PRODUCT OVERVIEW

TDI Camera

Compact, High-resolution X-ray Inspection

The Adaptive Energy TDI Camera is an advanced solution for radiographic inspection of high-precision welds, such as thin wall tubing, microelectronics, spiral and seam welds, along with additive metals manufacturing development. Offering real-time, high-resolution x-ray imaging, the TDI Camera has a compact form factor to enable easy deployment on the production line or in confined spaces.

Precision

The TDI Camera was specially designed for radiography of Class 1 welds, electron beam welds, laser welds, and for inspection of critical components and micro components. These applications benefit from high resolution up to 25 µm pixels, line pair gauge of better than 18 line pairs per mm, and high contrast image quality equal to that of fine-grain film quality.

The TDI Camera performs analog to digital conversion at 16 bits (65,536 gray levels). For thin wall tubing applications, the TDI Camera has wire IQI sensitivity of better than two percent on 0.100" wall thickness (Fe), for superior inspection accuracy.

Speed

Unlike any other high-resolution X-ray scanning solutions, the TDI Camera provides you with near real-time information so any issues can be fixed immediately. For example, you can monitor the bead of a seam weld as it’s laid down so operators can make corrections as they go. The TDI Camera performs continuous scanning at speeds up to 35mm per second, faster than any computed tomography system.

Efficiency

Along with fast scanning time, the TDI Camera also provides powerful processing capabilities with a proprietary software package for image acquisition, analysis, and archiving. The TDI Camera has been specially designed for radiation tolerance (shielded to 225kV X-rays), redundancy, error checking, speed, and robustness.

Flexibility

The TDI Camera has a unique, compact form factor. It weighs just 10 pounds, and measures only 6.4" (W) x 4" (H) x 4.4" (D) with a small camera head. The small size makes it ideal for inspection of microelectronics, to move along a seam weld in a production environment, or for use wherever space is tight but precision is important.

Advantages

The key benefits of an Adaptive Energy TDI camera system include:

- Extremely high resolution imaging (up to 25 µm/pixel) for precision inspection of small areas and micro components
- Continuous scanning up to 35mm per second provides near real-time imaging
- Small form factor and ease of use for flexible deployment

Technical Specifications

- Inspection width: approximately 1" (25 mm)
- Detector resolution: better than 25 µm/pixel
- Resolution (line pair gauge): better than 18 line pairs/mm
- Pixels per line: 1024
- Wire IQI sensitivity: better than 2% on 0.100" wall thickness (Fe)
- Energy range: 20-225 kV
- Data output: USB2 serial data to PC
- Analog to digital conversion 16 bits (65,536 grey levels)
- Compact size: 6.4" (W) x 4" (H) x 4.4" (D)
- Weight: 10 lbs.
- Power: 24V DC or 110-250V AC
- Shielded to 225kV X-rays
- Comes with extensive software package for image acquisition, analysis and archive
- 2 lightweight umbilical cables included

Specifications are subject to change without notice.
TDI Camera Solution

For pipe and tube manufacturing quality assurance, thin wall tubing, to interrogate PCB components and connections, or any high-resolution, precision radiographic inspection application, the Adaptive Energy TDI Camera is an optimal solution.

About Adaptive Energy

Adaptive Energy was founded in 2001 to provide customized, non-destructive material evaluation and testing solutions to meet unique government, aerospace, transportation, energy, materials, and infrastructure industry requirements. The founders saw that off-the-shelf products were not addressing the needs of customers who had non-standard material testing demands, or who had to do testing and inspection in especially challenging environments.

With decades of experience in imaging technologies, engineering, machining, materials, and non-destructive testing (NDT), Adaptive Energy’s experts work as partners with customer R&D, operations, and QC & QA teams to design and fabricate ingenious and effective solutions that perform at the highest level while delivering low total cost of ownership.

Printed circuit board (top), spiral weld close-up (bottom)

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