



The Complete Solution Provider



ADVANCED NDT SERVICES

- * AUTOMATED ULTRASONIC TESTING OF CROSS COUNTRY PIPELINE (AUT)
- * PHASED ARRAY (PA) ULTRASONIC TESTING
- * TIME OF FLIGHT DIFFRACTION TESTING (TOFD)
- * ECT, RFT, MFL – TUBE INSPECTION
- * INTERNAL ROTATING INSPECTION SYSTEM (IRIS)-TUBE INSPECTION
- * EDDY CURRENT WELD INSPECTION
- * LONG RANGE ULTRASONIC TESTING- (LRUT)
- * CORROSION DETECTION UNDER INSULATION (CUI)
- * AUTOMATED ULTRASONIC CORROSION INSPECTION



Cutech is a rapidly expanding global Engineering company. We offer wide range of Conventional NDT and Advanced NDT services to Marine, Petro Chemical, process, oil & Gas, Power sectors. We provide services globally with a highly qualified NDT inspectors and Engineers. Cutech's Integrated management System complies to ISO 9001:2008, ISO 14001: 2004, OSHAS 18001:2007. Further Cutech's system are accredited by SAC SINGLAS, DNV, Lloyds and ABS.



PA and TOFD- PIPE WIZARD, OMNISCAN & ISONIC

- * REPLACEMENT OF RT
- * AUTOMATED WELD INSPECTION- CROSS COUNTRY PIPELINE
- * NO RADIATION HAZARD & SAFETY PRECAUTIONS
- * IN-EXPENSIVE IN TIME, LABOUR & FACILITIES
- * PREVENTION OF NEEDLESS REPAIRS & COST SAVING
- * HIGH SPEED INSPECTION
- * PRE-SERVICE & IN-SERVICE INSPECTION
- * IMMEDIATE RESULT-PERMANENT RECORD
- * INDEPENDENT OF WELD CONFIGURATION & DEFECT ORIENTATION



TUBE INSPECTION- MULTI SCAN

- * CONDENSERS
- * FEEDWATER HEATERS
- * HEAT EXCHANGERS
- * AIR CONDITIONERS
- * BOILERS
- * AIR COOLERS



ECT WELD- NORTEC

- * WIRE ROPE & CABLE INSPECTION
- * TUBE / PIPELINE-INSPECTIONS
- * GENERAL CORROSION DETECTION
- * WELDED / JOINT INSPECTION
- * COATING THICKNESS MEASUREMENT
- * BOLT HOLES

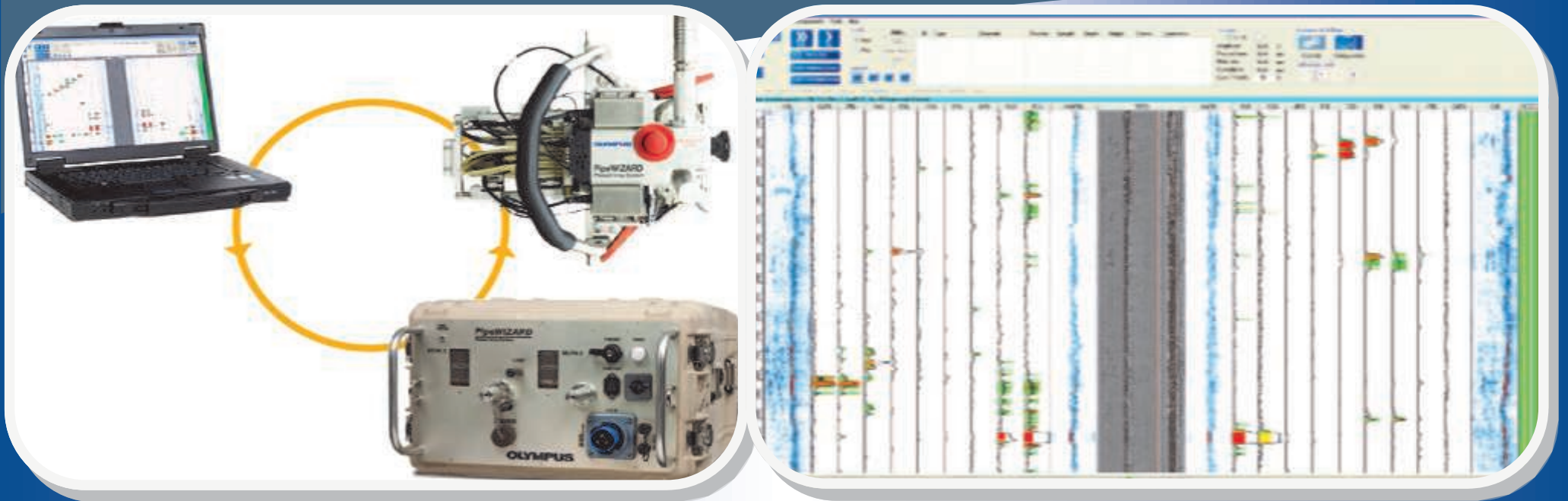


LRUT- MSSR

- * INSULATED PIPE LINES IN REFINERIES, CHEMICAL PLANTS, AND ELECTRIC POWER PLANTS.
- * SUPPORT LEGS OF LARGE SPHERICAL STORAGE TANKS
- * HIGH TEMPERATURE PIPE LINE INSPECTION
- * OFFSHORE PIPE LINE RISERS , BURIED PIPELINE INSPECTION
- * CASED ROAD ,RAILWAY ,RIVER OR BRIDGE PIPE CROSSINGS.



AUTOMATED ULTRASONIC TESTING — PA & TOFD



Girth Weld Inspection:

The global economy depends on transporting huge volumes of gas, oil, water, and other chemicals by pipe lines. Pipes are girth-welded on-site, typically using automated welding systems. For construction of pipelines, welds are the “weak spot” as this is where defects tend to occur. Welds are tested by Ultrasonic technology, coated, and buried or laid on the sea bed. Due to the demanding construction cycle, it is important that weld defects be detected and analyzed very quickly.

Automated Ultrasonic Testing (AUT)

In the last 2 decade, automated ultrasonic testing (AUT) has begun overtaking traditional , UT & radiography as the pipeline weld in-spection method of choice throughout the world. Radiography has significant limitations: poor detection of planar defects, no vertical sizing capability, safety issues, and environmental concerns.

The advantages of AUT:

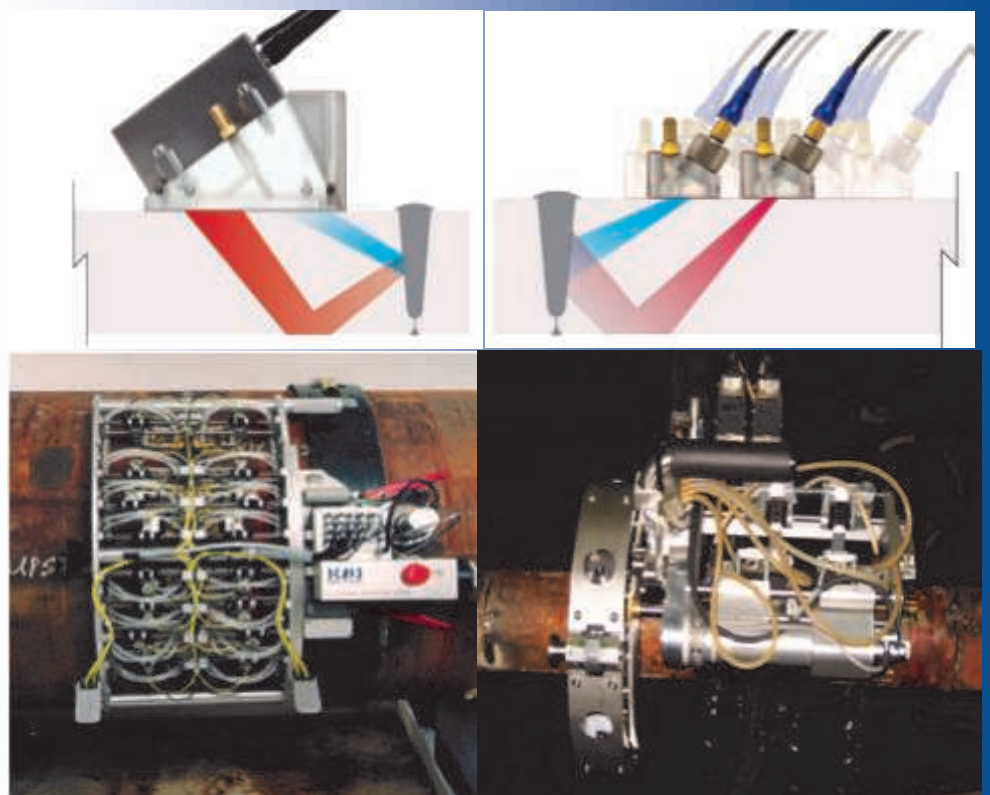
- ◆ No radiation hazard, no chemicals, no licensing
- ◆ Very short inspection cycle time for high production rate
- ◆ Better detection and sizing accuracy, leading to lower rejection rate
- ◆ Use of Engineering Critical Assessment (ECA) acceptance criteria with measurement of vertical height and depth of indications
- ◆ Real-time analysis from smart output display
- ◆ Data and inspection reports on electronic support
- ◆ Better control of welding process, also giving lower rejection rate

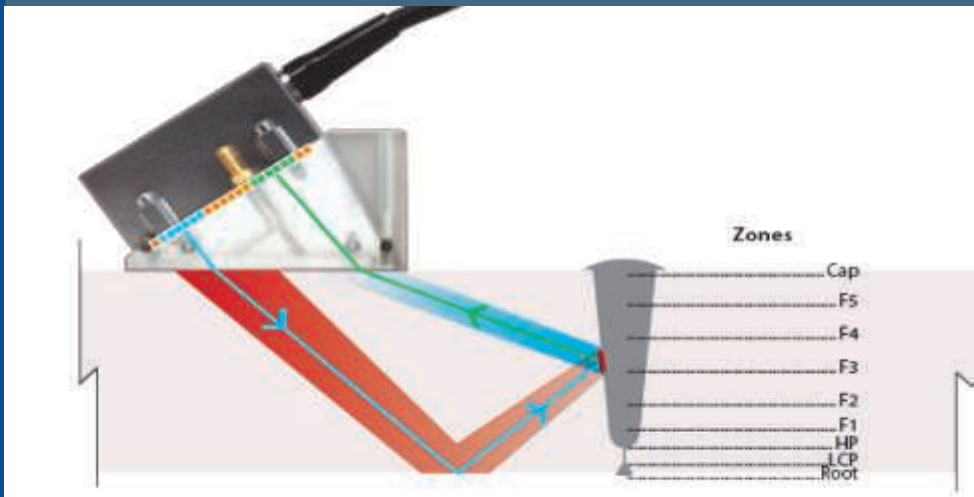
Advantages of Phased Array over Multi Probe

The early AUT systems used multiprobe systems with conventional ultrasonic probes. Phased arrays use electronic beam forming to generate and receive ultrasound. Each element in the array is individually pulsed and delayed to create a wide range of beam angles and focal distances.

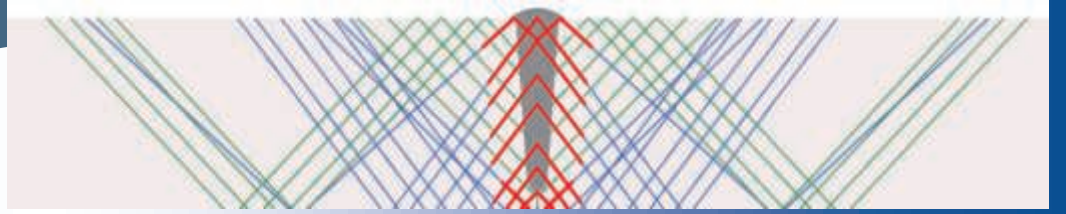
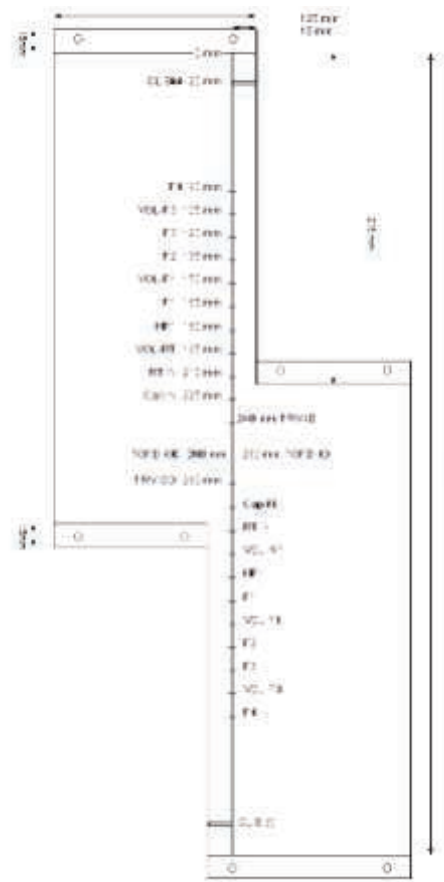
Phased arrays offer major advantages over conventional multiprobe systems:

- ◆ Typically, two phased array probes replace more than 24 conventional transducers
- ◆ Phased array setups are performed by loading a file, not by adjusting each individual transducer position
- ◆ Phased array beams are optimized (angle, focus, UT path, beam width) by setting appropriate parameters ,leading to better sizing accuracy
- ◆ A phased array scanner is significantly smaller and lighter than conventional multiprobe scanner. It is then easier to manipulate and requires less coating cutback on each side of the weld
- ◆ Phased array systems are used to inspect almost any type of weld configuration, while conventional multiprobe systems are limited in wall-thickness and pipe diameter
- ◆ Phased array electronic scanning allows customized weld inspections, including multiangle TOFD, advanced imaging, and detailed inspections





