2012-2013
OMEP, OSU, PPRC

OMEP – Material and Labor

OMEP / Manufacturing Growth Through Innovation

OSU – Energy Efficiency Center

OSU Oregon State University

PPRC – Supplemental P2

pprc

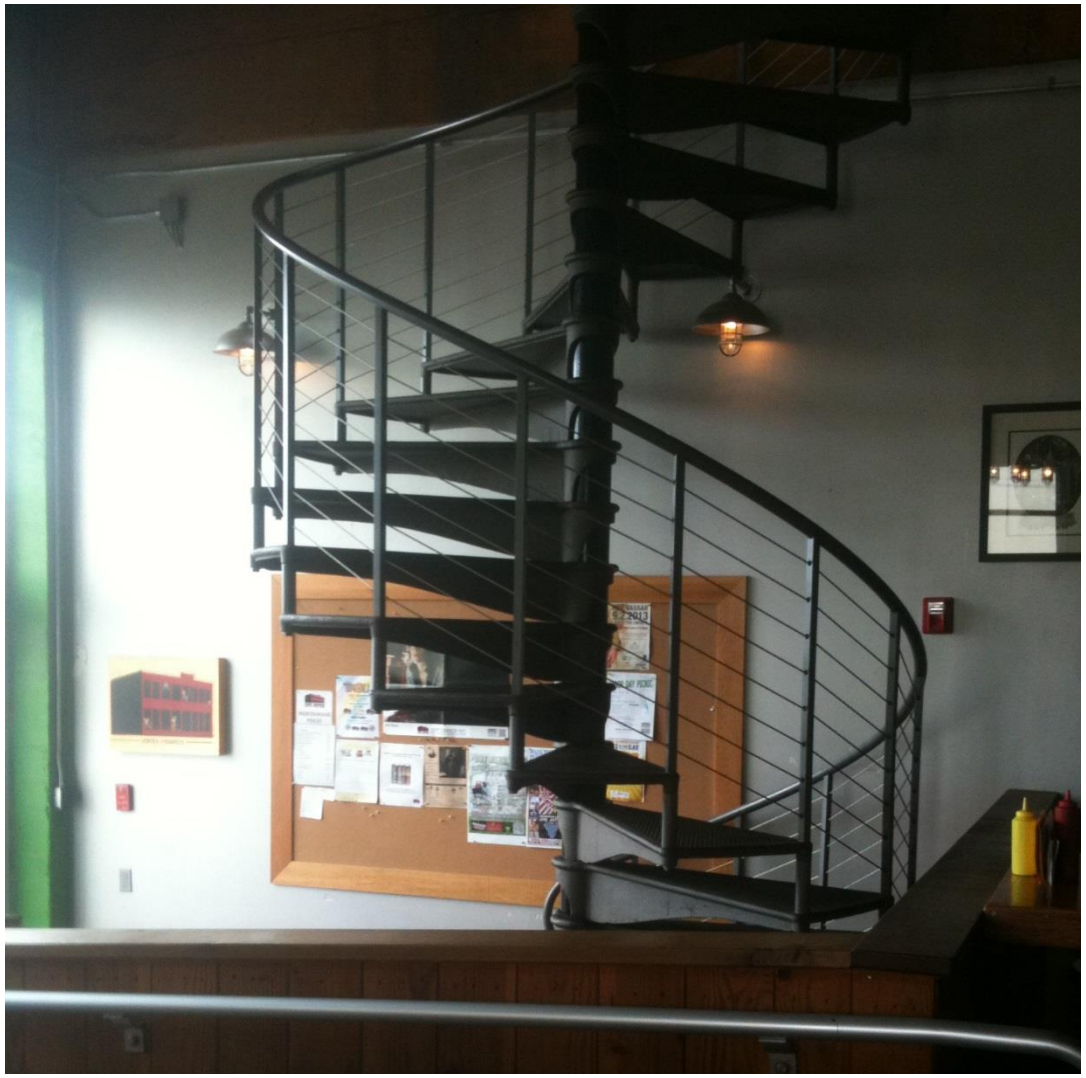
Good Environmental Practices (Already in Place)

- Heat exchanger
- Spent grain to feed
- Reuse pallets (not landfilled)
- Attempting to recycle stretch wrap
- Good housekeeping
- Restaurant grease recycle
- Enclosed room for boiler

FORT GEORGE
BREWERY + PUBLIC HOUSE
ASTORIA, OREGON

Good Environmental Practices (Already in Place)

- Salvaged material



OMEP Projects: Labor & Material Focus
Canning and Keg Washing
Mark Biederback

Labor:

- Significant reduction in transfer of the product from process to cans and out the door
  - lifting, carrying, climbing ladders
  - picking up and tossing defect cans
- Keg cleaner functioning again

Material:

- Number of cans dropped before filled (~8’ high palletized raw cans federal into feed chute)
- Enhanced some of the filling machine mechanics to decrease can and beer loss as a result of filling/canning.

