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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
ACADEMIE
ASSOMPTION**

**Total Heat Loss
5 year savings of
\$ 507,472.30**

**CO₂ Reduction of
329.16 MT/Year**

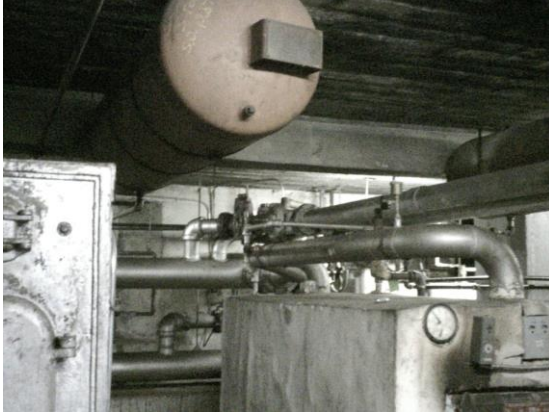


Benefits:

- Simple payback period
- CO₂ Reduction
- Personnel safety

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

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

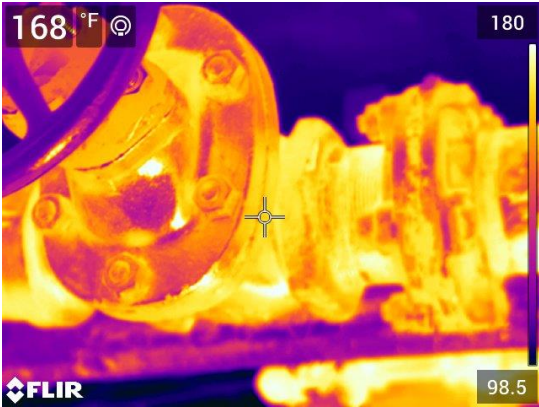
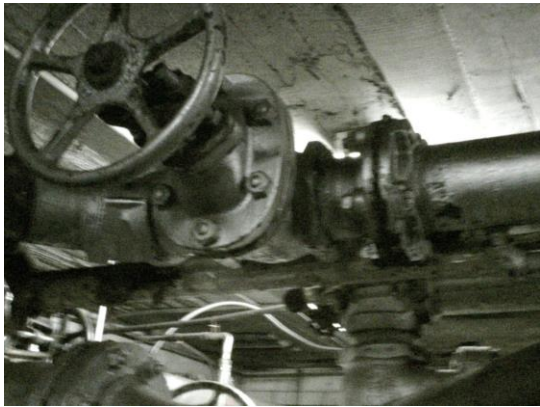
165°F
77°F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	87,504	\$ 2,650.08	\$ 2,650.08	\$13,250.40	8.4
1	570	\$ 346.80	\$2,303.28	\$11,516.40	1.2
1.5	417	\$ 242.88	\$2,407.20	\$12,036.00	0.72

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

157*F
77*F
Fiberglass

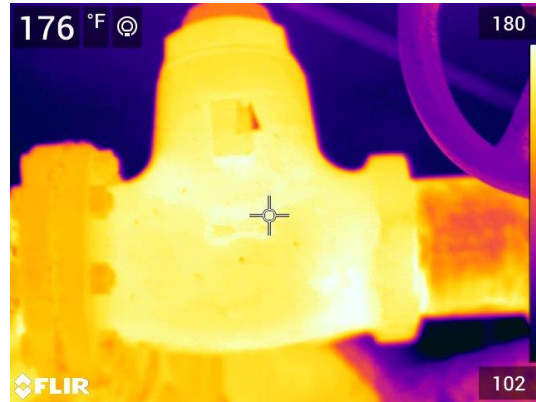
Emittance of Surface
Expected Useful Life of Insulation System
Operating hours per year
Efficiency of fuel Conversion%

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	14,970	\$ 453.24	\$ 453.24	\$2266.20	1.44
1	2,034	\$ 61.62	\$391.62	\$1958.10	0.18
1.5	1,482	\$ 44.88	\$408.36	\$2041.80	0.12

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

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

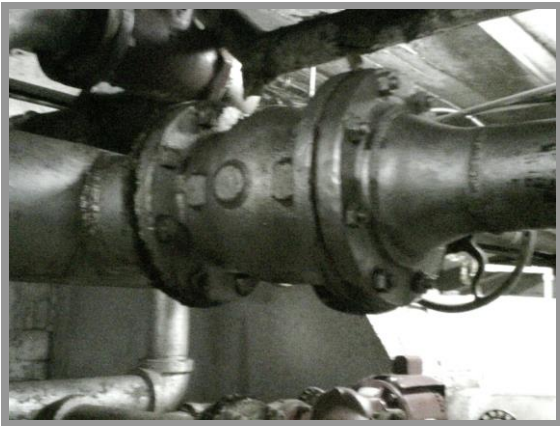
157°F
77°F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	36,351	\$ 1,100.82	\$ 1,100.82	\$5,504.10	3.57
1	4,809	\$ 145.74	\$955.08	\$4775.40	0.42
1.5	3,654	\$ 110.46	\$990.36	\$4951.80	0.42

