ZM100A Zeromag demagnetizer

Dynamic magnetism control to stop arc blow

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Applications using Zeromag

- Overcoming Arc blow
- Pipe butt welding
- Plate and pressure vessel welding
- Use with TIG, MIG, MMA and Sub-arc processes

Features

- Portable low cost weld preparation demagnetism
- 100% success rate
- Cancels magnetism to prevent arc blow
- Uses proprietary DIVERSE technology
- Reduces or eliminates weld repairs caused by magnetic arc blow
- Compact rugged construction
- Can be used in conjunction with preheat
- Rapidly deployed and simple to operate
- One person operation
- Robust and portable

Overview

The Diverse ZEROMAG measures and neutralizes magnetic fields which may be present in the weld preparation region of mating steel components.

The Zeromag ZM100A is designed to demagnetize pipes. Zeromag ZM100A, working with up to 100m of demagnetizing cable can provide the necessary reverse magnetic field for most pipe and plate welding scenarios. The ZM100A has a power output of 1.5KW and can be used with any ac supply from 90V to 265V. Normally specified to be used with the Zermag Clam coils, the ZM100A can nominally balance up to 500G in steel components allowing welding to proceed without problem when, without Zeromag, welding would be totally impossible.

Zeromag can be used in sub sea welding chambers to 15m. Zeromag can be used hyperbarically if it is in a pressurised case. It has its own cooling and does not require any other services. It weighs approx 25Kg, which means that it can easily be moved from site to site.

There are a range of clam coil cables for fast deployment of the demagnetizing cable. They provide 25 turns with a single action cam; diameter is specific to customer requirements. For preheat weld scenarios, the clam coil product range is available with cable insulation rated to 85C. For operation above 85C suitable thermal blankets are available.

Options

- Clam coils
- Bobbins
- High temperature demagnetizing cable
- ZM150 Pipe end/joint degauss
- Magmeter MF300H+ for magnetic site survey

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Technical overview

Background

The Zeromag system finds its key application in arc welding. Magnetic fields may cause arc instability, and at worst can cause magnetic arc blow. The fields can be caused by induction of the earth's magnetic field in large structures and pipes. Alternatively, the steel may be magnetised at manufacture or by the use of magnetic clamps or magnetic pipe pigs.

Arc blow occurs when welding is attempted in the presence of a magnetic field. Some processes are more prone to arc blow than others, but TIG welding is particularly sensitive. Disruption of the welding arc generally occurs in a magnetic field of greater than 20 gauss. Arc blow can be expected with magnetic fields of greater than 40 gauss.

The shape of the weld prep effects the shape and direction of the magnetic field, often magnifying the magnetic effect over 100 times. The effect of shape can be extended to the shape of the cut of the pipe: if cut at an angle then there will be preferential routes for the magnetic flux which will concentrate in specific zones.

The Zeromag ZM100A is at the heart of the of the system It is light, fast and simple to use. Simply the best way to remove magnetism for pipe welders.

This is the system favoured by many of the worlds leading pipe welders and has a 100% success record, excellent post sales support and a variety of options.

Applications

One of the most attractive features of Zeromag is its simplicity of use: simply wind the demagnetizing cables around the pipe (or over the surface if working with plate steel) site the magnetic sensing probe and press start. Welding can then proceed with a near zero magnetic field.

Usually Zeromag is only used when magnetism is encountered so is not normally made part of the pre job weld validation process. For critical welding tasks where validation is obligatory, the important point about Zeromag is that it does not change the state of the pipe, and only reduces magnetism to the levels used at validation allowing approvals all previously obtained approvals to be valid.

Typical applications are pipelines, tie-ins, LPG vessels, lay barges, storage tanks, oil drilling operations,

Options

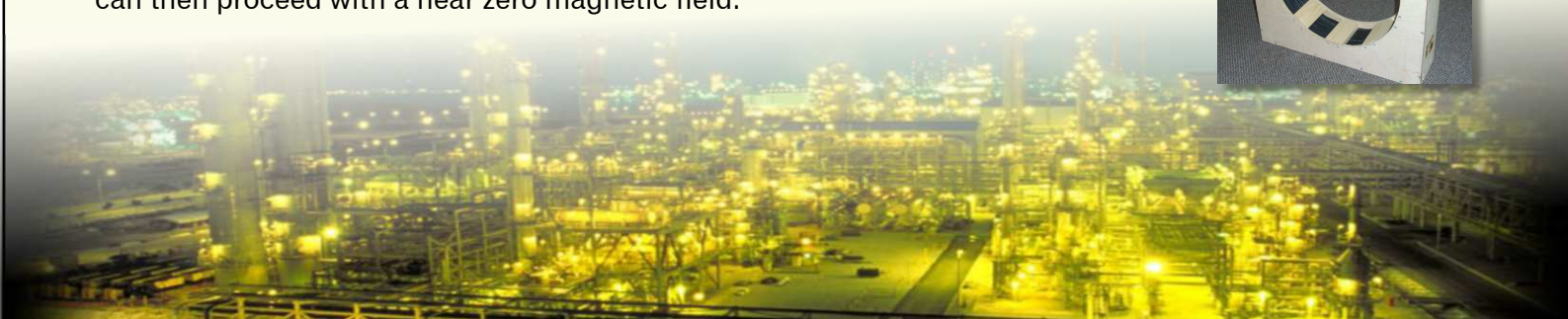
The ZM100A is the basic instrument. For a fully operational system, more users take the Demagnetizing Kit for Pipe Welders (DKPW) which includes all the ancillary parts such as probe, demagnetizing cables, Magmeter and storage cases.

For some applications it is useful to have one or more of the Zeromag optional products:

Clam coils used for joint degauss

ZM150 Pipe end/joint degauss controller

Bobbins used for pipe end degauss



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ZM100A: Performance Specification

Magnetic field reduction	Typically reduced 20x for most weld scenarios magnetic field reduced to <10 Gauss
Gaussmeter measurement range	0 to +/-1800 Gauss
Resolution	1 Gauss
Magnetic Probe Size	5mm x 20mm x 100mm long. Encased in stainless steel
Controls	Auto/Manual switch 2 push buttons to start and stop automatic mode Manual adjustment control used for manual override Gaussmeter null
Current Output range	0 to +/-100 Amps max
Output voltage range	0V to 15V
Magnetic field nulling time	3 seconds typical
Manual Control	-100A to +100A continuously variable with 10 turn control
Auto Control	Auto-tracking and nulling of magnetic field
Line Power	Line voltage range 90V - 265V ac 48 - 62Hz Power 1.8kVA
Temperature - operating	-20C to 50C
Temperature - storage	-40C to 85C
Humidity	0 - 90%, non-condensing
Environmental	Not water proof so do not operate or store in a wet environment
Weight	26kg
Dimensions WxLxH	520 x 220 x 550mm
Storage/shipping case dimensions Zeromag Accessories	 WxLxH 62 x 26 x 63, weight 35kg WxLxH 62 x 26 x 53, weight 28kg
Calibration	Calibrated by Diverse to NPL traceable standard
Housing	Built into a carrying case to enable it to be used on site; 19” portable rack, 4U
Demagnetizing cable:	50m + 50m. Options: bobbins and clam coils
EMC	Validated to CE and FCC standards for emissions and immunity
Warranty	12 months