



Ultrasonic Sciences Ltd

Ultrasonic systems for rail, automotive and engineering industries



- Automated systems for hollow rail axle inspection
- Immersion systems for solid axle testing
- Rail wheel testing units - production and in-service inspection
- Systems for inspection of welded auto parts - wheels, gear assemblies etc
- Replacement of destructive testing
- Custom systems for engineered parts
- Inspection of bonded assemblies
- High speed automated production units for Go/Nogo testing

In the 14 year period since the company's formation, Ultrasonic Sciences have designed and manufactured over 150 ultrasonic inspection systems. These are used in industries as diverse as metal manufacture, rail transport, semiconductor manufacture and power generation. Often the machines operate in continuous production conditions, used by staff with little or no specialised knowledge.

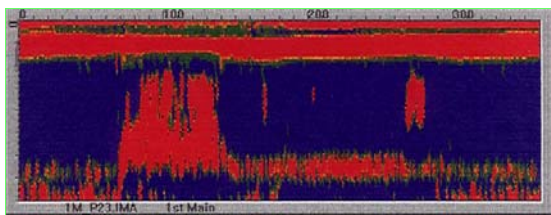
This places great demands on the reliability of the mechanisms and the electronics. Automation of inspection set-ups and calibration routines is also an important feature in ensuring consistent and reproducible inspection.



Automated system for measurement of weld penetration and undercut on car wheels (Ford Inc, Detroit)

These features can be built into inspection systems for almost any application on engineered parts.

We have developed a unique range of modular PC based boards, which combine to give you exactly the features you need, with the required level of automation at a reasonable price. In many cases our machines have achieved a pay-back within 6 months of installation.



Scan image showing the electron beam weld in an automotive part, with red areas indicating a lack of fusion.

Systems can be configured to provide simple go/no go assessments, or to provide colour images to show full details of the product quality.

Key to illustrations on front page. Top left - system for automated testing of hollow rail axles. Top right - automatic EB weld testing unit. Lower left - underfloor wheel lathe fitted with ultrasonic inspection heads. Centre right - 24 probe test system for rail wheel inspection. Lower right - twin probe rotating test head for axle bore inspection.

Typical systems

Rail transport

Hollow axle inspection systems - rotating probe units which travel down the hollow bore inspecting the external surface and bulk material for defects.

- Inspection with wheelset in-situ on the train
- Programmable changes to test parameters to compensate for changes in axle profile
- Simple attachment to axle
- Couplant recycling and monitoring

Wheel inspection system for in-service inspection - installation of multi-channel ultrasonic test heads onto underfloor wheel lathes, inspecting for fatigue cracks and other defects.

- Test head fits directly on lathe tool-post
- Wheel lathe provides all necessary probe motion
- Custom operator consoles linked to lathe CNC controller

Wheel testing in manufacturing cell - full tread inspection in less than 1 minute, from a single rotation of the wheel.

- Fully automated system, linked to PLC controller of machining cell
- Tests mixed wheel designs, loaded at random
- Combined axial and radial inspection

Automotive

Inspection of welded transmission gear assemblies - in-line unit for 100% testing of EB welded gears.

- Go/Nogo indication to operator with cycle time of 4 seconds
- Multiple inspection spindles to suit different designs with separate "audit spindle" for full C scan analysis

Nondestructive quality control of wheel seam welds - automatic measurement of weld penetration, undercut and weld area.

- Completely automatic measurements - no operator involvement.
- Cycle time 2 minutes - previously 3 hours for destructive method

General engineering

Inspection of oil drill tubulars - high speed internal rotating probe head with multi channel electronics, for pitting/crack detection, wall profile and thickness measurement.

High pressure gas cylinder testing - automated system for detection of longitudinal and circumferential defects in cylinders.

Inspection of pump impellers - immersion testing of welded/brazed impellers with contoured profile.

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