

MAGNETIC PARTICLE INSPECTION SYSTEM



Flawstar

*Precision Flaw Detection with Dual Magnetization –
Powering Reliability through Head Shot & Coil Shot
Technology*



Overview

Our **Bench Type Magnetic Particle Inspection (MPI) Equipment** is a robust, reliable, and high-performance system designed for detecting surface and near-surface discontinuities in ferromagnetic components. Engineered with **AC and Half-Wave DC (HWDC) magnetization**, the system ensures precise defect detection across a wide range of industrial applications.

The system is equipped with both **Head Shot and Coil Shot magnetization techniques**, providing comprehensive inspection coverage for complex component geometries.

Integrated with **PLC & HMI controls**, the equipment offers user-friendly operation, repeatability, and enhanced inspection efficiency.

Key Features

- **Dual Magnetization Capability**
 - AC for surface defect detection
 - HWDC for sub-surface defect detection
- **Head Shot & Coil Shot Facility**
 - **Head Shot** for longitudinal magnetization using headstock & tailstock contact
 - **Coil Shot** for circular magnetization using multi-turn coil
 - Ensures detection of defects in all orientations
- **Advanced Control System**
 - PLC-based automation for consistent performance
 - HMI interface for easy operation and parameter control
- **Heavy-Duty Bench Design**
 - Rugged construction for industrial environments
 - Adjustable headstock and tailstock for varied component sizes
- **Integrated Demagnetizer**
 - Ensures effective demagnetization post inspection
 - Prevents residual magnetism affecting component performance
- **Flexible Clamping System**
 - Quick and secure positioning of components
 - Suitable for different geometries and sizes

Technical Specifications

- **Magnetizing Current Output**
 - AC Output: Up to 3000 – 6000 Amps (configurable)
 - HWDC Output: Up to 3000 – 6000 Amps (configurable)
- **Magnetization Methods**
 - Head Shot (Direct Contact Magnetization)
 - Coil Shot (Indirect Magnetization via Coil)
- **Input Power Supply**
 - 415V, 3 Phase, 50 Hz
- **Duty Cycle**
 - Suitable for continuous industrial operation
- **Shot Timer**
 - Adjustable from 0.5 to 5 seconds
- **Control System**
 - PLC-based control panel
 - HMI touch screen (parameter setting & monitoring)
- **Demagnetizer**
 - Separate Demagnetizing unit
 - AC demagnetization with adjustable cycle
- **Headstock & Tailstock**
 - Pneumatic / Motorized operation (optional)
 - Adjustable stroke for different component lengths
- **Bed Length**
 - Standard: 1000 mm to 2000 mm (customizable)
- **Clamping Capacity**
 - Suitable for small to heavy components (custom fixtures available)
- **Coil Facility**
 - Multi-turn coil for circular magnetization (included / optional based on configuration)
- **Magnetic Particle System**
 - Wet horizontal unit with recirculation pump
 - Tank Capacity -35 Litre (Stainless Steel)
- **UV Inspection Compatibility**
 - Compatible with UV LED / conventional UV lamps
- **Safety Features**
 - Emergency stop
 - Overload protection
 - Interlocks for safe operation

Inspection Capabilities

- Detection of:
 - Surface cracks
 - Seams and laps
 - Porosity and inclusions
 - Grinding and quenching cracks
- Ensures **multi-directional flaw detection** using combined head shot and coil shot methods
- Suitable for:
 - Shafts
 - Forgings
 - Castings
 - Welded components
 - Automotive and aerospace parts

Applications

- Automotive Industry
- Aerospace Components
- Oil & Gas Sector
- Power Plants
- Heavy Engineering & Manufacturing

Automation & Customization

We specialize in **custom-built MPI systems** tailored to your exact requirements:

- Custom bed lengths and load capacities
- Integration with:
 - **Conveyor Systems**
 - **Cobot / Robotic Loading Systems**

Why Choose Us

- Designed and manufactured with industry expertise
- Proven reliability in demanding environments
- Strong after-sales support & service
- Capability to deliver **fully automated inspection solutions**

Optional Add-ons

UV LED Inspection Lamps | Pie Gauge | Ketos Ring | QQI Shim | Gauss Meter

Our Other Capabilities

In addition to the Magnetic Particle Inspection System, we offer a comprehensive range of advanced NDT systems and automation solutions:

- ✚ **Eddy Current Sorting & Crack Detection Systems**
- ✚ **Water Washable Penetrant Testing Systems**
- ✚ **Industrial Washing Machines & Dryers**
- ✚ **Automation & Robotics Solutions**
- ✚ **All Types of Feeding Systems (*Viz. Conveyors, Step Feeders, Vibratory Bowl Feeders, etc.*)**
- ✚ **All Types of Standard Calibration Blocks**

Get in Touch

We would be happy to understand your application and provide a **tailor-made solution**.

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