Dedicated ultrasonic beam for F3 zone



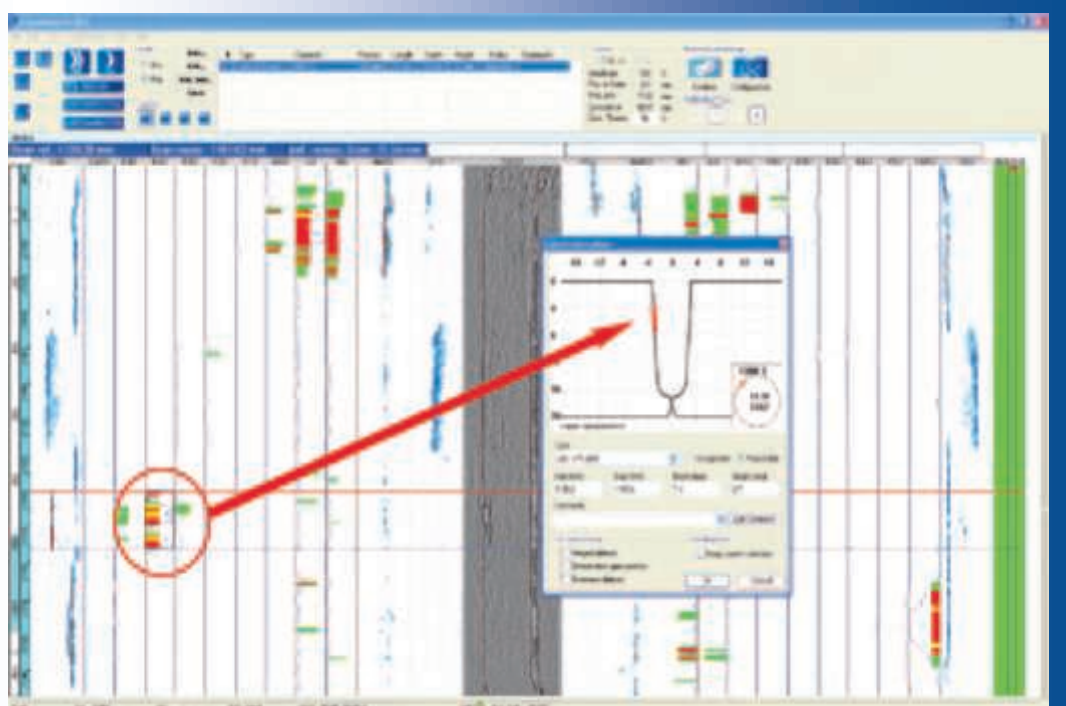
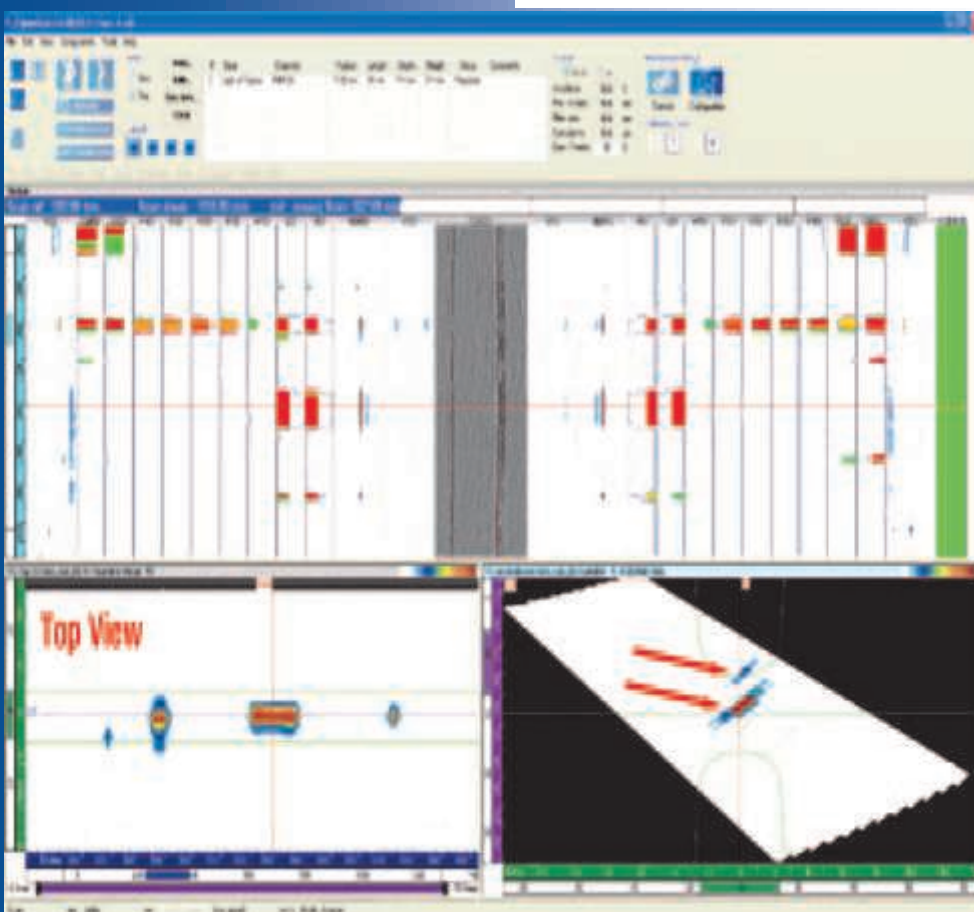
The main technique used with the PipeWIZARD system is the zone discrimination technique where each individual zone of the weld is inspected with a specific ultrasonic beam. The height of the zones is approximately equal to a welding pass

- ◆ Two phased array probes, one on each side of the weld, ensure a full coverage of the bevel area and the volume of the weld.
- ◆ Pulse-echo and transmit-receive ("pitch and catch") configurations are used depending on the zone inspected.
- ◆ An additional technique is used to improve detection and sizing on small or misoriented indications: time-of-flight diffraction (TOFD).
- ◆ An optional transverse module with 4 dedicated conventional transducers can be used to detect transverse indications in the weld.
- ◆ Specific channels are displayed to monitor the coupling of each phased array probe during the scans of the weld and of the calibration block.
- ◆ Each weld configuration requires a dedicated calibration block with the same diameter, thickness, and material as the pipes to be used on site.
- ◆ Specific reflectors are machined, representing the typical defects more likely to appear during the welding process. All the beams are calibrated according to the inspection procedure.

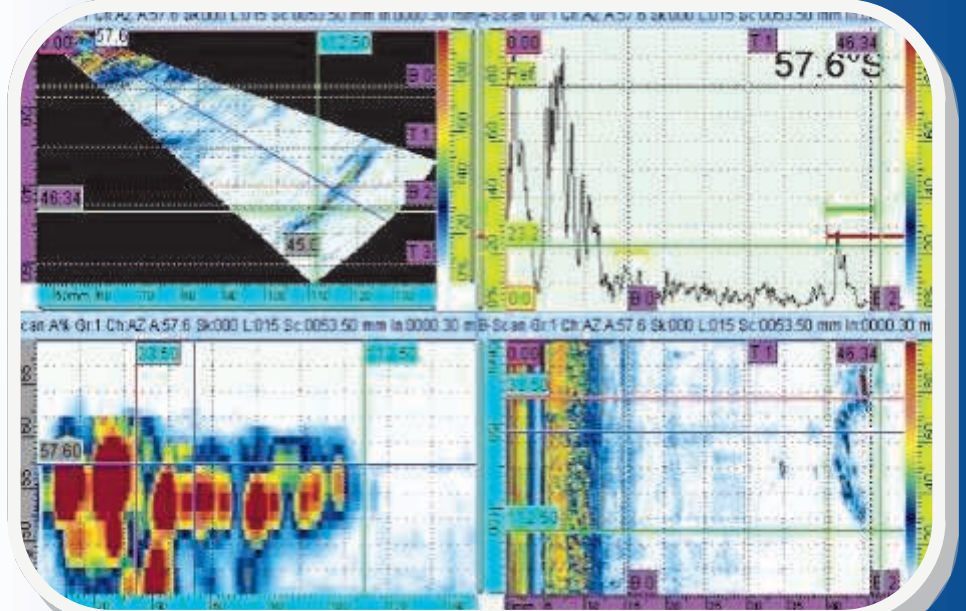
The PipeWIZARD software provides virtually unlimited number of channels in 10 separated layouts. This software allows automatic interpretation of data by displaying the defect position on the bevel profile, as well as its circumferential position

Many analysis tools are available to help the operator size and position the indications:

- ◆ Twin gate for the strip chart
- ◆ Weld overlay on sector scan and linear scan (see below)
- ◆ Zooming function, View linking
- ◆ Custom views, Automatic measuring
- ◆ Cumulative indications measurement
- ◆ C-scan merge function, Customizable color palette



PHASED ARRAY AND TOFD ULTRASONIC TESTING



Phased Array Technology (A replacement for RT)

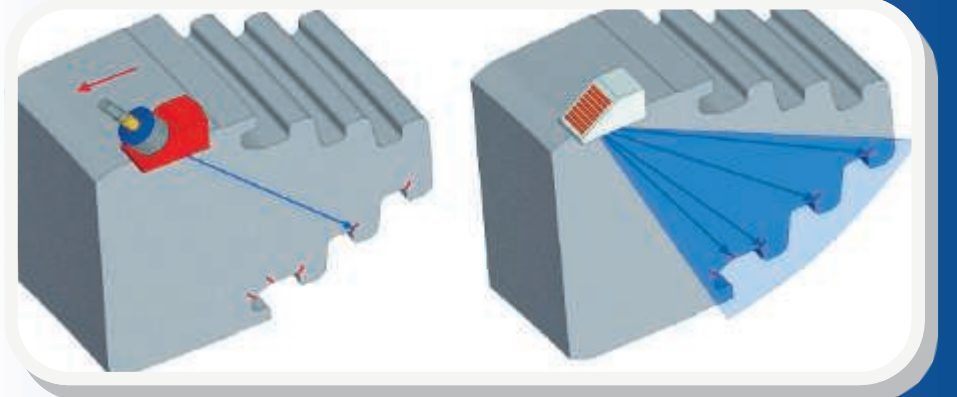
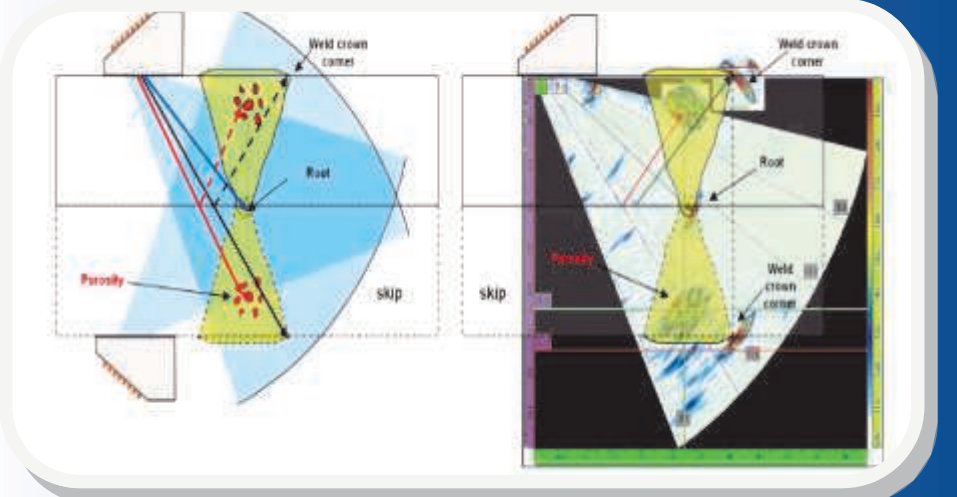
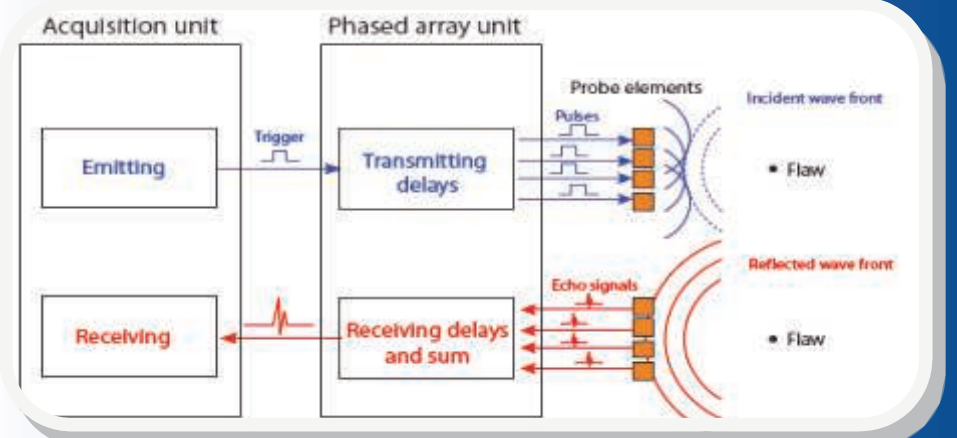
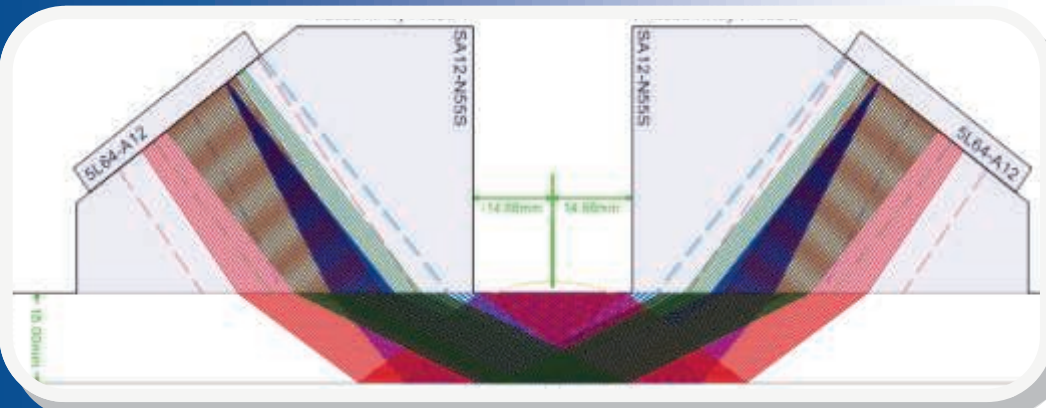
Phased array technology enables the generation of an ultrasonic beam where parameters such as angle, focal distance, and focal point size are controlled through software. Furthermore, this beam can be multiplexed over a large array. These capabilities open a series of new possibilities. For instance, it is possible to quickly vary the angle of the beam to scan a part without moving the probe itself. Phased array also allows replacing multiple probes and mechanical components. Inspecting a part with a variable-angle beam also maximizes detection regardless of the defect orientation, while optimizing signal-to-noise ratio.

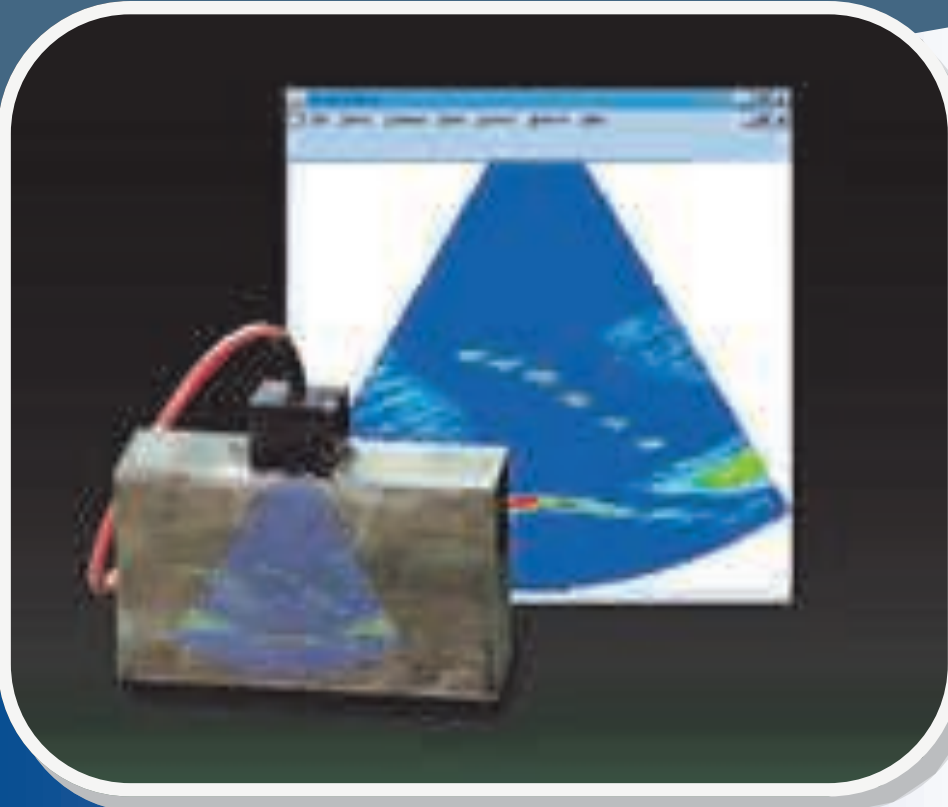
Sectorial Scans (S-scans)

- It is the ability to scan a complete sector of volume without any probe movement.
- Useful for inspection of complex geometries, or those with space restrictions
- Provide various angles which can detect misoriented angled defects.

