Service Brochure:

Heater / Boiler / Furnace
Tubes Inspection

By Intelligent Pigs

Dacon UT-M Series 2.0

Dacon Inspection Technologies Company Limited
About Us

Dacon is renowned for technical innovation in the sphere of non-destructive testing, in-line inspection and asset integrity management. We are pioneers in the use of wide-ranging inspection techniques, and we have developed our own inspection systems and state-of-the-art industrial applications.

Dacon is headquartered in Thailand. With more than 300 qualified personnel working under the quality and safety management system. We therefore have the potential to provide auditing services according to international standards. We are committed to the process and delivery of a quality audit service and continual improvement for customer satisfaction.
This is why you too need

**Heater / Boiler / Furnace Tubes Inspection**

- Fired heaters, furnaces, and boilers, especially high-pressure equipment, the process fluid also is often flammable. A leak or failure in the equipment have the potential to cause damage and serious injury.

- An inspection and reliability program for heaters, furnaces, and boilers is an important component to maintaining the integrity and operability of the equipment.

- To gather data and information on the fired tubes so that it can be analyzed and a reasonable assessment made of the equipment’s mechanical integrity for continued service.

- Repairs or replacements can be predicted for the future by analyses of appropriate data.

**In-Line Inspection Device**

**Intelligent Pigs**

- Using conventional NDT methods to inspect coils in fired heaters, furnaces, and boilers, is challenging.

- Dacon offers a comprehensive solution with intelligent pigging and assessment integrity management. Intelligent pig is quickly and accurately inspecting the coil sections of fired heaters.

- Dacon intelligent pigging delivers the most accurate and reliable ultrasonic inline inspection technology available today. Combining a corrosion assessment with ultrasonic based geometry measurement enables a comprehensive inspection in a single run.
Dacon intelligent pigging reliably perform precise, direct measurement of dents with depth resolution down to 0.1 mm (0.004 in). The increased number of sensors and overlap, along with state-of-the-art data acquisition systems, deliver higher spatial resolution.

Intelligent Pig tube is able to inspect fired heater tubing up to 12-inch diameter. Within the complex geometries of fired-heaters they can navigate configurations containing 1D, short-radius return bends, plug headers, multiple tube diameters throughout the process coil and/or common headers and convection coils containing finned or studded tubing.
**Principle**

**Immersion-Based Ultrasonic Technology**

- This technology applies an ultrasonic transducer to generate an acoustic wave propagates through the liquid medium and the tube wall. This transducer is also able to record the reflections caused by the internal and external tube wall.

- This allows for the thickness of the wall to be assessed and assists in distinguishing between internal and external metal loss.

- The damage mechanisms are quickly identified and quantified in an inspection report such as corrosion erosion along with deformation such as bulging, swelling and ovality.

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![Diagram of UT Sensor Module and internal/external tube wall](image)
Feature

Metal Loss Detection Feature

Optimized to detect and accurately measure internal and external anomalies such as corrosion, lamination and other metal loss features

**Key Advantages:**
- Accurate and precise feature classification and sizing, particularly regarding general thinning
- Absolute wall thickness river bottom profile assessment through high resolution quantitative wall thickness measurement
- Reliable differentiation between corrosion and lamination

Geometry Measurement Feature

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C-Scan Feature

C-Scan refers to the image produced when the data collected from an ultrasonic inspection is plotted on a plan view of the component. The C-scan is used in corrosion mapping and by techniques other than just ultrasonic. It is not limited to showing amplitude but is also used to display changes in measured wall thickness or qualitative measurements in the extent of corrosion.

The primary advantages

- Requires no technicians to access the inside of fired heaters.
- Typically requires no scaffolding.
- Rapid collection of mass volumes of data.

Specification

- Pipe diameter range: 2.5” – 12”
- Number of transducers: 32 (minimum)
- Transducer frequency: 5 MHz
- Battery life: 7 hrs. (minimum)
- Running speed: 0.1 – 2.0 m/sec
HEATER / BOILER / FURNACE
TUBES INSPECTION

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