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Mechanical Insulation Life Cycle Assessment

Mechanical insulation saves up to 500 times the energy and 750 times the emissions required for its production

Mechanical insulation and insulation in general are among the few industrially manufactured products that save more energy over their life span than is required for their manufacturing. Mechanical insulation systems, compared to surfaces without insulation, save more than 140 and up to 500 times more energy over their life spans (20 years for the purposes of this discussion) than it takes to produce them. Mechanical insulation also saves a minimum of 150 (and up to 750) times more CO₂ emissions than it takes to produce the insulation product. This data proves beyond doubt that mechanical insulation is a sustainable, green initiative that provides an unparalleled ecobalance.

Mechanical insulation systems are used for piping, equipment, vessels, ducts, boilers, and similar mechanical equipment in commercial building and industrial applications. They perform thermal, acoustical, and personnel safety functions for piping and equipment in both hot and cold applications; Heating, Ventilation, and Air Conditioning (HVAC) applications; and refrigeration and other low-temperature piping and equipment applications.

Insulation reduces energy consumption and greenhouse gas emissions. Properly installed and maintained insulation can also:

- be an important part of sustainable design initiatives and safety programs
- increase available carbon credits
- increase manufacturing productivity
- eliminate or reduce corrosion under insulation
- control condensation and mold growth
- provide an unrivaled return on investment. From a life cycle perspective, insulation is one of the most sustainable green initiatives in the industrial and commercial building sectors.

A life cycle assessment (LCA) is used to systematically investigate the environmental impact of goods. The complete life cycle of a product is tracked “from cradle to grave.” All aspects of the product’s life, including raw material production, energy usage, manufacturing, transporting, use, and disposal, are considered. Such ecobalances provide information on greenhouse gas emissions and the use of energy and raw materials, which is becoming increasingly important.

Construction and operation of commercial buildings and industrial facilities are among the most energy- and raw material-intensive industries. To meet the growing need for energy and protect the environment for future generations, increased energy efficiency should be considered a primary source for reducing energy use and emissions. Mechanical insulation is one of the most valuable keys to achieving those goals. It is relatively

simple, cost effective, maintainable, and “shovel ready,” creating and preserving jobs now on a local basis across a wide array of industries. It’s time to get excited about mechanical insulation.

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The International Association of Heat and Frost Insulators and Allied Workers (HFIAW) is over 100 years old. Established in 1903, its members have worked to conserve energy and help reduce the release of greenhouse gases into the atmosphere. The International Union has 86 Local Unions in the United States and 9 Local Unions in Canada, with approximately 25,000 highly skilled workers who work for 1,200 signatory contractors. All the members in the United States have completed an extensive Apprentice Training Program that includes up-to- date Health & Safety Training and is certified by the Bureau of Apprentice Training and the U.S. Department of Labor. The International Union’s signatory contractors, and its members whom they employ, perform work in nuclear and coal-burning powerhouses, refineries, steel mills, water treatment facilities, factories, auto plants, airports, office buildings, schools, and hospitals, to name a few. For more information about HFIAW, visit www.insulators.org.