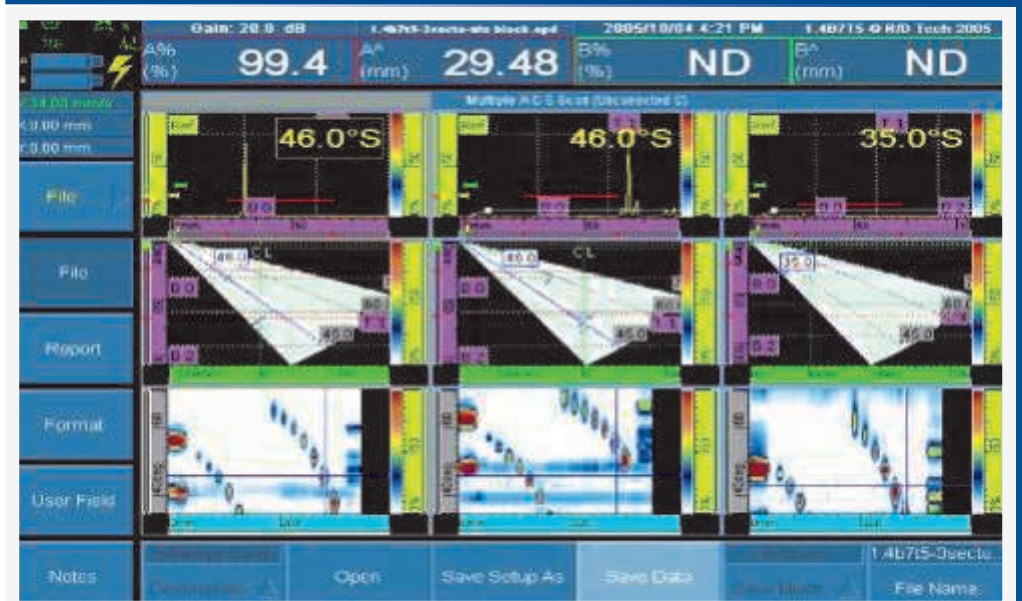
Benefits of Phased Arrays

- Software control of beam angle, focal distance, and spot size
- Multiple-angle inspection with a single, small, electronically controlled multi-element probe
- Flexibility for the inspection of complex geometry
- High-speed scans with no moving parts
- Complete coverage of weld with single probe scan
- Accuracy in sizing



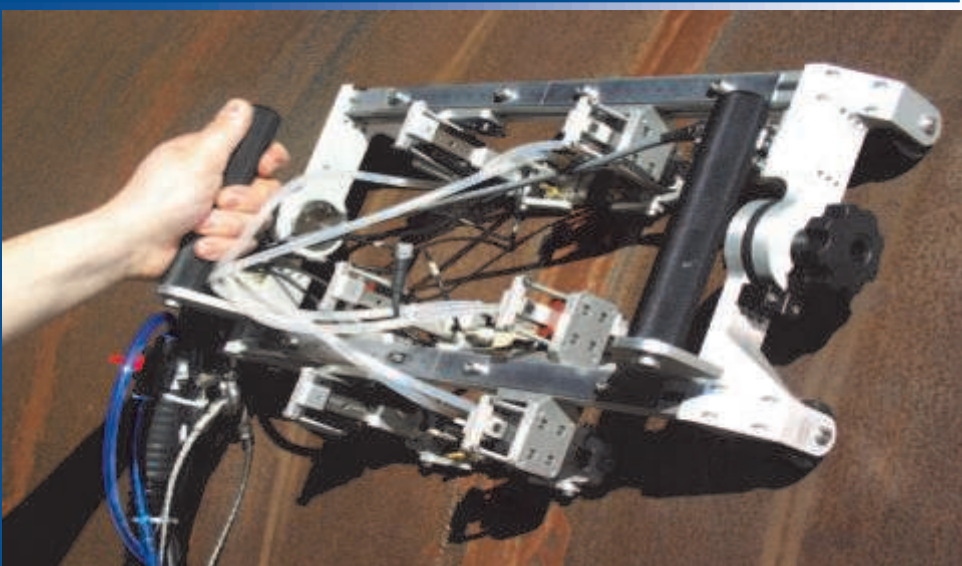


- ◆ Intuitive data interpretation
- ◆ Visual representation of the defect is seen on the screen and can be recorded
- ◆ Real-time, volume-corrected, vertically projected representation of S-scans, with selectable A-scans
- ◆ Large, high-resolution color display
- ◆ Different display can be viewed at a time (A,B,C, S-scans)
- ◆ Real-time data interpolation to improve spatial representation of defects during acquisition of data
- ◆ Easier and more precise defect characterization and sizing
- ◆ Thorough report setup including readings, images, and parameters



Major Applications

- ◆ Butt Weld Testing
- ◆ Composites
- ◆ Nozzle Testing
- ◆ Small Diameter Austenitic Pipe Weld Testing
- ◆ In Service Testing of Pipe—Stress Corrosion Cracking
- ◆ T-weld Testing of Bridge Structures
- ◆ Hydrogen Induced Cracking



Manual Encoded scanner

- ◆ Encoded linear scan (one axis) for PA, TOFD or pulse-echo inspections with Encoder wheel.
- ◆ Compact, light, and versatile
- ◆ Can fit a full range of probes and wedges
- ◆ Best for complex location inspection
- ◆ Single probe with encoder best suitable for one side access weld with complex geometry
- ◆ Suitable for pipes, plates, vessels, spherical tanks

Chain Scanner

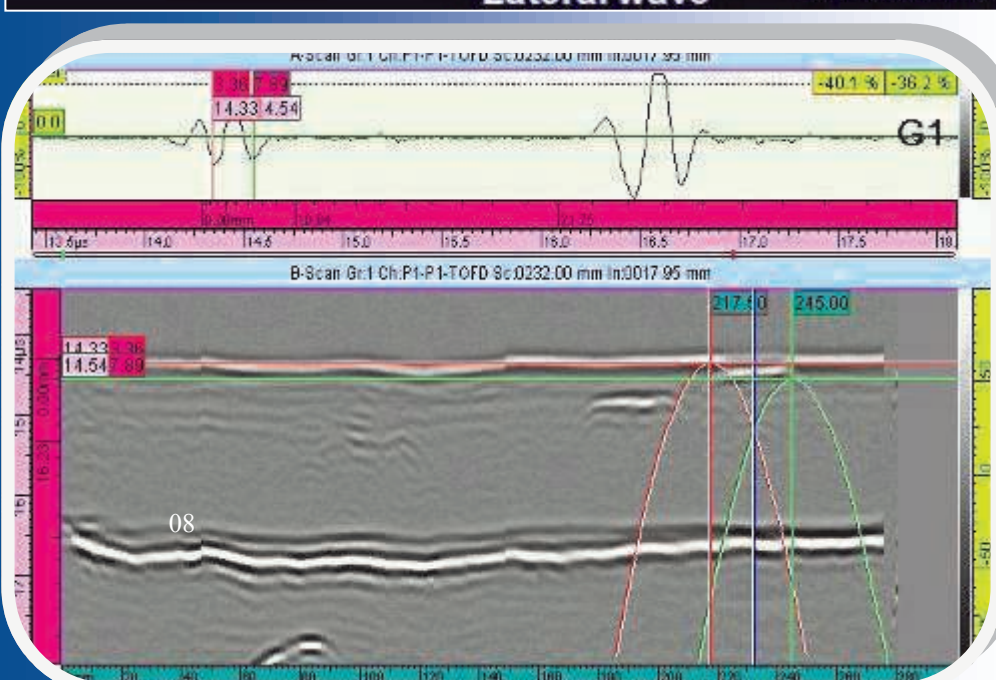
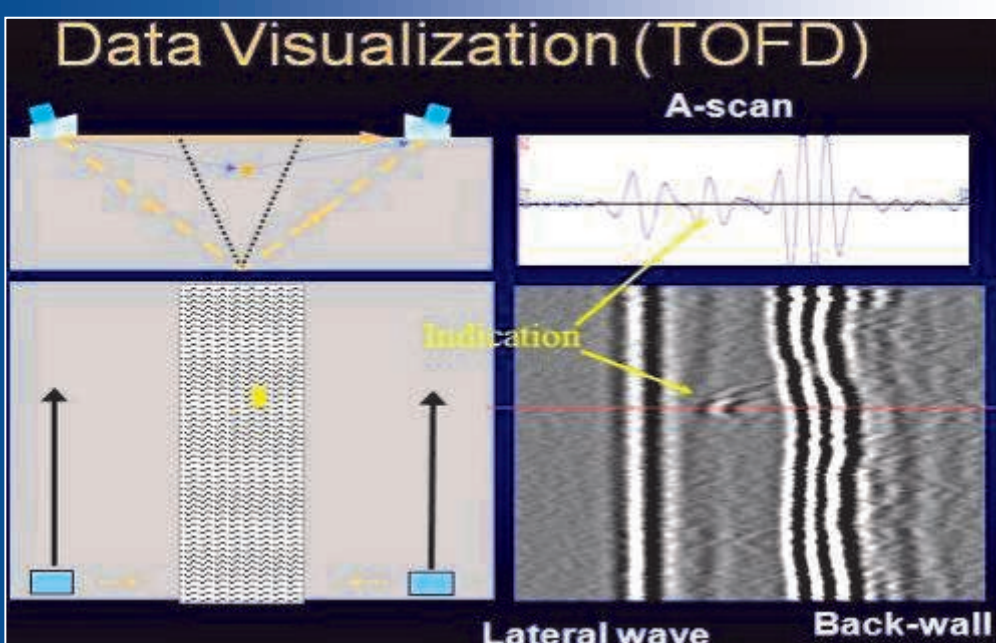
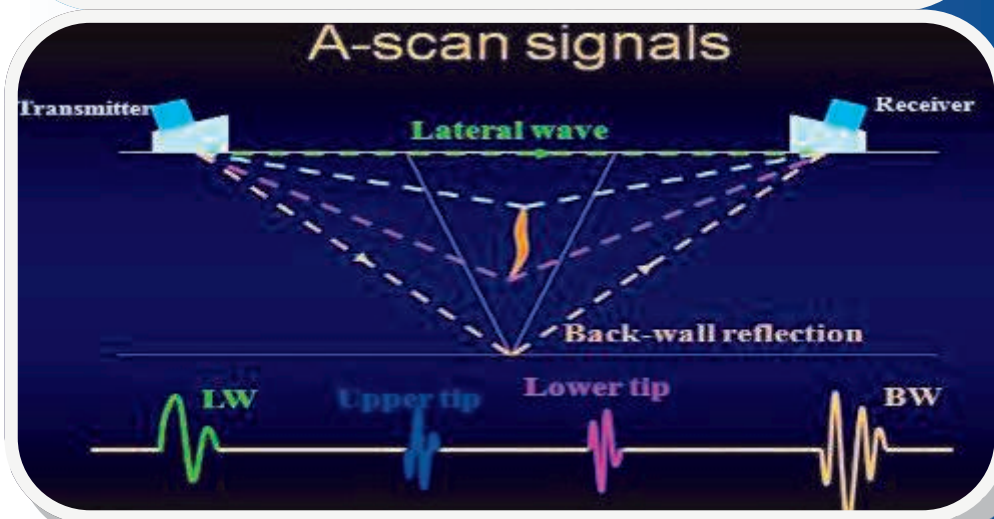
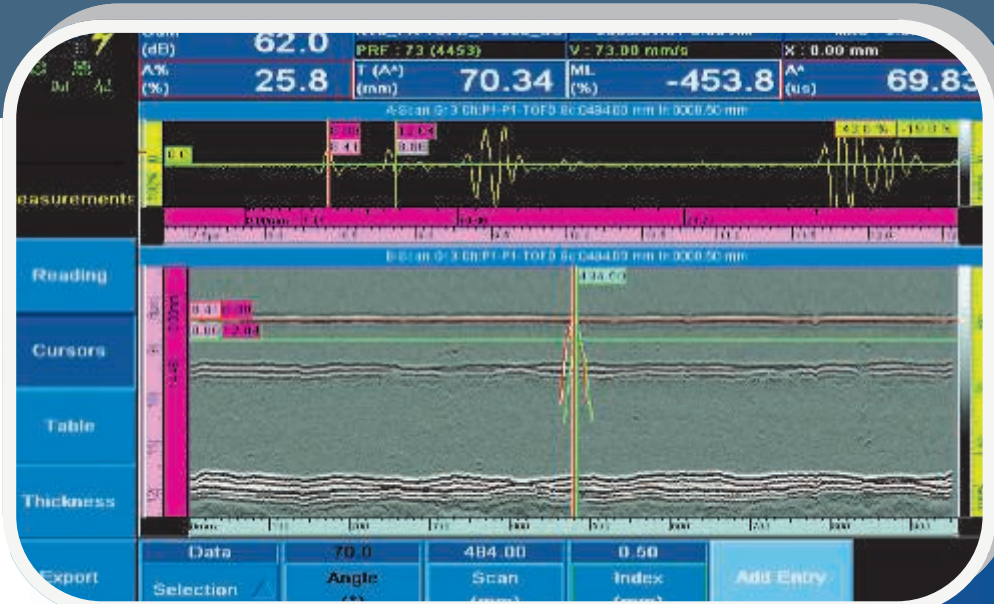
- ◆ Standard configuration using one or two probes and optional configuration using four probes for TOFD, phased array, or pulse-echo inspections
- ◆ Pipe range with outside diameter from 5mm to 965mm (1.75" to 38")
- ◆ Encoded manual scan on one axis
- ◆ Easily clamping device for quick scanner positioning
- ◆ Adjustments without tools
- ◆ Scanner suitable for plates also





Time Of Flight Diffraction (TOFD)

The deflection of a wave front as it passes an ultrasonically opaque object and expands into the region that is behind the object and hence not directly exposed to the incoming waves. When ultrasound is incident at linear discontinuity such as a crack, diffraction takes place at its extremities. The study of this phenomenon has led to the use of time of flight diffraction method of crack sizing. TOFD is very sensitive to detecting all kinds of defects, irrespective of its orientation. Using this advanced technique gas, binding defects, porosity, slag inclusions and cracks can be detected independent of defect orientation with very accurate sizing of the defects.



Advantages & applications of TOFD

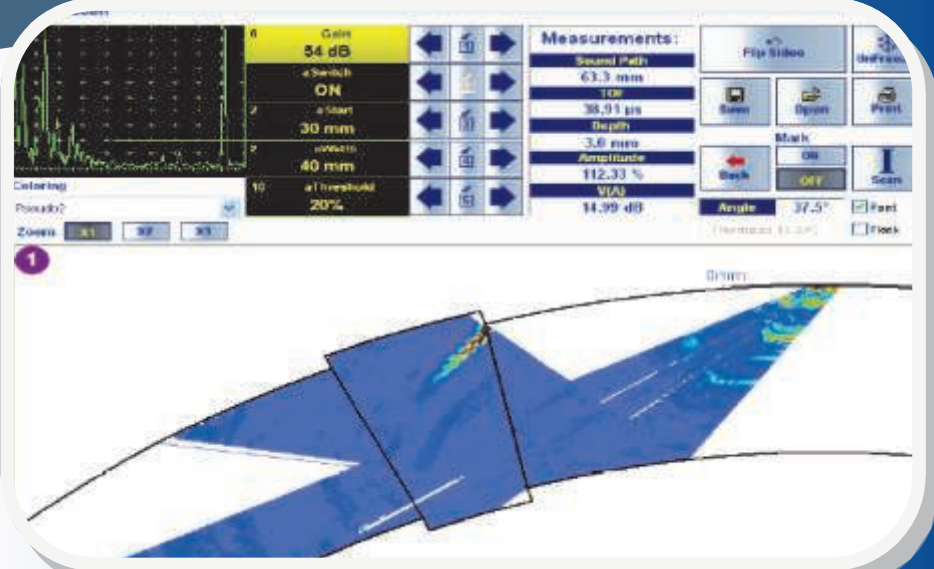
- ◆ TOFD defect detection does not depend on the defect orientation, in contrast to the pulse echo technique.
- ◆ In contrast to the radiography method, planar defects and cracks, which are not perpendicular to the measured surface, can be detected.
- ◆ Defect height, length can be exactly determined.
- ◆ Higher POD improves risk reduction and calculation.
- ◆ The evacuation of areas because of radiation is not necessary. That means less interruption in the production process less during pre-service or in-service inspections
- ◆ The inspection results are immediately available, as is a permanent record and a permanent print as longitudinal or transversal projection of the weld is available.
- ◆ When Engineering Critical Assessment (ECA) is applied, only the relevant defect has to be cut, thereby preventing needless repairs which could harm the integrity of the weld.
- ◆ Because of the high test speed the costs are less than those for radiography for wall thickness above 25 mm.
- ◆ TOFD saves costs, if applied during construction, possible to distinguish pre-service and in-service defects. That means the unit can stay longer in production, and is safe.

Applications' of TOFD

- ◆ Thickness range from 6 mm to 300mm
- ◆ Coarse grained material inspect ability
- ◆ Pipe lines, plates, vessels, irrespective of type of bevel.

