

Tube Inspection – non-intrusive, no probes, 5 seconds/tube, all types



Fast ||| **Reliable** ||| **Intuitive**

Acoustic Pulse Reflectometry Inspection System for heat exchanger tubes



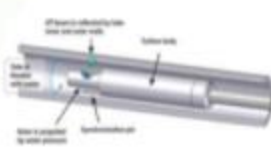
Conventional Tube inspection Technologies



EDDYCURRENT
— electromagnetic test



VIDEO SCOPE
— optics



IRIS
— ultrasonic

APRIS Key Features



▶ ADAPTABLE UP TO 4" INNER DIAMETER, ANY SHAPE OR MATERIAL

- Boilers, Fin Fans, other heat exchangers
- U-bends, twisted, spiral wound tubes
- Ferrous and non-ferrous metals, graphite and plastics

APRIS Key Features



▶ ULTRA-FAST, NON-INVASIVE, INSPECTION

- Less than 10 seconds per tube, 5 seconds < 20ft (6m)
- No need for inventory of consumable probes or standards

Detected Defects

TUBE SIZE

▶ 5/16" – 4" (7mm – 100mm)



▶ **HOLES**
Min. diameter (0.5mm)



▶ **BLOCKAGES**
Min. 5% of cross section



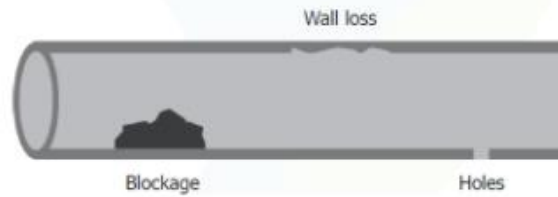
▶ **EROSION**
Min. 10% of wall thickness



▶ **PITTING**
Min. 10% of wall thickness

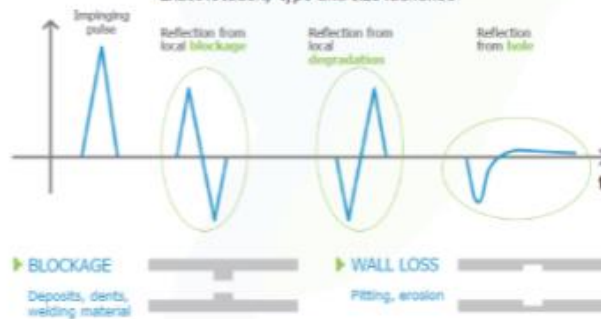
Sample Defect Types

- ▶ Receive qualitative and quantitative information of defect types



Identifying Defect Signatures

- ▶ Each inner diameter defect has its own signature. Exact location, type and size identified

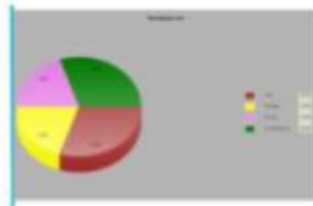
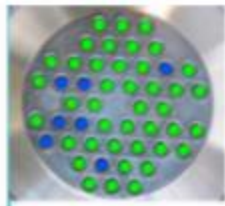


- ▶ Perform tube mapping either with drawing or with photo

▶ Input following tube parameters in APRIS Software

- Tube Outer Diameter (OD)
- Tube Thickness
- Tube Length

Report Generation



Color	Count	Percentage
Green	15	37.5%
Red	10	25.0%
Yellow	5	12.5%
Blue	5	12.5%