

SAVA FRANCE

DEMAGNETIZATION

STANDARD AND SPECIFIC SOLUTIONS



PORTABLE DEGAUSSING GENERATOR

Flexible and easy to move for POWERFUL & OPTIMAL demagnetization of all types of parts

SAV FRANCE develop and produce high tech industrial demagnetizing equipment. The diversity of our product range as well as our knowledge in the field of demagnetization allow us to offer as well standard and complete tailor-made solutions ready to start.

Thanks to tests with real parts carried out by our specialists, we find the best solution for any application. This approach offers maximum reliability in every application. SAV FRANCE is a reliable partner to provide:

- The optimal solution for your demagnetization applications
- Simple Over-powered Low frequency versions
- Very high quality with unique technology
- All technologies from a single source
- Partnership service Demagnetization on site

Reasons of magnetization

The reasons for magnetization of workpieces are various.

Magnetization through manufacturing processes:

- > Parts have been magnetized during machining / forming due to magnetic tools
- > Forming of steel may result in magnetization

Magnetization through handling of parts:

- Lifting magnets magnetize steel parts
- Transfer of parts by magnetic gripper

Magnetization by electrical processes:

- > Welding of pieces or machining on EDWC machine
- Electroplating and PVD processes
- Magnetoscopy without demagnetization

Magnetization by storage and transport:

- Mechanical vibrations during transport
- Storage of large quantities of steel

Effects of magnetization

- Metal chips stick to the workpiece : scratched surfaces and tools wear off faster
- Edges breaking off on EDWC machine : down time
- > Adherence of stamping residues : damage of produced parts
- Unstable welding and coating processes : electron beam welding is impossible
- > Attraction of ferromagnetic parts : cleaning process is not achieve, malfunctioning of parts
- > Magnetic field sensors are falsely activated : inaccurate readings of Hall or inductive sensors
- > Measurement errors on sensitive measuring instruments
- Effects in eddy current processes
- > Parts sticking together : down time for robots and automatic feeding systems, problems of assembly

Field strength	Chip adhesion size	Gauss	Tesla	A/m	A/cm
2 - 6 Gauss	200 - 1000µm	1mG	0,1µT	0,08A/m	0,0008A/cm
6 - 12 Gauss	1000 - 3000µm	1G	0,1mT	80A/m	0,8A/cm
12 - 25 Gauss	> 3000µm	3G	0,3mT	240A/m	2,4A/cm
> 25 Gauss	paper clip	5G	0,5mT	400A/m	4A/cm

SAV demagnetization tunnels are used to demagnetize ferromagnetic parts. Depending on the nature of the parts, they can retain a certain level of magnetic remanence, the more the part is made of alloy steel the greater the magnetic remanence. SAV demagnetization tunnels eliminate this magnetic remanence, but the effectiveness of the result depends largely on:

- the nature of workpieces
- shapes and dimensions of workpieces
- material of workpieces
- position of workpieces in demagnetization situation











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Demagnetization: technologies and methods

The coil is energizing with an alternating current and creates an alternative magnetic field with positive and negative impulse of current.

Pulse method:

- The alternating magnetic field is briefly increased in the coil to a high amplitude and then reduced to zero
- Frequency, current, pulse shape and pulse duration are controlled by a power modul
- The pulse parameters are optimally set for the application
- This technology provides best results

Continuous method:

- The alternating magnetic field remains constant in the coil
- The field reduction required for demagnetization is achieved by increasing the distance between the part and coil by pulling the part out of the coil
- This method operates at lower field strength compared to pulse demagnetization
- Coil current is either generated by a power module or, in simple applications, provided directly by main power

Very small magnetic fields, called magnetic dipoles, are contained in ferromagnetic parts (inside the Weiss area). Under the influence of an external magnetic field (lifting magnet, magnetic chuck, friction or molecular change during machining ...), these magnetic dipoles are oriented in the same way, which after stopping the influence of external magnetic field will remain more or less according to the moving of the BLOCH WALLS. The piece is magnetized!

To demagnetize a ferromagnetic part, this one must be exposed to an H decreasing alternative magnetic field of high intensity. The alternative magnetic field of the demagnetization unit must recreated the initial state unordered of the magnetic dipole. All this demagnetization tunnels work under alternative current and thus changes the polarity at a defined frequency regarding the application. The decay of the amplitude of the magnetic field is created by a power module or by moving the piece through the demagnetization tunnel slowly and uniformly outside the magnetic field. The piece is no longer magnetized.