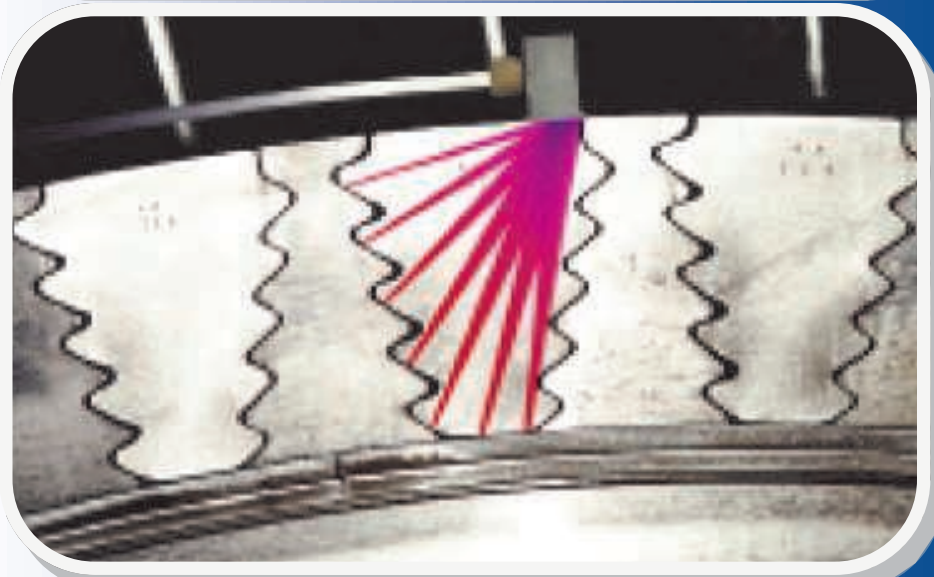
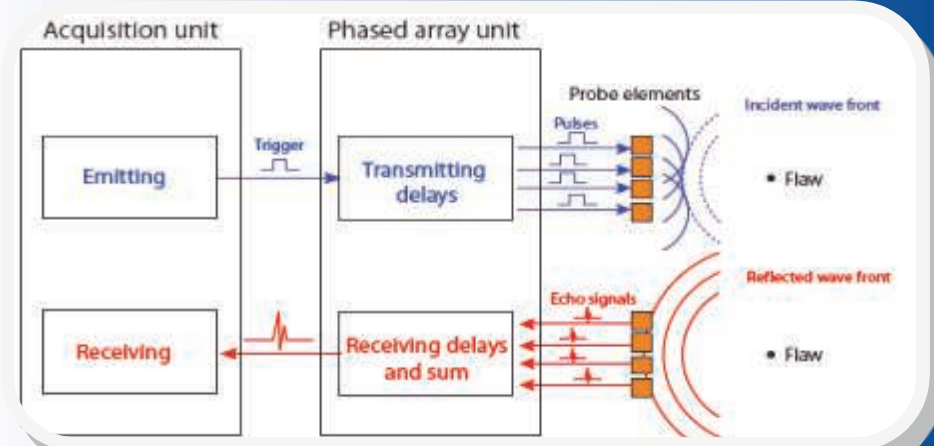


PHASED ARRAY AND TOFD ULTRASONIC TESTING



Phased Array Technology (A replacement for RT)

Phased array technology enables the generation of an ultrasonic beam where parameters such as angle, focal distance, and focal point size are controlled through software. Furthermore, this beam can be multiplexed over a large array. These capabilities open a series of new possibilities. For instance, it is possible to quickly vary the angle of the beam to scan a part without moving the probe itself. Phased array also allows replacing multiple probes and mechanical components. Inspecting a part with a variable-angle beam also maximizes detection regardless of the defect orientation, while optimizing signal-to-noise ratio.

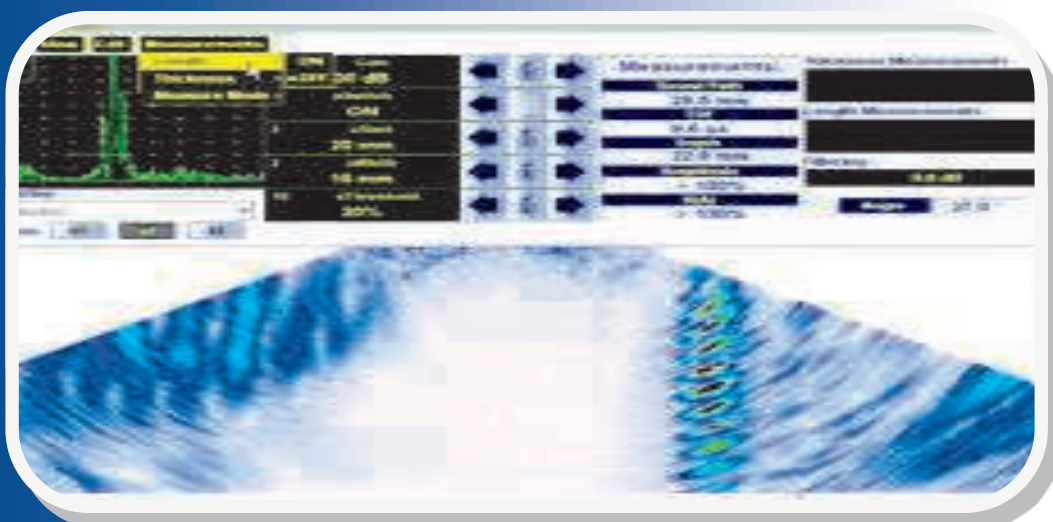
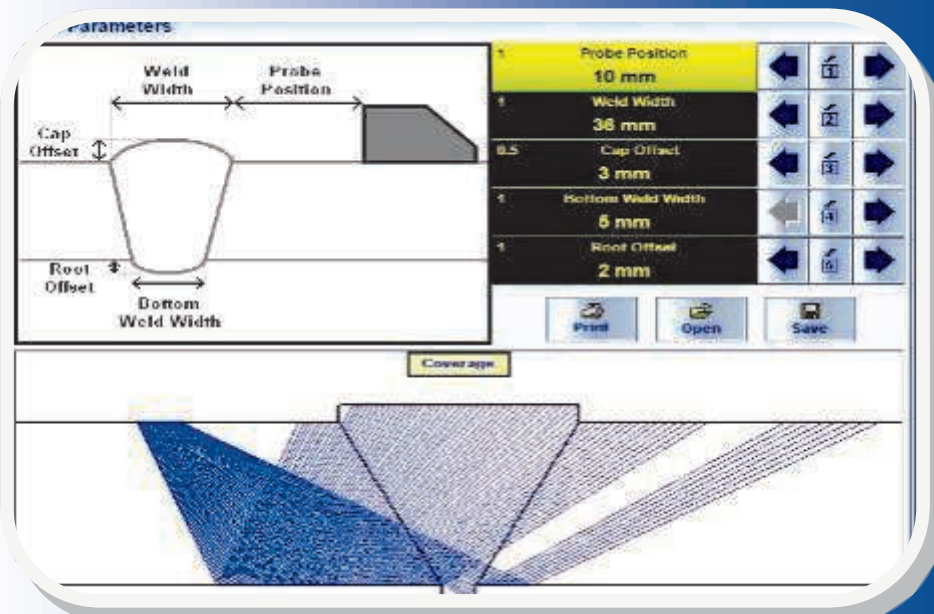


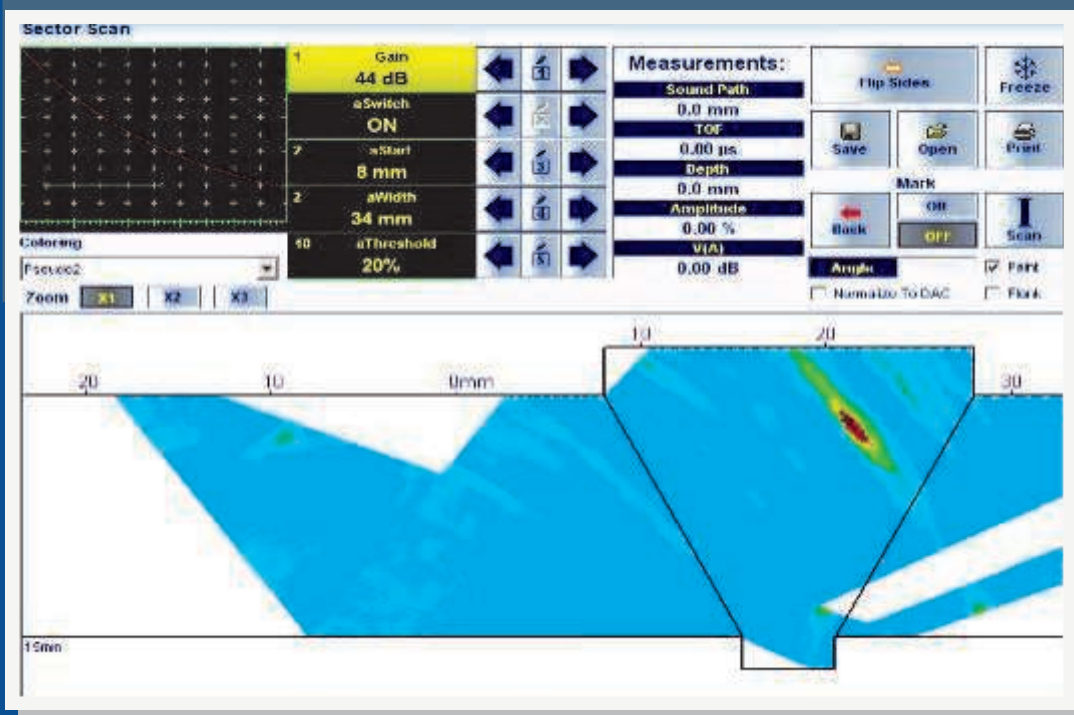
Sectorial Scans (S-scans)

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- Useful for inspection of complex geometries, or those with space restrictions
- Provide various angles which can detect misoriented angled defects.

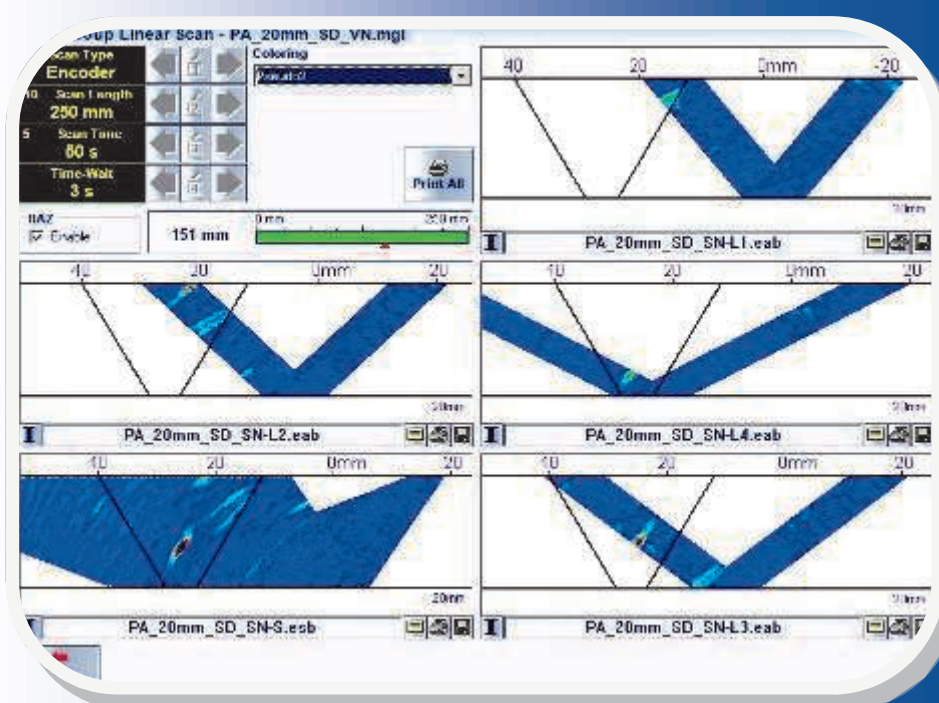
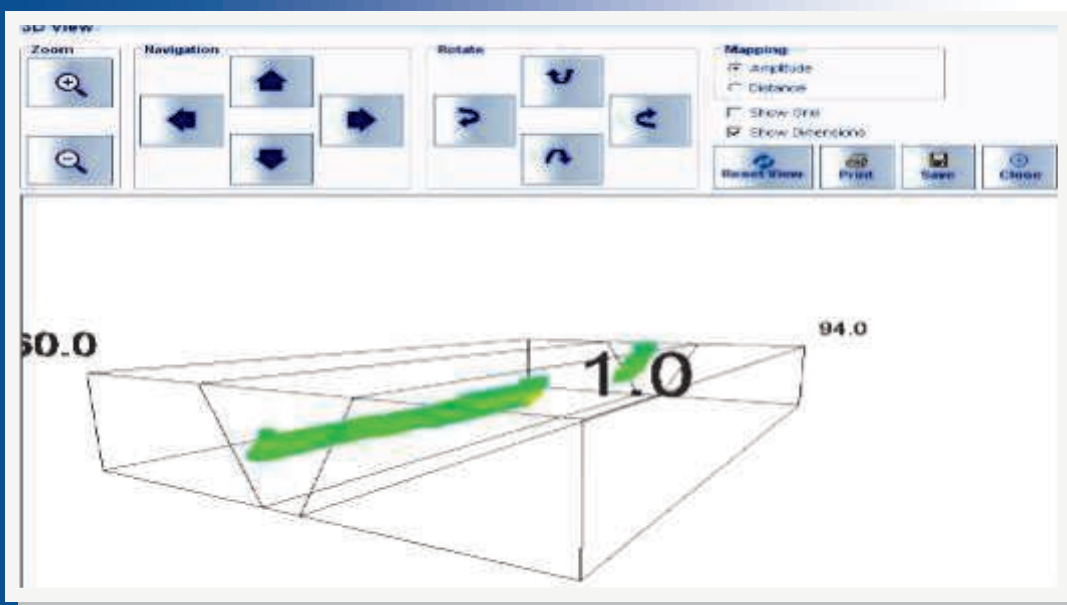
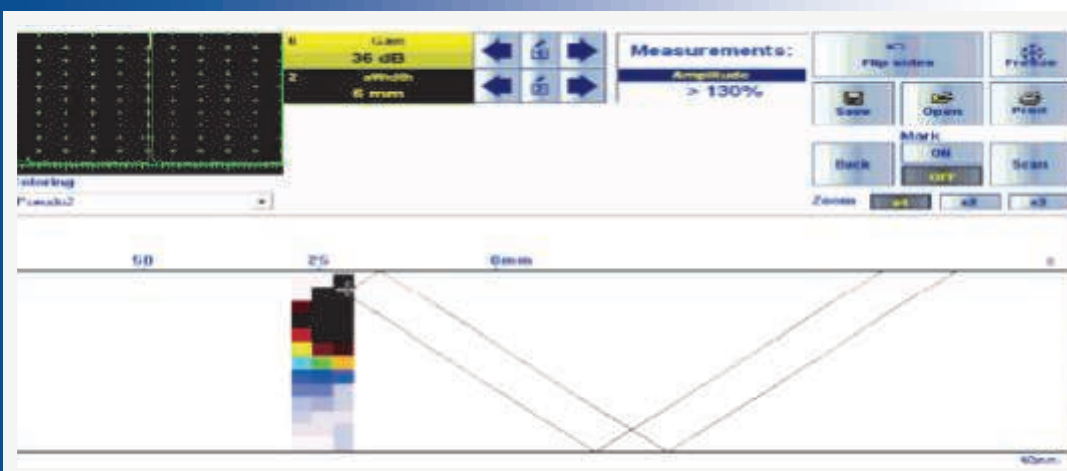
Benefits of Phased Arrays

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- Multiple-angle inspection with a single, small, electronically controlled multi-element probe
- Flexibility for the inspection of complex geometry
- High-speed scans with no moving parts
- Complete coverage of weld with single probe scan
- Accuracy in sizing





- ◆ DAC, TCG
- ◆ 3D-viewing
- ◆ Multi group imaging with one probe
- ◆ True to geometry, regular B-Scan and S-Scan accompanied with all codes compliant A-Scan
- ◆ Unique Tandem B-Scan for detection of Planar vertically oriented defects
- ◆ Visual representation of the defect is seen on the screen and can be recorded
- ◆ Real-time, volume-corrected, vertically projected representation of S-scans with selectable A-scans
- ◆ Different display can be viewed at a time (A,B,C, S-scans)
- ◆ Easier and more precise defect characterization and sizing



