Detect through Air !

Air-Coupled Ultrasonic waves Transmitted
from Air Transducer

Non-contact !

No Couplant Required

Inspect Characteristics and Quality of Materials !

Enable Japan Probe to respond to inspections that were never achieved before.
For example : Lithium ion battery, composite material, solar panel,
wind power generation blades, brake pad, IC chips, films and so on.

NAUT21-M

NAUT21

NAUT21-I

NAUT21-R

NAUT21-S

NAUT21-V

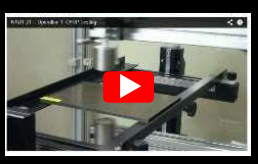
NAUT21

Non-Contact Air Coupled Ultrasonic Testing

Patent No. 4903032

We accept your sample test at no charge,
and support equipment rental !

Search "Japan Probe" on the website , and request it.



Please watch NAUT21 solution videos !

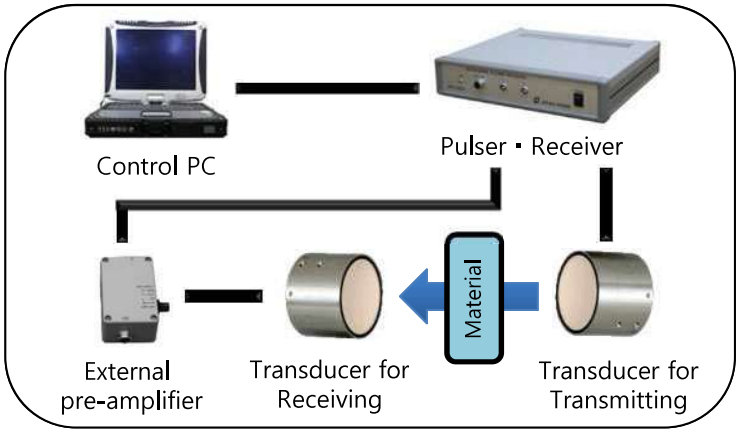
Ultrasonic Sensor
JAPAN PROBE

Non-Contact Air Coupled Ultrasonic Testing

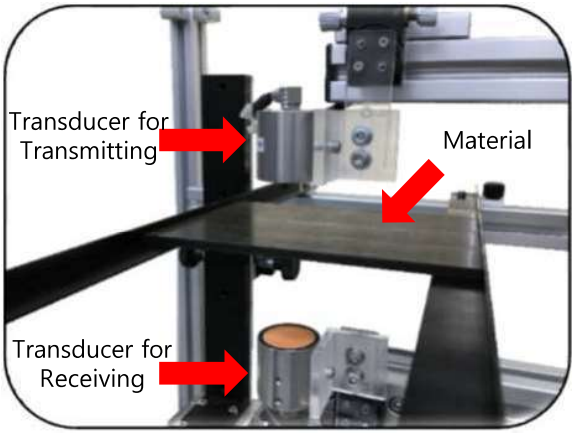
NAUT21

Patent No. 4903032

NAUT21 enables you to realize the inspection, measurement, evaluation, and analysis of materials considered impossible until now.
It enables you to detect materials without damaging or wetting them with any couplant.
It enables you to detect cracks irrespective of staining or transparency. Also, lighting does not affect performance.



Structure of NAUT



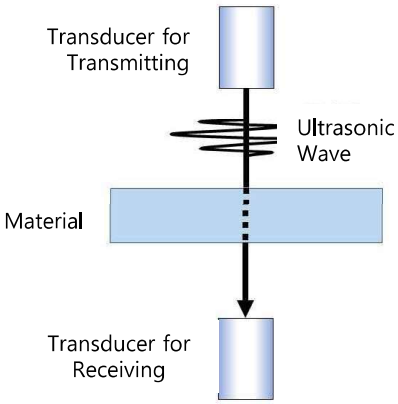
CFRP measurement using NAUT transmission method

■Non-Contact Air Coupled Ultrasonic Testing system "NAUT"

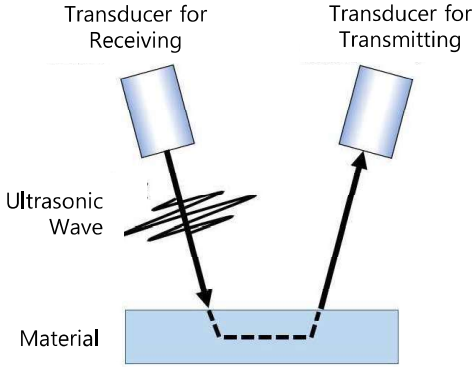
'To develop ultrasonic testing system by contact-free'

Toward this challenge, JAPAN PROBE developed NAUT21 (Non-Contact Air Coupled Ultrasonic Testing system 21) by air-coupled with the help of, the analysis algorithm based on years of extensive experience, technique, inspection data and know-how of the ultrasonic probe.

