

## Tube Testing

### Multi Technology System

Eddy Current, Remote Field Testing, IRIS Ultrasonics, Magnetic Flux Leakage



No single inspection technique is adequate for all types of materials and a single system may only be used for a narrow range of applications.

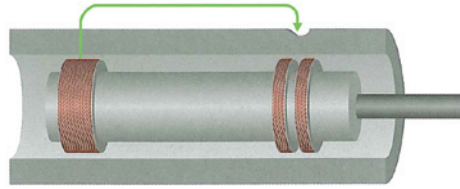
The eddy current (EC) technique is a commonly utilised to inspect nonferromagnetic materials. Remote Field Testing (RFT) is used for the inspection of ferromagnetic materials and carbon steel tubes.

The IRIS (Internal Rotating Inspection System) ultrasound technique is used for tube profilometry and corrosion mapping, and is a reliable backup technique for any material type, for eddy current and remote field inspections.

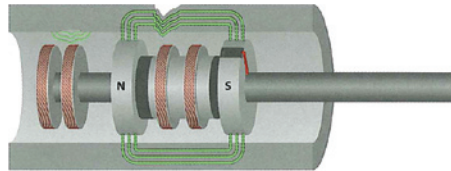
## Tube Inspection with Remote Field and Magnetic Flux Leakage

- ⊕ Boilers
- ⊕ Feedwater heaters
- ⊕ Air coolers
- ⊕ Carbon steel heat exchangers

### Remote Field and Magnetic Flux Leakage Applications

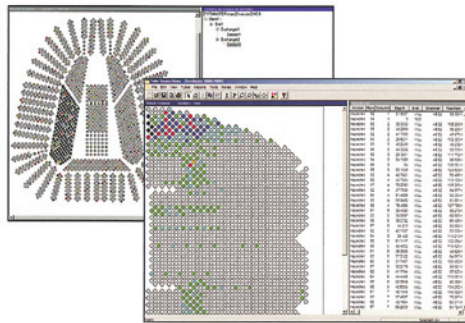


Remote field (RFT) is used for the inspection of ferromagnetic tubes, such as carbon steel and ferritic stainless steel. This inspection technique detects and sizes wall thinning caused by corrosion, erosion, wear, pitting and baffle cuts. R/D Tech• remote field equipment has been used successfully on several applications: tube and shell heat exchangers, feedwater heaters, boiler tubes and buried pipes.



Magnetic Flux Leakage (MFL) is a fast inspection technique, suitable for wall-loss measurement and detection of sharp defects, such as pitting, grooving and circumferential cracks. MFL is effective for aluminium-finned carbon steel tubes, because the magnetic field is mostly unaffected by the presence of such fins.

### Inspection Planning and Tubesheet



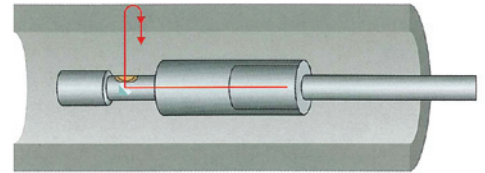
### Mapping

- ⊕ Database management of exchangers, reports and tubesheet maps.
- ⊕ Graphical tools for the creation of tubesheet maps and inspection lists.
- ⊕ Storage of all reports and tubesheet maps in database.
- ⊕ Display results from single or multiple reports.

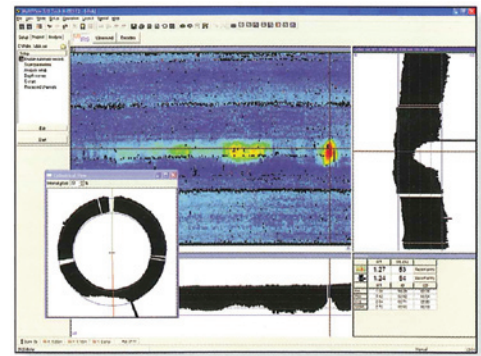
## Tube Inspection with IRIS for Ferrous and Nonferrous Materials

- ⊕ Boilers
- ⊕ Feedwater heaters
- ⊕ Air coolers
- ⊕ Heat exchangers

### IRIS Applications



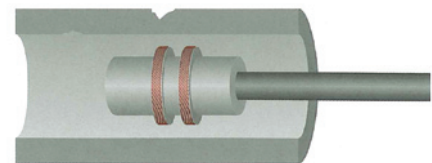
The IRIS ultrasonic option is used for the inspection of a wide range of materials including ferrous, nonferrous and nonmetallic tubing. This technique allows detection and sizing of wall loss as the result of corrosion, erosion, wear, pitting, cracking and baffle cuts. The R/D Tech• digital IRIS inspection technology is used extensively as a backup technique for remote field, magnetic flux leakage and eddy current inspections.



## Tube Inspection with Eddy Current

- ⊕ Condensers
- ⊕ Feedwater heaters
- ⊕ Heat exchangers
- ⊕ Air conditioners

### ECT Applications



Eddy current testing is a non-contact method for the inspection of nonferromagnetic tubing. This technique is suitable for the detection and sizing of metal discontinuities such as corrosion, erosion, wear, pitting, baffle cuts, wall losses and cracks in nonferrous materials.