

DEUTROFLUX UWE

Universal Stationary Magnetic Particle Crack Detectors

KARL DEUTSCH

DEUTROFLUX UWE 350, 600, 900

Reliable testing for cracks in all directions



UWE 900 with flanged darkening booth (the image shows the unit without front curtains)



Optionally with Memory II: Operation via Siemens Touch Panel with parameter memory (e.g. specific data of the component, name of inspector). There are additional documentation options of the test results for USB or network.

Most application problems in magnetic particle testing can be solved by testing systems with two contacts. In this case, the parts to be tested are often manually placed into the respective supports of the testing system, and, subsequently, it pneumatically clamps the test piece. The next step comprises magnetization and spraying with a crack detection agent. This takes about 4 seconds.

Usually a multi-directional magnetization is employed. A longitudinal current is fed through the test piece, generating a circular magnetic field (direct current flow). This circular field enables the detection of longitudinal cracks. Additionally, coils are mounted to the workpiece supports of the testing system. Therefore, at the same time, a longitudinal magnetic field is produced which allows the detection of transverse cracks (field flow).

Usually both magnetic fields are phase-shifted alternating fields which oscillate according to the mains frequency (50 or 60 Hz, respectively).

The resulting rotating magnetic field facilitates the detection of defects of all orientations.

For the next step of the test cycle, spraying with crack detection agent is stopped and the magnetic field is kept constant for another 2 seconds approx.: this is the so-called post-magnetization. During this time, the magnetic particles (iron or iron-oxide powder) in the agent form the crack indications. Most agents use fluorescent particles and therefore the crack indications are evaluated under UV-light. The particles are usually applied to the test part in an aqueous suspension via spraying showers.

The demagnetization can be carried out directly within the testing system by reducing the field strengths to zero. Alternatively, a separate coil outside the testing system can be used.

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Specifications and Options*

Features at a glance

- Uses the skin effect of alternating current for uniform magnetization and problem-free demagnetizing, also with complicated workpieces
- Two phase-shifted alternating currents generate a rotating magnetic field, cracks in each direction are displayed in a single process step
- Operating errors are excluded by automatic cycling of the test sequence (clamping, rinsing, magnetizing, post-magnetizing and demagnetizing)
- Electronic and pneumatic components

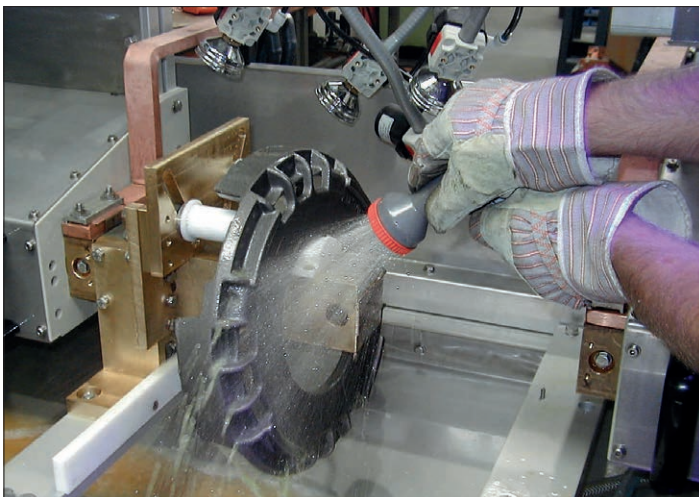
from renowned manufacturers ensure high operational reliability and trouble-free service, even after years

- Flanged control cabinet, easily accessible for operation and service
- Each spraying shower can be adjusted individually, and jointly pneumatically switched on and off: Short rinsing times, no dripping
- Guiding and adjusting mechanism outside the wet area, powder coating on the outside - no painted parts, stainless steel in the interior
- Double flexibility: The compact unit can easily be moved to other places, the

