the Use of a Computer System*).
- Allows user to customize program by adding and saving individual company's insulation installed cost estimates.
- Performs calculations in metric and inch-pound units.



Installation Instructions

System Requirements

1. Microsoft® Windows® 98, Windows® 2000 or Windows® XP
2. CD ROM Drive or access to the Internet

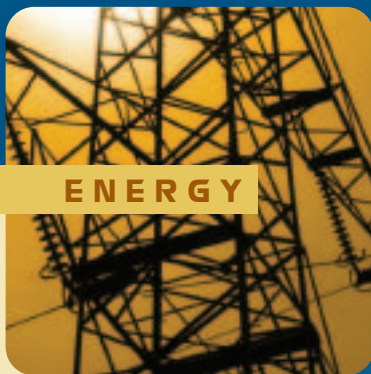
If you have a previous version of 3E Plus®, make sure to uninstall it using the Control Panel Add/Remove Program feature. During installation, a Windows alert may appear requesting permission to update some of your system files or resources. NAIMA recommends you follow the advice of the alert and keep the newer file.

During installation, please temporarily turn your computer's virus protection off. You should turn it back on after installation is complete.

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Comprehensive Energy Management Tool

- Used as a tool in several DOE programs offered through its Industrial Technologies Program.
- Used by National Insulation Association (NIA) in its Industrial Energy Appraisal, National Insulation Training, and 3E Plus® Training Programs.

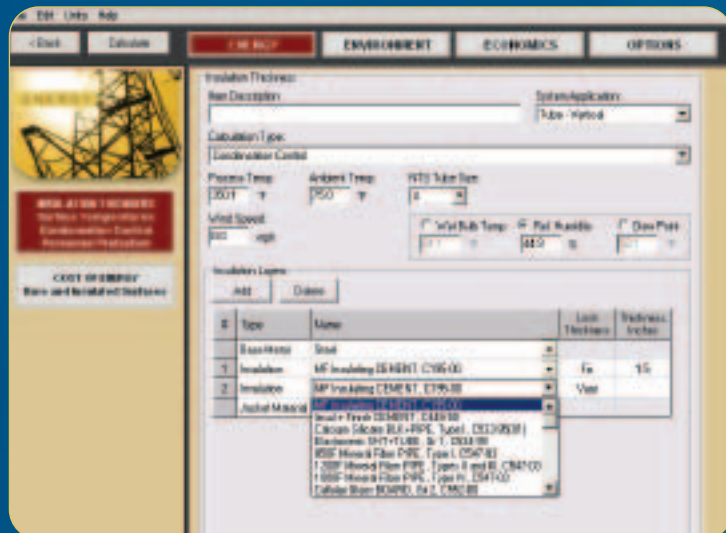


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3E Plus® Insulation Thickness Computer Program

3E Plus® Version 4.0 is the latest installment of an insulation thickness program that traces its roots back more than 40 years when it was called the Economic Thickness for Industrial Insulation Program. Today's version is a far cry from the card deck of 1961. Version 4.0 is computer-based with a friendly user interface and automated data recording. Users benefit from improved retrofit calculations and are able to add their own fuel combinations and materials specifications.

Given the international nature of business, 3E Plus® Version 4.0 also allows users to calculate in both metric and inch-pound units. This comprehensive energy management tool is used by facility managers, energy and environmental managers, industrial process engineers and others in the industrial industry to calculate the economic, energy and environmental savings from proper levels of industrial insulation.