OMEP Projects: Water Canning and Keg Washing

Mark Biederback

Water conservation targeted but not resolved in can washing operation

Can flush water used inside then be used to clean the outside of the can?

OSU Energy Efficiency Center

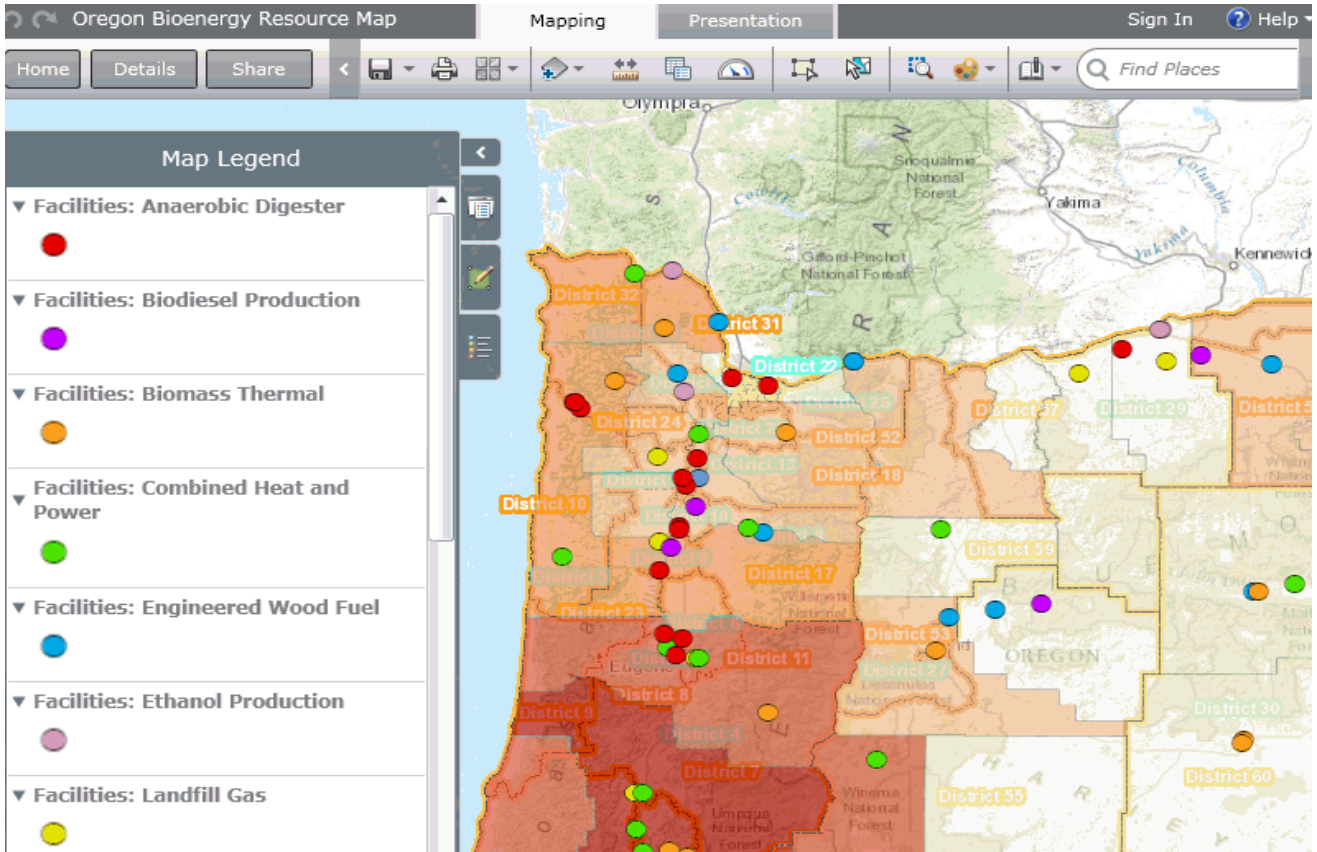
Three Primary Analyses/Recommendations

Recommendation	Estimated payback (with local/state incentives)	Potential Savings
Lighting Retrofit	3.9 years	21,700 kwh
Insulate steam pipes	0.4 years	276 MMBtu/yr
Expansion Analysis (lighting)	0.2 years	~11,000 kwh (compared to installation of incandescents)

