SyncScan

Versatile Ultrasonic Flaw Detector

Upgradeable

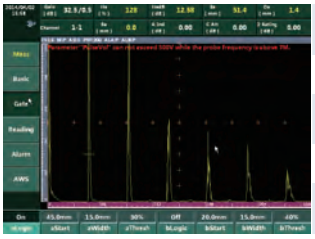
Minimize Your Cost for PA & TOFD

SIUI

SyncScan

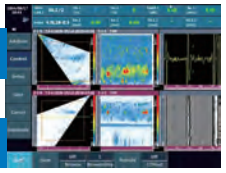
Versatile Ultrasonic Flaw Detector

● Upgradeable from Conventional UT to PA/ TOFD/ TG



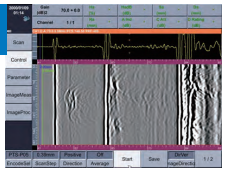
Conventional UT

Version1: upgradeable to 16:128 PAUT + 1-ch TOFD/ UT



Version 2: upgradeable to 16:64 PAUT(PR) + 1-ch TOFD/ UT

Version 3: upgradeable to 1/2/4-ch TOFD/ UT



* PR: pitch & catch function.

* Thickness measurement function is available for all versions.

* Please define version before purchase.

● Minimize Your Cost

SyncScan incorporates latest advancements in high-performance PA, TOFD and high end thickness measurement functions into one compact unit, which can minimize your cost for PA and TOFD.

- Smart test wizard guide you step by step from creating your PAUT/ TOFD setups to reports.
- Multiple advanced functions optimises the daily workflow.
- Typical applications: weld inspection, corrosion mapping, pressure vessel inspection and composite testing.

● Compact and Durable, suitable for aloft and field work.

● Light weight: 3.75 kg with battery

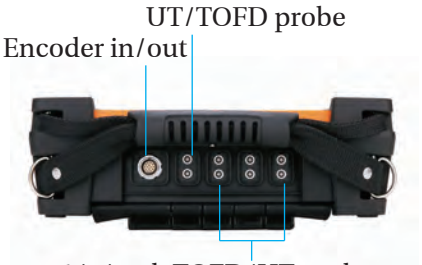
● Good sealing

● Rubber bumpers

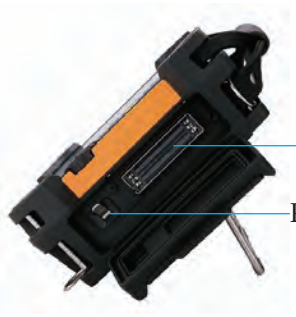
● Touch screen

● Overview

Side view (Left)



Top view



Side view (Right)

*EN-12668-1 compliant; ISO 18563-1:2015 as optional.

*Specific functions are subject to final order.

SyncScan

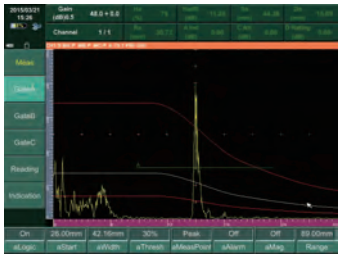
Conventional UT

● Basic Functions

Velocity+Zero Calibration/ Angle Calibration/ DAC/ AVG (DGS)/ Full screen A-Scan/ Screenshot/ Cineloop/ Auto gain/ Auto freeze/ Coordinates switch (sound path, depth, horizontal)/ Surface compensation (xx+xxdB)/ Second leg color/ Wave compare/ Wave filling/ Peak Envelope

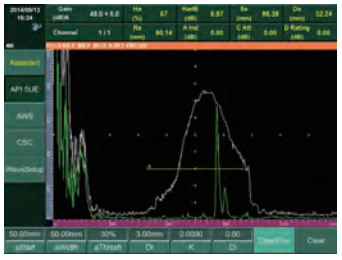
● Advanced Functions

TCG/ API 5UE/ AWS/ CSC/ Flat Weld Simulation (Butt Welds Simulation and Ray Tracing Function)/ FFT (Spectrum)/ Crack Height Measurement/ B-Scan (Time Based and Real Time)

