

# Uson



## Zetec Component Testing Solutions

### Uson's Custom Approach to Applications.

Uson has an application-specific approach for your inspection needs. Starting with your material samples and requirements for flaw detection, Uson designs and builds innovative test solutions. The entire solution is engineered to meet your specifications, from the first feasibility study through design, prototyping and manufacturing. Thorough quality testing is completed before installation at your facility.

### Free Feasibility Study Guarantees Results.

With a free feasibility study, your real samples are carefully evaluated for detection and test reliability before you make any commitments. Our application specialists have extensive knowledge in eddy current testing and can determine if eddy current is the best solution for your test situation. A formal feasibility report and cost estimate is forwarded to you for your consideration. Budgetary quotations are also available.

### Custom Designs Fit Your Process.

Uson designs are customized to your application. Let us help you achieve 100% quality inspection. For more information about Uson or our products, visit: [www.uson.com](http://www.uson.com)

Uson's Zetec eddy current NDE solutions are the result of almost 40 years of market leading experience in safety critical industries.

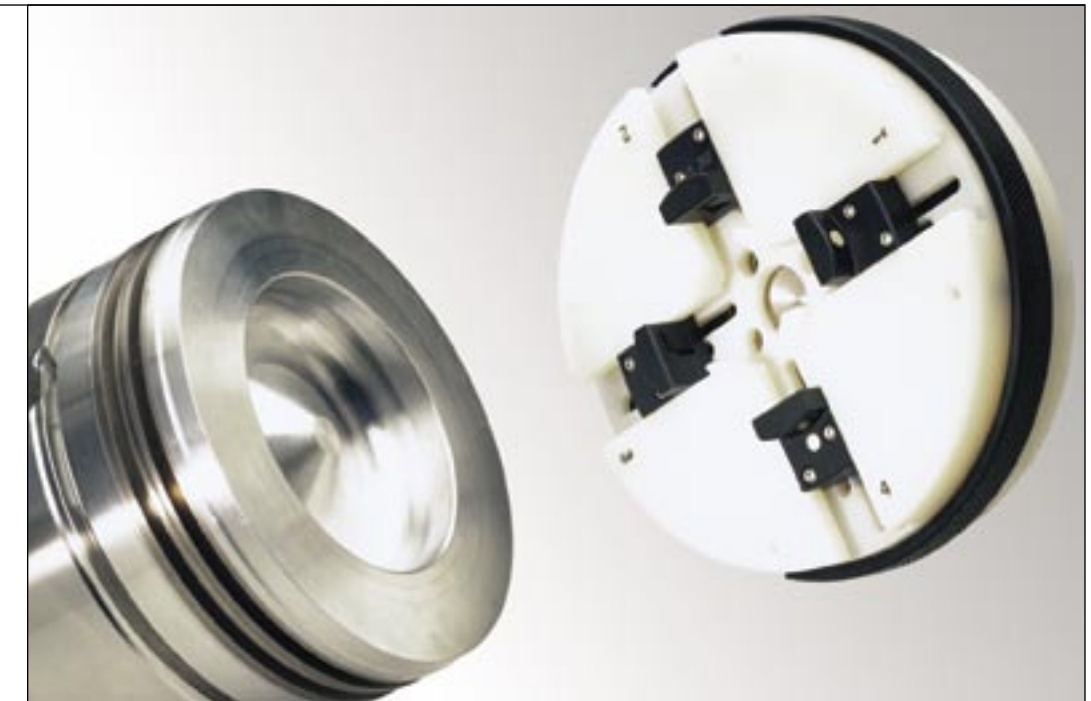
The relationship between Uson and Zetec combines the non-destructive test experience of two companies who understand the challenges faced in the manufacturing environment.



## 100% Inspection of Pistons

Assures Zero Defects in Critical Areas

- Fast, in-line production testing
- Timesaving, scrap-reduction process
- Lower per-part inspection costs
- Ensure minimum warranty costs
- Meet increased quality requirements
- Real-time process
- Inspect multiple test points simultaneously



### Eddy current testing is the perfect solution in the production of critical manufactured components.

These remarkable, high signal-to-noise ratio systems were developed for the nuclear power industry; they can now be used for piston and cylinder liner testing. Uson systems test automotive components to detect cracks, porosity, fissures or other surface and subsurface flaws.

Until the development of eddy current testing for pistons and cylinder liners, such flaws were only detectable with time-consuming

X-ray, mag particle, liquid penetrant and ultrasound procedures or costly destructive testing.

Even rigorous sampling can miss statistically unpredictable or previously unencountered defects.

As engines become more complex and compression ratios increase, ensuring zero-defect piston quality is of increasing importance. Cast materials can develop structural problems that can shorten piston life.