In order to achieve low residual magnetism, the following parameters need to be optimized:

- 1. Positon of workpiece according to its shape. The workpiece must remain as long as possible in the magnetic field lines so it is absolutely necessary to place the workpiece lengthwise relative opening of coil. For complicated shapes, it is necessary to repeat the demagnetization in different directions or to use a rotating magnetic field!
- 2. Simple or assembly workpiece. The best way is disassembled parts.
- 3. Unitary workpiece, sorted workpieces or bulked workpieces. Bulked parts is frequently hard to demagnetize.
- 4. Frequency of degaussing field. The penetration of the magnetic field into the workpiece depends on the speed of the polarity change, therefore the frequency used. Thicker the part is, more the frequency must decrease to go to the heart of the material. If the frequency used is not good regarding the workpiece, magnetism can return into the workpiece after a few days! To demagnetize large workpieces, frequency of down to 1 Hz is necessary.
- 5. Magnetic field intensity. More the workpiece is hard and alloy, more the demagnetization is difficult. To achieve a good result with difficult workpieces, a power module is needed.

Measuring a magnetic field

The measurement with a tesla meter remains very simple but it is necessary to use an accurate and quality device as our model 878.05. You have to be in DC mode and HOLD function to measure the residual magnetism in different area. Now you need to know what goal you want to achieve!

SAV FRANCE offer a complete range of solution from manually demagnetizer to complex automatic systems based on our knowledge.













SAV 876.99-GDM

PORTABLE DEGAUSSING GENERATOR

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Use :

The portable degaussing generator type GDM70 is designed for mobile use (mounted on wheels + handles) and easy use, without the presence of a SAV FRANCE specialist. Thanks to its innovative design and using the latest technologies (microprocessor), the generator sends powerful and high-precision magnetic fields into the cables in order to magnetize or demagnetize steel parts with high repeatability.

Technical data:

- Input voltage: 3x380...480VAC 50/60Hz, 16A..32A (at 16A reduction power)
- Output voltage: ~400VAC
- Repeatability of magnetic field: >99,5% (at 50% of maximum current)
- Dimensions LxHxP: ~680x530x380mm
- Weight: ~24kg (without cables)

Magnetic field cable:

- Different conductor cross sections and lengths
- (compromise weight handling/heating)
- Magnetic field cable 876.99-GDM-CA-15-12G-S:
- Ø cable 16mm, weight ~10kg, length 15m
- Magnetic field cable 876.99-GDM-CA-8-12G-S:
- Ø cable 16mm, weight ~6kg, length 8m
- Connection adapter 876.99-GDM-BD2-12G-S
- Max. theoretical field strength with CA-15-12G-S and winding Ø 500mm:
- ~ 90kA/m (30'000AW). (Divide x1,5 when using function magnetization DC)
- Extension of magnetic field cables by coupling

Other coil systems:

- Tunnel demagnetizer 890.42F
- Special coils

Demagnetization:

- · Low frequency sine wave pulse demagnetization with 1Hz for high penetration depth
- Progressive frequency sine wave pulse
- Pulse length between 1s and 30s, depending on needed application
- Setting of all relevant process parameters
- (amplitude, pulse duration, rate of field increase and decrease etc.)
- · Further technological field control functions for special applications

Magnetization DC:

• Adjusting the polarity, amplitude and duration of the DC sequence

Magnetic symmetry:

· Adjustment of the residual magnetism in fluxing direction

Typical applications:

- NDT (MPI, ECT)
- Rotating equipment
- · Mechanical engineering, tool manufacturing
- Steel industry, supply parts
- Welding
- R&D



Contact us for any information or send us the form below.









SA								
REQUIRE	MENTS							
Date								
Company Address		P M	hone Iobile -mail					
Contact								
We wish an offer on the fallowing equipment:								
Tunnel demagnetizer Plate demagnetizer Complete system with conveyor Measuring instrument								
Expected offer date:								
WORKPIECES TO DEMAGNETIZE (send us some pictures and drawing for special parts)								
Single part Assembly parts Unitary workpieces Multiple stored workpiece Multiple bulk workpieces Ring Tube Cylinder Bar Plate Cube Other								
Maximum weig Magnetism on	ht:kg parts:	Unit of measurem Residual magneti	ient: sm required: .					
TRANSFER O	F WORKPIECES							
Convevor belt Flexible convevor chain Roller convevor Robot Manual transfer Other								

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Cycle time:

MANUFACTURING PROCESS

Process before demagnetization: Handling with magnetic lifter Work holding with magnetic tool Magnetoscopic checking Welding Riveting Punching Cutting Other

Process after demagnetization: Washing Measurement Assembly Welding Other

SEND A LITTLE SKETCH OF APPLICATION





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