



## Eddy Current Testing Improves Thread Inspection with Automation

*Fast - Clean - Cost Effective - 100% Reliable*

*Zane Thompson, Applications Engineer*

### Scope

Eddy current testing (ECT) has proven to be one of the leading methods of nondestructive testing for thread inspection. A leading manufacturer of automotive hubs and spindles sought to find a fast, clean, and cost-effective test method for thread inspection – which was also 100% reliable.

### Application

At first, the manufacturer considered ECT to determine thread condition vs. no-thread condition. Usually, this would be a simple test. Then, the customer raised the bar to include additional test parameters:

- Partial and damaged threads
- Oversized and undersized threads
- Broken tap
- No hole
- Thread width
- Depth of thread – peak and valley

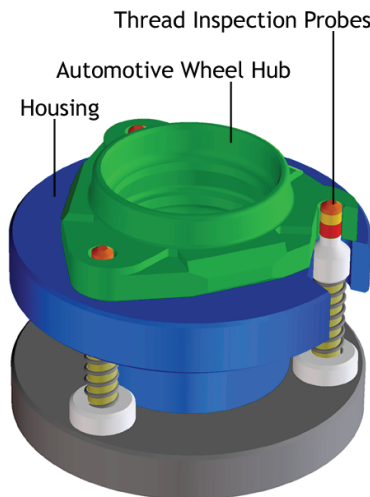
### Before ECT

Before ECT, the customer used thread gauges and vision systems. These methods were time consuming and labor intensive, as well as expensive. Vision systems had limitations that could not view 360 degrees of the threaded area at the same time and were not 100% reliable. The thread (go/no-go) gauge was labor intensive and also not a 100% reliable test method.

### The Challenge

The most critical challenge was centering. Initially, the part was positioned over the ECT probe manually. Operator

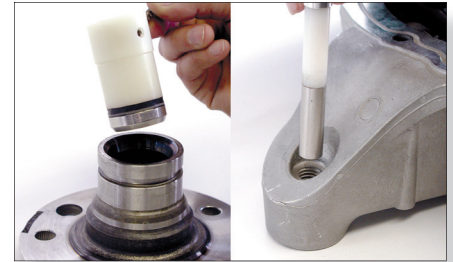
placement slowed the process and caused false rejects due to improper loading. There was also high probe wear due to mishandling. Zetec worked closely with the customer to determine what could be done to remove the hands-on process while ensuring product quality and probe longevity. After some design iterations, a way to extend probe life was determined:



- Chamfered nose to optimize centering
- Stainless steel sleeve over the ECT coil
- Spring-loaded housing (allows probe to spring back if threaded hole has a broken tap or no drill hole)

### Solution

Using Zetec's MIZ-27CT Instrument, it was easy to add thread inspection inline with production. The MIZ-27CT



provides two-way communication to a Material Handler for the precise positioning of the thread inspection probe that is critical to prolong probe life. Zetec's automated ECT solution provided the customer with a thread inspection system that was cost-effective and increased productivity with simultaneous inspection of multiple threaded holes and inspection speed that keeps pace with production lines. After adding ECT to their production line, inspection times improved to better than two seconds/part. ECT provided a savings of approximately \$100,000/year for each thread inspection production line. The inspection system paid for itself in less than one year with production savings. The lead engineer for the project was extremely satisfied with the solution.

## Uson

Component Testing Solutions

8226 Bracken PL SE, Suite 100  
Snoqualmie, WA 98065, U.S.A.

Tel: +1 425-974-2905

Fax: +1 425-974-2897

Email: [eddycurrent@uson.com](mailto:eddycurrent@uson.com)

[www.uson.com](http://www.uson.com)

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