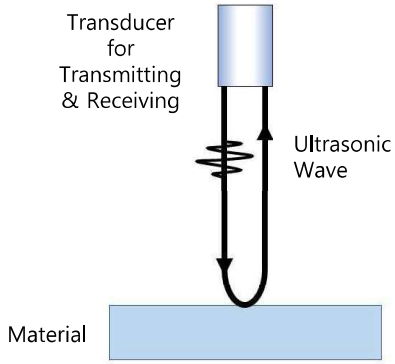
1. Transmission Method :
   Typical method for detecting the inside of material by air-coupled. Inspecting and measuring the inside of material by setting two air transducers above and below the material.
2. Single-side Transmission Method :
   Typical method for inspecting and measuring the inside and back side of material by setting two transducers at the same side of the material. Used for inspection, measurement, evaluation and analysis of box-shaped materials and welded parts.
3. Reflection Method :
   Typical method for inspecting and measuring by using only one air transducer at one side of the material. Used for inspection, measurement, evaluation, analysis, etc. of surface shape and scratches.



Transmission Method



Single-side Transmission Method

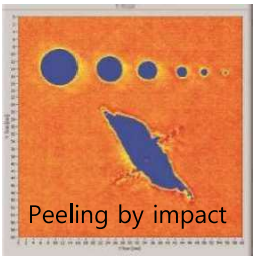


Reflection Method

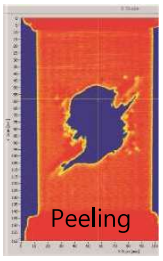
NAUT21 has been used successfully for the inspection, measurement, evaluation and analysis of materials in many different fields since NAUT21's sale. Here are some of the typical examples.

■Inspection/Measurement/Evaluation/Analysis

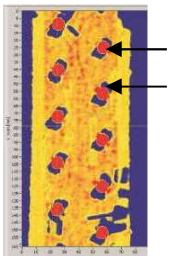
1. High-tech Material (CFRP)



a.



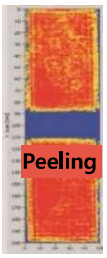
b.



c.

(a. Image after impact test, b. Image after lightning strike test, c. Image after tensile test)

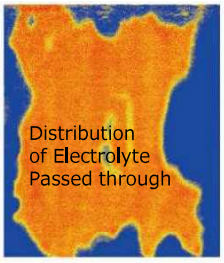
2. GFRP (Glass Fiber Reinforced Plastic)



GFRP

3. Lithium Ion Battery (LiB)

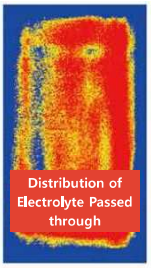
(LiB image)



(Image by NAUT21)

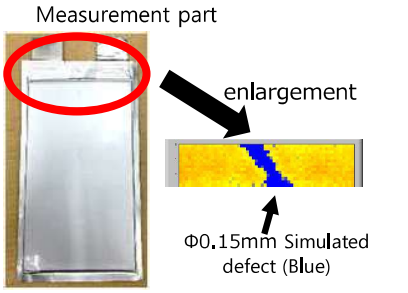
a. LiB (Lamination type)

(LiB image)



(Image by NAUT21)

b. LiB (Square type)



(LiB image) (Image by NAUT21)

c. LiB (seal part of Lamination type)

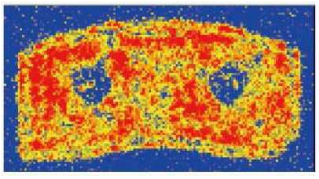
4. Weld bead

(image)

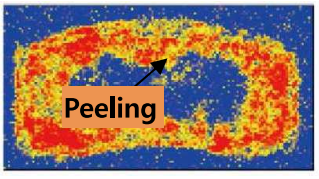
(Image by NAUT21-S)

