

MECHANICAL INSULATION—IT WORKS!™

DEMONSTRATES IMPRESSIVE NUMBERS



Commercial Market— Untapped Potential

The MIC conducted an unprecedented study of the effects of mechanical insulation systems in schools and hospitals throughout the United States and found that on average:

- For schools, it is estimated that properly designed, installed, and maintained mechanical insulation saves 13 kBtu/sf/yr of site energy (about 20% of the total usage).
- For hospitals, the energy savings from mechanical insulation are estimated to be 149 kBtu/sf/yr (roughly 78% of the total site energy usage).

The Montana Mechanical Insulation Assessment Pilot Program identified approximately 3,500 items in 25 state-owned buildings (56 mechanical rooms) where mechanical insulation was missing or damaged. Properly insulating these items would result in estimates of:

- Energy savings of about 6 billion Btu per year
- Overall payback period of 4.1 years
- Annualized rate of return of 24%
- Associated reductions in CO₂ emissions estimated at 300 metric tonnes per year
- Energy savings representing 8% of natural gas consumption

It was determined the findings could be extrapolated to similar Montana facilities.



Industrial Market— Enormous Opportunities

By extrapolating from the results of more than 1,100 energy assessments of large and medium size plants (and by using the results from NIA's assessments of small plants and the utility industry), the U.S. Department of Energy's Save Energy Now program, estimated that increased maintenance of mechanical insulation in areas where it was missing or damaged could:

- Deliver \$3.7 billion in annual energy savings.
- Reduce 37.9 million metric tons of carbon emissions.
- Provide a Return on Investment in 11.3 months (106% annual return).
- Create more than 27,000 jobs per year for insulation contractors, of which 90% to 95% are small businesses, in all 50 states. (Those 27,000 jobs support other industry channels with job opportunities, so the total job creation opportunity is 40,000.)
- Promote American manufacturing, since 95% of materials required for these opportunities are made in the United States, with most of the rest made in Canada.

Estimates are based primarily on process heating and steam systems. They do not include manufacturing processes or other opportunities.

ACHIEVE BIG NUMBERS

WITH MAINTENANCE AND UPGRADES

Based on data from more than 700 industrial energy assessments, the National Insulation Association estimates that implementing a comprehensive mechanical insulation maintenance and upgrade program in the commercial and industrial market segments would lead to:*

Energy savings of \$4.8 billion per year
CO₂ reductions of 43 million metric tons per year
Generation of 89,000 jobs

\$4.8 billion in Energy Savings per year equates to:

- 45 billion kWh of electricity, enough to power 4.2 million households (4% of U.S. households) for a year and equivalent to the annual output from 10,300 wind turbines
- 82 million barrels of oil, enough to fill about 41 supertankers
- 19 million tons of coal, enough to fill 190,000 railcars
- 480,000,000,000 Btus (0.48 quadrillion Btus) of primary energy—about 0.5% of total U.S. annual consumption or 1.83 days of energy consumption for the entire United States

43 metric tons of CO₂ reduction per year equates to:

- Adding 1.9 billion mature trees (4.3 million acres of new forest, an area the size of Connecticut and Delaware combined)
- Removing 7.9 million cars from the roads, about 3% of 254 million cars registered in the United States
- Shutting down 11 coal-fired power plants, 1.6% of U.S. installed coal-fired capacity

- Installing 730 million compact florescent light bulbs, equivalent to 2.3 light bulbs for every man, woman, and child in the United States

Generation of over 89,000 jobs:

Mechanical insulation maintenance can put tens of thousands of people to work immediately and retain existing jobs while contributing to the competitiveness of U.S. manufacturing, reducing our country's dependence on foreign energy sources, improving our environment, and increasing profitability of private and public businesses and facilities. Equally important, the majority of insulation contractors who install and maintain mechanical insulation systems represent independent small businesses in every state. Mechanical insulation is a proven technology. It does not require research and development or engineering or design processes. It exists now. Materials and skilled craft personnel are available and ready to be deployed.

*The estimates were developed based on a given set of assumptions and the best information available at the time. Neither the National Insulation Association nor the International Association of Heat and Frost Insulators and Allied Workers guarantees the accuracy of the good faith estimates contained herein.

The Mechanical Insulation Education & Awareness Campaign (MIC) is a program offered by the Department of Energy (DOE) in conjunction with the National Insulation Association (NIA) and the International Association of Heat and Frost Insulators and Allied Workers (International). The MIC program goals are to increase awareness of the energy efficiency, emission reduction, economic stimulus, and convey benefits of mechanical insulation in the industrial and commercial markets.

In addition to data development, the MIC facilitated the formation of the simple calculators (including the mobile app) and the E-Learning Modules. The calculators can be found on the MIDG website (www.wbdg.org/midg) and are useful for beginners to experienced professionals in the construction, design, specification, maintenance, and management fields.

The smartphone app is the Mechanical Insulation Financial Calculator, which allows you to calculate the cost savings of installing/maintaining insulation on mechanical systems. The E-Learning Modules are accessible at www.nerlearning.org and cover all aspects of mechanical insulation. The modules are designed for both industrial and commercial markets.

The Power of Insulation

Listed below are the organizations that were instrumental in the development of this resource. We encourage you to visit these sites and learn more about each organization.



National Insulation Association

www.insulation.org



National Institute of Building Sciences
(Mechanical Insulation Design Guide)
www.wbdg.org/midg



U.S. Department of Energy

www1.eere.energy.gov/manufacturing



The International Association of Heat and Frost Insulators and Allied Workers
www.insulators.org