Wort Vapor Capture
Water Heater (On-Demand)
Heat Bridging (Warehouse metal I beams)
Canning Line Water Use
Refrigeration Controls

PPRC Walk-Through and Sampling of Recommendations

- Promote OMEP and OSU Recommendations
- Find outlets for ‘energy waste sources’ (Hop liquor and yeast)



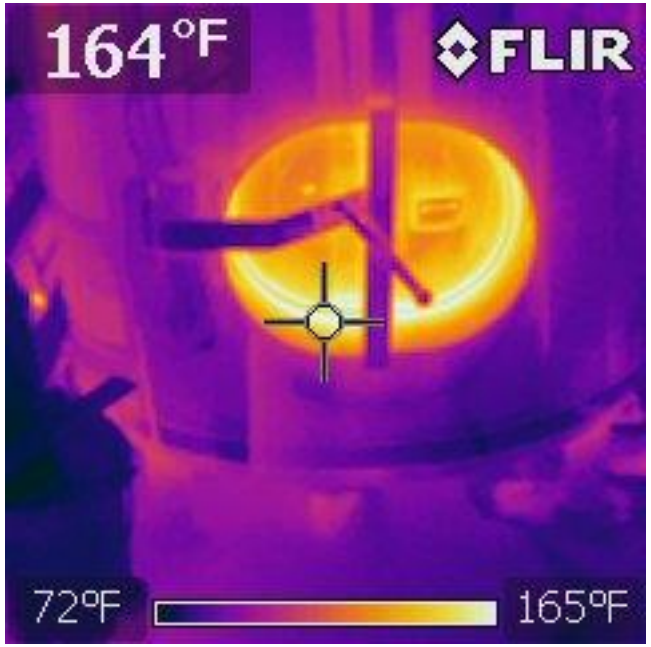
PPRC Walk-Through

Work on increased recycling (tough in Astoria…)

PPRC Walk-Through and Sampling of Recommencations

- Keg collars
- Further minimize air flow from cold storage, with better curtains, seals, etc.
- Compressed air leak test
- Keg cleaning – standardize, NO HOT WATER for exterior, water reuse
- Dry/waterless cleaning techniques to extent possible
- Infrared camera assessment to identified

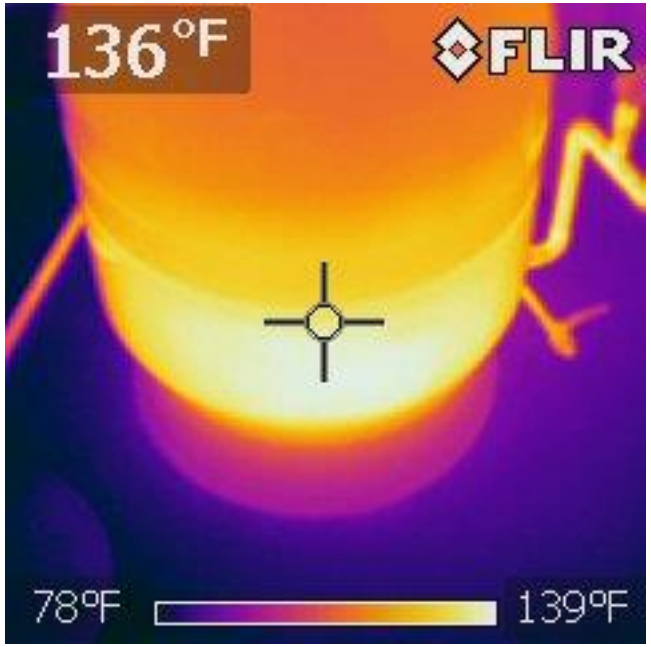
IR Assessment
Hot Tank (Doors)