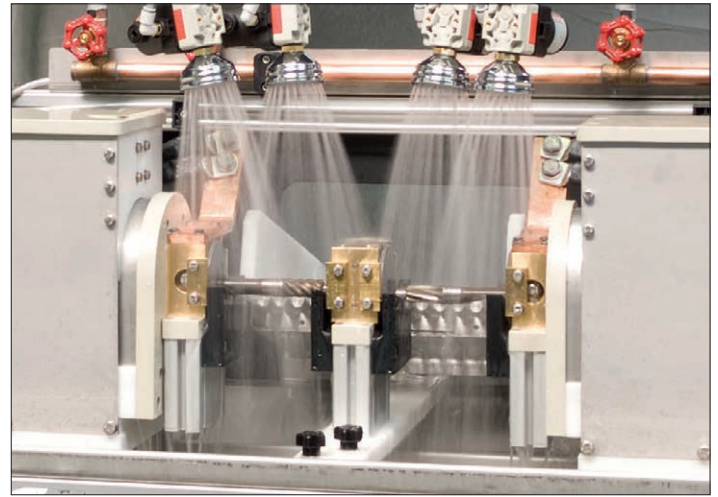
stable construction with strut or groove profiles allows subsequent mounting of tubs, holders etc.

- Container for inspection media with inclined bottom, circulation device and without corners in the pump area: no settling of the flux agent
- Rotating and height adjustment of contact plates for long service life and low transition losses
- Tailored inspection booth and LED illumination
- Four times economical: reasonable price/performance ratio, low space requirement, long service life, maintenance-friendly

Ample range of accessories - individually tailored to your needs



UWE 900 with magnetizing bar for testing of ring-shaped components. The image shows spraying with the hand shower, both sides with clamping stroke.



UWE 350 with centre contact for simultaneous testing of two components



UWE 350: The image shows a unit equipped with Memory II and spraying showers (option).

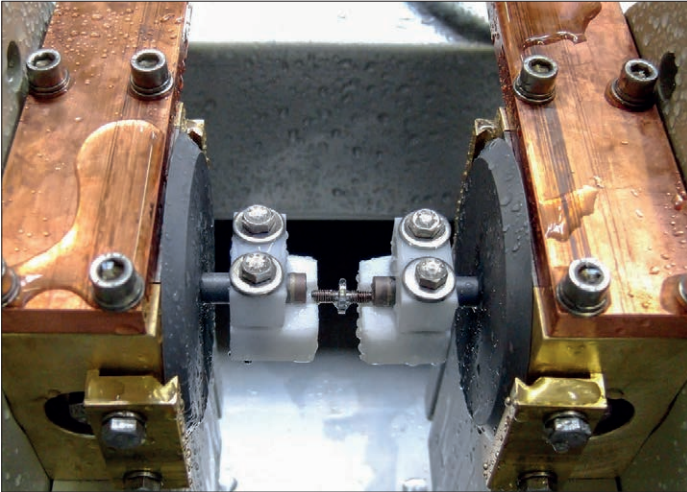


UWE 900 with pneumatically movable lamp holder for easy loading of the components from the top (also available with a light barrier)

* further options on request

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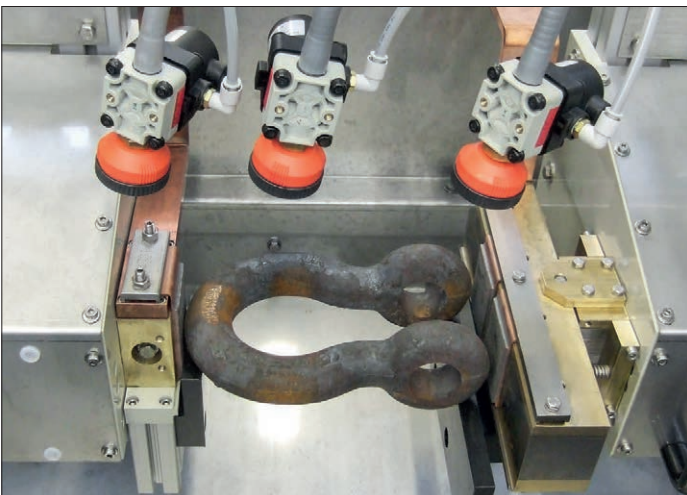
Specifications and Options*