Butt welded of Steel plate

5. Friction Materials (Brake Pad)



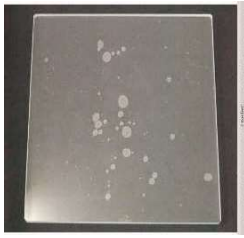
(Image of good brake pad)



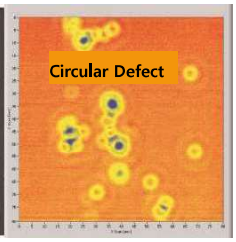
(Image of defective one)

Brake Pad for Automobile - Image by NAUT21

6. Various Materials (Films, Tires, etc.)

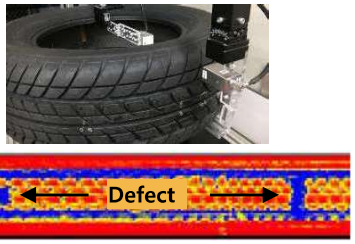


(Resin image)



(Image by NAUT21)

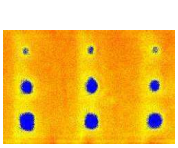
Contact Surface of Acrylic Resin

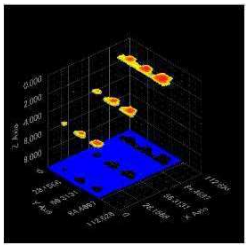


(Upper : Testing scene)
(Lower : Image by NAUT21)

Tire

7. 3D Image for LiB Inspection Result





(Left : Planar image by air coupled)
(Right : 3D image by immersion method)

NAUT21-I Image

■Usage : Material characteristic evaluation, analysis, crack & foreign object detection, etc.

●High-tech material (CFRP, GFRP) ●LiB ●Friction material (Brake pad) ●Solar panel
●Metals (Surface & Internal flaw) ●Ceramics (Green state, etc.) ●Film of paint ● Insulator (Foam, etc.)
●Semi-sintered body ●Pipe (Defect, Length, Thickness) ●Various contact surfaces (Reinforced resin, etc.)
●Measurement of displacement amount and surface, etc.,

Non-Contact Air Coupled Ultrasonic Testing

NAUT21 Series

6 models available for multiple purposes!
NAUT21 will realize the inspection, measurement, and analysis of materials.

■Model Introduction

1. NAUT21 (Standard type) :
For the inspection, measurement, evaluation & analysis by scanning air transducer horizontally,

2. NAUT21-V (Vertical type) :
For the inspection, measurement, evaluation & analysis by scanning air transducer vertically.
(Display upright LiB, bottles and cans by C-scope.)

3. NAUT21-R (Rotating type) :
For the inspection, measurement, evaluation & analysis by rotating and scanning cylinder type materials such as pipe, tube, etc.
(We can customize the robotic type of testing system based on the principle of NAUT21-R.)

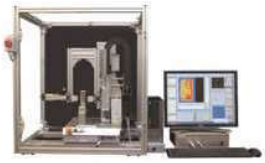
4. NAUT21-M (High speed type for in-line application) :
For the inspection, measurement, evaluation & analysis in real time by scanning air transducer at high speed. (It is increasingly used in many different fields for inspection of LiB and brake pads.)

5. NAUT21-I (Combination type of Air coupled and immersion testing):
For the inspection, measurement, evaluation & analysis by both air-coupled and immersion method (Visualizing the inside of materials by planar image by air-coupled ultrasonic system, and visualize the depth information in 3D by immersion method in addition to the planar image.)

6. NAUT21-S (New Single-side type) :
For the inspection, measurement, evaluation & analysis by using a new single-side transmission method which allows the transmitter and receiver transducers to be placed on the same side of a material. (Suitable to use at a limited space, box shaped material, in-line application and so on)

We offer customized NAUT21 system for your requirement.

NAUT21 (Standard type)



NAUT21-V (Vertical type)

NAUT21-R (Rotating type)

NAUT21-M
(High speed type for in-line)

NAUT21-I
(Air-coupled & immersion type)

NAUT21-S
(Single-side type)

■Air Transducer

Available in 3 types based on usage.
It provides high quality & high performance brought by years of research, manufacturing and experience.

Flat Type

Line Focus Type

Point Focus Type

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