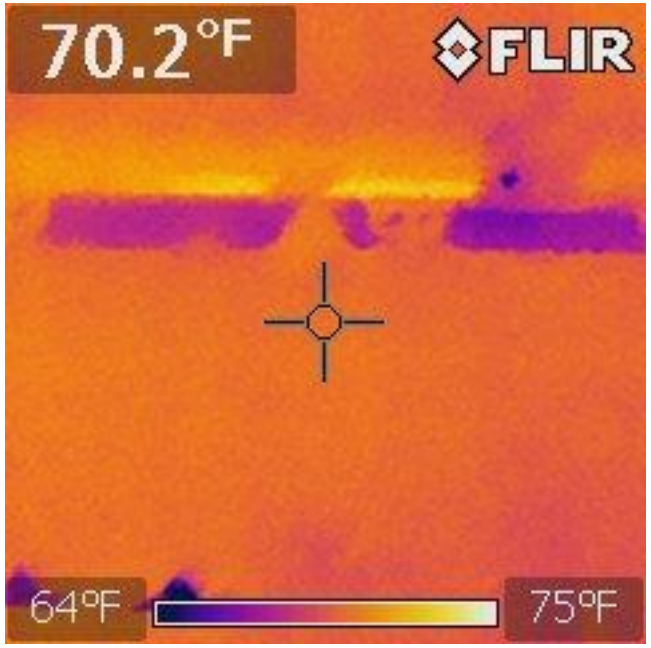
Cold Beer

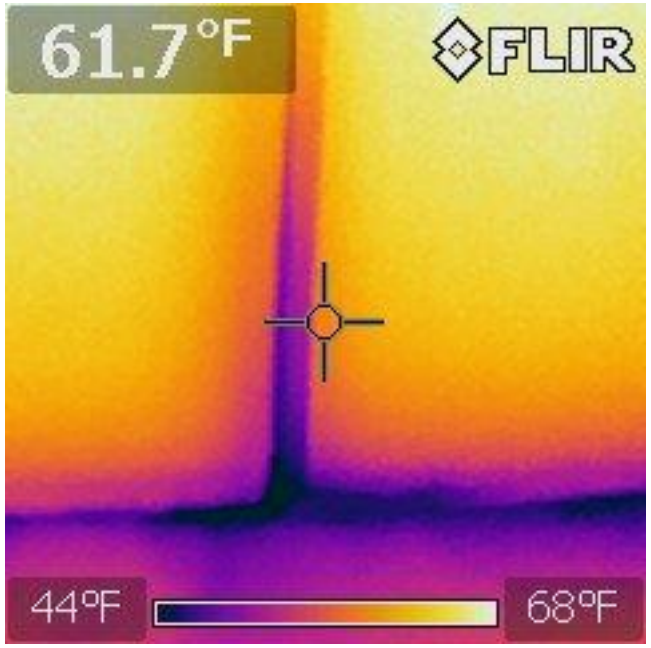
Compression Tank & Adjacent

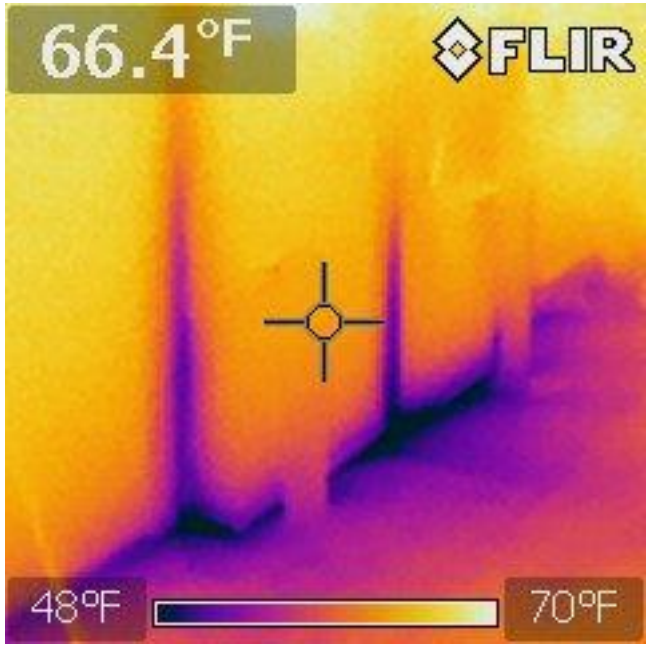
Note – temperature pointer/reading not at hottest point on tank