Manual Encoded Scanner

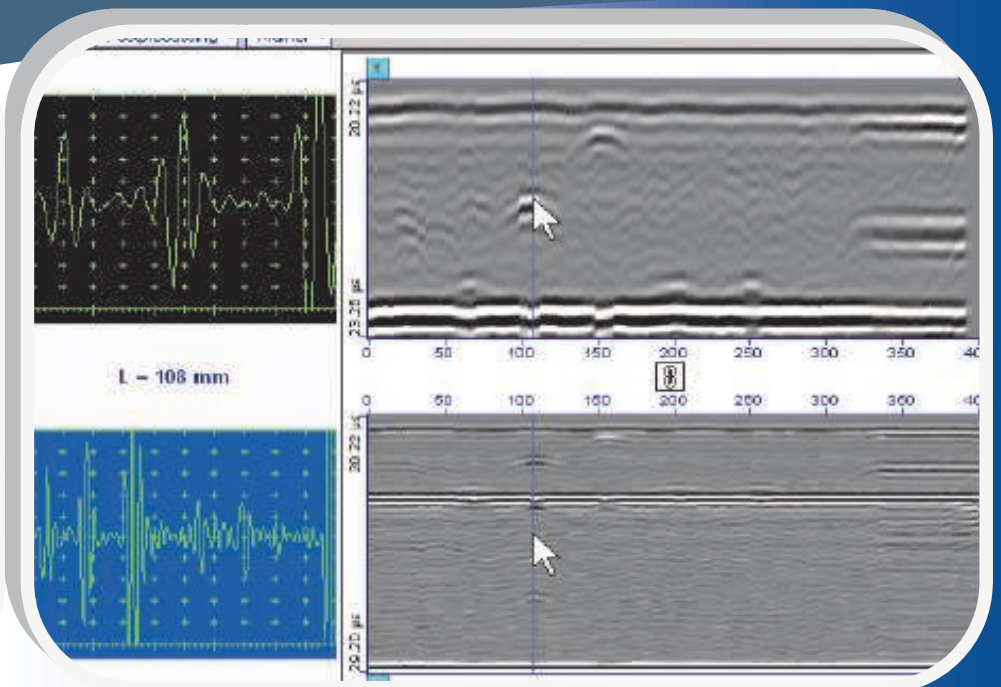
- ◆ Encoded linear scan (one axis) for PA, TOFD or pulse-echo inspections with magnetic yoke Encoder wheel.
- ◆ Compact, light, and versatile
- ◆ Can fit a full range of probes and wedges
- ◆ Wheel less encoder suitable for one side access welds with complex geometry
- ◆ Suitable for pipes, plates and vessels



Major Applications

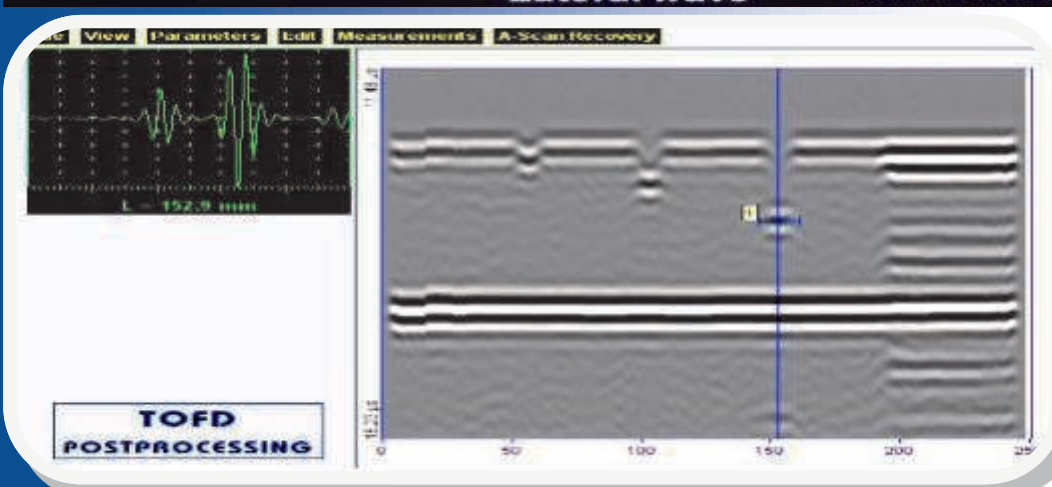
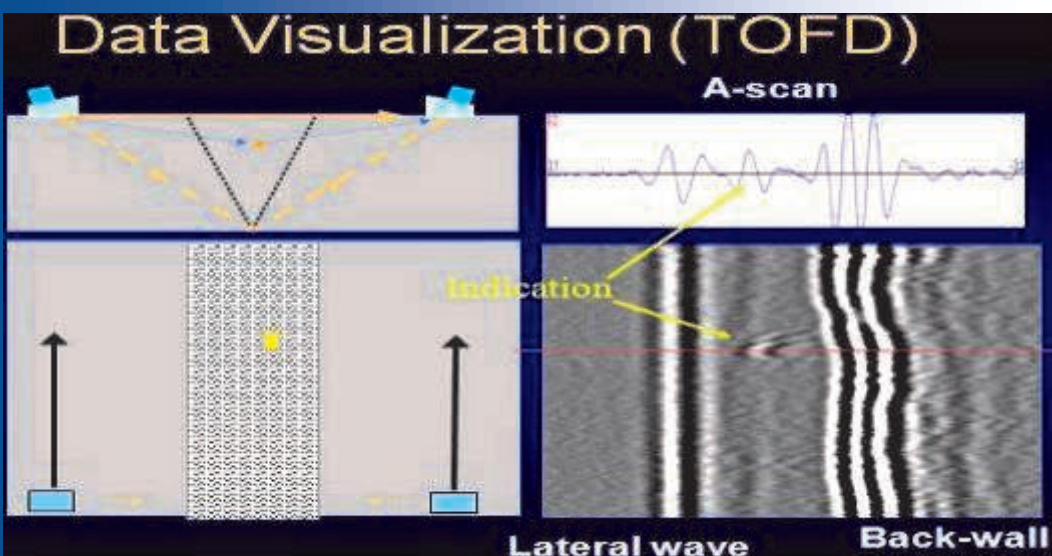
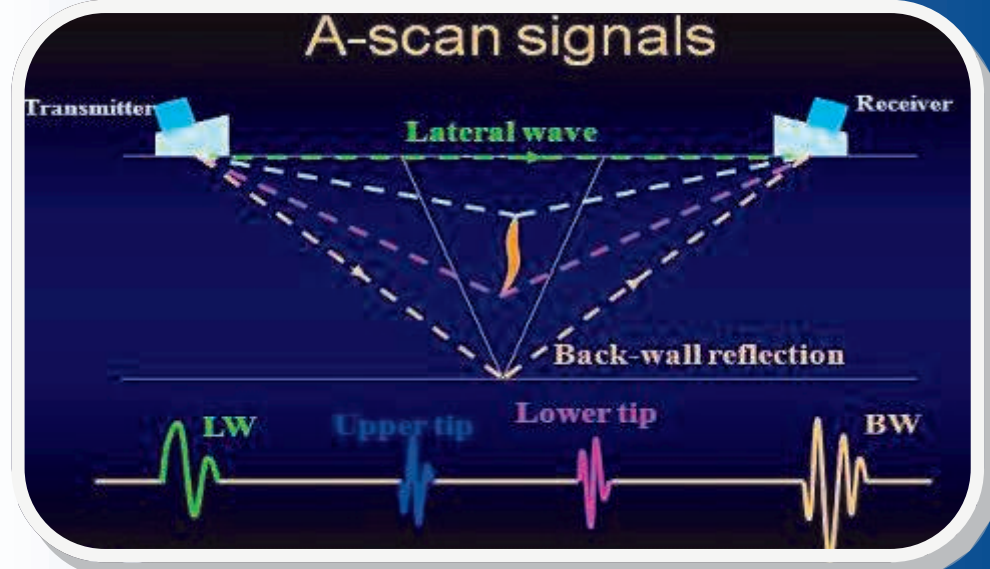
- ◆ Butt Weld Testing
- ◆ Heavy thickness pressure vessels
- ◆ Composites
- ◆ Nozzle Testing
- ◆ Small Diameter Austenitic Pipe Weld
- ◆ In Service Testing of Pipe for Stress Corrosion Cracking
- ◆ T,K,Y-weld Testing
- ◆ Hydrogen Induced Cracking





Time Of Flight Diffraction (TOFD)

The deflection of a wave front as it passes an ultrasonically opaque object and expands into the region that is behind the object and hence not directly exposed to the incoming waves. When ultrasound is incident at linear discontinuity such as a crack, diffraction takes place at its extremities. The study of this phenomenon has led to the use of time of flight diffraction method of crack sizing. TOFD is very sensitive to detecting all kinds of defects, irrespective of its orientation. Using this advanced technique gas, binding defects, porosity, slag inclusions and cracks can be detected independent of defect orientation with very accurate sizing of the defects.



Applications of TOFD

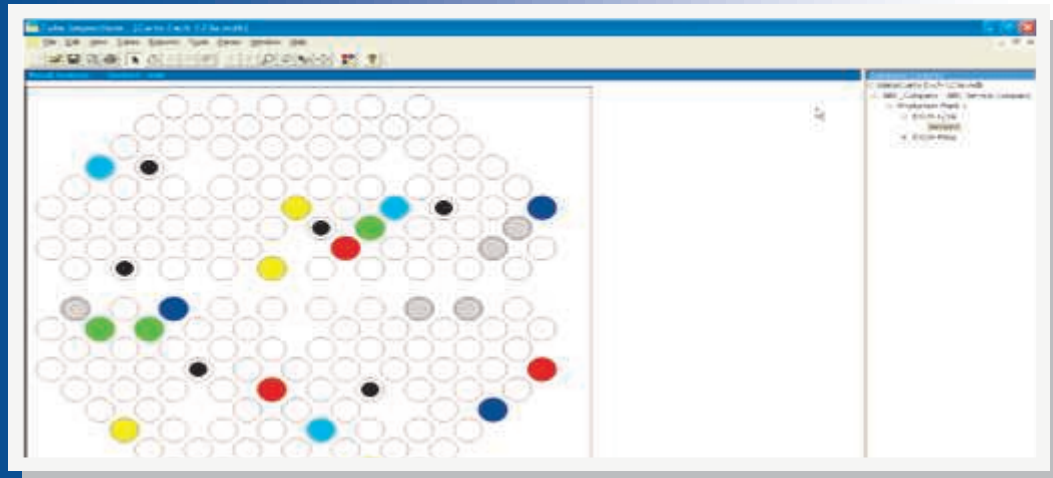
- ♦ Thickness range from 6 mm to 300mm
- ♦ All types of defect can be detectable
- ♦ Coarse grained material inspect ability

Advantages & applications of TOFD

- ♦ TOFD defect detection does not depend on the defect orientation, in contrast to the pulse echo technique.
- ♦ In contrast to radiography method, planar defects and cracks, which are not perpendicular to the measured surface, can be detected.
- ♦ Defect height, length can be exactly determined.
- ♦ Higher POD improves risk reduction and calculation.
- ♦ The evacuation of areas because of radiation is not necessary. That means less interruption in the production process less during pre-service or in-service inspections .
- ♦ The inspection results are immediately available, as is a permanent record and a permanent print as longitudinal or transversal projection of the weld is available.
- ♦ When Engineering Critical Assessment (ECA) is applied, only the relevant defect has to be cut, thereby preventing needless repairs which could harm the integrity of the weld.
- ♦ Because of the high test speed the costs are less than those for radiography for wall thickness above 25 mm.
- ♦ TOFD saves costs, if applied during construction, possible to distinguish pre-service and in-service defects. That means the unit can stay longer in production, and is safe
- ♦ Non amplitude scanning and detection, independent of weld configuration, good for mid wall defect .
- ♦ Improvement of near to surface resolution through removal of lateral wave and back echo record.



TUBE INSPECTION- MULTI SCAN



Carto

- ♦ A Software package used to plan and report heat exchanger inspections.
- ♦ The main function of carto is to create tube sheet maps.
- ♦ These maps are used to- select the tubes to be inspected, details the inspection results.
- ♦ The results can be printed exported to other software formats such as excel and word

Eddy Current Tube Inspection

Two coils are excited with an electrical current, producing a magnetic field around them. The magnetic fields penetrate the tube material and generate opposing alternating currents in the material. These currents are called eddy current.

Any defects that change the eddy current flow also change the impedance of the coils in the probe.

These changes in the impedance of the coils are measured and used to detect defects in the tube.

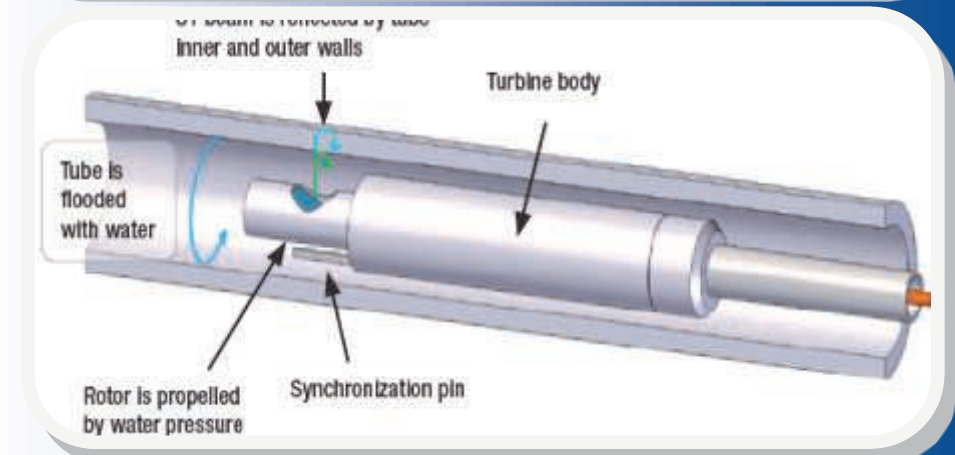
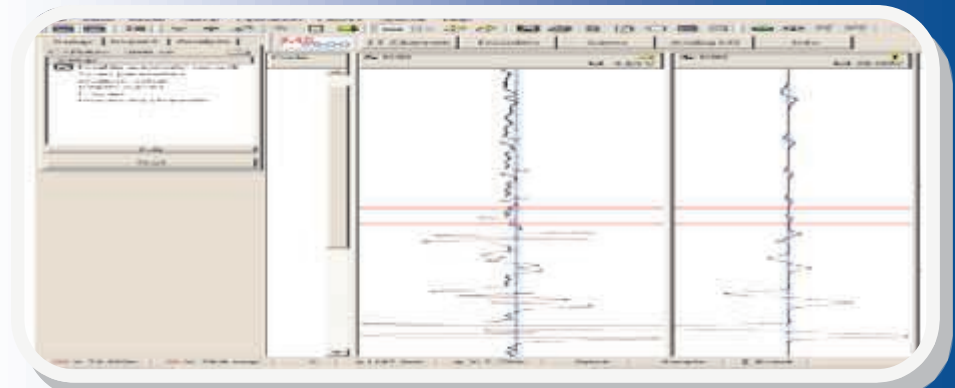
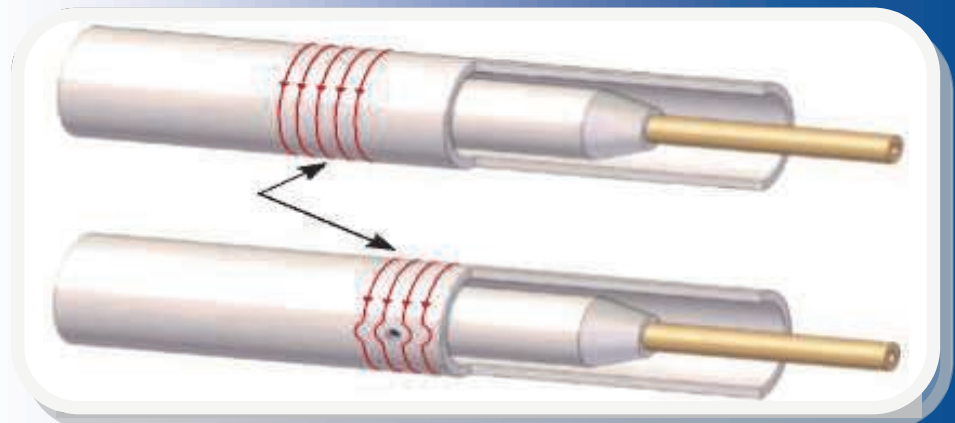
Applications of ECT:

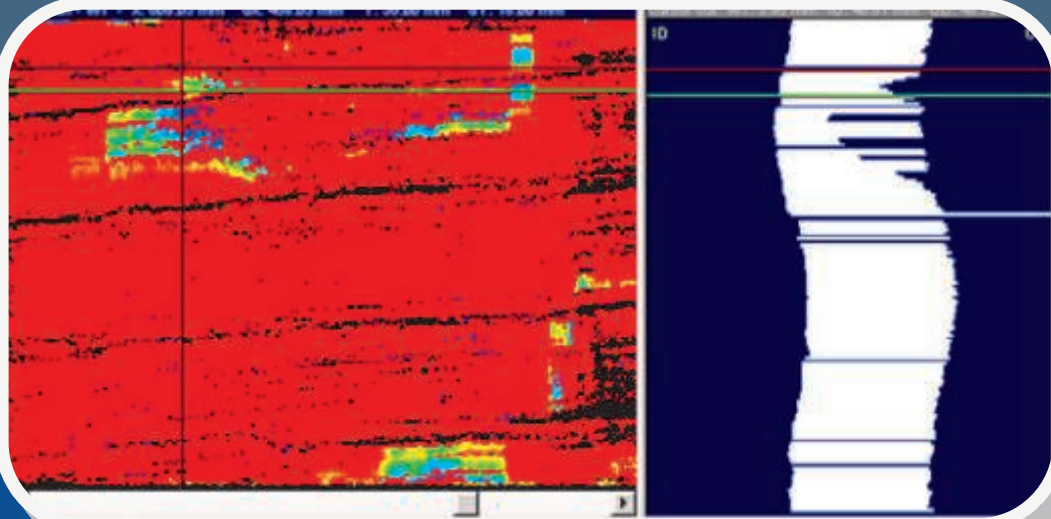
- Non ferritic tube- condenser, heat exchanger, feed water heater, Air conditioner
- Small pits detections in thin wall tube
- Circumferential cracks

Internal Rotating Inspection System (IRIS):

Works with same Basic ultrasonic principle. The impedance mismatch reflects the Ultrasound. Analysis of signal data with different display reproduces the information about the discontinuities.

