

## A HIGHER LEVEL OF RELIABILITY®

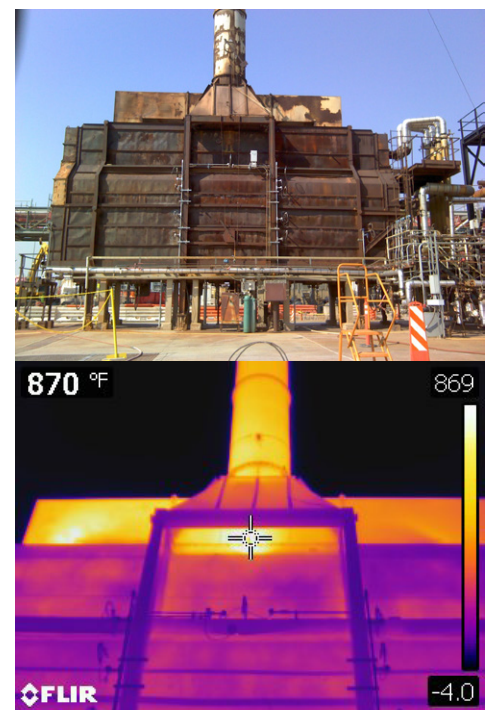
Tube metal temperatures are critical to furnace operations. When operating a furnace close to the maximum allowable tube metal temperature, changes of less than 200° F can dramatically reduce tube life on tubes rated for 100,000 hours to only a few hundred hours. Traditionally, operations personnel rely on thermocouples as the primary tool to provide the temperature data necessary for making critical process decisions.

However, the data that thermocouples provide is extremely limited:

- Prone to failure over time and are often not replaced at regular intervals
- Only supply data for a specific point on the tube
- Most process furnaces only have 1 to 3 thermocouples per pass
- In service applications that involve internal fouling such as distillation, it is not unusual to see tube metal temperature variations of 200°F or more in areas of fouling
- Cannot identify issues such as excessive coking, broken hangers, sagging tubes, etc. within an operating unit. Without internal IR, these things would only be discovered if they caused the unit to fail, or during a scheduled shutdown

Thermocouples do not tell the full story of heat distribution within a heater leading to unexpected repairs that may need significant planning (skilled personnel and materials). Typically, very costly to complete outside of annual outages. Most critically, the unit may fail.

Acuren recommends regular internal scanning using a skilled technician for these applications. This will allow operations to verify thermocouple values as well as identify any issues/areas of concern within the furnace/heater.



*Refractory failure on a heater*

## ACUREN'S INFRARED INSPECTION CAPABILITIES

### Expertise

- 100% of reports are reviewed by a Senior Thermographer

### Rapid Response

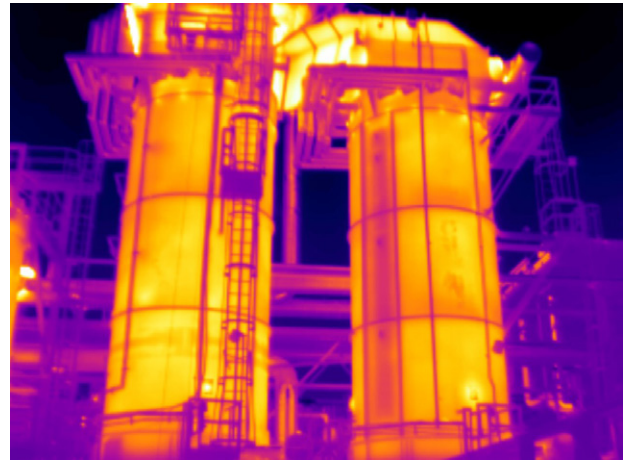
- Qualified personnel and equipment available nationwide

### Quality Results

- Professional reporting with value added observations – 'not just an image'

## TYPICAL FAULT INDICATIONS

- Flame impingement
- Detect/predict tube fouling problems (internal & external)
- Monitor decoking to determine optimal cleaning frequency and verify success any decoking of burner tubes
- Verify thermocouple function
- Identify firing/mixing issues
- Heater insulation and refractory integrity
- Heater tube hanger and support integrity



*Looking for thermal abnormalities to detect refractory failure*

## WHY ACUREN?

- Over 30 years of experience in internal furnace scanning
- Turnkey Service provider: Multiple level 3 thermographers, PhD Refractory Specialists, API 936 Inspectors, Professional Engineers and a full suite of NDE services available to supplement infrared findings



*Coating peeling off a tube in a heater*



CONTACT OUR INFRARED THERMOGRAPHY EXPERTS TODAY

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BEYOND INSPECTION