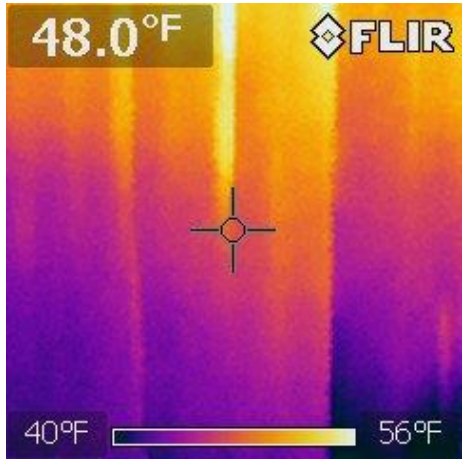
Cold storage

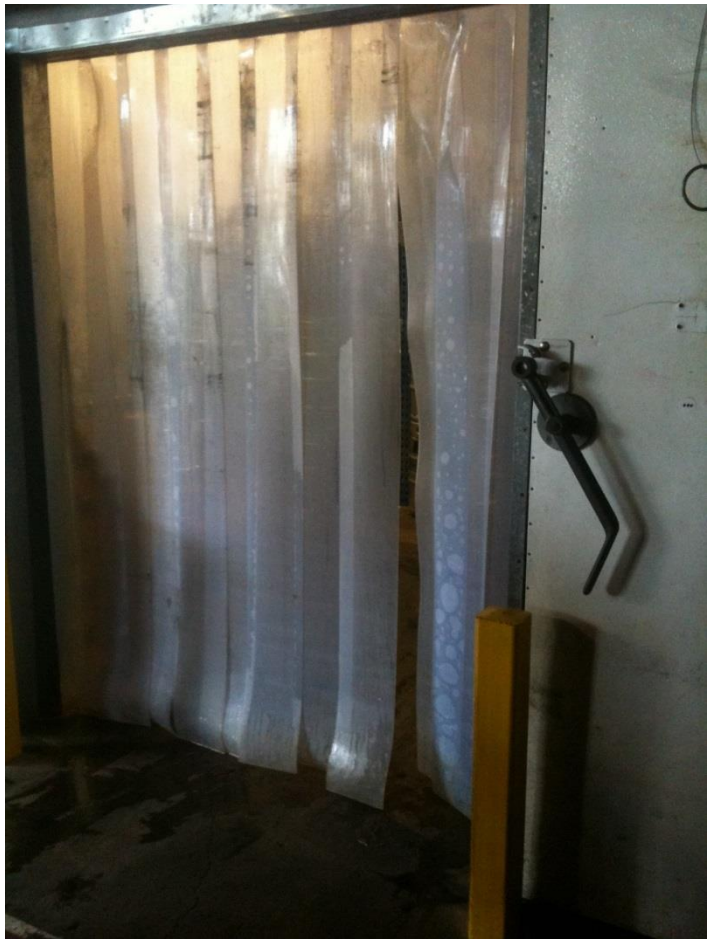


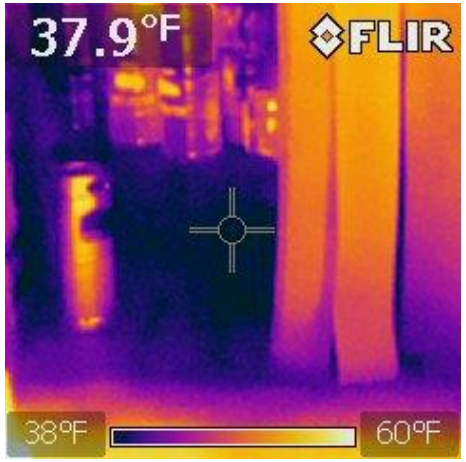


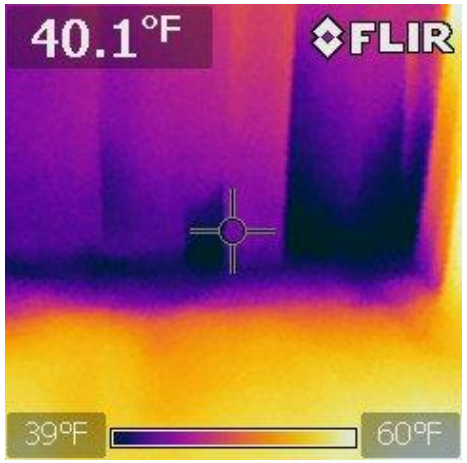


Cold storage

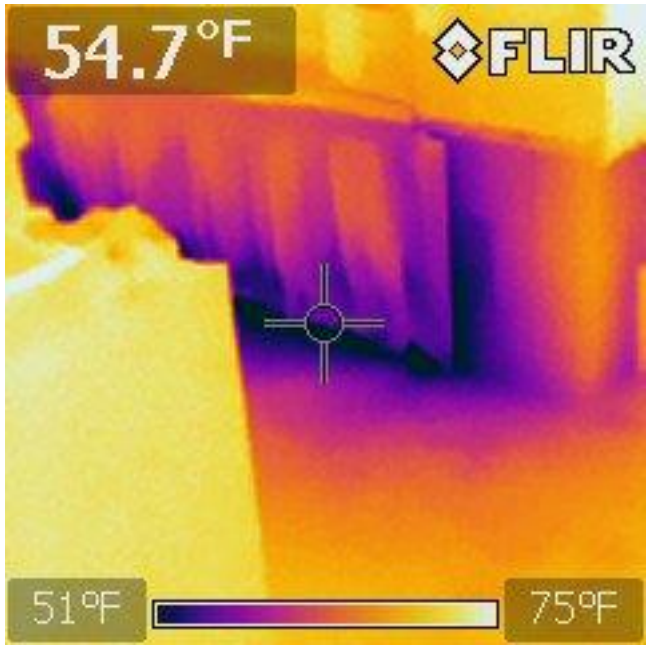


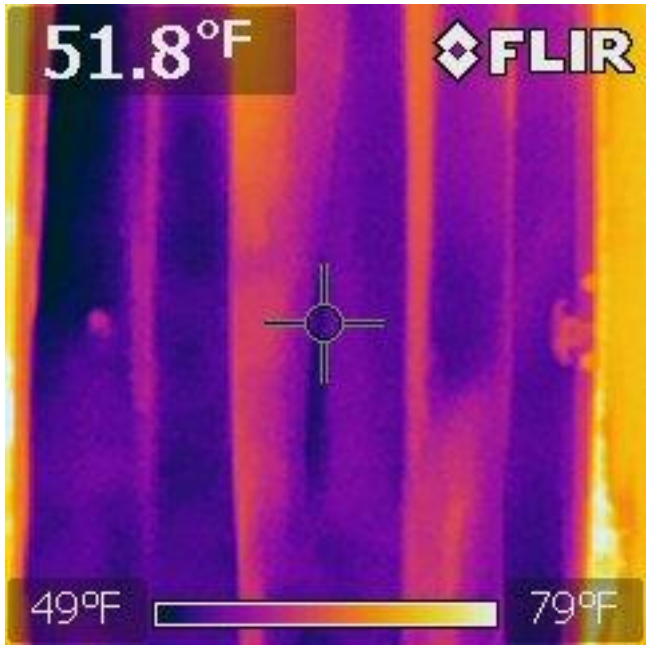




