

MAGNETIZING DEMAGNETIZING



MAGNETIZATION SYSTEMS



Several decades have passed since List-Magnetik constructed the first magnetizing yokes to the current capacitor discharge devices. Over that time, we have realized many successful projects and, in particular, we have designed and manufactured customer-specific magnetizing systems, mainly for the electromotor manufacture of the automotive supply industry.

Furthermore, these systems have a long service life despite low cycle times, and often operating 24/7, and are used worldwide. Our expertise in planning, simulation, electrotechnical production and the construction of the magnetizing coils are recognized by large organizations.

The **UKI-MPLC** magnetizers operate conforming to the capacitor discharge method with integrated PLC control with graphical control terminal. They are used in the multi-pole magnetization of all types of permanent magnet systems, and, more particularly, for the magnetization of rare earth magnetic materials. These devices are equipped with all the necessary safety components and also with the appropriate signaling signals for use in the field of line production in accordance with the quality standard (DIN EN 13849-1).

In combination with our impulse transformers **IT-1** and **IT-2**, impulse currents of up to 100 kA are possible. This consequently results in optimal saturation magnetization of multipolar rare earth magnets with a very narrow neutral pole change zone, and at the same time, very high cycle times.

The devices are available with the following functions:

- Individually adjusted to the motor geometry magnetizing coils
- Magnetic flux measuring device (**Fluxmeter FL-4**)
- Integrated current monitoring to control magnetic field strength
- Integrated temperature monitoring of the connected magnetizing device
- Integrated Profibus interface

We design each magnetizer according to its individual application. Let us know your specific requirements, and we will be happy to send you an offer.

Please include the following data:

- Magnet (magnet system) geometry
- Magnetic material or label
- Magnetization type / number of poles
- Cycle time in production mode
- Sketch or drawing of the magnet system

DE-MAG 500

LOW-COST MAGNETIZING AND DEMAGNETIZING DEVICE

Efficient and powerful, thanks to the capacitor discharge process

The **DE-MAG 500** magnetizing and demagnetizing device is a newly developed low-cost device based on the capacitor discharge process. It is therefore very well suited for magnetizing magnets and sensor systems made of ferrite or AlNiCo alloy. It can also be used to demagnetize solid or hardened steel parts.

For magnetization and demagnetization, a coil is connected to the device that matches the geometry of the components to be magnetized or demagnetized.

The magnetization of ferrite or AlNiCo magnet systems is performed with a single high current pulse. The current strength can be up to a maximum of 15,000 A. This current is passed through the magnetizing coil and enables cycle times of 3 to 5 seconds in flow production.

During demagnetization, individual decaying alternating field pulses are emitted to the connected coil via a special high-current thyristor circuit. The low frequency is adjustable in the range from 5 Hz to 50 Hz. Magnetic field strengths of up to 5,000 A / cm are achieved. This guarantees an optimal demagnetization of the component, with less than 5 A / cm remanence, even with large component geometry, since the depth of penetration of the demagnetization is very large.

The device has a built-in graphic PLC control that communicates with an automatic process automation in production via its interfaces.



PULSE MAGNETIZING YOKE

The **yoke magnetization process** is the most established process for magnetizing permanent magnets and permanent magnetic systems. It is particularly suitable for magnetizing 2-pole ferrite or AlNiCo magnet systems.

Due to the high functional reliability when used in flow production, and due to the very favorable price-performance ratio, the yoke magnetization process is still used especially in automatic manufacturing technology.

Our magnetizing yokes are made from a special electrical sheet to ensure a loss-free pulse curve.

As an option we deliver for all magnetizing yokes:

- Any desired connection voltage
- Suitable pole inserts for magnets and magnet systems, on request with fluxmetric measuring coils for measuring the magnetic flux
- Current monitoring to control the magnetization field strength
- Suitable manual workstations with automatic feeding of the systems to be magnetized into the magnetizing yoke

