

Why Should I Consider Using Quest Integrity's Heater Integrity Optimization Service?

What is the challenge?

Costly disruptions, excessive emissions and reduced production due to inefficient or compromised heater operation.

What is the return on investment?

- Increased operating time and production
- Improved heater reliability and extended life of tubes and other critical components
- Overall reduction in cleaning frequency on your asset
- Reduced operational costs from lower energy consumption (aligns with ESG strategies)
- Cost savings (10x) of running an optimized heater integrity program versus the costs of heater failures, tube replacements, lost revenue from downtime and associated damage from catastrophic events (e.g., fires, explosions, etc.)

"The heat transfer efficiency of the equipment increased after mechanical pigging by 62%... and accordingly increasing the production rate by 4818 MMBTU/month which is equivalent to 134 tons of product Methanol. Smart pigging has boosted the confidence in reliability. This 'new' inspection technique can be successfully implemented in other plant convection coils."

Methanol Plant Engineer

"Quest integrity's Heater Optimization service provided us with the necessary guidance and elements for achieving optimal heater performance and reliability."

U.S. Refiner

What is the solution being offered?

Implement an integrated solution providing the necessary information and expertise to optimize the performance and reliability of fired heater coils through:

1. Integrity Optimization Study

On-site diagnostic assessment (study) of the fired heater to identify performance and reliability improvement opportunities.

- Identification of key performance monitoring indicators (availability, throughput, yield, environmental and safety) and IOWs that effectively manages operating risk

4. FFS and Remaining Life Assessment

Fitness-for-Service and Remaining Life Assessment that ensures coil integrity during the next operating period and helps to establish future maintenance plan

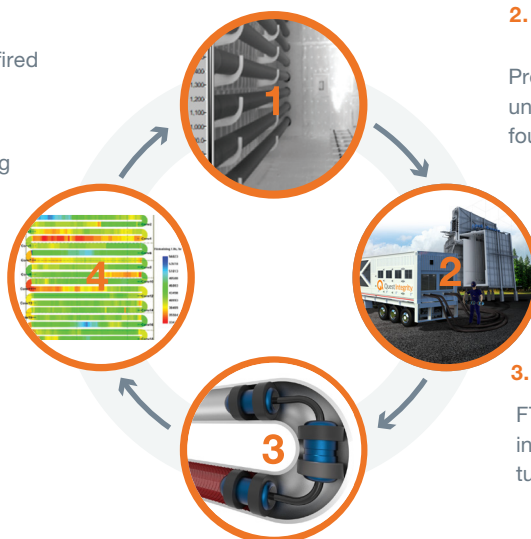
2. Advanced Decoking with Cleanliness Verification Technology:

Provides coil operational assessment to further understand factors associated with internal fouling (location, size, thickness, etc.)

- Ensures clean coils, enabling desired throughput, optimum operation and asset availability

3. Furnace Tube Inspection System (FTIS)

FTIS high-resolution ultrasonic smart pig inspection of the coil that provides a complete tube condition assessment



What can be avoided by performing Quest's Heater Integrity Optimization?

Unexpected heater downtime; reduced performance; operational upsets; potential harm to personnel, equipment, and the environment; longer equipment maintenance time; and increased maintenance labor costs.

Average production losses from an unplanned maintenance outage during a peak period:

- \$1.7MM USD/day for Crude Heater
- \$1.5MM USD/day for Naphtha & Gasoil Hydrotreater
- \$1.2MM USD/day for Coker Heater

What are the service objectives and value to owner/operators?

- Eliminate unscheduled downtime to maximize production and heater profitability
- Achieve desired temperatures, pressures, product quality and yield
- Improve heater reliability and decrease failure risk
- Extend life of fired heater coils
- Eliminate need for conventional NDT methods
- Reduce emissions and environmental concerns (helps achieve ESG strategies)
- Provide innovative solutions for the cleaning and the inspection of challenging coil configurations (e.g., common and plug headers)
- Minimize risk of potential harm to personnel and equipment
- Enable optimized tube replacement planning to allow tube harvesting versus wholesale replacements, avoiding emergency expedited material and labor costs associated with unexpected failures; takes the guesswork out of tube integrity management decisions



Optimize Performance

Provides confidence in asset integrity, reliability and fitness for service.

Why should I select Quest Integrity for this service?

- Quest Integrity provides a fully integrated, in-house integrity optimization service
- Our optimization engineers understand your assets and challenges; they were once operators, too!
- We understand and promote the importance of environmental and social self-governance in our communities and how that aligns with the goals of our clients
- We're the pioneers of numerous industry-leading cleaning, inspection and assessment technologies, including the smart pigging of fired heater coils
- Our team is highly experienced and qualified, with 20+ years exceeding client needs
- Quest Integrity has industry-best inspection tool sizes, resolution and detection capabilities
- We provide quick, accurate, in-house, and onsite Fitness-For-Service and Remaining Life Assessments utilizing our LifeQuest heater assessment software and 100% of the FTIS inspection data
- Quest Integrity provides a fixed, upfront cost for ease-of-budget planning
- We don't charge extra for additional cleaning



Execution Excellence

Fully integrated solution executed on time and on budget.