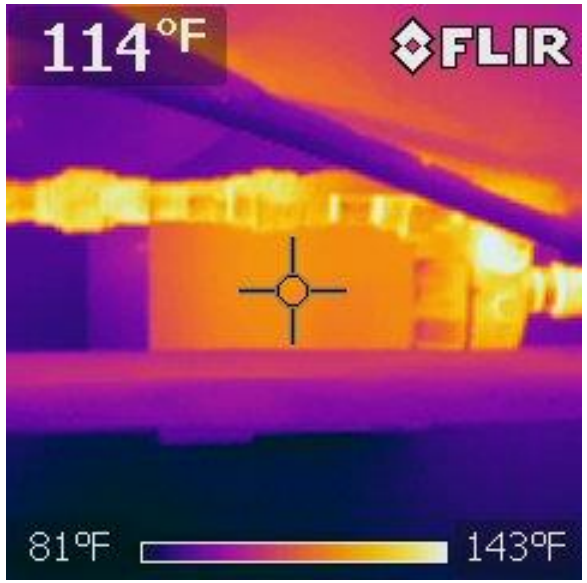


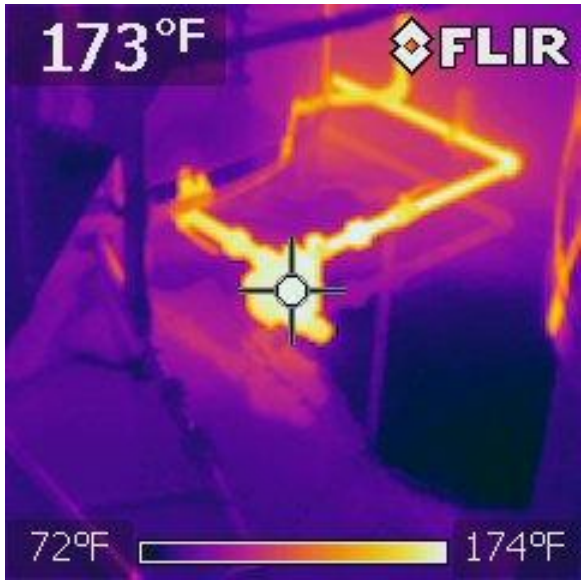
Pub kitchen
ld storage/refrigeration





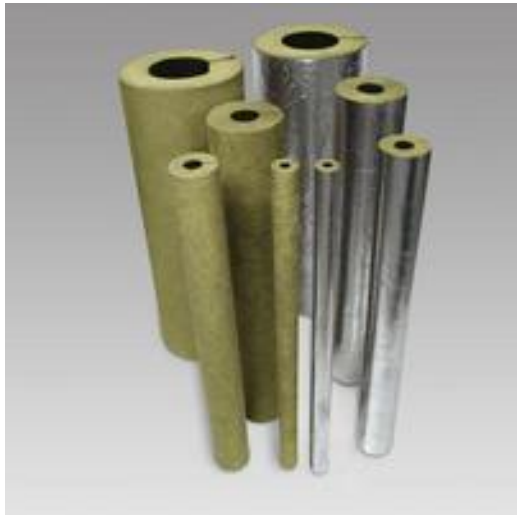
Steam / Condensate Lines – Throughout Facility



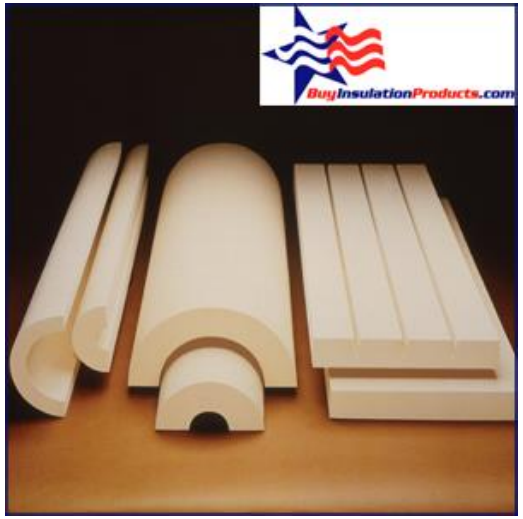