Boiler Room

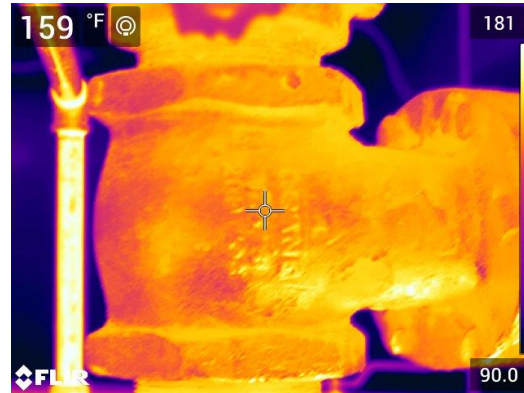


Operating Temperature,	168°F	Emittance of Surface	0.95
Ambient Temperature,	77°F	Expected Useful Life of Insulation System	20 yrs.
Insulation selected	Fiberglass	Operating hours per year	8320
		Efficiency of fuel Conversion%	75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	13,404	\$ 405.84	\$ 405.84	\$2029.20	1.32
1	1,944	\$ 58.80	\$347.04	\$1735.20	0.24
1.5	1,500	\$ 45.48	\$360.36	\$1801.80	0.12

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

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

126*F
77*F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	64,614	\$ 1,955.58	\$ 1,955.58	\$9,777.90	5.94
1	9,108	\$ 275.88	\$1,679.70	\$8,398.50	0.66
1.5	6,930	\$ 209.22	\$1,746.36	\$8,731.80	0.66

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

125°F
74°F
Fiberglass

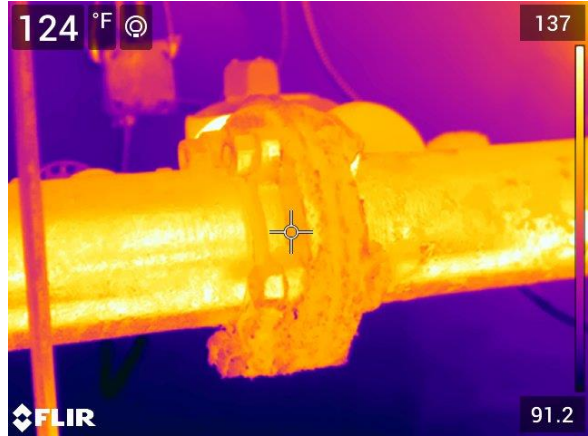
Emittance of Surface
Expected Useful Life of Insulation System
Operating hours per year
Efficiency of fuel Conversion%

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	4,719	\$ 142.95	\$ 142.95	\$714.75	0.45
1	678	\$ 20.49	\$122.46	\$612.30	0.06
1.5	477	\$ 14.40	\$128.55	\$642.75	0.06

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

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

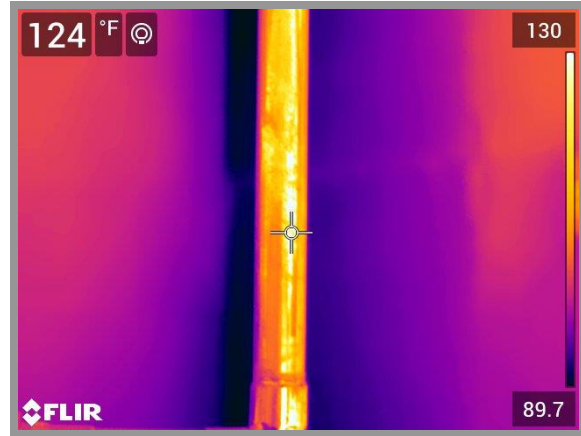
153*F
74*F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	12,068	\$ 365.40	\$ 365.40	\$1827.00	1.16
1	1,536	\$ 46.52	\$318.88	\$1594.40	0.16
1.5	1,128	\$ 34.16	\$331.24	\$1656.20	0.12

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

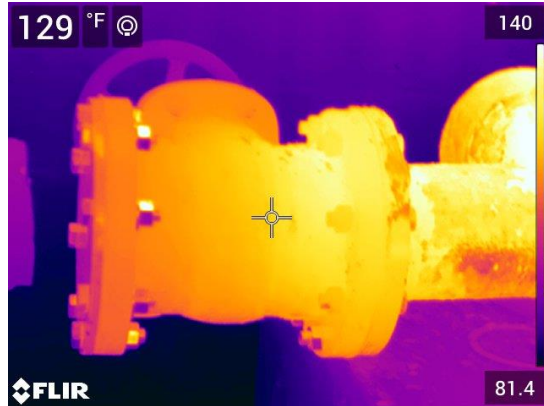
130*F
74*F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	7,590	\$ 229.50	\$ 229.50	\$1147.50	0.6
1	1,740	\$ 52.80	\$176.70	\$883.50	0.3
1.5	1,380	\$ 41.40	\$188.10	\$940.50	0