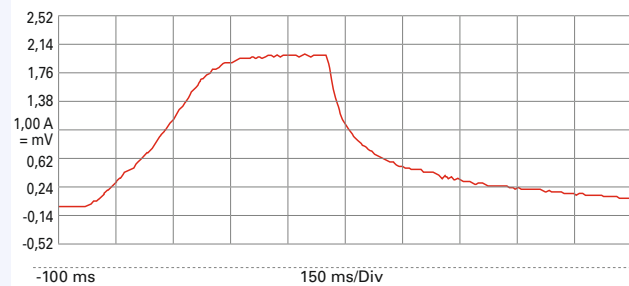


Diagram: pulse curve



Magnetizing Yoke EM-5/J



Pulse Generator IG-10

MULTIPOLE PERMANENT MAGNETIZER PM-200

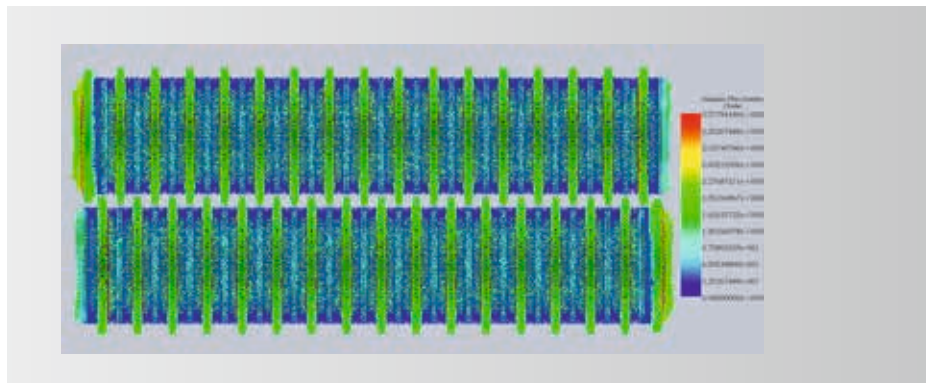
For multipolar magnetization of magnetic foils and tapes, on one or two faces, with a pole pitch of 3-6 mm.

This permanent magnetic process specially developed by List-Magnetik enables optimal multipolar magnetization in one pass, without the use of electrical energy. The throughput speed can be up to a maximum of 10 meters per minute without stopping the film during the magnetization process.

The magnetizing effect is based on a double roller system made of strong rare earth magnets, between which the film is pulled. With a magnetic field strength of up to 8,000 A/cm, perfect saturation of the magnetic material is possible, without the high energy consumption of a capacitor discharge.

It is a purely mechanical device that does not require a power connection and can be operated on-site. The thickness of the magnetic foils can be up to 4 mm.

Alternatively, the magnetizing roller for magnetizing magnetic foils up to a width of 1 meter can also be manufactured with an integrated drive.



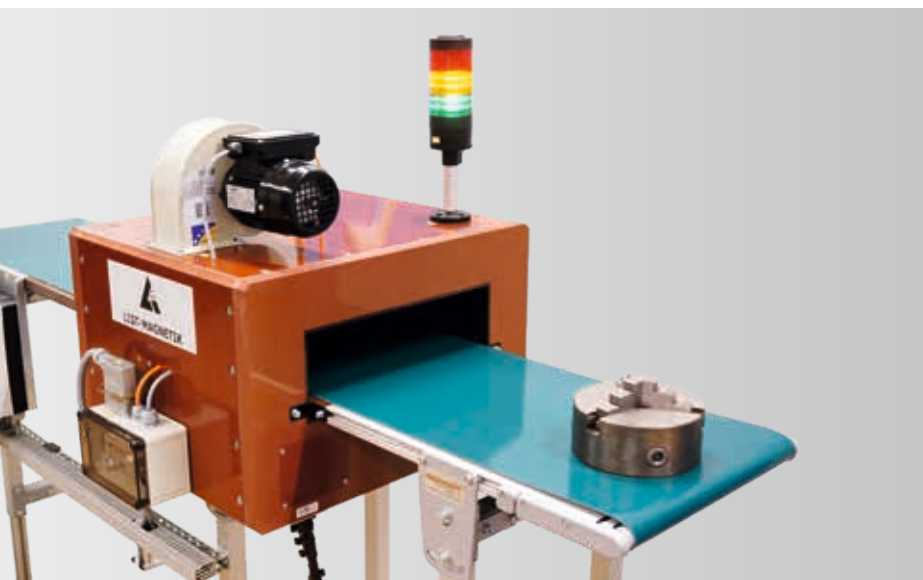
Schematic course of the magnetic field strength

DEMAGNETIZATION SYSTEMS



To reduce residual magnetism to a value close to zero is the task for demagnetizing devices. They can be used for the demagnetization of all types of machine parts, tools, cutting boards and bulk materials.

Depending on the dimensions and number of pieces, portable hand-held units or stationary systems are suitable. The basic technique is in general: Alternating fields which act on the object and which are slowly reduced from a maximum value to zero. The simple portable demagnetizers use a coil with electrical cores, which is connected to the alternating current network. The coil is slowly moved over the objects.



With our extensive experience in magnetization and demagnetization, we can also design and manufacture individual stationary demagnetization systems. The demagnetization of steel parts is a complex subject and must be solved in many individual cases by precisely adapted methods. The picture shows a system for the demagnetization of vehicle parts with a conveyor belt for integration into a production line. The cabinet operates in the capacitor discharge method SIE (Schwing-Impuls-Entmagnetisierungsverfahren / Oscillation Pulse Demagnetization) and a high-current thyristor circuit. In the coil tunnel the discharge takes place with a slowly decaying field, with the demagnetization frequency being very low (10-20 Hz). Very high field strengths can be achieved, which can penetrate the solid part. The part to be demagnetized can be completely demagnetized.

HE-10 Portable Demagnetizing Device

With the Portable Demagnetizing Device **List-Magnetik HE-10**, you can easily access even hard-to-reach places. For demagnetizing machine parts, tools, rotating parts, cutting plates, etc., simply pass the device over the magnetized objects and then slowly remove it.