Steam / Condensate Line Insulation Options: Mineral Wool or Calcium Silica

Mineral wool pipe insulation from IIG-LLC. They recommend a metal wrap around the outside of this product.



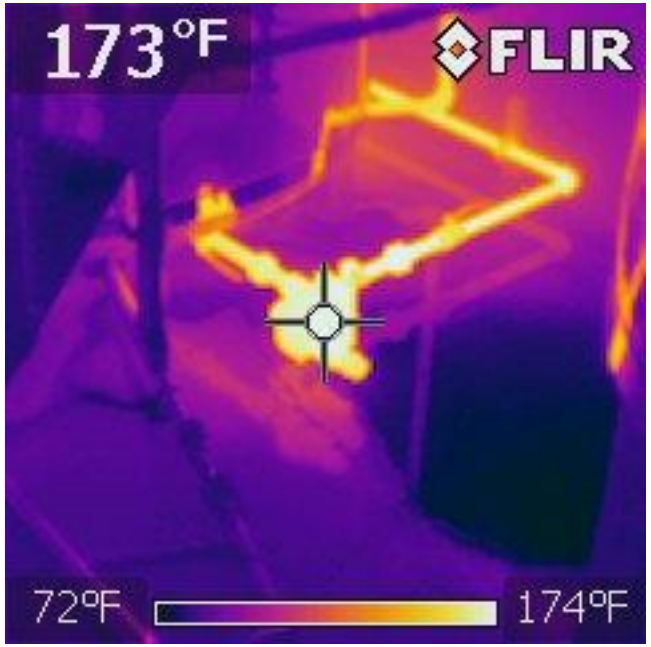
Mineral wool pipe insulation from Isover.