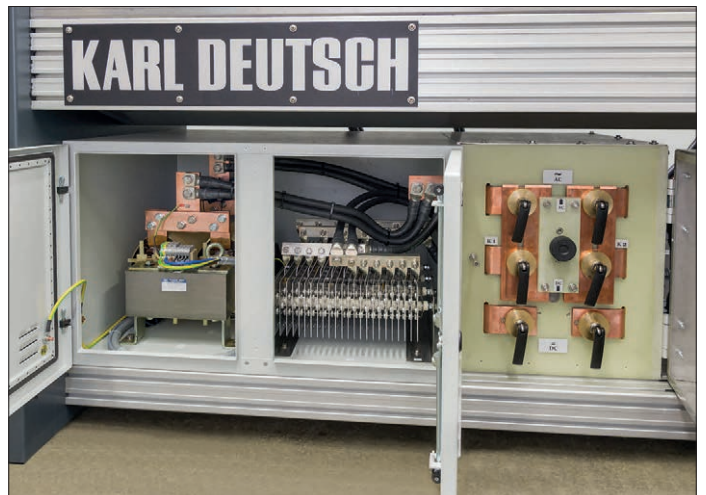
UWE 350: Test of small components with special contacts and component holders



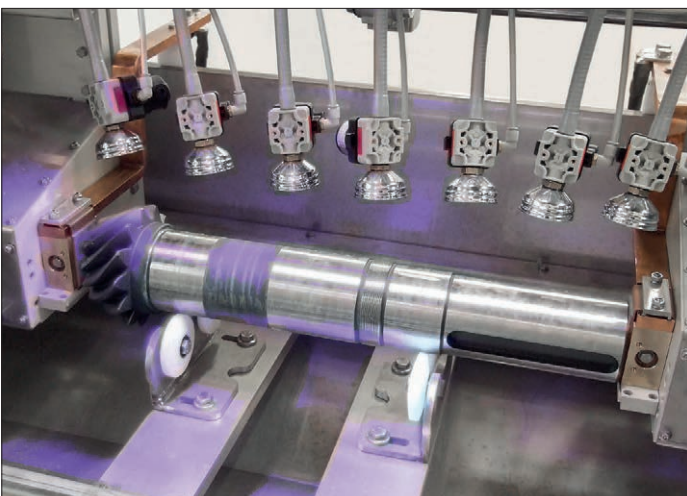
UWE 600 with pneumatically movable showers



UWE 600 with movable, expanded attachment yoke for secure contacting of u-shaped, equal leg components



UWE 600 with AC/FWDC for the current flow, on the right-hand side the changeover device for AC-FWDC is shown



Adjustable supporting rollers for rotation of the component during viewing within the machine



UWE 600 with pull-out container for easy filling of test agents

* further options on request

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Technical Information

Standard Model

Current flow

- Max. test current: 2,000 A, effective
- Open circuit voltage: 3.5 V (350), 5 V (600/900)
- Adjustment: infinitely variable
- Display: kA analog
- Flow monitoring: 1 limit value

Cycle control

- Without / individually / switchable
- Magnetizing and spraying time individually selectable
- Max. magnetizing time: 6 s approx.

Field flow

- Max. flux density: > 1 T
- Required number of ampere windings: 10,000 (UWE 350 / 600), 14,000 (UWE 900)
- Adjustment: infinitely variable
- Display: % AW, analog

Spraying

- Without cycle: no time limit
- Single cycle: only during magnetizing, automatically switched off during post-magnetization

Demagnetization

- Included as standard
- Individual switch off of both directions
- Release switchable: manually / automatically
- Demagnetizing frequency: 50 Hz
- Demagnetizing time: 1 s approx.

Container of test agent

- Content: 40 l
- Electrical power of pump: 0.78 kW
- Pump capacity: 228 l/min
- Delivery height of pump: 2 m approx.