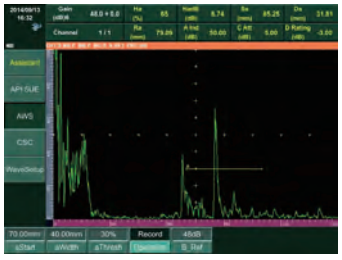


DAC

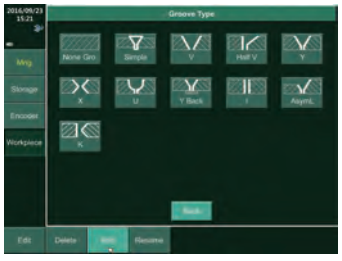
TCG



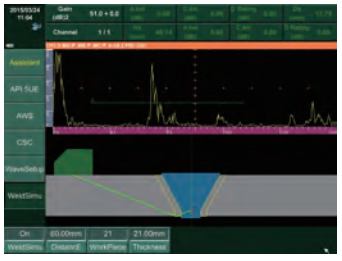
API 5UE



AWS



Various Weld Types



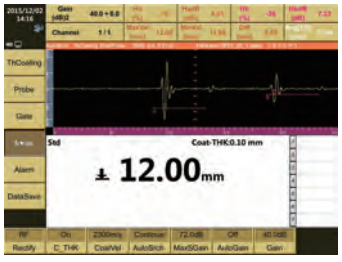
FlatWeldSim

CrackMeas

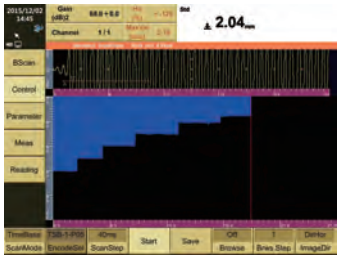
B-Scan

Thickness Measurement

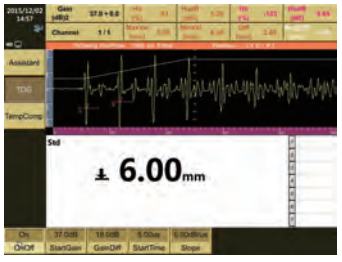
Advanced function to achieve CoatMode/ ECHO/ B-Scan/ Vpath/ TDG/ TempComp/ MultiLayers.



CoatMode



B-Scan



TDG

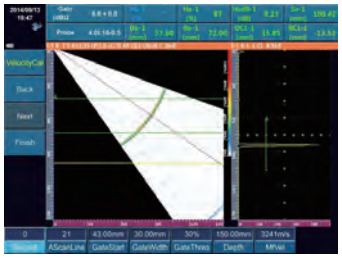
MultiLayers

SyncScan

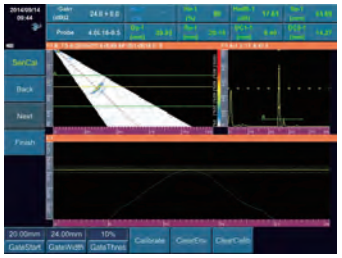
Phased Array

● Calibration Wizard

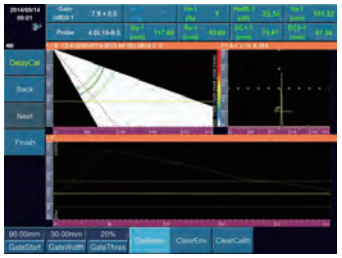
To facilitate PA users, SyncScan carries calibration wizard with step-by-step guide to maximize inpection speed.



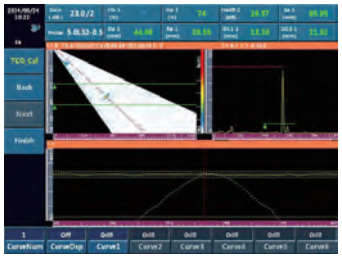
Velocity Calibration



Sensitivity Calibration

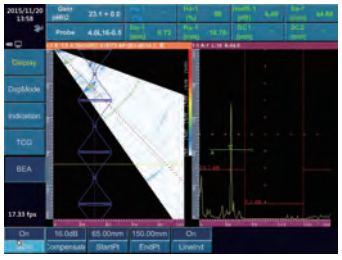


Delay Calibration



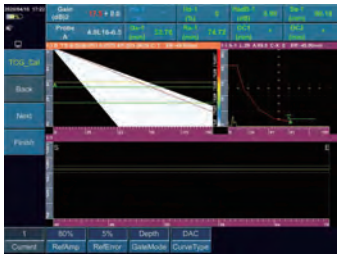
TCG Calibration

● PA BEA (Backwall Echo Attenuator)



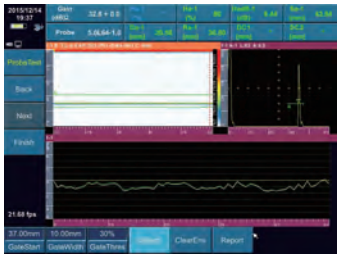
This is to help set a gate over an area and adjust the gain for this area regardless of the global gain. It is very useful for inspection of forgings and castings with allowing independent gain control of the area under the gate with the BEA for backwall echo monitoring.

● PA DAC



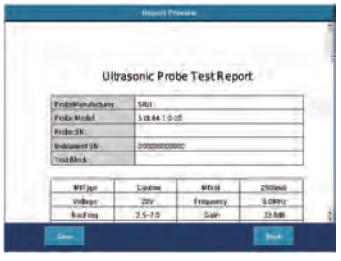
Max. 6 lines&16 points for each line

● PA Probe Element Testing



Probe Test Interface

Probe Test Result

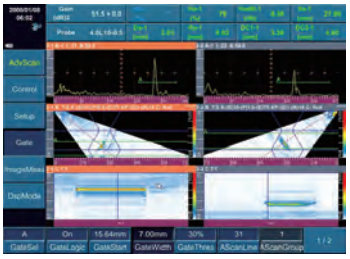


Probe Test Report

Conforming to ASTM E2491 code, this function achieves auto testing of PA equipment for its element activity, so as to measure activity of all elements and acoustic energy uniformity of the PA probe.