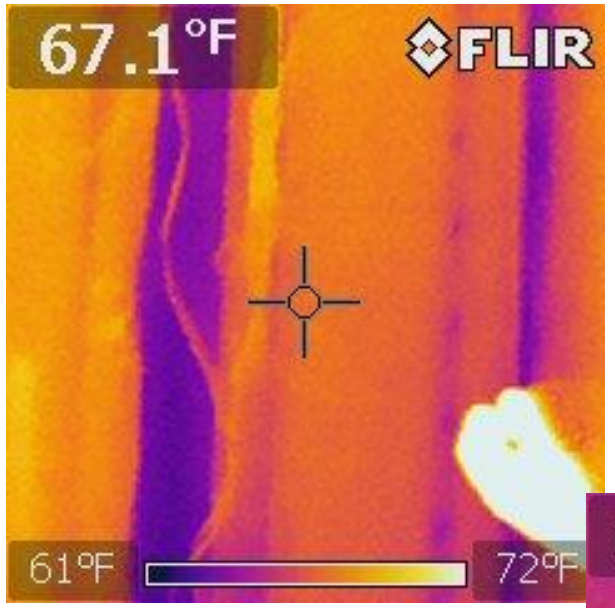
Calcium silicate insulation Calsil

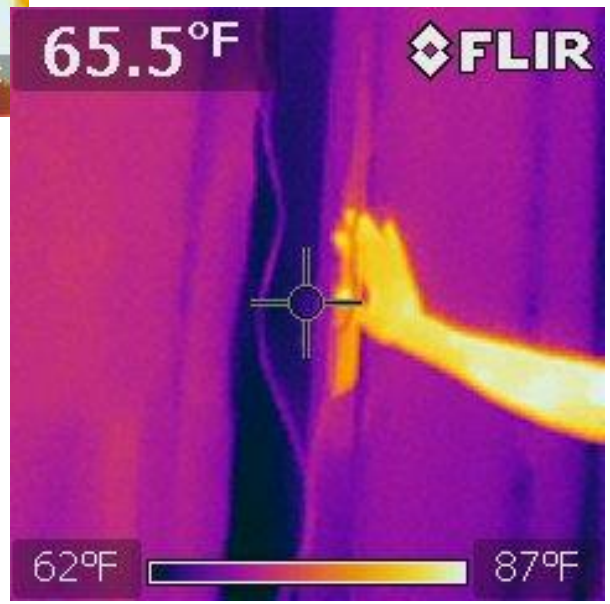
See article comparing features / costs, of two different materials: Megha Insulations

Pub tank door & steam? lines

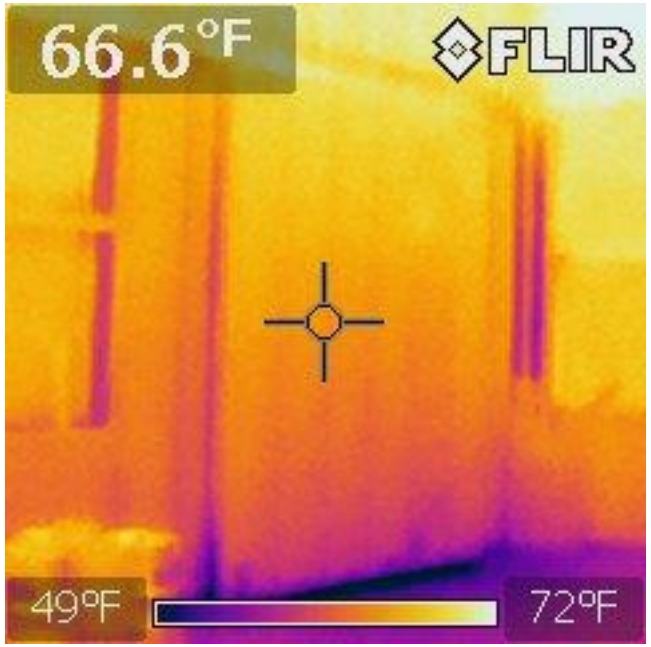


Warehouse



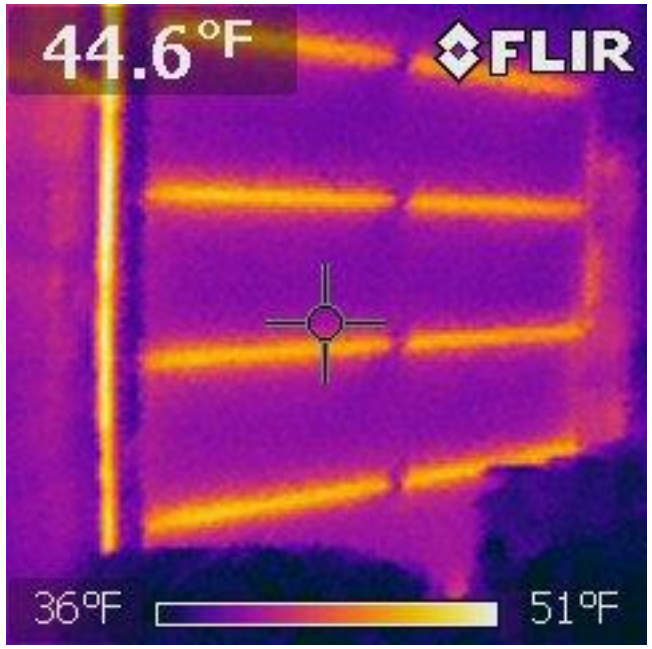


Door closed (purple area (beam on left side, 65 dF next to hand image) maybe not insulated well?



Note air leaks at bottom of door. Did not measure temperature at the 'draft' area

Warehouse - Door



Warehouse – Showing Areas of Lower Spray Insulation Efficacy