ADAPTIVE ENERGY SUCCESS STORY

Ensuring Airbag Production Quality & Speed

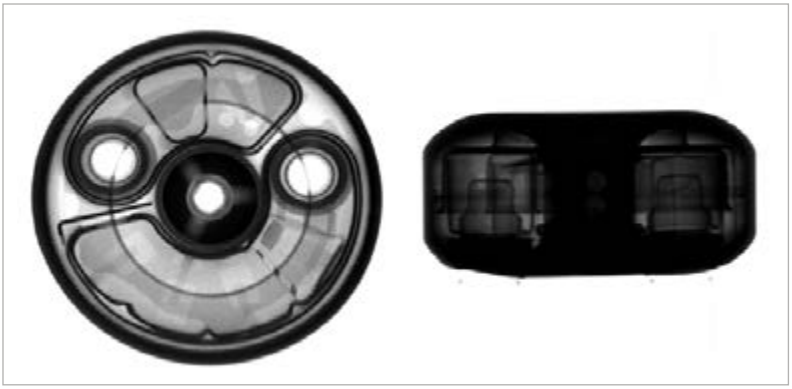
A custom two-camera X-ray system for an automobile component manufacturer to inspect airbag ignition components on the assembly line

The Challenge

The Customer designs and manufactures airbag systems used by the automotive industry. Their airbags are found in multiple automobile lines sold by European and Japanese car manufacturers. When developing a new airbag inflation system, the Customer needed to conduct close inspection of system components, which include small pellets of sodium azide (NaN3). Sodium azide is an inorganic compound—a colorless salt that is often used to create an explosion of gas to rapidly inflate airbags.

Igniting the gas reaction that inflates an airbag is one way to test that it operates correctly; but once inflated the bag cannot be reused, so this method is useless for devices manufactured for real-world installation. The Customer needed to verify the quality of units produced on the assembly line for its end customers: automobile manufacturers with consumer safety in their hands. The Customer needed a non-destructive testing method that would permit verification of the igniter system components while still in the factory.

The imaging solution designed by Adaptive Energy enabled the Customer to achieve the required high quality levels in its factory production line and maintain manufacturing consistency.



Driver-side airbag containing the igniter system

Industry: Automotive

Technology: Digital Radiography

Products & Services: X-ray camera assembly for high-speed digital imaging / Component placement

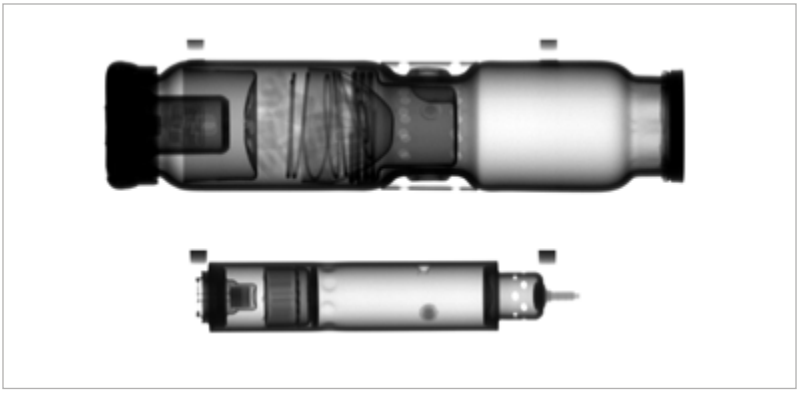
Customer Profile: A U.S. manufacturer of airbags for automobiles

Business Challenge: Inspecting airbag igniter system components to ensure they meet rigorous safety standards without slowing production

Solution: High-speed X-ray inspection system that captures simultaneous images of the airbag interior components, performs automated assessment and provides alerts for non-compliant units

Benefits:

- Fast and efficient non-destructive testing ensures production quality
- Detection system integrates with the Customer's current assembly line
- Images are archived for manufacturer documentation and verification
- Automobile manufacturers who install the airbags in their product lines know they can rely on the quality of these vital safety components, maintaining their brand reputation



Passenger and side-impact airbag containing the igniter system

The Adaptive Energy Solution

Adaptive Energy designed and built a customized X-ray imaging system that allows the company to test the inflation devices in a production setting. The solution uses digital radiography to operate at high-speed, allowing these critical components of the airbag igniter system to be inspected at assembly line production rates. Additionally, the system automatically verifies multiple parameters and alerts operators of non-compliant components. All captured images are archived to provide a reference point and documentation as required by the automobile manufacturers.

The airbag igniters are inspected with two single-line X-ray cameras set at 90 degrees to one another. The Customer is able to capture and correlate simultaneous images to inspect the sodium azide pellets and other components of the inflation system. By capturing images of the airbag igniters, the Customer can assess if the units are properly assembled and meet quality standards to ensure the airbag will deploy during an accident, protecting the driver and passengers.

Results

The imaging solution designed by Adaptive Energy enabled the Customer to achieve the required high quality levels in its factory production line and maintain manufacturing consistency. Because the system is user-friendly and doesn't require complex maintenance, it's easy for factory personnel to use and service. The Customer now uses the system to conduct periodic testing, for example, at the start of a new production run or for continued quality verification.

About Adaptive Energy

Adaptive Energy creates customized, non-destructive material evaluation solutions to address mission-critical, time-sensitive testing needs. By combining the latest digital radiography, computed tomography, and ultrasonic imaging technologies with innovative mechanical and robotic assemblies, Adaptive Energy's integrated systems offer rapid deployment, are easy to learn and maintain, and perform reliably under pressure.

Working collaboratively with organizations in the aerospace, automotive, energy, petro-chemical, defense, infrastructure, and materials industries, our experts develop optimized solutions for flaw and crack detection, composite delamination, weld inspection, hardness testing, custom radiation enclosures and overhead gantry systems, and more.

Adaptive Energy is also the exclusive distributor in the U.S. and Canada of FORCE Technology's P-Scan ultrasonic scanners, including the P-Scan Stack with Phased Array, a next generation automated inspection system.

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