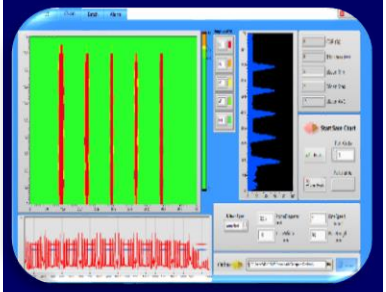
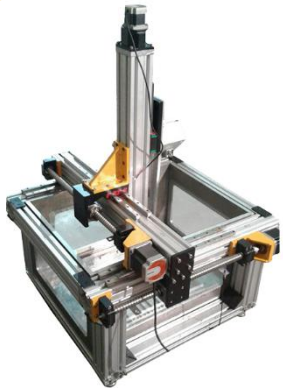
Advanced 3D Ultrasonic Immersion Scanner for Precise HIC Inspection (FLAW HUNTER S 9603)





- The Importance of Industrial Component Inspection
- Ultrasonic Testing
- Introduction to Advanced 3D Ultrasonic Immersion Scanner for Industrial Inspection (FLAW HUNTER S 9603)

The Importance of Industrial Component Inspection

In critical sectors such as oil, gas, petrochemicals, automotive, power generation, steel, defense, and aerospace, industrial components play a vital role in ensuring the safe and reliable operation of systems and infrastructure. To maintain high performance and structural integrity, these components must undergo precise and scientifically validated quality control procedures.

According to international standards including ASME, ISO 9712, and API 5L, non-destructive testing (NDT) is mandatory both before commissioning and during periodic inspections. These inspections are essential for detecting structural flaws, preventing catastrophic failures, and avoiding costly production downtime.

Ultrasonic Testing (UT)

Ultrasonic testing is one of the most advanced NDT techniques, relying on the transmission of high-frequency sound waves into a material and analyzing the reflected signals from internal interfaces or discontinuities. Piezoelectric transducers are used to generate and receive ultrasonic waves. The returned signals are amplified, processed, and displayed in graphical formats such as A-Scan or C-Scan on the system's monitor. If structural discontinuities such as cracks, Hydrogen-Induced Cracking (HIC), voids, or porosity are present, abnormal echoes appear before the expected backwall reflection. Analyzing these signals enables accurate identification of the type, location, and size of defects. This technique allows for multi-layer and deep flaw detection without causing any damage to the test piece.

Introduction to FLAW HUNTER S9603

Pejvak Rayan company a leading ultrasonic system manufacturer in the Middle East, has developed the **FLAW HUNTER S 9603**, a state-of-the-art 3D ultrasonic immersion scanner. This system is engineered based on international standards and indigenous technological expertise.

PEJVAK Rayan co
Pejvak Rayan Company
Manufacturer of Ultrasonic Inspection Systems & Probes

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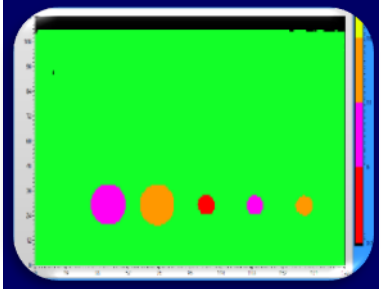

Advantages at a Glance

- Fully operated by one technician, with no human influence on test outcomes due to advanced automation.
- No consumables required, resulting in minimal operational cost
- All test data is automatically recorded and evaluated; part acceptance/rejection status is instantly available—no on-site inspector needed
- In addition to flaw detection, non-contact thickness gauging is supported on both sides of the part
- Test methodology complies with international standards across various industries
- Extremely high flaw detection resolution, even down to micron-level defects
- Suitable for inspection of thick components up to **200 mm**

The scanner is purpose-built for high-precision flaw detection and thickness measurement of sensitive components using **full immersion scanning** combined with **3D signal processing** capabilities.

Technical Features and Capabilities

The **FLAW HUNTER S 9603** is a single-channel system with modular upgradability to four channels. It is capable of testing both metallic and non-metallic materials, including polyethylene, plastics, ceramics, and composites. Its full immersion design ensures uniform coupling and enhances sensitivity for detecting surface and subsurface flaws.

Key Features

- Scanning Volume

Testable part dimensions up to **400 × 350 × 300 mm**
(custom sizes available upon request)

- Axis Positioning Accuracy

Up to **0.02 mm**, utilizing ball screw drives, precision linear rails, and incremental encoders

- Ultrasonic Transducers

Waterproof probes with frequencies ranging from **2 to 20 MHz**, depending on material and thickness

- Minimum Detectable Flaw

Voids as small as **0.1 mm in diameter** (high resolution)

- Testing Depth Capability

Simultaneous flaw detection and thickness measurement up to **200 mm**

- Data Visualization Modes

3D Image, A-Scan, B-Scan, C-Scan

- Flaw Position Analysis

Spatial and depth resolution up to **0.1 mm**

- High Repeatability

Probability of Detection (POD) > **99%**, compliant with **ASTM E2862**

- Offline and Automated Data Processing

Test images, sections, and results can be saved digitally for further analysis, documentation, or third-party review

- Automated Crack Index Calculation

Automatic computation of **Crack Area Ratio (CAR)** for quantitative assessment of surface damage or micro-cracks.