● PA Groups

Dual-side Butt Weld Inspection



Two Groups of A+B+C Scans

Y Splitter for Two PA Probes

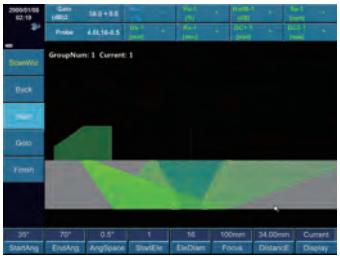
- One PA probe can be designated up to six groups for different inspection, like sectorial or linear scan.
- Multi groups of elements and different angles can be applied for scanning at the same time, fully covering weld area and enhancing inspection efficiency.
- Two PA probes can work simultaneously to inspect both sides of the weld, enhancing the inspection efficiency and speed.

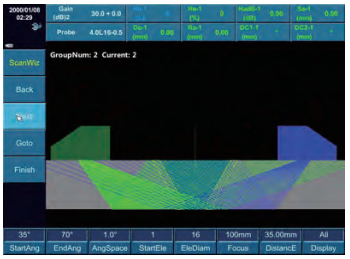
SyncScan

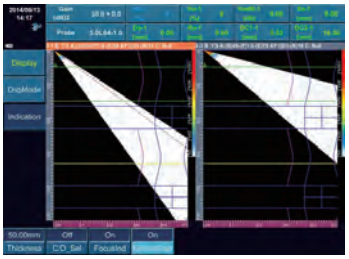
Phased Array

● PA Flat Weld Simulation


V Weld Types


Beam Coverage Simulation


Beam Coverage Simulation

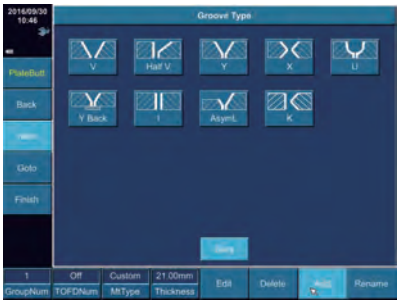

FlatWeldSim

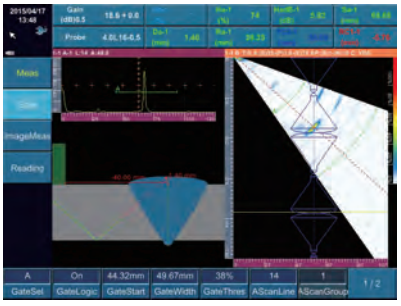
This function is to simulate simple flat plate workpieces geometry, including the beam coverage simulation and imaging parameter settings. With this function, it will be easy to analyze, locate flaw signals.

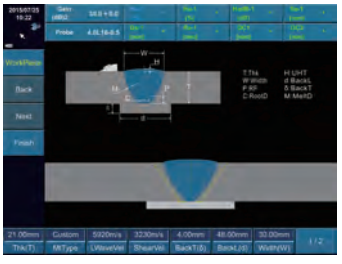
● PA Flat Weld Solution

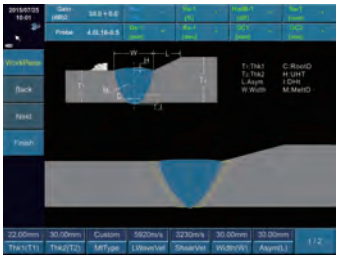
Suitable for flat butt welds inspection.

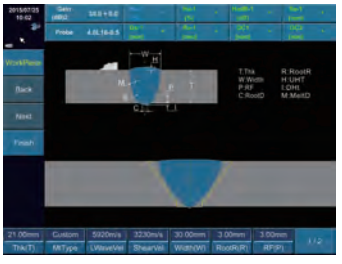
- Automatically simulate various welds with different groove types to make simulation closer to the on-site weld shape.
- Professional wizard operation mode facilitates users finish phased array setup.
- Assisted positioning (RayTracing) flaw measurement and report generation functions are available.

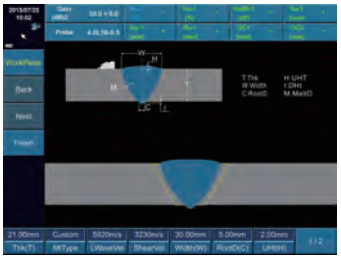

Various Weld Types Selection


RayTracing (A+B+R Scan)


Y-weld with Backing


Asymmetric Weld


U-Weld

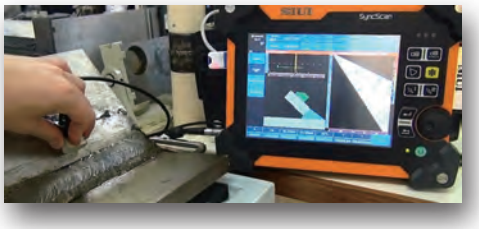

Single V-Weld

- Nine types of weld groove: V, Half V, Y, X, U, I, K, Y with backing, asymmetric welds.
- Quick setup of weld parameters: thickness, material type, groove width, root clearance, up/down reinforcement, fusion simulation, heat-affected zone, as well as workpiece edit, delete, add and rename.

