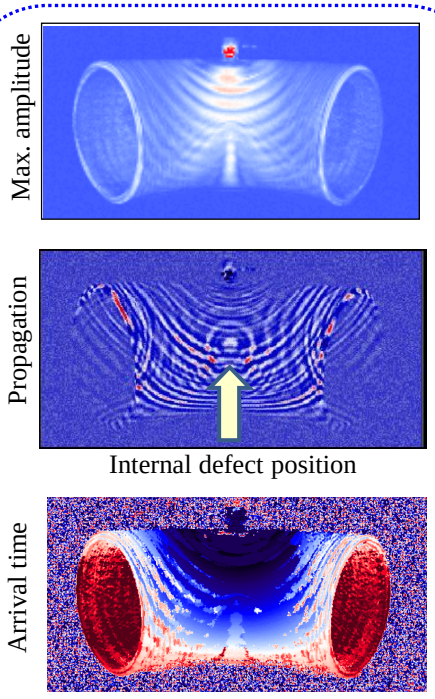
つくばテクノロジー株式会社 Tsukuba Technology Co., Ltd.

Laser Ultrasonic Visualization Inspector (LUVI)

Laser ultrasonic visualization inspector(**LUVI**) is a nondestructive inspection system, which can be used to study the ultrasound propagation in an arbitrary-shaped object and the nondestructive inspection of materials and structures. LUVI scans an object at 1 kHz and space resolution reaches to 0.1mm. Using LUVI, the ultrasound propagation process can be observed and defects, such as cracks in a metal object, corrosions in a steel tube, delamination in CFRP material, debonding in composite structure, can be found easily in a short time. Moreover, LUVI has various image processing and signal processing functions to analysis and evaluate defect. LUVI was developed by Tsukuba Technology Co., Ltd.

LUVI Prototype

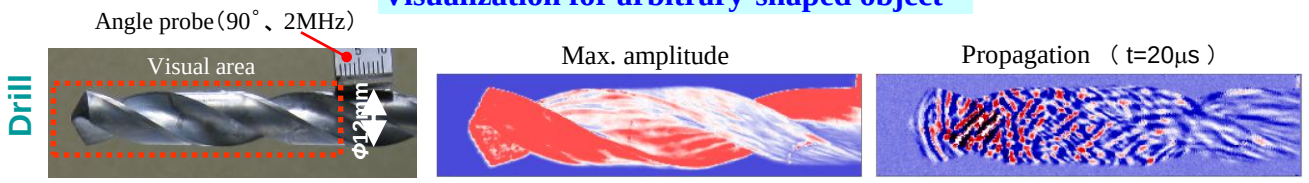
Visualizing



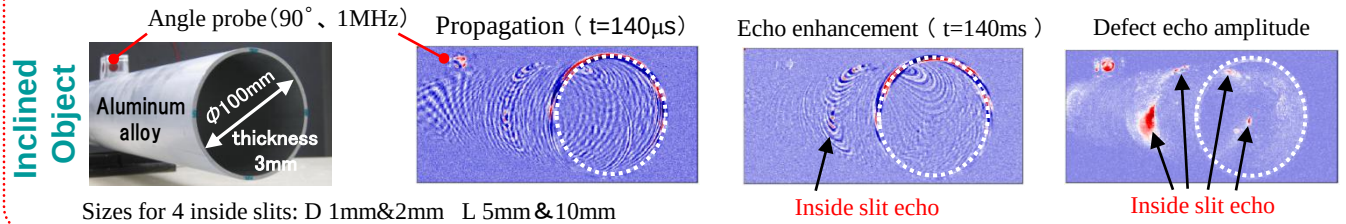
Visualization of stainless elbow tube

Visualization Examples

Visualization for arbitrary-shaped object



Inclinable 70° OK



Sizes for 4 inside slits: D 1mm&2mm L 5mm&10mm

Tsukuba Technology Co., Ltd.

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【Feature】

◇ **Visualize** the ultrasound propagation process
◇ Used to study the ultrasound propagation and find defect in **arbitrary-shaped** object
◇ Used to the nondestructive inspection of materials and structures in **large-area** and **hi-speed**
◇ **Operation easily** no setting irradiation angle and focus distance for laser

【Standard Specification】

◇ Visualization range：Within ±25°
◇ Channel number：2
◇ Distance to object：0.1m～2m（using focus lens: ～ 10m ）
◇ Scanning speed：Max.2kHz（ 200×200 scanning points in 20 seconds for CFRP）
◇ Laser：Max.2mJ@1kHz、1053nm pulse YLF laser
◇ Pulse duration：20 or 30 ns
◇ A/D sampling rate：Max.250MHz
◇ Display image：Ultrasonic propagation moving image, B-scope image (speed image), A-scope waveform etc.
◇ Moving image speed：1～30 frame/s (variable)
◇ Inspection object：Metal, ceramics, resin, composite material, etc.
◇ Inspection thickness：About 0～100mm（metal）
◇ Inspection precision：About 0.2mm (2MHz probe used)

【Main Application】

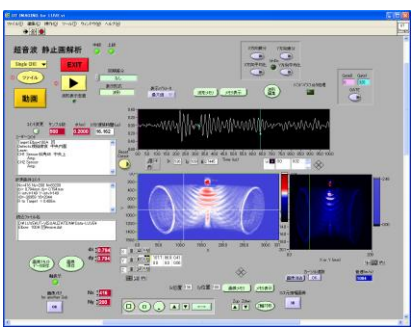
◇ Flaw detection for pipelines of petroleum, gas, power plant etc.;
◇ Inspection of fatigue damage, internal defect, weld defect, cracks in composite material, etc.;
◇ Study of wave propagation mechanism, performance evaluation of ultrasonic probe, structure health evaluation, material evaluation, etc..

【Application Field】

Automobile, aircraft, power plant, shipbuilding, petroleum, gas, iron manufacture, electronic component, semiconductor, etc..

Analysis Software

LUVI has been equipped with rich image analysis and signal analysis software, and it can be utilized for analysis and evaluation of the defect.



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