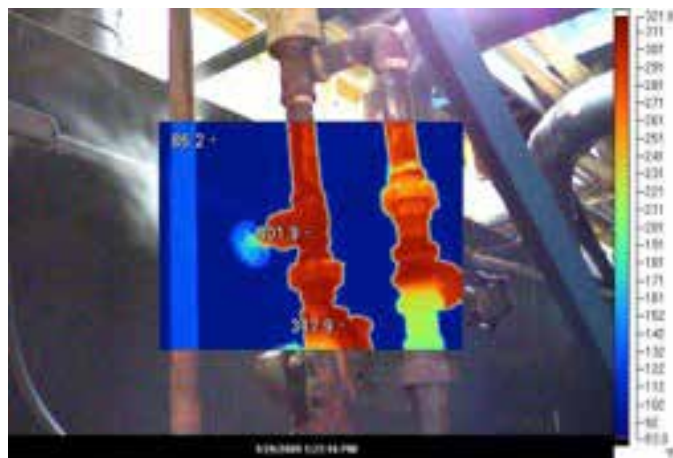


Steam trap inspection

Replacing six failed steam traps reduced energy costs by \$16,200/year

ROI Success Story



Facility type	Manufacturing
Equipment type	Boilers and steam lines
Measurements taken	Thermal imaging inspection of steam lines
Problems noted	Six steam traps not operating properly; leaking coils in the plating tanks; steam leaks at plating lines; opportunities to recover condensate
Savings	Six failed traps replaced at a cost of \$500 per trap. Savings achieved: \$3,200 per trap using known cost to generate steam and heat loss calculations below. Total savings: \$16,200. Next step: Energy log at boiler supply panel before and after addressing leaks and condensate issues
Recommended tool	Fluke Ti125 Thermal Imager

How it works

- Heat loss is calculated based on Newton's third law of cooling
- Heat loss is a combination of convection and radiation losses
- Surface temperature losses can be calculated using

$$h_R = \epsilon \cdot \sigma \cdot \frac{(t_s + 273)^4 - (t_A + 273)^4}{(t_s - t_A)}$$

Where: t_s = Surface temp
 t_a = ambient temp
 ϵ = body emissivity
 σ = Stephen-Boltzmann constant,
 $5,67 \cdot 10^{-8} \text{ W} \cdot \text{m}^{-2} \cdot \text{K}^{-4}$