Operational and Technical Advantages

- Fully Automated Operation

The testing process is performed by a single operator, with no manual influence on results

- Cost Efficiency

No need for couplants or consumables, leading to significantly reduced operational costs

- Global Standards Compliance

Test results meet the acceptance criteria of all major international inspection agencies

- Thick Section Testing

Capable of inspecting components up to **20 cm thick** with high resolution

- Non-Contact Measurement

Enables accurate thickness gauging without contact with either surface, ideal for complex geometries or delicate parts

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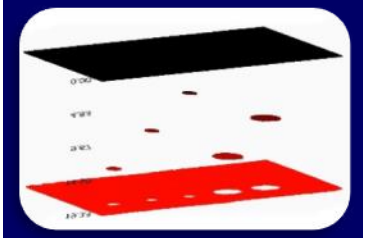

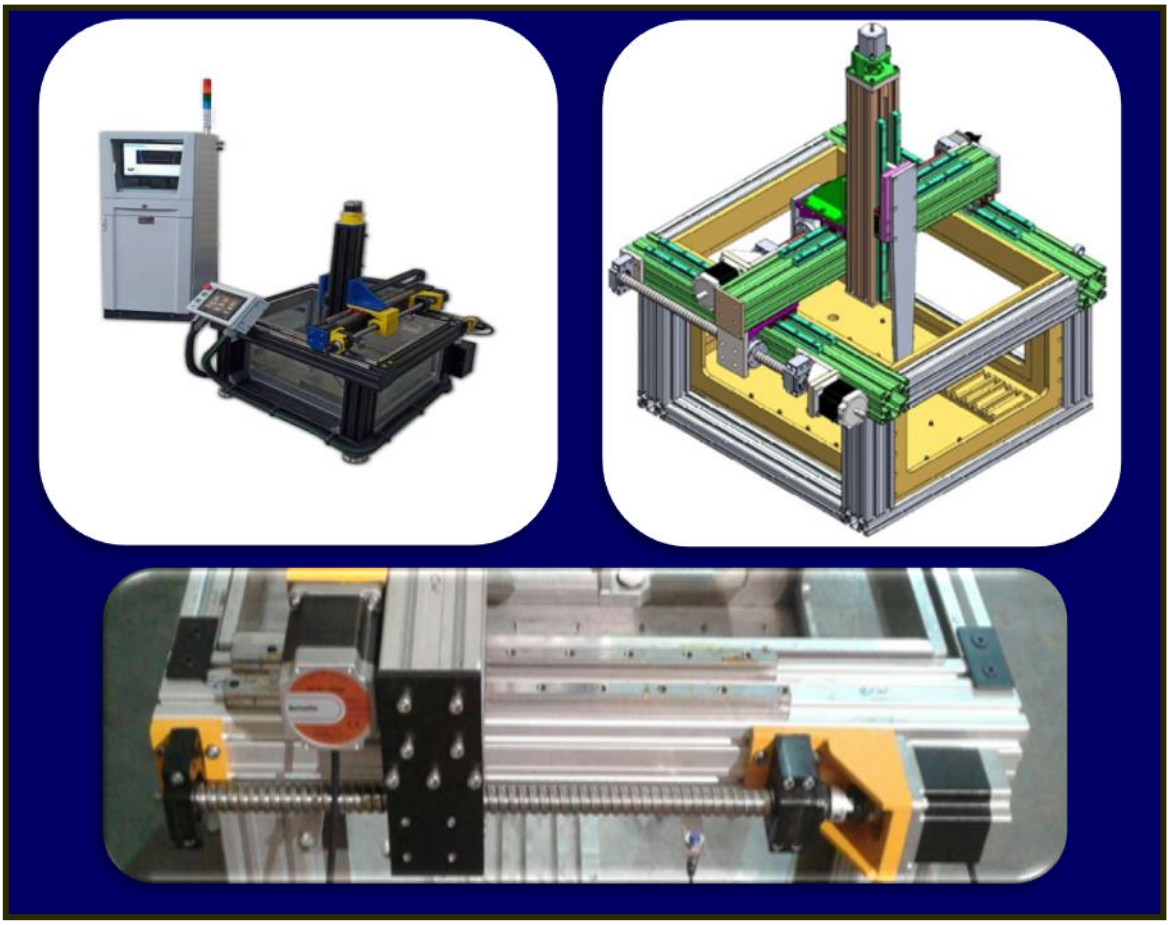

Advantages of choosing Pejvak Rayan Company

Industrial Ultrasonic Testing Equipment Manufacturer

-Trusted Expertise:
Over 20 years of experience in ultrasonic testing systems.

