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The following pages will outline a case study, which shows the benefits in energy and cost savings of properly installed mechanical insulation.

Insulation is a proven means for conserving energy, reducing greenhouse gas emissions, increasing process productivity, providing a safer and more productive work environment, controlling condensation (which can lead to mold growth), supporting sustainable design technology and a host of other benefits.

Mechanical insulation does all of this, while providing a return on investment (ROI) rate, which is seldom rivaled. Despite the proven ROI, insulation is often overlooked and its benefits undervalued. Insulation is truly the lost or forgotten technology. Can you think of a more important time than now to think about how insulation can help you?

An insulation system is a technology, which needs to be engineered and maintained throughout the entire process. Several studies have estimated roughly 10 to 30 percent of all installed insulation is now missing or damaged.

The practice of not replacing or maintaining an insulation system in a timely and correct manner reduces the full benefits of insulation, and in return, decreases the ROI. In many cases, significant other issues - such as excessive energy loss, corrosion under insulation (CUI), mold development, increased cost of operations and reduced process productivity or efficiency - develop.

You can learn more on www.MechanicalInsulatorsLMCT.com, where additional case studies can be viewed.

Please do not hesitate to contact me should you have any additional questions.
Thank you,

Peter Ielimi

Executive Director
Mechanical Insulators Labor Management Cooperative Trust

ENERGY AUDIT MCADAM HIGH SCHOOL

Total Heat Loss
5 year savings of
\$ 2,587.25

CO₂ Reduction of
2.25 MT/Year

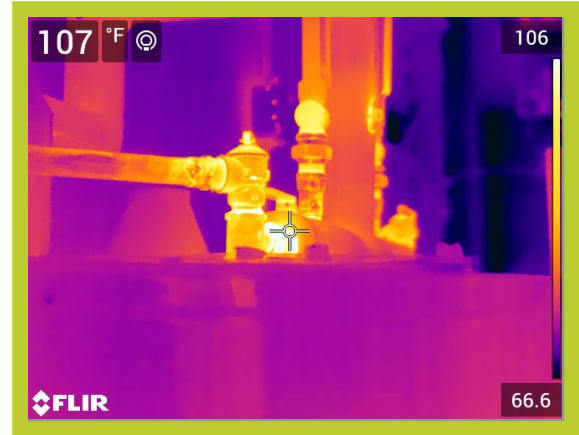


Benefits:

- Simple payback period
- CO₂ Reduction
- Personnel safety

*Audit Done By:
Joshua Sherrard
Certified Thermographer
Certified 3E Plus Auditor*

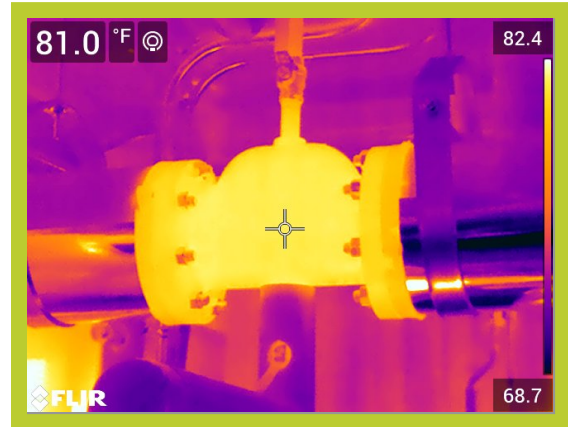
Furnace Room



| | | | |
|------------------------|------------|---|---------|
| Operating Temperature, | 108°F | Emittance of Surface | 0.95 |
| Ambient Temperature, | 72°F | Expected Useful Life of Insulation System | 20 yrs. |
| Insulation selected | Fiberglass | Operating hours per year | 8760 |
| | | Efficiency of fuel Conversion% | 80% |

| THICKNESS | HEAT LOSS | FUEL COST \$/yr | 1styr SAVINGS. | 5yr. SAVINGS | CO2 EMMISSIONS |
|-----------|-----------|--------------------|-------------------|-----------------|-------------------|
| 0 | 1800 | \$ 22.50 | \$22.50 | \$112.50 | 0.1 |
| 1 | 380 | \$ 5.40 | \$17.10 | \$85.50 | 0 |
| 1.5 | 310 | \$ 4.50 | \$18.00 | \$90.00 | 0 |