SyncScan

Phased Array

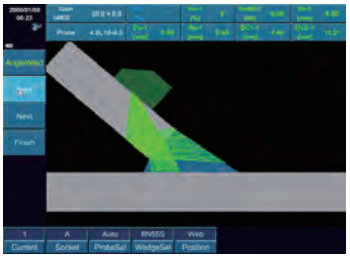
● PA Angle Weld Solution



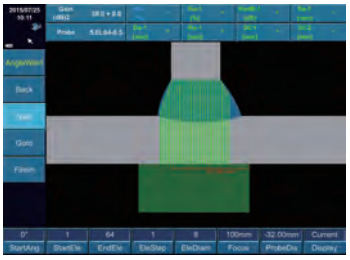
Suitable for angle welds in offshore platform and oil & gas steel structure.

- Automatically simulate real angle weld shape based on parameters input.
- Simulate sound beam coverage in six different probe positions.
- With RayTracing function it can auto analyze and judge the workpiece flaw situation, record flaw image and measurement result, and generate test report.

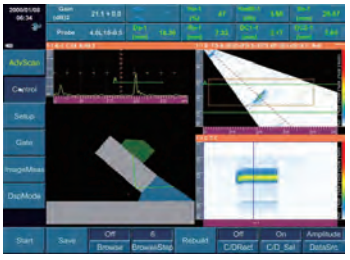
Flange Simulation



Web Simulation



T-weld Simulation

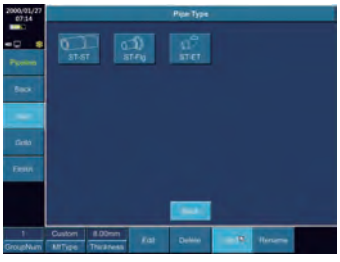


RayTracing (A+B+C+R Scan)

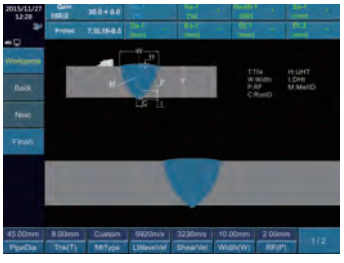
● PA Pipe Girth Weld Solution

This is used to perform circumferential weld inspections on pipes.

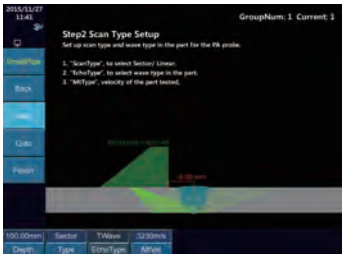
- Especially suitable for testing welds of small diameter pipes with OD from 20.32-114.3mm (0.84-4.5 inch) with scanner LPS.
- By offering features of V-groove and Y-groove weld overlay, beam coverage simulation, as well as built-in wedge and link assembly guide table, it helps users to finish testing of small diameter pipes quickly.



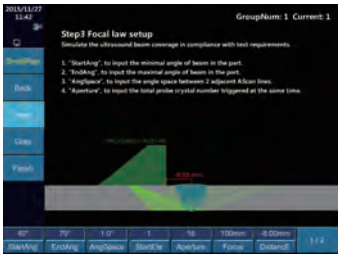
Pipe Types



Workpiece Setup

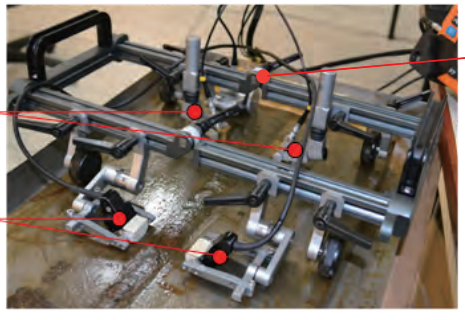


Scan Type Setup



Focal Law Setup

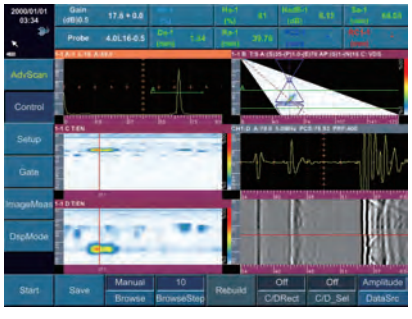
● Simultaneous Display of PAUT and TOFD Software



TOFD Probes

PA Probes

Foldable Mechanism



Simultaneous PAUT and TOFD inspection can expand scanning coverage, decrease undetected rate.

SyncScan

Phased Array

● PA C Scan In-Depth

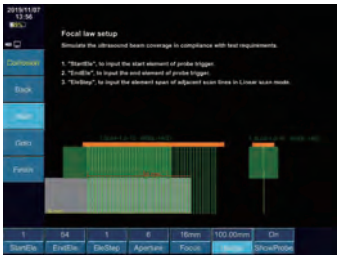
Showing echo depth, can be used for simple corrosion inspection.