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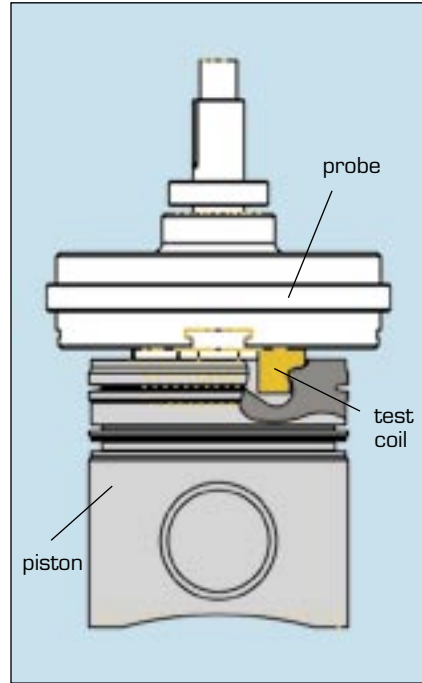
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# Uson's Zetec Eddy Current Equipment Provides The Best, Most Sensitive Crack Testing Systems Available



Using multiple frequencies, the Zetec system can detect different flaws simultaneously.

"Hit or miss quality leads to increased warranty costs and production line slowdowns. This technology has given us an advantage in detecting surface and subsurface flaws. We found eddy current testing to be the ultimate test solution."

— Major piston plant manager

When a Zetec eddy current test system is in place, components can be tested in the production line without slowdowns. Whether it's discrimination of hardness, detection of cracking, porosity or casting flaws, a Zetec test system helps assure your piston is defect free. Now, zero defects\* are not just a goal but also an affordable reality.

**Test Probe Capabilities.** Each test probe is designed to find material and manufacturing flaws in critical areas. The MIZ<sup>®</sup>-27CT test unit uses multiple frequencies to simultaneously detect different types of flaws. For instance, frequencies of 300 – 400 kHz are used to detect surface defects during production. Lower frequencies, 100 kHz or less, are used to reveal subsurface flaws undetectable to the naked eye.

**Early Warning Crack Detection.** Our +Point<sup>®</sup> and split-core coils are specifically engineered to detect flaws in critical areas of the piston such as cracks or porosity in the crowns and skirts. What's more, multiple critical locations can be tested simultaneously. This means there is no waiting for sample tests, destructive cutting of parts or messing with dye penetrants. Moreover, a cracked part can be detected with eddy current testing early in the manufacturing process, before additional machining and grinding is performed, further driving down production costs. Simply put, Uson offers you the best in-line crack testing available.

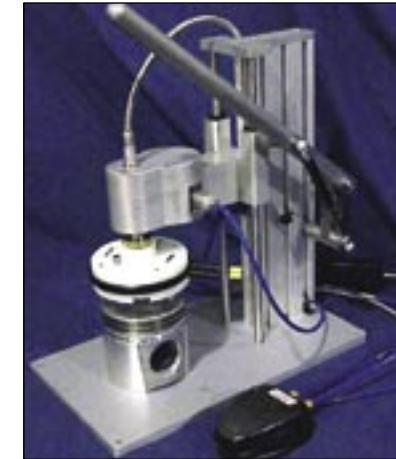
**Advantages of +Point<sup>™</sup> Coils.** The key advantage of nuclear industry-proven Zetec +Point<sup>™</sup> test coils is the reduced error rate from the increased signal-to-noise ratio. The Zetec system uses two coils — one placed in a horizontal axis and one in a vertical axis — constantly comparing critical information reducing "noise" and yet increasing sensitivity to detectable defects in the pistons.

**Complete Systems.** Uson Piston Inspection Systems range from highly versatile eddy current probes and economical stand-alone instruments to complete turnkey operations.

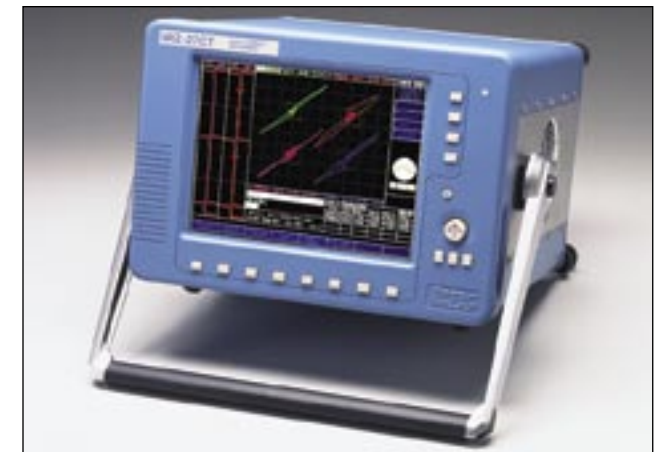
Our test systems provide I/O capability allowing the separation of "good vs. bad" parts as well as the activation of paint markers and sorters. So every defective unit is clearly labeled or sorted. In addition, our rugged and reliable eddy current test equipment can be mounted within environmental enclosures designed to operate in harsh factory environments.

**Perfect Instruments for the Job.** The powerful MIZ<sup>®</sup> 27CT is a state-of-the-art platform using the same electronics developed for the nuclear industry. The MIZ-27CT can support multiple coils that allow a single, unified system to inspect a number of critical locations with one test instrument on one easy to view color display. Multiple independent frequency readings enable the MIZ-27CT to maximize the difference between acceptable and rejected parts. Up to 25 test configurations for different parts can be stored by the user along with flexible alarm box parameters — meeting any test situation.

\*At customer-identified test points.



A Zetec test probe is designed to test for manufacturing flaws at both the piston crown (as shown) and piston skirt.



The MIZ-27CT simultaneously shows several parameters on an easy-to-view color display.