-Advanced Technology:
High-accuracy flaw detection with global standards; suitable for pipes, billets, rebars, ingots, sheets, and plates.

-Cost-Effective Quality:
Competitive pricing tailored for Asian markets — without compromising performance.

-Complete Service:
On-site installation, professional training, and ongoing technical support.

Experience world-class technology with region-friendly pricing

Pejvak Rayan – Precision You Can Rely On

FLAW HUNTER S 9603 – Technical Specifications

No	Specification	Values
1	Testable Part Dimensions	L × W × H = 400 × 350 × 300 mm *(customizable)*
2	Functionality	Flaw detection and thickness measurement
3	Material Compatibility	Metals, non-metals, polyethylene, ceramics, plastics, etc.
4	Thickness Measurement Accuracy	0.05 mm
5	Minimum Detectable Defect	0.1 mm diameter void
6	Detectable Flaws	Hydrogen-Induced Cracking (HIC), inclusions, air pockets, porosity, delamination
7	Display Modes	3D Image, A-Scan, B-Scan, C-Scan, Strip Chart

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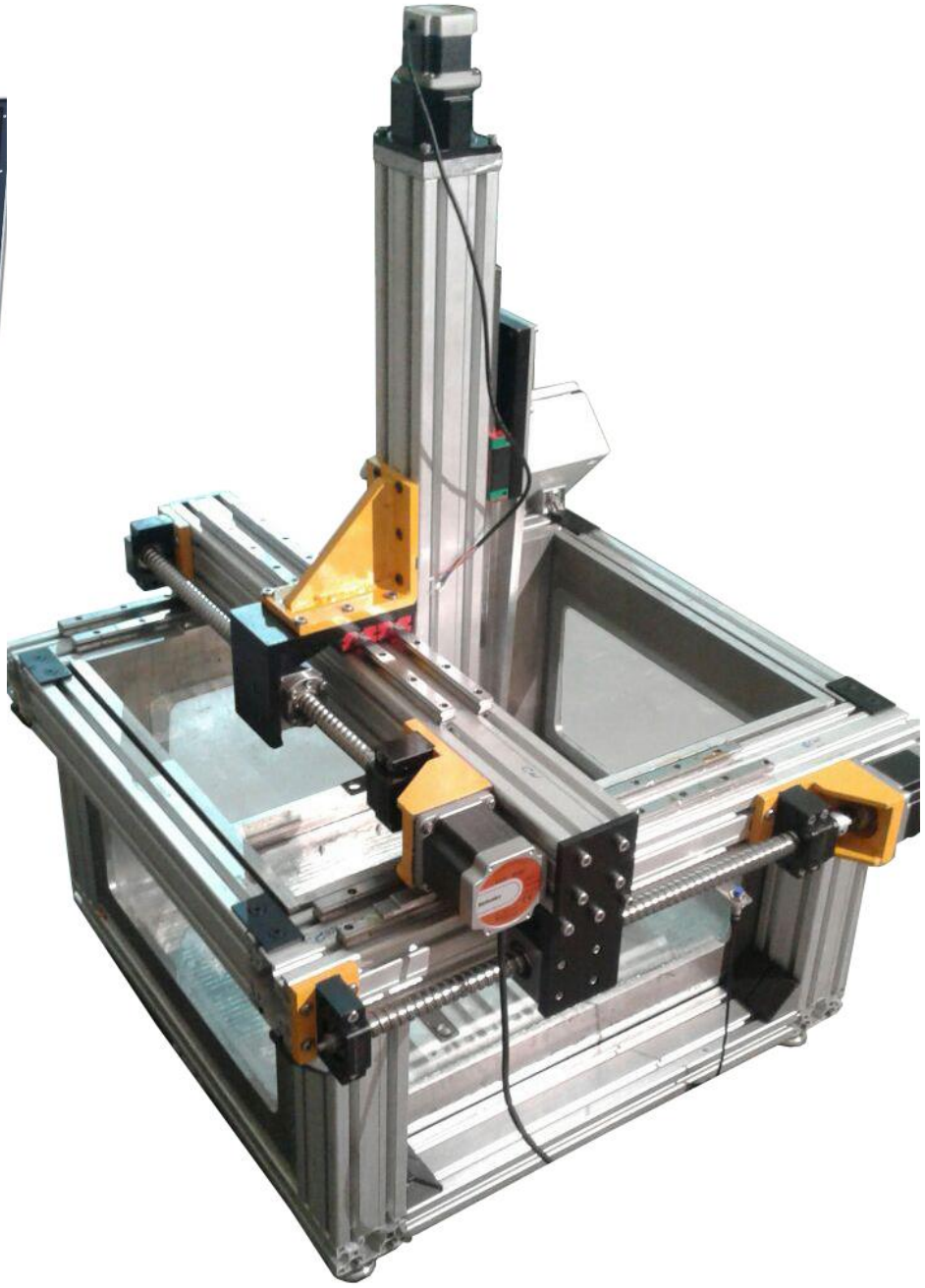

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