Furnace Room



| | | | |
|------------------------|------------|---|---------|
| Operating Temperature, | 82°F | Emittance of Surface | 0.95 |
| Ambient Temperature, | 72°F | Expected Useful Life of Insulation System | 20 yrs. |
| Insulation selected | Fiberglass | Operating hours per year | 8760 |
| | | Efficiency of fuel Conversion% | 80% |

| THICKNESS | HEAT LOSS | FUEL COST \$/yr | 1styr SAVINGS. | 5yr. SAVINGS | CO2 EMMISSIONS |
|-----------|-----------|--------------------|-------------------|-----------------|-------------------|
| 0 | 1,436 | \$ 58.84 | \$58.84 | \$294.20 | 0.28 |
| 1 | 228 | \$ 9.44 | \$49.40 | \$247.00 | 0.04 |
| 1.5 | 168 | \$ 6.98 | \$51.86 | \$259.30 | 0.04 |

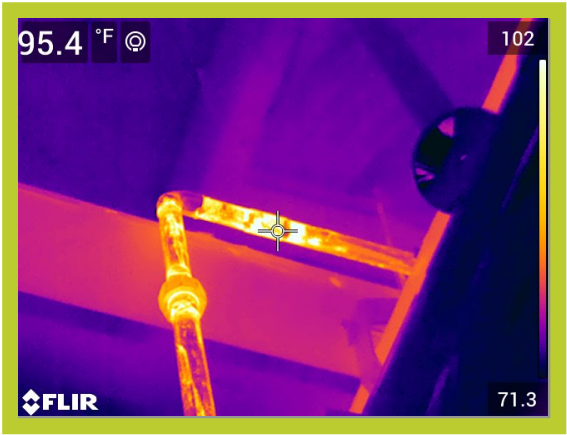
Furnace Room



| | | | |
|------------------------|------------|---|---------|
| Operating Temperature, | 82°F | Emittance of Surface | 0.95 |
| Ambient Temperature, | 73°F | Expected Useful Life of Insulation System | 20 yrs. |
| Insulation selected | Fiberglass | Operating hours per year | 8760 |
| | | Efficiency of fuel Conversion% | 80% |

| THICKNESS | HEAT LOSS | FUEL COST \$/yr | 1styr SAVINGS. | 5yr. SAVINGS | CO2 EMMISSIONS |
|-----------|-----------|--------------------|-------------------|-----------------|-------------------|
| 0 | 189 | \$ 7.77 | \$7.77 | \$38.85 | 0.03 |
| 1 | 39 | \$ 1.62 | \$6.15 | \$30.75 | 0 |
| 1.5 | 33 | \$ 1.35 | \$6.42 | \$32.10 | 0 |

Furnace Room



Operating Temperature,
Ambient Temperature,
Insulation selected

82°F
72 °F
Fiberglass

Emittance of Surface
Expected Useful Life of Insulation System
Operating hours per year
Efficiency of fuel Conversion%

0.95
20 yrs.
8760
80%

| THICKNESS | HEAT LOSS | FUEL COST \$/yr | 1styr SAVINGS. | 5yr. SAVINGS | CO2 EMMISSIONS |
|-----------|-----------|--------------------|-------------------|-----------------|-------------------|
| 0 | 756 | \$ 31.08 | \$31.08 | \$155.40 | 0.12 |
| 1 | 156 | \$ 6.48 | \$24.60 | \$123.00 | 0 |
| 1.5 | 132 | \$ 5.40 | \$25.68 | \$128.40 | 0 |

*Estimated Calculations supplied by 3E Plus Mechanical Insulation Energy Calculator *

Mechanical Room



Operating Temperature,
Ambient Temperature,
Insulation selected

83°F
72 °F
Fiberglass

Emittance of Surface

0.95

Expected Useful Life of Insulation System

20 yrs.