The special feature of this device is that the coil has an iron core and an iron yoke on the back, which significantly increases the field strength in front of the pole. As a result, the device has a greater depth effect. It can also be used to perfectly demagnetize non-flat surfaces and parts of any shape.

It has a 230 V AC connection and produces an alternating magnetic field of 50 Hz with sufficient field strength for the demagnetization of alloyed steels.

Dimensions:	20 x 120 x 135 mm
Weight:	3,5 kg
Active Pole Surface:	50 x 40 mm mm
Field Strength:	300 A/cm outer, 170 A/cm center
Power consumption:	10 W
Supply voltage:	230 V - 50/60 Hz
Operating temperature:	approx. 50 °C



HE-20 Portable Demagnetizing Device

The Portable Demagnetizing Device **List-Magnetik HE-20** can be used either mobile or stationary, as required. The portable device demagnetizes machine parts, tools, rotary parts, cutting plates and much more. It has a 230 V AC connection and produces an alternating magnetic field of 50 Hz with sufficient field strength for the demagnetization of alloyed steels.

In addition to mobile use, you can also use the **HE-20** as a desktop device. In doing so, carry the objects to be demagnetized over the device and then slowly remove them. The **HE-20** is also suitable for installation under a conveyor belt, whereby the parts are moved over the device.

Dimensions:	360 x 280 x 95 mm
Weight:	12 kg
Active Pole Surface:	200 x 20 mm mm
Field Strength:	350 A/cm outer, 200 A/cm center
Power consumption:	35 W
Operating temperature:	approx. 50 °C



DEMAGNETIZING SYSTEM WITH CONVEYOR BELT

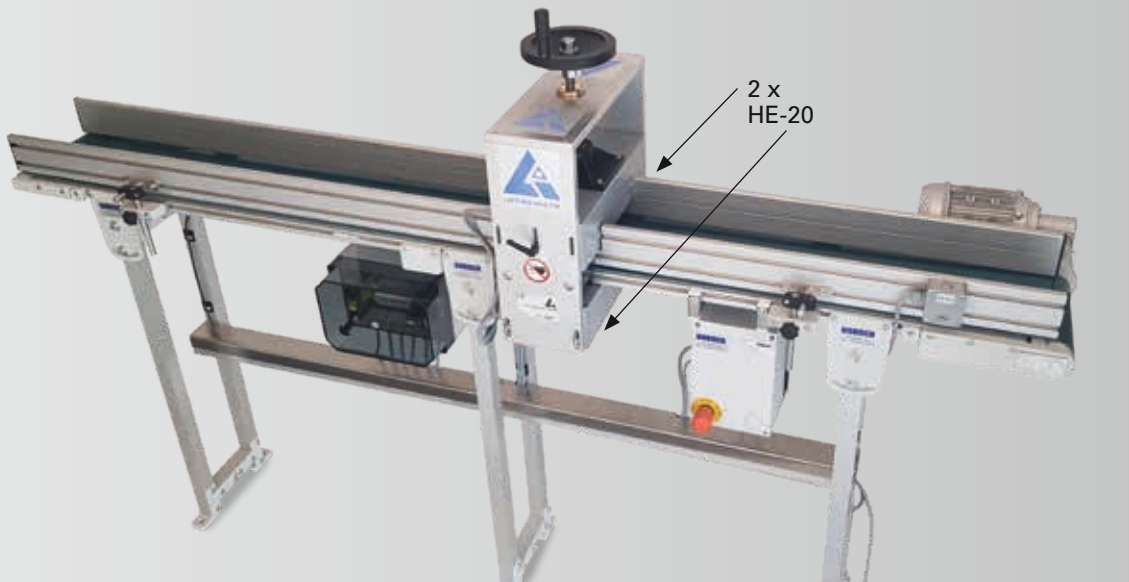
Project example for the integration of Portable Demagnetizing Devices HE-20

Demagnetization can be easily integrated into a stationary environment with a conveyor belt. If a workpiece on the belt is slowly moved over a demagnetizing device, a better effect can be achieved than when moving the device over a lying part.

To increase the demagnetizing effect, 2 Portable Demagnetizing Devices HE-20 can be mounted on a conveyor belt. One device is positioned above and one device below the belt. This opposite installation increases the demagnetizing field strength of the 50 Hz oscillation. The depth of penetration of the demagnetization is increased. Both devices are connected to 230V / 50Hz.

In the project example, a height adjustment of the upper demagnetizing device was installed for components of different heights in order to achieve the optimal (small) distance depending on the component height.

The components at the end of the conveyor belt are prevented from falling by optical sensors.



List-Magnetik
Dipl.-Ing. Heinrich List GmbH
Max-Lang-Straße 56/2
D-70771 Leinfelden-Echterdingen

Telefon +49 (711) 90 36 31-0
Telefax +49 (711) 90 36 31-10
info@list-magnetik.de
www.list-magnetik.de



www.list-magnetik.de