● PA Corrosion Solution

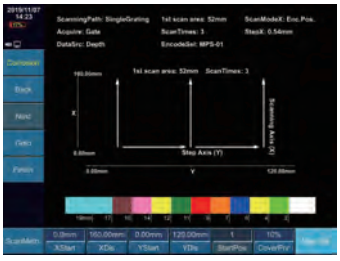
Suitable for detecting loss of wall thickness due to corrosion, abrasion, and erosion on plate and pipe.

- Easy to work out scan plan for corrosion inspection.
- Workpiece simulation and beam simulation coverage to facilitate parameters setting.
- Customized color map to visualize wall thickness of test results in different colors.
- Data analysis for better understand the corrosion.

Workpiece Simulation



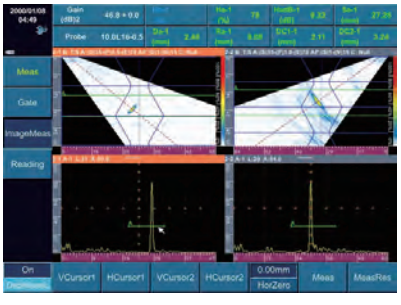
Focal Law Setup



Scan Plan Interface

Customized Color Map

● Image Measurement & Report Generation



Flaws can be measured and analyzed.

PDF test report can be generated on the SyncScan instrument.

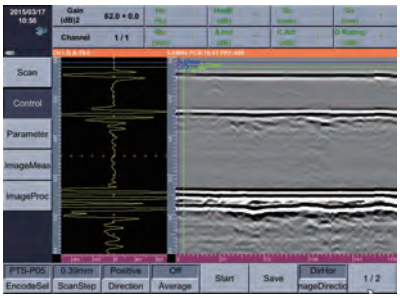
A-scan signal waveform and info (angle, south path, amplitude and depth) for any position on the scan figure can be displayed real time, and the users may use two cross cursors to measure flaw length and height on the B/C/D scans.

The measurement result and flaw images can be saved for generating test report automatically.

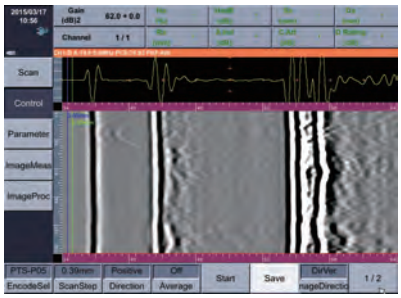
SyncScan

TOFD

● TOFD Image Direction

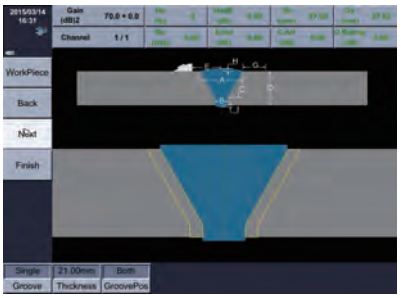


Horizontal TOFD image



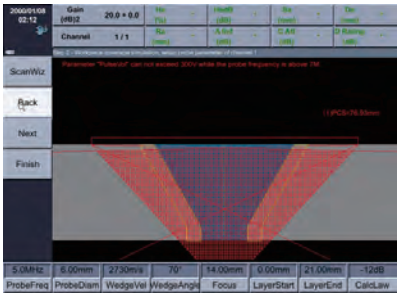
Longitudinal TOFD image

● Workpiece Setup

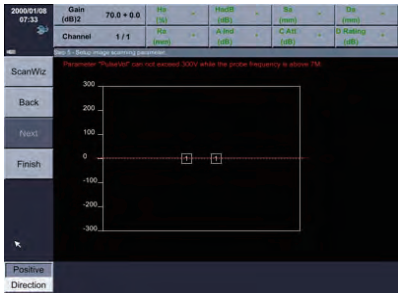


Input weld parameters to set up the workpiece.

● TOFD Wizard



Beam Coverage Simulation



Scanning Parameter Setting

With step-by-step menu to guide users to finish TOFD scanning process easily and quickly.

1: Setup channel number for inspection.

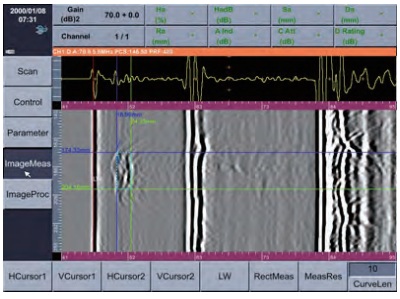
2: Workpiece coverage simulation.

3: Setup wave parameter.

4: Setup encoder parameter.

5: Setup image scanning parameter.