Operating hours per year

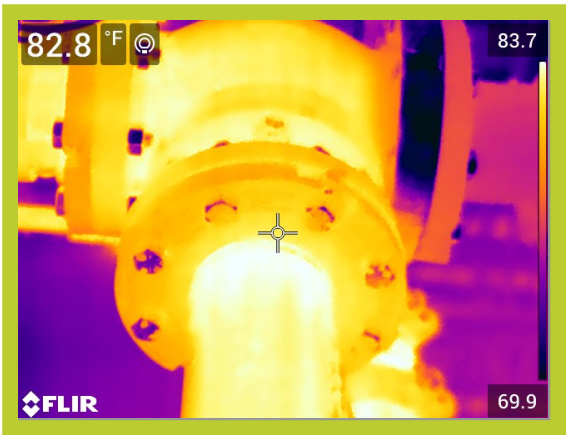
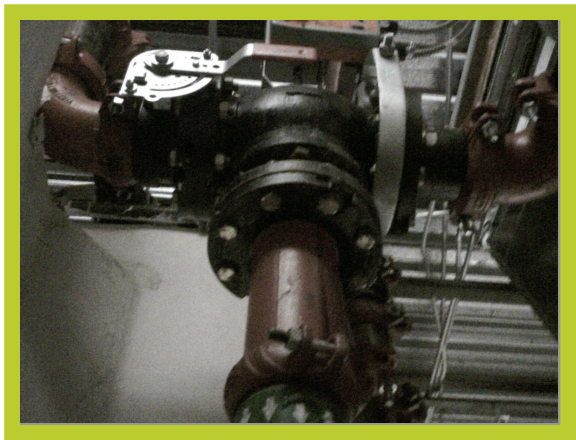
8760

Efficiency of fuel Conversion%

80%

| THICKNESS | HEAT LOSS | FUEL COST \$/yr | 1styr SAVINGS. | 5yr. SAVINGS | CO2 EMMISSIONS |
|-----------|-----------|--------------------|-------------------|-----------------|-------------------|
| 0 | 10,116 | \$ 415.08 | \$415.08 | \$2075.40 | 1.80 |
| 1 | 1,620 | \$ 66.98 | \$348.10 | \$1740.50 | 0.36 |
| 1.5 | 1,260 | \$ 51.12 | \$363.96 | \$1819.80 | 0.36 |

Mechanical Room



| | | | |
|------------------------|------------|---|---------|
| Operating Temperature, | 90°F | Emittance of Surface | 0.95 |
| Ambient Temperature, | 72 °F | Expected Useful Life of Insulation System | 20 yrs. |
| Insulation selected | Fiberglass | Operating hours per year | 8760 |
| | | Efficiency of fuel Conversion% | 80% |

| THICKNESS | HEAT LOSS | FUEL COST | 1styr | 5yr. | CO2 |
|-----------|-----------|-----------|----------|----------|------------|
| | | \$/yr | SAVINGS. | SAVINGS | EMMISSIONS |
| 0 | 2,080 | \$ 85.24 | \$85.24 | \$426.20 | 0.40 |
| 1 | 320 | \$ 13.16 | \$72.08 | \$360.40 | 0.08 |
| 1.5 | 236 | \$ 9.72 | \$75.52 | \$377.60 | 0.04 |

*Estimated Calculations supplied by 3E Plus Mechanical Insulation Energy Calculator *

Results

| | |
|--------------------------------------|---------|
| Simple Payback Period, yrs | 5.2 |
| Internal Rate of Return (IRR or ROI) | 18.4% |
| Net Present Value, | \$7,628 |

Calculations

| Year | Investment | Annual Savings | Annual Cash Flow | Cumulative Cash Flow |
|------|------------|----------------|------------------|----------------------|
| 0 | \$-2,712 | \$0 | \$-2,712 | \$-2,712 |
| 1 | \$0 | \$517 | \$517 | \$-2,195 |
| 2 | \$0 | \$517 | \$517 | \$-1,678 |
| 3 | \$0 | \$517 | \$517 | \$-1,161 |
| 4 | \$0 | \$517 | \$517 | \$-644 |
| 5 | \$0 | \$517 | \$517 | \$-127 |
| 6 | \$0 | \$517 | \$517 | \$390 |
| 7 | \$0 | \$517 | \$517 | \$907 |
| 8 | \$0 | \$517 | \$517 | \$1,424 |
| 9 | \$0 | \$517 | \$517 | \$1,941 |
| 10 | \$0 | \$517 | \$517 | \$2,458 |
| 11 | \$0 | \$517 | \$517 | \$2,975 |
| 12 | \$0 | \$517 | \$517 | \$3,492 |
| 13 | \$0 | \$517 | \$517 | \$4,009 |
| 14 | \$0 | \$517 | \$517 | \$4,526 |
| 15 | \$0 | \$517 | \$517 | \$5,043 |
| 16 | \$0 | \$517 | \$517 | \$5,560 |
| 17 | \$0 | \$517 | \$517 | \$6,077 |
| 18 | \$0 | \$517 | \$517 | \$6,594 |
| 19 | \$0 | \$517 | \$517 | \$7,111 |
| 20 | \$0 | \$517 | \$517 | \$7,628 |