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

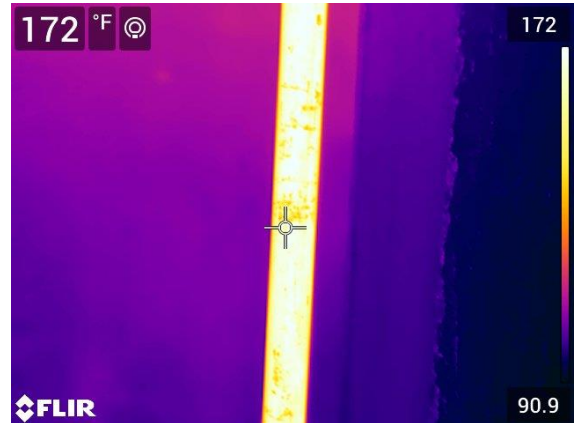
171°F
74°F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	23,436	\$709.80	\$ 709.80	\$3549.00	2.1
1	4,452	\$ 134.82	\$574.98	\$2874.90	0.42
1.5	3,486	\$ 105.42	\$604.38	\$3021.90	0.42

Boiler Room



Operating Temperature,
Ambient Temperature,
Insulation selected

148°F
74°F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	17,532	\$ 531.36	\$531.36	\$2656.80	1.8
1	2952	\$ 88.92	\$442.44	\$2212.20	0.36
1.5	2412	\$ 72.72	\$458.64	\$2293.20	0.36

Entrance

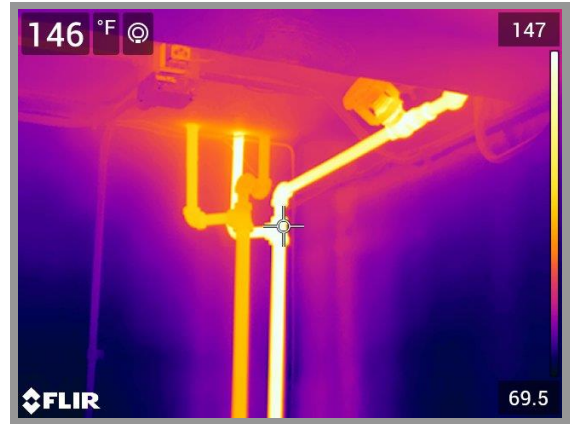


Operating Temperature,	148°F	Emittance of Surface	0.95
Ambient Temperature,	72°F	Expected Useful Life of Insulation System	20 yrs.
Insulation selected	Fiberglass	Operating hours per year	8320
		Efficiency of fuel Conversion%	75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	17,532	\$ 546.48	\$546.48	\$2,732.40	1.8
1	2952	\$ 91.08	\$455.40	\$2,277.00	0.36
1.5	2412	\$ 74.52	\$471.96	\$2,359.80	0.36

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

Classrooms



Operating Temperature,
Ambient Temperature,
Insulation selected

148°F
74°F
Fiberglass

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

0.95
20 yrs.
8320
75%

THICKNESS	HEAT LOSS	FUEL COST \$/yr	1styr SAVINGS.	5yr. SAVINGS	CO2 EMMISSIONS
0	246,600	\$ 7,470.00	7,470.00	37,350	24
1	48,000	\$ 1,464.00	\$6,006.00	\$30,030.00	6
1.5	37,800	\$ 1,146.00	\$6,324.00	\$31,620.00	6

Results

Simple Payback Period, yrs	0.6
Internal Rate of Return (IRR or ROI)	166.3%
Net Present Value,	\$1,968,852

Calculations

Year	Investment	Annual Savings	Annual Cash Flow	Cumulative Cash Flow
0	\$-61,028	\$0	\$-61,028	\$-61,028
1	\$0	\$101,494	\$101,494	\$40,466
2	\$0	\$101,494	\$101,494	\$141,960
3	\$0	\$101,494	\$101,494	\$243,454
4	\$0	\$101,494	\$101,494	\$344,948
5	\$0	\$101,494	\$101,494	\$446,442
6	\$0	\$101,494	\$101,494	\$547,936
7	\$0	\$101,494	\$101,494	\$649,430
8	\$0	\$101,494	\$101,494	\$750,924
9	\$0	\$101,494	\$101,494	\$852,418
10	\$0	\$101,494	\$101,494	\$953,912
11	\$0	\$101,494	\$101,494	\$1,055,406
12	\$0	\$101,494	\$101,494	\$1,156,900
13	\$0	\$101,494	\$101,494	\$1,258,394
14	\$0	\$101,494	\$101,494	\$1,359,888
15	\$0	\$101,494	\$101,494	\$1,461,382
16	\$0	\$101,494	\$101,494	\$1,562,876
17	\$0	\$101,494	\$101,494	\$1,664,370
18	\$0	\$101,494	\$101,494	\$1,765,864
19	\$0	\$101,494	\$101,494	\$1,867,358
20	\$0	\$101,494	\$101,494	\$1,968,852