● TOFD Measurement



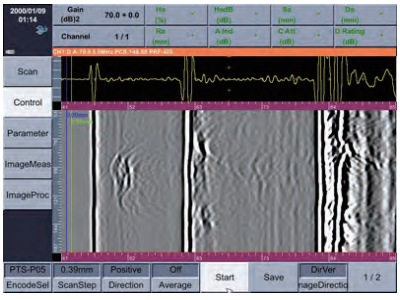
TOFD Measurement

TOFD Measurement Result

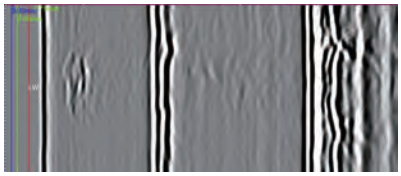
TOFD measurement is easy and useful.

The flaw height and length can be measured by moving the reference line. The measurement result is clearly shown in the data table.

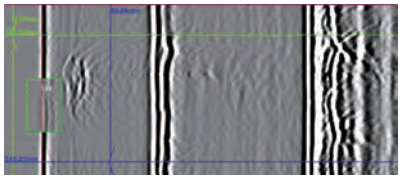
● TOFD Image Processing



Raw TOFD Image



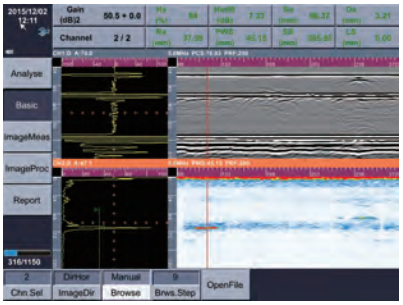
After SAFT



After Remove

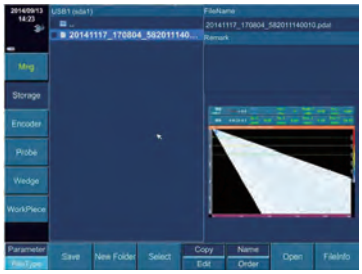
Perform straightening, filter, local zoom, contrast adjustment, gain post processing and SAFT on the TOFD image.

● Blind Zone Inspection



TOFD+Conventional UT to inspect the blind zone area

Management

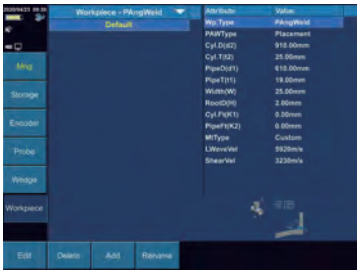


Storage Management

Encoder Management

Probe Management

Wedge Management



Work Piece Management

- Easy-to-use interface to make work piece, probe, wedge, encoder and storage managements more convenient.
- In the work piece management, the shape of the work piece is simulated and detailed parameters are listed for reference.
- Users may manage probe and wedge parameters via probe and wedge management.
- Follow the wizard, users can finish encoder calibration and test quickly.
- Parameters, screenshot and data can be easily managed in the storage management.

SuporUp PC Software

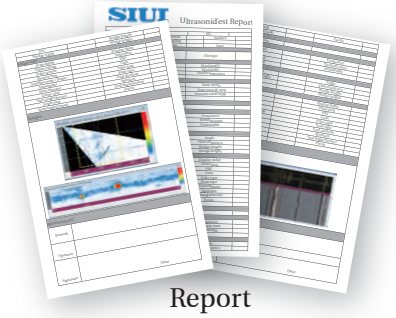
Checking data file, Screen capture, Measuring data analysis, Playback.

Generating test reports in word or excel format.

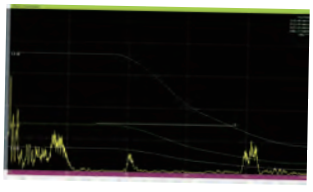
Several files from corrosion solution can be opened and combined.

Abundant report samples are available.

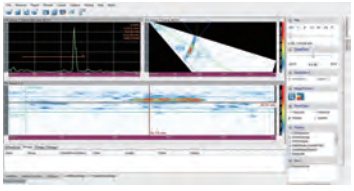
It can be installed in every user's laptop without extra cost.



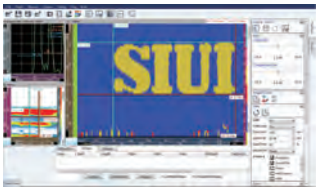
Report



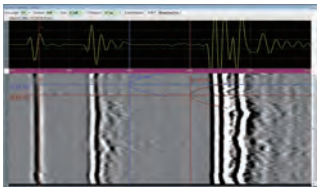
UT File Measurement



PA File Measurement



Corrosion File Measurement



TOFD File Measurement

On-site Application

Widely used for various detection demands, such as PA weld inspection, TOFD weld inspection, corrosion mapping, composite inspection, gas pressure welding on rail, pressure vessel inspection, stainless steel and PE pipe inspection, etc.

