ACTIVE TEST GROUP

MAGNETIC PARTICLE INSPECTION UNITS

ERMAG

www.activetest.ru

VERSATILE MAGNETIC

Magnetization

CIRCULAR

LONGITUDINAL

COMBINED

INDUCTION

Mag particle units, ErMag series, are designed for nondestructive magnetic particle inspection of parts made from ferrous materials or ferromagnetic alloys of any length and diameter and provide detection of surface and subsurface, longitudinal and transverse defects.

ErMag 3000 AC/DC

- **18 different magnetization modes**
- **Dynamic stability of current**
- **8 different demagnetization modes**
- **Frequency of circular demagnetization current: 50 Hz and 0.5–1 Hz**

Semi-automatic and automatic magnetic particle units of ErMag series have all standard components required for magnetic particle inspection:

- Clamping devices with a pneumatic drive to create current of circular magnetization;
- Fixed and movable sliding rollers for placing parts of various diameters;
- Suspension system with demagnetization function and device for automatic suspension stirring;
- Longitudinally magnetized coil;
- Manual and automatic way of sprinkling an inspected part with magnetic suspension;
- Power cabinet (its elements are optional);
- Control panel with the function of manual or automatic system control;
- Touch screen;
- Light source.

PARTICLE INSPECTION UNITS
ERMAG SERIES

Long-term experience and expert knowledge of technical specialists of ActiveTestGroup company make it possible to develop specialized solutions with individual choice of functional capabilities in the field of magnetic particle inspection for any Customer.

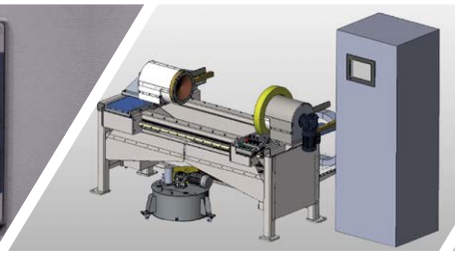
In the mag particle inspection units of ErMag series the magnetization of the inspected parts is performed either in a sequential (longitudinally and circularly) or in a combined way. Bringing different frequencies of circular and longitudinal magnetization together, it is possible to realize 18 different modes and choose the one that is most suitable for inspecting a particular part.

The amplitude of the magnetization currents is kept constant when induction load changes during magnetization. This is important for longitudinal magnetization of inspected parts of variable cross-section. The resistance introduced into the longitudinal magnetization coil changes in dependence to the diameter of the part. Consequently, the magnitude of the magnetic field changes which influences the defect detection. At dynamic stability of current, time constant does not exceed 200 ms, which ensures permanent magnetic field at inspection area.

It is possible to use two built-in demagnetization systems with alternating current — circular and longitudinal. Correct choice of the optimal demagnetization option allows achieving remaining magnetization of simple shaped parts no more than 50 mkTl.

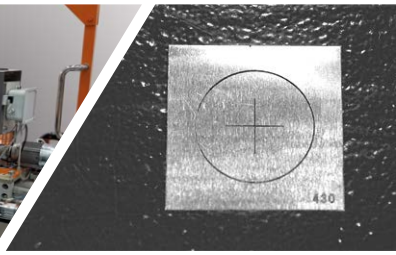
Changes in the current frequency of the circular demagnetization from standard 50 Hz up to 1 Hz allow demagnetization of parts after their magnetization by direct current.

Sensor screen of power cabinet



ErMag 1000 AC/DC at design stage

ErMag 1800 AC/DC at production stage



Checking the performance of the MP unit on the test sample CX-430

OUR NEWCOMER

MP unit ErMag 1,5 — for inspection small parts up to 300 mm in size made from ferromagnetic alloys — has the following technical features:

- Contact-free magnetization of inspected parts, that ensures the absence of burns on parts;
- Magnetization of a whole batch of parts with similar dimensions, without accurate positioning the parts, they can be placed chaotically;
- The MP unit occupies an area of no more than 0.4 m^2;
- Detection of defects of all possible directions during only one magnetization cycle;
- High performance of magnetic particle inspection of small parts;
- Magnetization and demagnetization functions.

Common technical parameters of mag particle units ERMAG series

Parameter	Value/Value Range
Inspected part length	Upon Customer requirement
Inspected part diameter (Clamping device diameter)	
Inspected part weight	
Clamp of inspected part	Pneumatic, electromechanic, manual
Moving drive of movable head	Electromechanic, manual
Methods of MP inspection	Remaining magnetic field Applied magnetic field
Magnetization/Demagnetization	Circular, longitudinal, combined, induction
Magnetization current	Direct, alternate 50 Hz, alternate 0.5–1 Hz 18 different combinations of magnetization modes
Magnetization/Demagnetization current mode control	Smooth (continuous)
Accuracy of magnetization/demagnetization current maintenance	No less than 5%
Time of dynamic stability of current	No more than 250 ms
Current range of circular magnetization, amplitude value	From 0.025 I_{max} to I_{max} ($0 < I_{max} \leq 25000$) A
Strength of magnetic field in the centre of coil without inspected part	From 0 to 350 A/cm
Coil diameter	Upon Customer requirement
Moving mode of coil	Electromechanical, manual
Demagnetization current	Alternate 50 Hz, alternate 0.5–1 Hz 8 combinations of demagnetization modes
Remaining magnetic field, minimum	50 mkTl
Applicable suspension	Oil, water
Applicable indicator powder	Black, luminescent, color
Method of suspension application	Automatic, manual
Inspection mode	Automatic cycle of magnetization and demagnetization by specified parameters, manual
System control options	Touch-screen, hand-operated, foot-operated
Illumination of the inspection zone by visible light	No less than 1000 lux
UV emission of the inspection zone	No less than 1000 mcW/cm^2

MAGNETIC PARTICLE INSPECTION SYSTEMS AND EQUIPMENT ERMAG SERIES

SMPI 426/1420

System of magnetic particle inspection of pipe ends

FULL UPGRADE OF MAGNETIC PARTICLE INSPECTION UNITS

Example of modernization of magnetic flaw detector УМДЭ-10 000

DEMAGNETIZER DMU 65/65

Semi-automatic device for demagnetization of parts in the conditions of manufacturing, repair and maintenance

SPS-40

System for magnetic suspension application

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