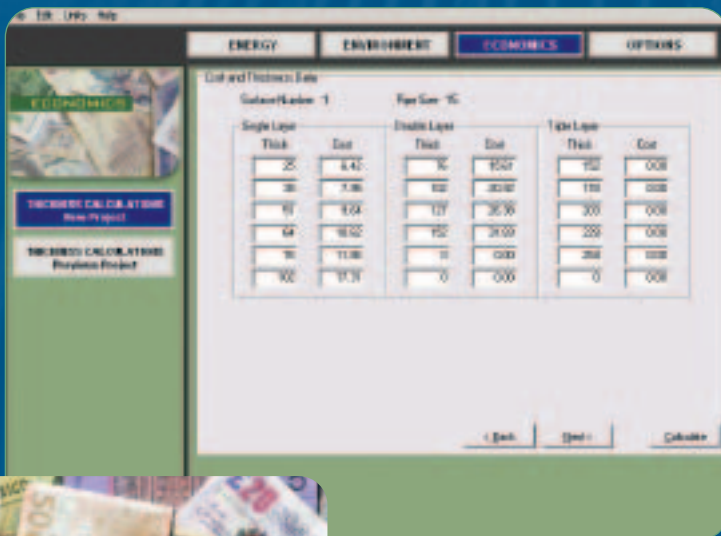
Energy Calculations

1 The energy (Btu) currently being saved with existing insulation systems and the actual dollar value of those savings.

2 The potential Btu savings with an insulation upgrade and the fuel dollar value of those savings.

Program Features

- Determines economic thickness of insulations based on return on investment for chosen fuel cost, installed cost, tax rates, maintenance, etc.
- Calculates the amount of insulation needed for personnel protection for various design conditions.
- Calculates the thickness of insulation needed for condensation control.
- Calculates greenhouse gas emissions and reductions.



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Economic Calculations

1 The cost of operating systems with existing insulation in terms of Btu and dollars.

2 The potential cost reduction of operating those same systems with an insulation upgrade.

- Determines surface temperature and heat loss/gain calculations of individual insulation thickness up to 10 inches or 250 mm.
- Solves for outside insulated surface temperatures for all types of insulation applications at different process temperatures and various configurations.
- Calculates bare vs. insulated heat loss efficiency percentages for horizontal and vertical piping, ducts and flat surfaces.
- Performs calculations for various flat surfaces, selected pipe sizes and all standard iron pipe sizes from 1/2" to 48" and from 15 to 1200 mm.
- Calculates heat loss/gain and outside insulated surface temperatures for any insulation material provided the thermal conductivity, associated mean temperatures, and temperature limit are entered by the user.

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Version 4.0 Highlights

Friendlier user interface

Robust reporting capability

Metric conversions

Ability to add custom fuels

Improved retrofit calculations

Free download of 3E Plus® at www.PipeInsulation.org

Environmental Calculations

1 The number of pounds of greenhouse gases [CO_2 , NO_x , and Carbon Equivalent (CE)] currently being prevented from release into the atmosphere due to reduced fuel consumption resulting from higher insulation levels.

2 The potential number of pounds of greenhouse gases that could be prevented from release into the atmosphere through an insulation upgrade, resulting from greater reductions in fuel consumption.

About NAIMA

NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation, and to encourage the safe production and use of these materials.

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NAIMA
NORTH AMERICAN INSULATION
MANUFACTURERS ASSOCIATION

History of 3E Plus®

3E Plus® was developed by the North American Insulation Manufacturers Association (NAIMA) to simplify the task of determining how much insulation is necessary to use less energy, reduce plant emissions and improve process efficiency.



1961 — First version of Economic Thickness for Industrial Insulation program developed as a card deck.

1973 — Next version of card deck called Econ 1.

1980 — Card deck converted to MS-DOS and called Economic Thickness for Industrial Insulation for Hot and Cold Surfaces, covering economics and payback.

Late 1980s — Environmental aspect added to the program now called 3E Version 1.0.



1993 — 3E Version 2.0 released.

1994 — “Plus” added to program name to con-
note performance of insulation in place. 3E Plus®
also included a heat flow program.

1996 — 3E Plus® honored with US Dept. of
Energy National Awards for Energy Efficiency and
Renewable Energy.

1998 — 3E Plus® Version 2.1 released.



2001 — 3E Plus® Version 3.0 released. This was
the first Windows version of the program and CO₂
numbers were added.

2002 — 3E Plus® Version 3.1 released.

2005 — 3E Plus® Version 4.0 released. Close to
10,000 registered users.

Disclaimer

Use of the 3E Plus® program for an assessment of the economic thickness guidelines for insulation does not ensure or guarantee compliance with any energy code in your geographic location. Consult local authorities before finalizing your installation plans. The use of the 3E Plus® program to calculate heat gain/loss does not ensure or guarantee specific dollars savings or energy savings. This program was designed for the industrial process, environmental management and insulation industries. It is a valuable tool for the calculation and selection of the insulation thickness needed to reduce heat gain or heat loss, maintain a safe insulated surface temperature for personnel protection and for condensation control. NAIMA makes no warranty whatsoever of this product. NAIMA can not be responsible for your use of this program.

Manufacturers have specific recommendations for the installation of their products. Consult your manufacturer for specific details.

The 3E Plus® program is the intellectual property of the North American Insulation Manufacturers Association (NAIMA). This program is maintained and updated by NAIMA. The only way to ensure that you have the latest version of the program is to download it from www.pipeinsulation.org.

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