Technical Specification

	Conventional UT	Phased Array	TOFD	Thickness Measurement
System				
No. of Channel	1/2/4	16	1/2/4	——
Probe Connector	LEMO 00, 2/4/8 pcs	Tyco, 1 pc	LEMO 00, 2/4/8 pcs	——
Max. Supporting Elements	2-8	Version1: 128 Version2: 64	2-8	——
PR(Pitch & Catch) Function	——	Version1: N/A Version2: Available	——	——
Pulser	Negative square	Bi-polar square	Negative square	Negative square
PRF	Adjustable 10-2000Hz, step: 20Hz	100Hz-10KHz, step: 100/200/500/1000ns	10-2000Hz, step: 20Hz	200Hz
Pulse Voltage	50V-400V, min. step:1V	10-100V, step:10V/20V	50V-400V, min. step: 1V	50-400V
Pulse Energy	——	4 levels	——	——
Pulse Width	30-1000ns, step:10ns	50-1000ns, step:10ns	30-1000ns, step:10ns	30-1000ns
Damping	4 levels , 25/75/200/1000Ω	——	4 levels, 25/75/200/1000Ω	——
Pulser Delay	——	0-20μs, resolution 5ns	——	——
Pulser Focusing	——	Single point focusing	——	——
Receiver				
Gain	0-110dB, step: 0.5/2/6/12dB	0-80dB, step: 0.1/0.5/2/6/12dB	0-110dB, step: 0.5/2/6/12dB	0-110dB, manually adjustable (0.5/2/6/12dB)/ auto (for auto-search or auto-gain)
Bandwidth	0.5-20MHz (-3dB)	0.7-20MHz (-3dB)	0.5-20MHz (-3dB)	0.5-20MHz
A/D Sampling Rate	170MHz/12bits	100MHz/12bits	170MHz/12bits	——
Sampling Point	1024, 16bit/ point	Adjustable 256/512/1024, 16bit/point	1024, 16bit/ point	——
Rectification	Positive/ Negative/ Full/ RF	Positive/ Negative/ Full/ Filter/ RF	RF	RF/ Full/ Positive/ Negative
Receiver Delay	——	0-20μs, resolution 2.5ns	——	——
Receiver Focusing	——	Max. range: 1008 foci per scan line	——	——
Filter	10 levels: 1-4/0.5-10/2-20/ 1/2.5/4/5/10/13/15MHz	14 levels: 0.7-4/2.5-7/4-8.5/7-10/ 9-15MHz/full/HPF2.5/HPF4.0/ HPF7.0/HPF9.0/LPF7.0/LPF8.5 /LPF10.0/LPF15.0	6 levels: 0.5-5/0.5-10/3.5-10/ 0.5-15/5-15/0.5-20MHz	——
Reject	0-80%, step:1%	——	——	——
Scan				
Scan Type	A/B	A/S/L/C/D	A/ TOFD	A/B
Trigger Mode	——	Time-based/ Encoder	Encoder	——
Scan Length	——	≤3m/scan (16G SD card, encoder precision:0.5mm)	≤90m/scan (16G SD card, encoder precision: 0.5mm, 4-ch TOFD simultaneously)	——
Focal Laws	——	512	——	——
Scan Angle Range	——	-89°~+89°, step 1°	——	——
Angle Spacing	——	0.1°-5°, step 0.1°	——	——
Line Average	——	——	4 levels, 1/2/4/8	——
Focus Position	——	6-500mm, step1mm	——	——
Focal Mode	——	Depth, Sound Path	——	——
Basic				
Range	0-15000mm, min. display range 5mm	0-1000mm, min. step: 0.01mm, min. display range 3mm	0-15000mm, min. step:0.1mm, min. display range 5mm	0.5-600mm (subject to probe, material, temperature and selected configuration), display range 5-1000mm
Material Velocity	500-15000m/s, min.step:1m/s	500-15000m/s, min. step:1m/s	500-15000m/s, min. step:1m/s	500-15000m/s, min.step:1m/s
Display Delay	0-1000mm, min. step: 0.01mm	0-1000mm, min. step: 0.01mm	0-1000mm, min. step: 0.01mm	0-500mm, min. step: 0.01mm
Probe Zero	0-200us, min. step: 0.01us	——	0-200us, min. step: 0.01us	0-200us
Probe Flank	0-100mm, step: 0.01mm	——	0-100mm, step: 0.01mm	——
Wizard	DAC, AVG/ DGS, Angle calibration, Auto calibration (velocity, zero)	Scan wizard, velocity/ delay/sensitivity/ TCG calibration	PCS Calculation, Time Window Probe Zero Calibration, Ultrasound Parameter, Depth Calibration	——
Calibration	Zero, Velocity, Angle	Zero, Velocity, Delay, Sensitivity, TCG	PCS, Wedge Delay, PCS/Depth, Time Window, Probe Zero	a. Fast zero point calibration with the built-in test block. b. User-defined calibration (zero point calibration/ zero point+ velocity calibration)