Machine upgrades

- Heavy-duty rollers for dislocation of the machine
- Workpiece ejector
- Darkening booth
- Mounting rollers
- Full-wave DC (FWDC) for current and field flow
- Max. AC test current 3,000-5,000 A, effective
- Field flow monitoring
- Low frequency demagnetizing
- Memory II (operating via Siemens touch panel with parameter memory and for documentation)

Alternative magnetic particle devices

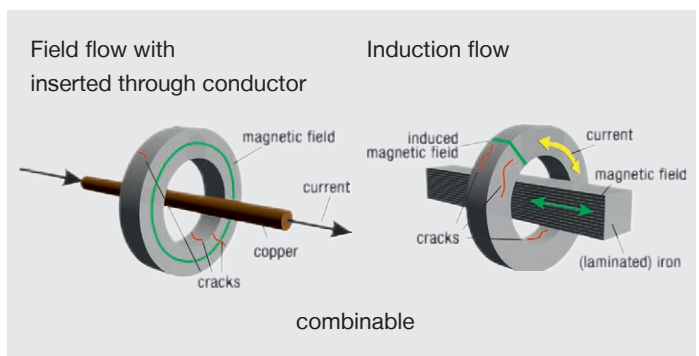
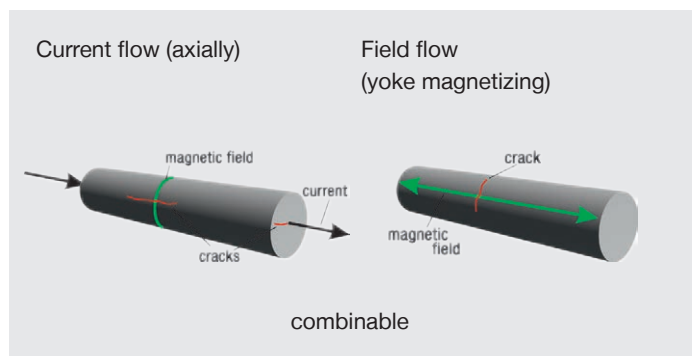
- DEUTROFLUX UWS, device with movable coil
- DEUTROMAT special machines
- DEUTROPULS handyoke and current flow units

Special leaflets are available. Technical literature and teaching material is provided on request.

The principle of magnetic particle crack testing

Magnetizing method according to DIN EN ISO 9934-1

The combined magnetic particle crack testing reliably indicates cracks of all directions.



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Technical Information

	UWE 350	UWE 600	UWE 900
Max. length of workpiece*	350 mm	600 mm	900 mm
Max. diameter of workpiece*	300 mm	400 mm	400 mm
Max. weight of workpiece	25 kg	75 kg	75 kg
Current flow (max. current)	2,000 A	2,000 A	2,000 A
Field flow (max. flux density)	> 1 Tesla (10,000 AW)	> 1 Tesla (10,000 AW)	> 1 Tesla (14,000 AW)
Power supply	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz
Max. current consumption	43 A	50 A	70 A
Max. power consumption	18 KVA	20 KVA	28 KVA
Control voltage	24 VDC		
Type of control	SIMATIC PLC		
Rel. duty cycle	40 % (optionally 60 %)		
Air pressure	5-6 bar (500-600 kPa)		
Air consumption per cycle	0.5 NI		
Clamping stroke	8 mm		
Number of spraying showers	w/o (optionally 3 pcs)	5 pcs	7 pcs
Total weight (with switch cabinet and container for testing agent)	550 kg approx.	650 kg approx.	780 kg approx.
Dimensions (L x W x H)	2.0 m x 0.9 m x 1.8 m	2.3 m x 0.9 m x 1.9 m	2.6 m x 0.9 m x 1.9 m

* These values represent the maximum available space in the machine for the workpiece.
Depending on the dimensions of the workpieces and the test task, special equipment may be required.

Further information can be found on our website www.karldeutsch.de » English » Products » Magnetic Particle Testing



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