

Heat Losses are COSTLY!!!

In this case, just four (4) feet (1.2 meters) of missing insulation would cost this refinery almost **\$16,000 per year in energy losses.**



Calculation Basis:

- Fuel Cost Basis provide by Refiner: \$12.65 per MM BTU (LHV) Fuel Oil Cost
- Heater Efficiency: 80%
- Line Temperature (Reactor Effluent to Reformer Heater: 904.6°F) (Per DCS Operator)
- Line Size: 20"
- Heat Loss from bare 20" pipe: 254.4 MM BTU/ft/year (per 3E-Plus software)
- Heat Loss from same pipe with 3" Insulation: 7.9 MM BTU/ft/year (per 3E-Plus Software)
- Delta: 254.4 – 7.9 = 246.5 MM BTU/ft/year

Calculation: (246.5 MM BTU/ft./yr. * 4 ft. * \$12.65) / 0.80 = \$15,591 Annual Energy Losses

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 US industrial market segment would lead to energy savings of \$2.8 Billion per year.

* Using Data from US Department of Energy (DOE) Industrial Technologies Program (ITP)

Fuel cost used is based on Hawaii refinery location. Mainland fuel costs may be significantly lower due to availability of relatively low cost coal & natural gas.