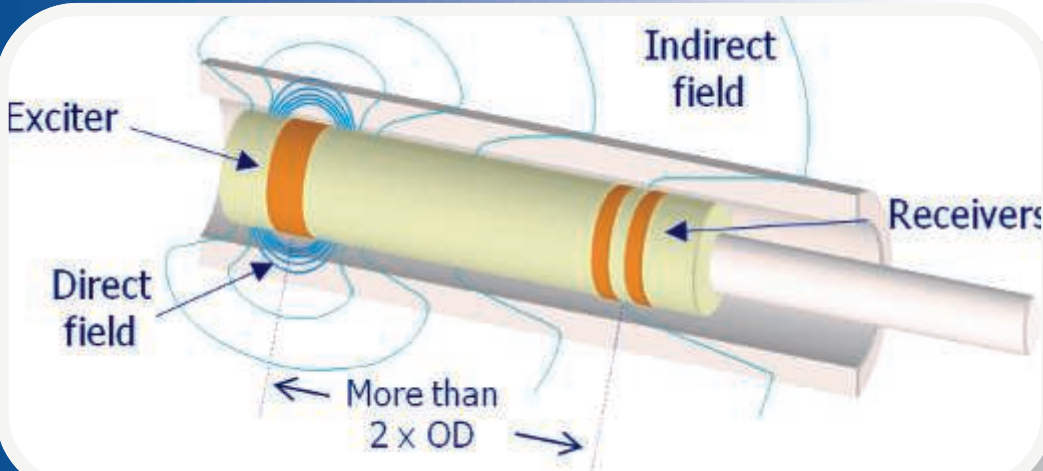
IRIS technology is used extensively as approve up technique for RFT,ECT,MFL.





Applications of IRIS:

- ◆ Non ferritic tube-condenser, heat exchanger, feed water heater
- ◆ Mild ferritic steel, monel, stainless steels
- ◆ Aluminum finned air cooler
- ◆ Circumferential crack detection
- ◆ Full tube length recording
- ◆ Reduces missed flaws with C-scan display, color maps and cross section views of defects



Remote Field Testing (RFT):

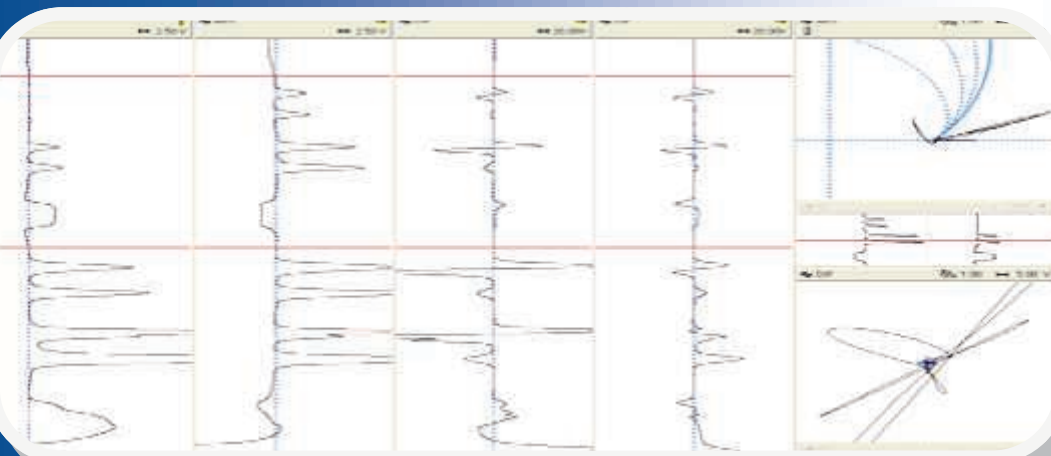
Direct field is centered around the exciter coil and is rapidly attenuated relative to the distance down the tube.

The indirect field is diffused outward through the tube wall, propagates along the tube axis and is then re diffused back through the tube wall.

The zone which is in indirect field is dominant is called as remote filed zone.

Applications of RFT:

- ◆ Mild ferritic steel, monel, stainless steels- 400 series
- ◆ Ferritic tubing- heat exchangers, feed water heaters, boilers
- ◆ Offers good sensitivity when detecting and measuring volumetric defects resulting from erosion, corrosion wear and baffle cuts



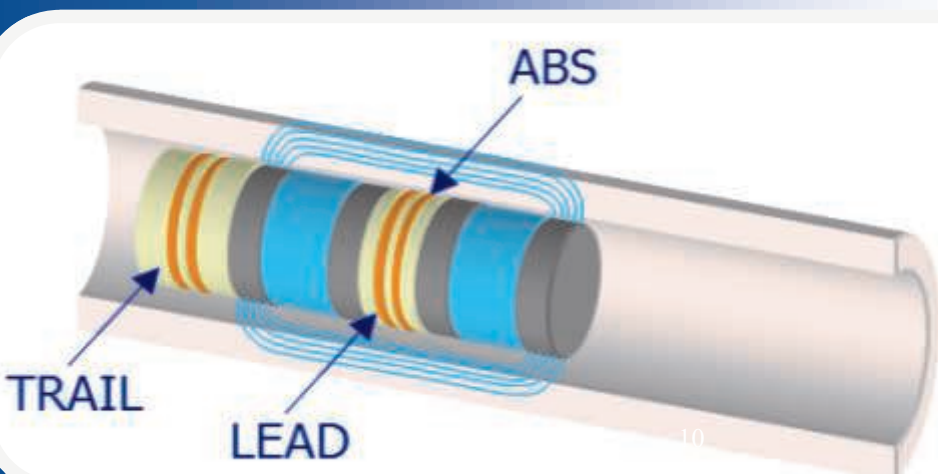
Magnetic Flux Leakage (MFL)

Two strong permanent magnets coupled to a steel core, generate a magnetic field that saturates the tube wall.

An absolute coil (ABC) is wound around the core to measure magnetic field variation caused by general wall loss

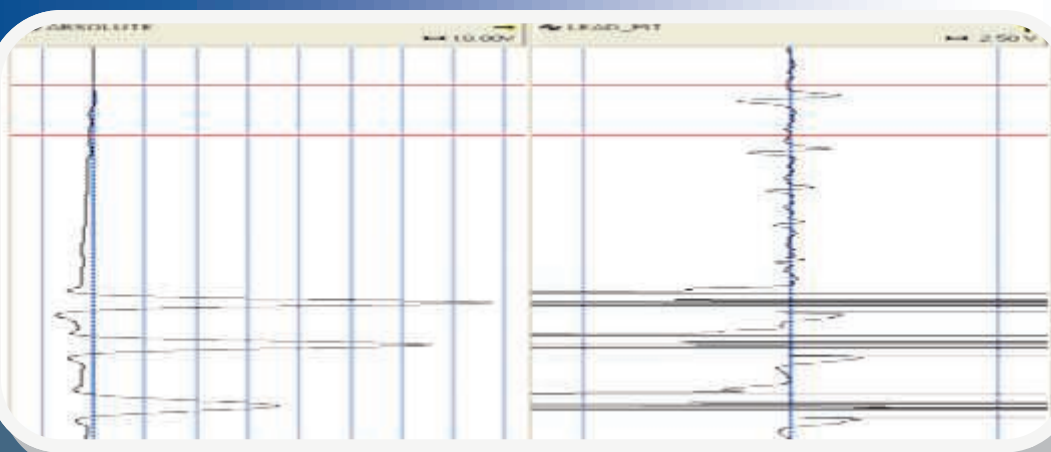
A flaw between two magnets caused the magnetic filed in tube wall disturbed results in a small amount of flux leakage in to the inner tube.

The flux leakage is detected by a differential coil located between the magnets and a trail coil at the end of probe detects the residual magnetism from the internal pits



Applications of MFL:

- ◆ Carbon steel-Heat exchangers, feed water heater, effective for Aluminum finned carbon steel tubes
- ◆ Very fast, suitable for wall loss, pitting, grooves and Circumferential cracks



LONG RANGE ULTRASONIC GUIDED WAVE TESTING (LRUT)-MsSR

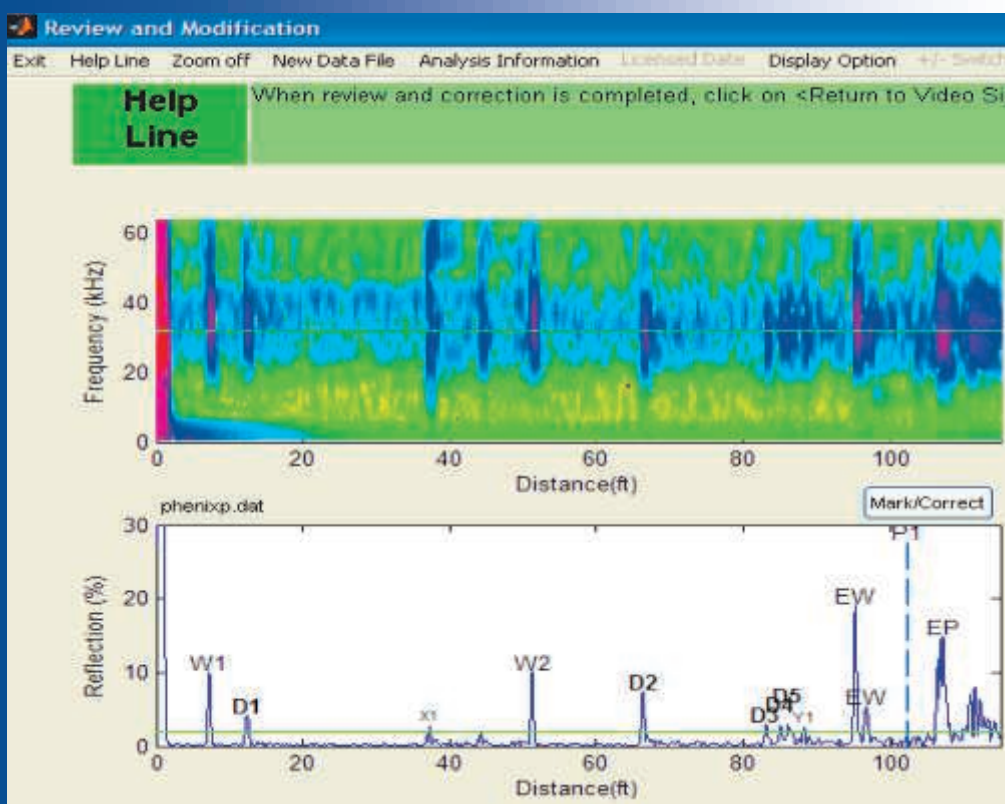
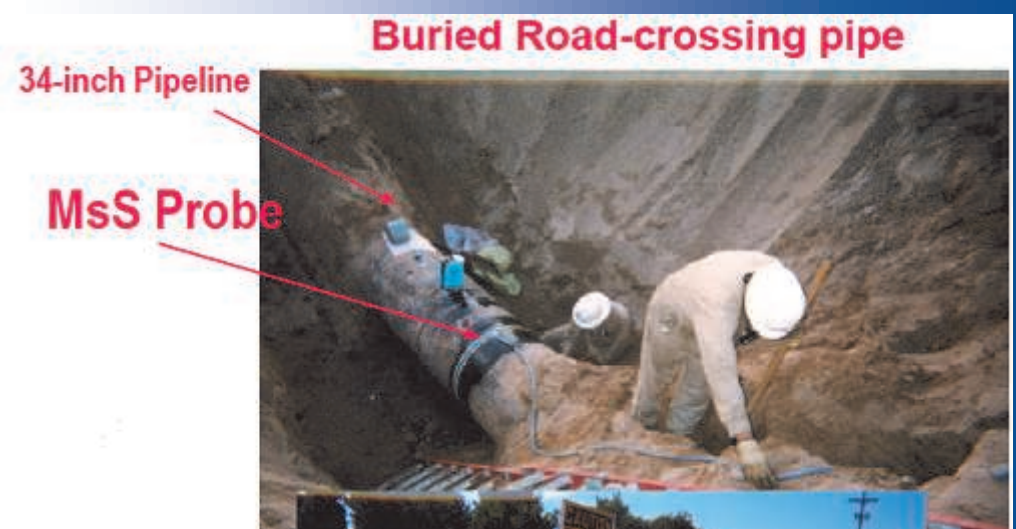
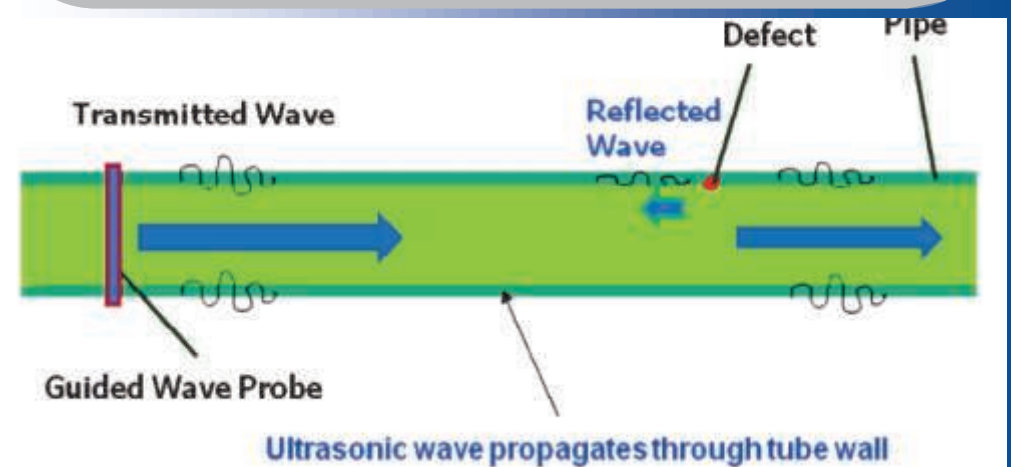


LRUT- MsS technology

Magneto-strictive Sensor (MsS) probe uses magneto-strictive principle for generating and receiving ultrasonic wave. Mechanical coupling between magnetic strip and specimen generates the guided wave by applying alternative current through the ribbon coil and travel over the length of the specimen and reflect back in the presence of the anomalies

Advantages of LRUT

- ◆ The whole pipe wall is tested, there by achieving 100% examination
- ◆ Surface clearance is required only at the probe installation point about 3 inch.
- ◆ Typical test range 60m in each direction from a single location, ideal conditions can achieve 350m in total
- ◆ Testing of pipe up to 60" diameter.
- ◆ Proven capability on pipe in service up to 160 degree centigrade.
- ◆ Reliable detection of 3% metal loss.
- ◆ Rapid screening for in-service degradation.
- ◆ Ability to inspect inaccessible areas such as clamps, supports and buried pipelines
- ◆ Cost reduction in gaining access to the pipes for inspection.