Technical Specification

	Conventional UT	Phased Array	TOFD	Thickness Measurement
Basic				
Test Point Selection	Peak/ Flank/ J Flank/G Flank/ G Peak	Peak/ Flank/ J Flank/ G Flank/ G Peak	——	——
Measurement	Three gates: to measure echo amplitude, amplitude dB difference, sound path, Ra/Da	Three gates for each A scan, max. 18 gates: to measure echo amplitude, sound path, Ra/Da	Flaw height and length measurement.	Measurement Mode: Normal (R-B1, transmit pulse to the first echo.) All Measurements using Zero Crossing.
	Cursor: two cursors to measure horizontal and vertical position of B-Scan and distance between cursors (active when optional B-Scan function is available.).	Cursor: two cursors to measure horizontal and vertical position of B-Scan and distance between cursors on B/C/D scan.		Measurement Function: Standard/ minimum/ maximum/ average/ difference
Gate Mode	Normal, Tracing	Sound Path, Depth	——	Gate A is selected in standard measurement mode
Gate Start	Full range	Full range	——	0-1000mm, step is adjustable
Gate Width	Full range	Full range	——	1-1000mm, step is adjustable
Gate Thresh	10-90%, step: 1%	10-90%, step: 1%	——	10-90% or -10~-90%, step: 1%
Display Resolution	——	——	——	0.001/0.01/0.1 mm (0.0001/0.001/0.01 inch)
Display Error	——	——	——	0.80-9.99mm ± 0.05mm 10.00-99.99mm ± (1‰H + 0.04)mm 100.0-400.0mm ± 3‰H mm With TG5-10L probe, H is thickness of the detected material
Storage	——	——	——	Measurement files, data file, screen shot storage, recall and delete function and the storage is up to the SD card.
Display Mode	——	A, B, C,D, A+B, B+C, B+D, A+B+C, A+B+D, 3A+B, A+B+C+D, A+B+R, A+B+C+R, A+[B], A+C, Full screen	——	A scan+ big reading/A scan+ data grid+ small reading/data grid+ big reading
Data Files	——	——	——	1D/2D/3D file format, measured value is recorded and displayed in grid table: record length and conversion mode is user-defined. Each data package includes measured value, basic parameter setup and A scan wave data.
Measurement				
Curve Function	DAC: Max. 6 lines&16 points for each line, AVG/DGS	TCG: Max. 6 lines& 16 points for each line	——	——
Auxiliary Function	Full screen, Screenshot, Cineloop, Weld/plate/ forging inspection, Coordinates switch (sound path/ depth/ horizontal), Auto gain (single/ continuous), Second leg color, Wave compare, Gate expansion, Wave filling, Peak envelope, Auto freeze	BEA, Auto gain: Single/ Continuous Auto Search: Search the highest echo amplitude scan line within gate range in B-Scan	——	Auto search (Off/On-Proper display range, gain and gate position can be adjusted automatically based on the measured waveform echo, which improves measurement efficiency.), freeze, auto gain, history reading bar, last reading maintain
Alarm Signal	Signal and sound alarm: positive/ negative	Signal and sound alarm: positive/ negative	——	Upper and lower limit alarm (sound, signal and data color).
Display Measure Value	——	8 positions can be user-defined	——	——
Data Analysis	——	Image mode switch, Image gate dynamic reconstruction, Report generation	LW/BW straightening/ removal, Contrast adjust, Gain adjust, Zoom, Color scale adjustment, Test report generation	Data file/measurement file/ screenshot file can be played, analyzed and report generated on SuporUp software
Tube Wall Thickness Measurement	——	——	——	With a TG5-10L probe, it can measure steel tube with diameter not less than 20mm and wall thickness not less than 2.0mm.
Measurement Times	——	——	——	4/8/16/32Hz

Technical Specification

	Conventional UT	Phased Array	TOFD	Thickness Measurement
Testing Index				
Time Base Linearity	≤0.5%	——	——	——
Vertical Linearity	≤3%	——	——	——
Amplitude Linearity	≤±2%	——	——	——
Attenuator Precision	20dB±1dB	——	——	——
Dynamic Range	≥32dB	——	——	——
Software				
Optional Software	UT API 5UE UT AWS UT TCG UT CSC UT FFT UT B-Scan UT FlatWeldSim UT CrackMeas	PA DAC PA Groups PA Probe Element Testing PA FlatWeldSim PA Flat Weld Solution PA Angle Weld Solution PA Pipe Girth Weld Solution Simultaneous Display of PAUT and TOFD Software PA C Scan In-Depth PA Corrosion Solution	Can be upgraded to 2-ch TOFD Can be upgraded to 4-ch TOFD SAFT	TG ECHO TG CoatMode TG MultiLayers TG B-Scan TG Vpath TG TDG TG TempComp

General Technical Specification	
Display Screen	8.4” high brightness TFT LCD, 800×600 pixels
Dimension (W×H×D)	284×220×90 (mm)
Weight	3.75 kg with battery
Battery	Lithium battery, 1 pc (0.55kg)
Battery Capacity	7.5 Ah/pc, operation time around 4 hours
External Power Supply for Adaptor	AC 100-240V 50Hz/60Hz
Adaptor Output	15V DC
Power	26VA for PAUT, 20VA for UT/ TOFD
Data Storage	Standard SD card (16G)
Language	English/ Polish/ Hungarian/ German/ Czech/ French
Input/Output	
USB Connector	2 pcs
Ethernet Connector	1 pc
Video Output	VGA port
Encoder Connector	1 pc (14-core)
Environment Tests	
Operation Temperature	-10℃-45℃
Storage Temperature	-20℃-60℃
IP Code	IP65

SIUI

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