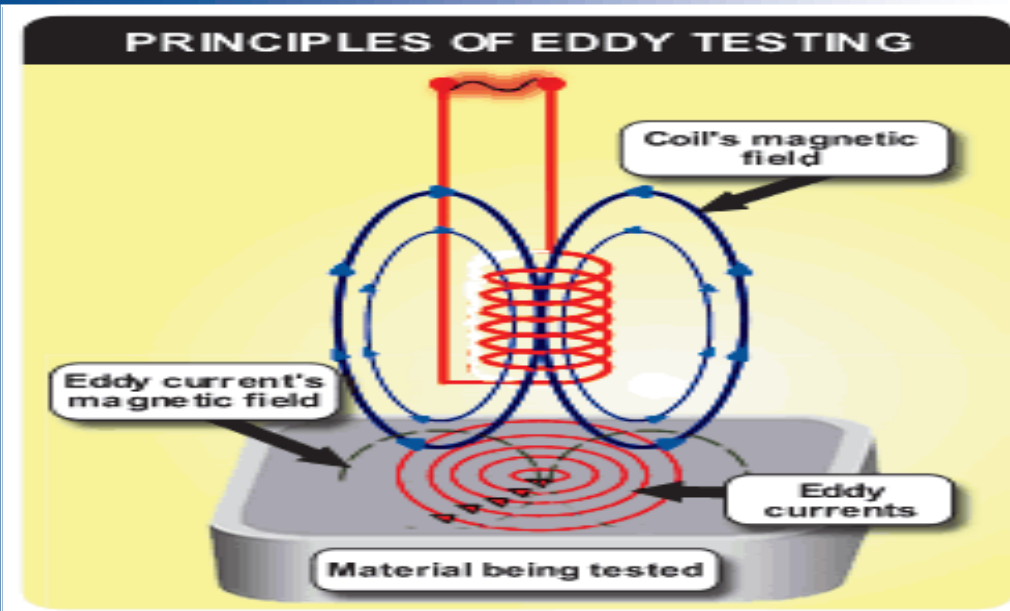
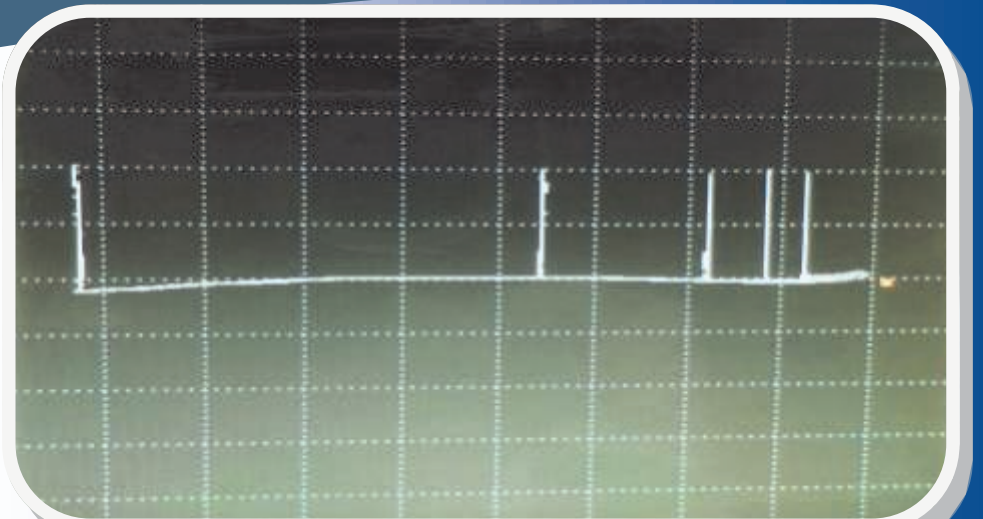


Applications of LRUT

- ◆ Insulated pipelines in refineries, chemical Plants, and electric power plants.
- ◆ Support legs of large spherical storage tanks
- ◆ High temperature pipe line inspection
- ◆ Offshore pipe line risers inspection
- ◆ Buried pipe line inspection
- ◆ Cased road or railway crossings.
- ◆ Inspection of the pipelines under culverts and tank dyke pipe line crossings.
- ◆ River or bridge pipe line crossing



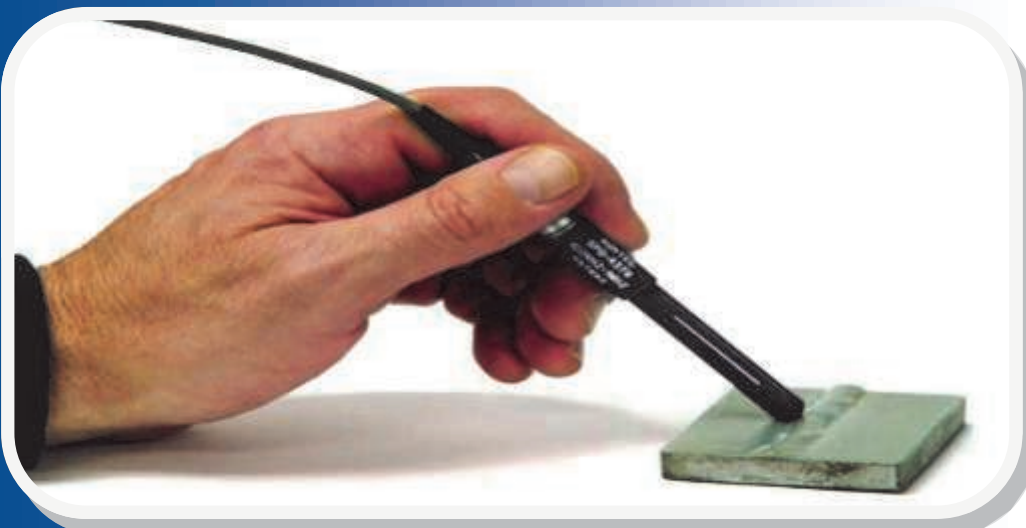
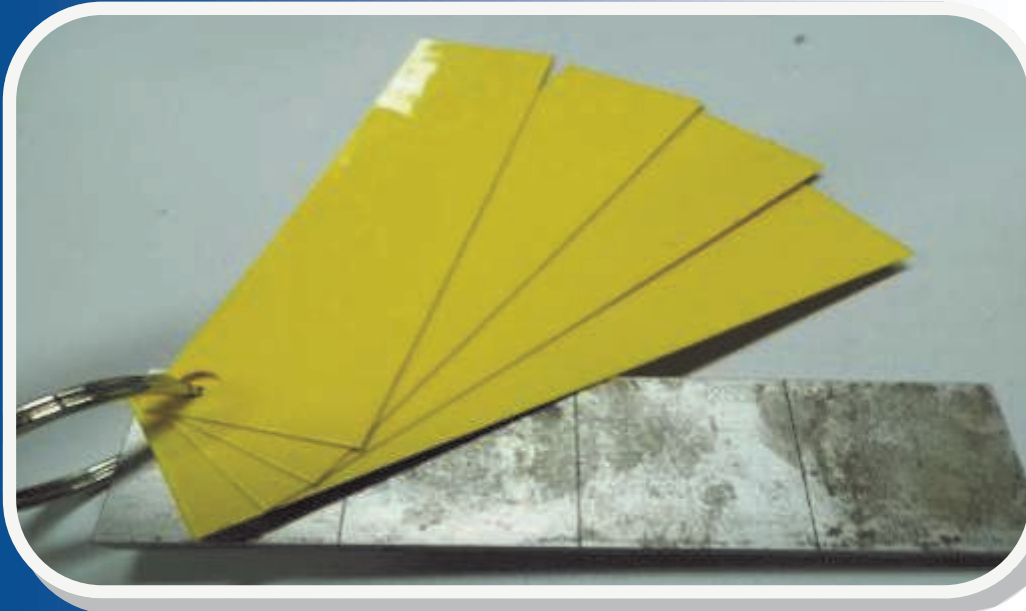
ECT WELD INSPECTION



Eddy Current Technology

Eddy current testing (ECT) is a method for the inspection of metallic parts. The probe, excited with an alternating current, induces an eddy current in the part being inspected. Any discontinuities or material property variations that change the eddy current flow in the part are detected by the probe as a potential defect.

The eddy current technique is now recognized to be fast, simple, and accurate. The technique is widely used in the aerospace, automotive, petrochemical, and power generation industries in the detection of surface or near surface defects in materials such as aluminum, stainless steel, copper, titanium, brass, Inconel, and even carbon steel (surface defect only). Very sensitive to cracks.

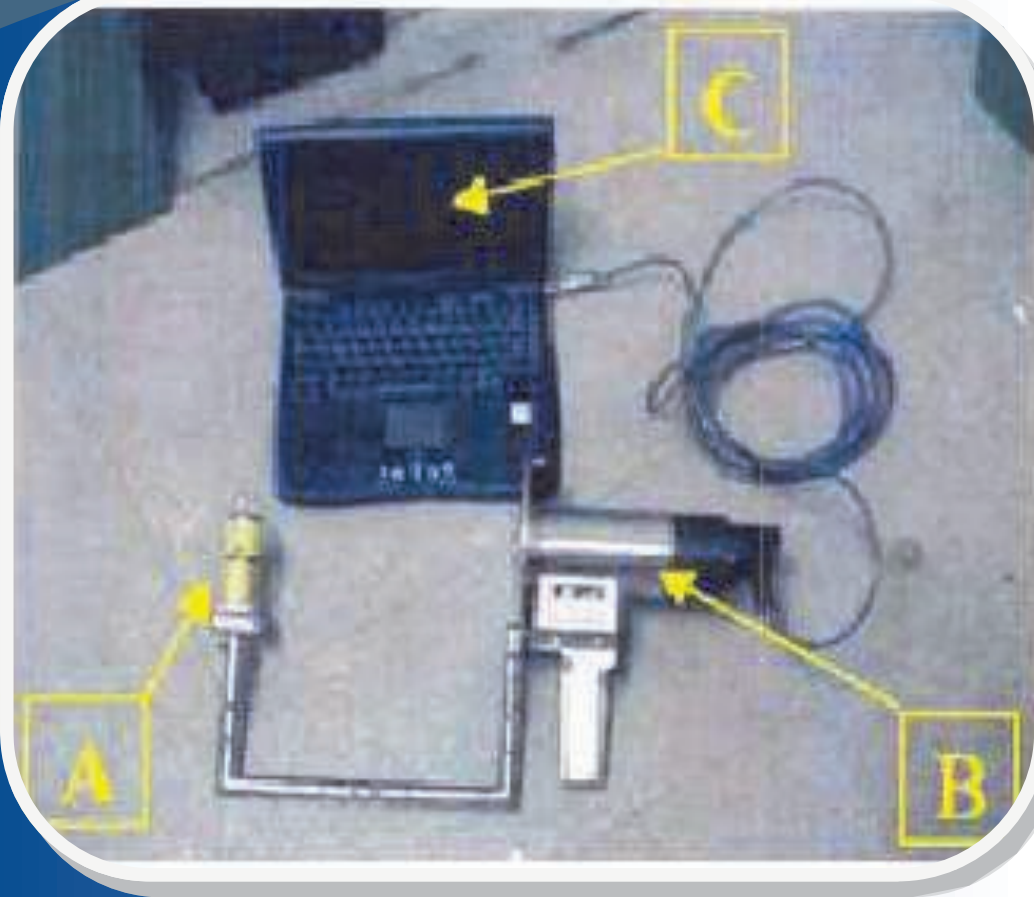


Applications' of ECT

- ◆ Detection of cracks in SS vessels and tanks
- ◆ Detection of cracks in turbine blades
- ◆ Inspection of aerospace structures
- ◆ Detection of cracks in bolt holes
- ◆ No consumables used - e.g. Ink & contrast paint.
- ◆ Ability to test areas with poor access.
- ◆ No surface preparation required - e.g. Paint doesn't need to be removed, saving time in preparation for the inspection and in any re-coating of surfaces.
- ◆ Improved sensitivity-ability to detect smaller defects using specially developed Weld Probes.



CORROSION UNDER INSULATION

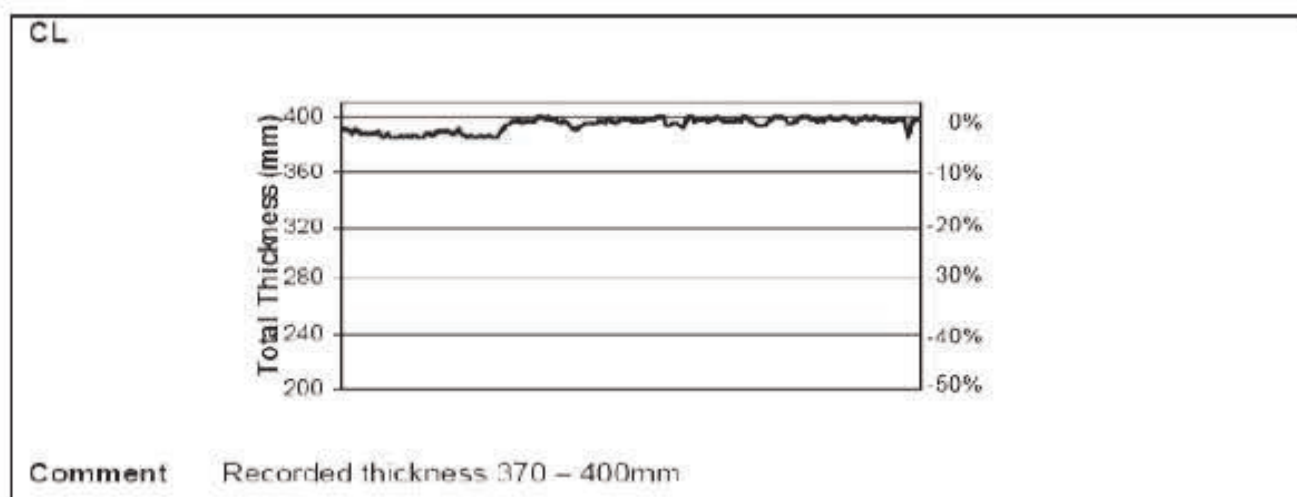
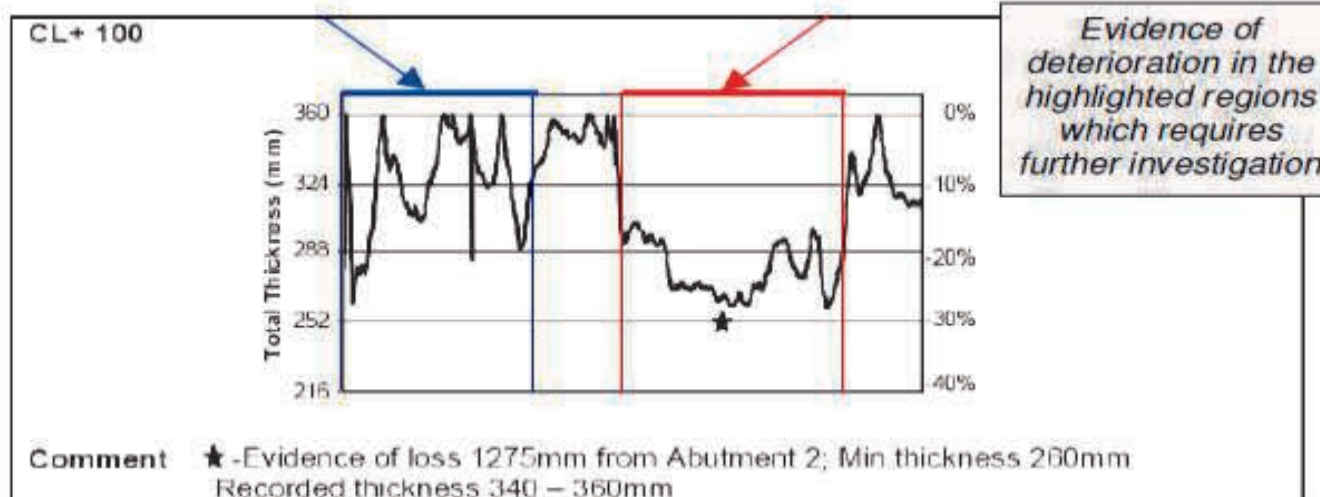


Lixi Profiler Corrosion under Insulation Inspection System:

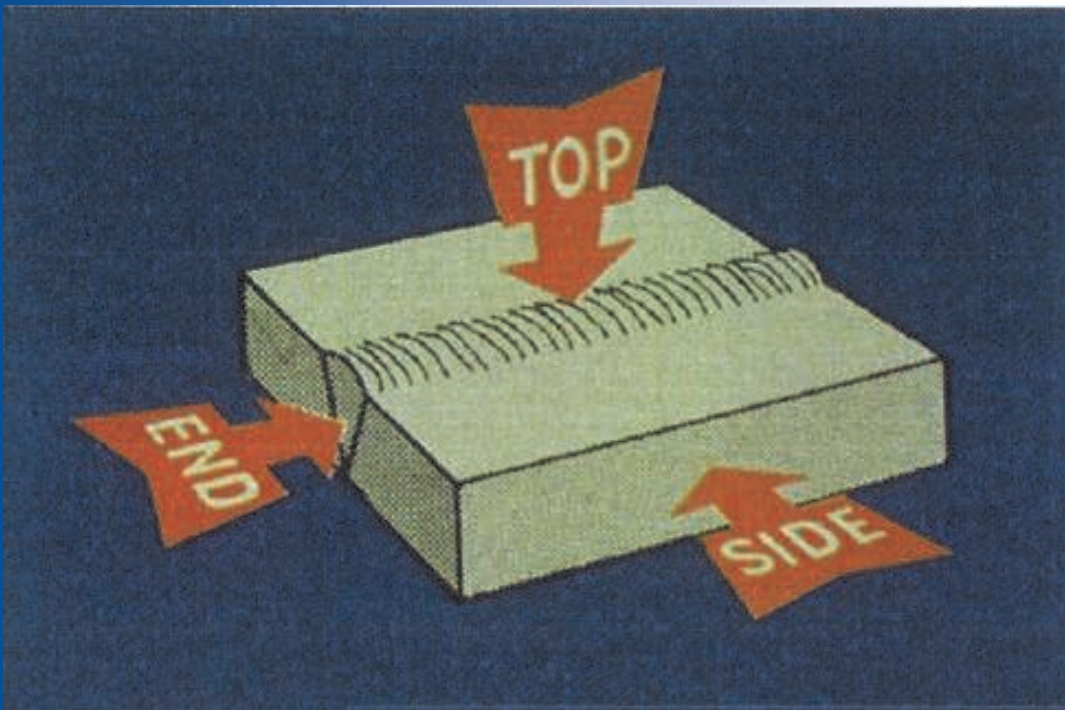
- ♦ Lixi profiler is a real time density measuring system, which produces graph showing the net thickness of the specimen under insulation.
- ♦ It uses a radioactive isotope gadolinium 153 and generates a highly collimated beam of radiation that penetrates through the specimen section. The amount of radiation reaches the detector opposite to the source is proportional to total thickness and average density of the material it passes through. The lexi profiler is calibrated against the solid section of the specimen and thus calculates and reports the thickness of the specimen

Applications:

- ♦ Pipe wall thinning
- ♦ Weld location
- ♦ Pipe blockages
- ♦ Integrity in ammonia systems
- ♦ Inspection of wood and rubber
- ♦ Composite material inspection



AUTOMATED ULTRASONIC CORROSION MAPPING



P-Scan Ultrasonic Corrosion Mapping System

- ♦ Corrosion monitoring is the practice of measuring the corrosivity of process stream conditions by the use of "probes" which are inserted into the process stream and which are continuously exposed to the process stream condition

The Need for Corrosion Monitoring

The rate of corrosion dictates how long any process plant can be usefully and safely operated. The measurement of corrosion and the action to remedy high corrosion rates permits the most cost effective plant operation to be achieved while reducing the life-cycle costs associated with the operation.

Corrosion monitoring techniques can help in several ways:

1. by providing an early warning that damaging process conditions exist which may result in a corrosion-induced failure.
2. by studying the correlation of changes in process parameters and their effect on system corrosivity.
3. by diagnosing a particular corrosion problem, identifying its cause and the rate controlling parameters, such as pressure, temperature, pH, flow rate, etc.
4. by evaluating the effectiveness of a corrosion control/prevention technique such as chemical inhibition and the determination of optimal applications.
5. by providing management information relating to the maintenance requirements and ongoing condition of plant.

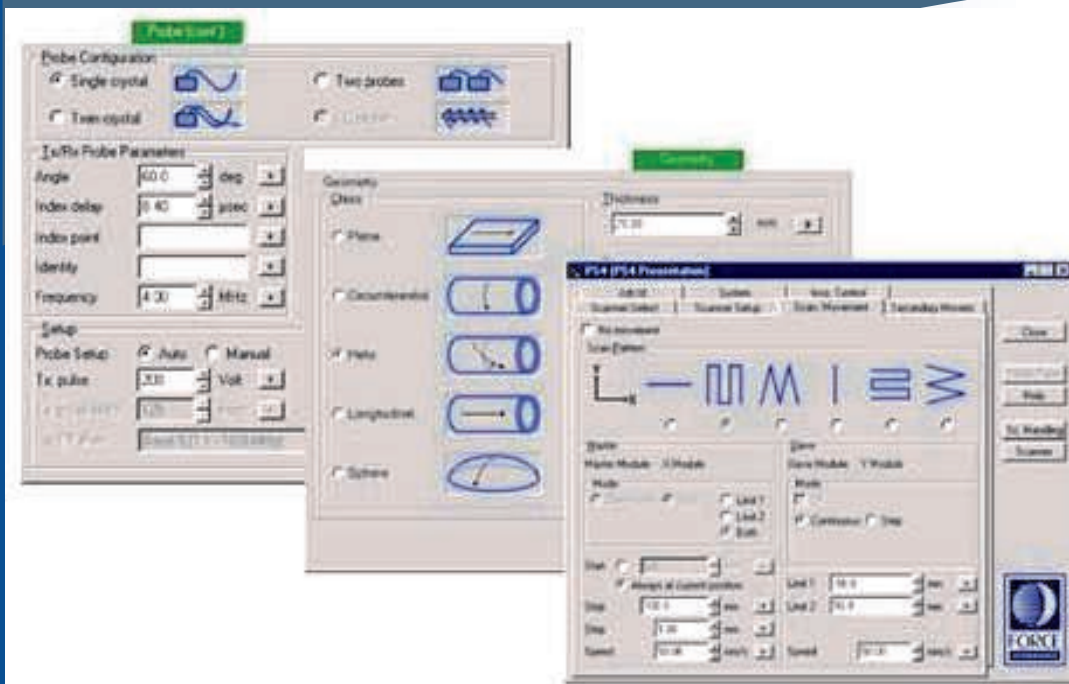
Software for Data collection, analysis & its advantages

- ♦ All indications are projected in to one plane and the top view is therefore equivalent to an x-ray image of the same inspection volume
- ♦ By combining the information in the TOP view with the information in the side and end views it is also possible to get information about the depth location of the defect, as well as an indication of the through wall size.
- ♦ Available A,B,C and D scans
- ♦ Possible to re-analyze the recorded data at a different sensitivity settings with out eh need for a new raw data collection.

Scanner features

- ♦ Automatic mag-netic Wheel XY scanner
- ♦ Pipe diameter when using standard wheels: from OD 70 mm (2.8 inch)
 - large rear wheels: from OD 40 mm (1.6 inch)
- ♦ Small size and lightweight for easy transportation and set-up
- ♦ Operation by one operator
- ♦ Scanner body with integrated control panel for easy scanner operation





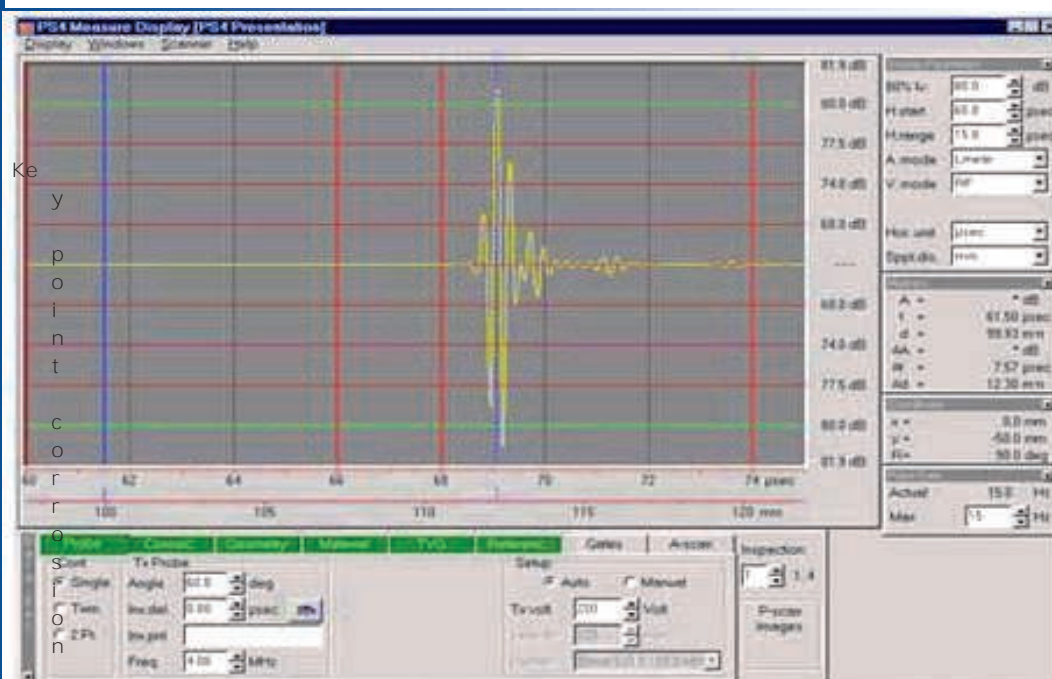
Inspection Types

P-scan System 4 supports standard ultrasonic and eddy current (EC) inspection techniques.

The techniques comprise:

- A-scan - RF A-scan recording
- Eddy Current - surface inspection
- P-scan - weld inspection
- SAFT - synthetic aperture focusing technique (off-line)
- Through Transmission - composite materials inspection
- TOFD - time-of-flight diffraction
- T-scan - corrosion mapping.

The inspection methods can be run concurrently, so a single scanning can collect data using any number of these techniques.

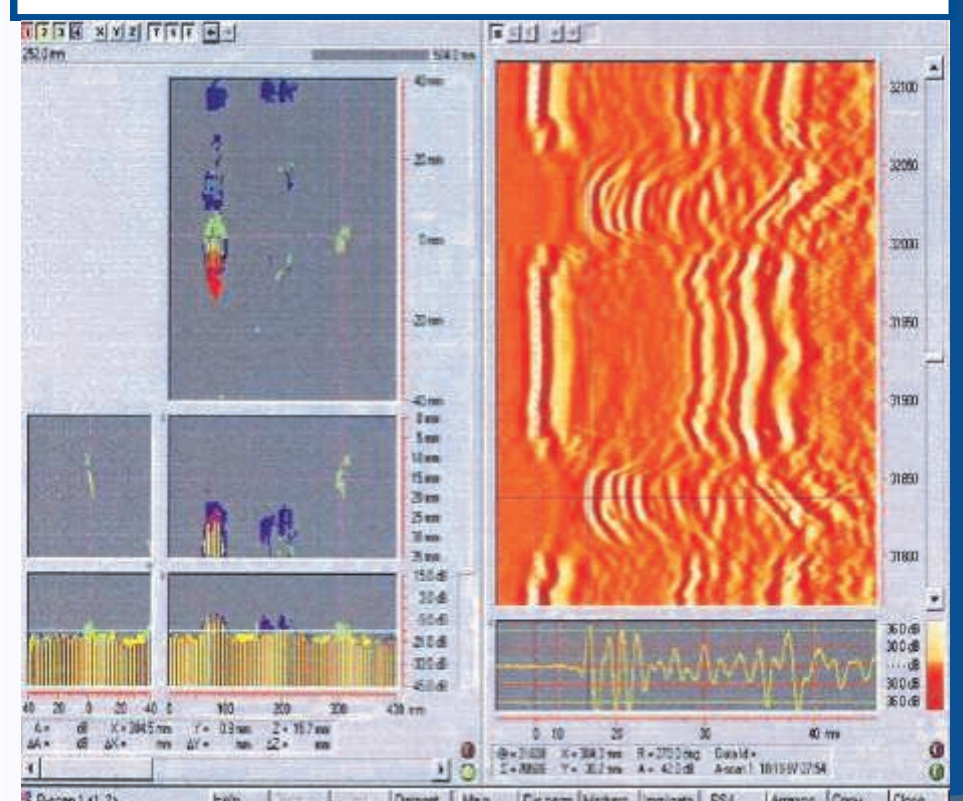
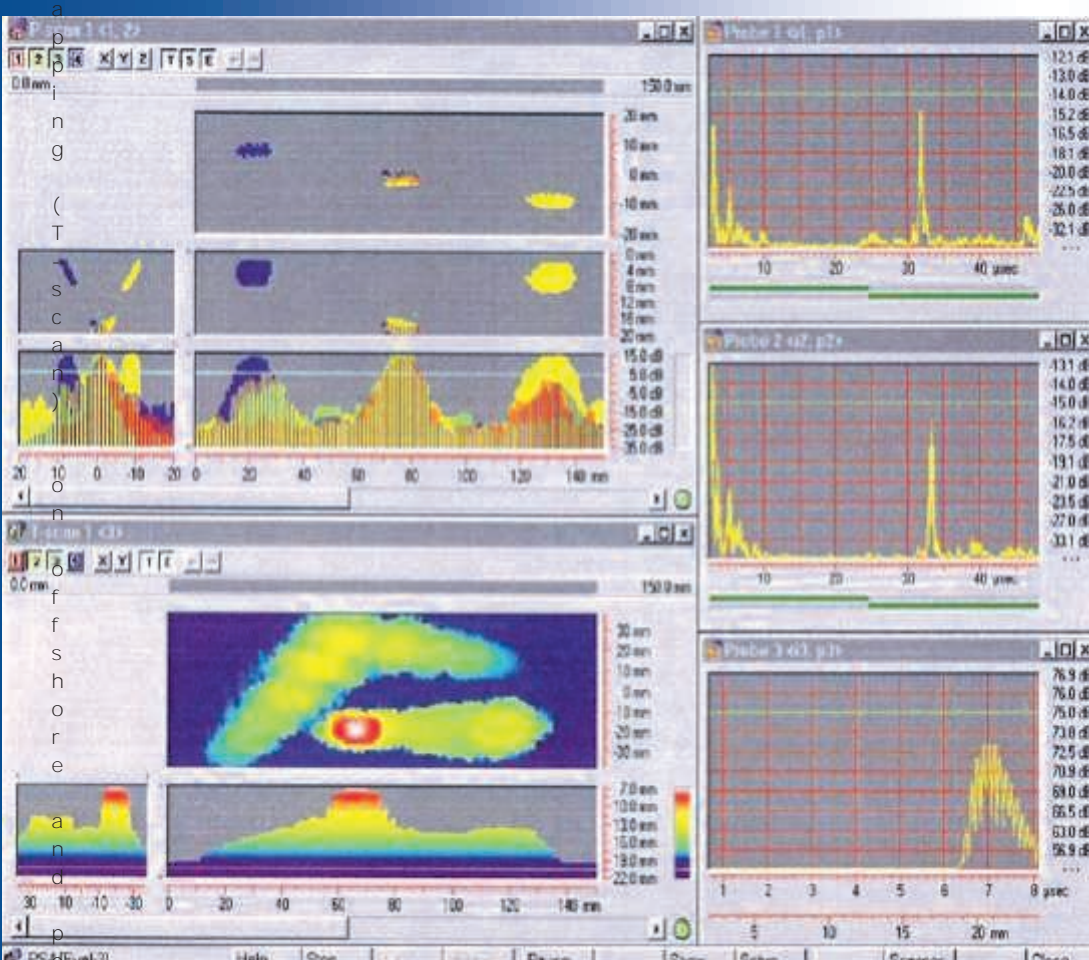


P-Scan Ultrasonic inspection Advance Features

- P-scan for weld inspection
- T-scan for corrosion mapping
- Through transmission for composite testing
- Full A-scan collection
- TOFD for flaw detection and sizing

Applications:

- ◆ Pipe wall thinning measurements
- ◆ Key point corrosion mapping (T-scan) on offshore and petrochemical installations
- ◆ In-service inspections
- ◆ Weld inspection
- ◆ composite material inspection





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