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Merkle HighPULSE series

ALWAYS AT THE PULSE OF TIME!

The new Merkle HighPULSE generation features innovative and functional details. These are more valuable than ever for every professional welding application. The new, dynamic design with robust, integrated carrying handles leaves no doubt who the boss is.

- Continuous energy control at TEDAC® torch
- Optimum operation even with gloves
- Multi-functional display
- DeepARC, ColdMIG, HighUP and ProSWITCH

HighPULSE 280 K

HighPULSE 35

HighPULSE 352/452/552 DW

HighPULSE 452/552 KW

SE 350 K

ALL-ROUNDER HighPULSE

With innovative function details!

Making a perfect machine better is no easy task. But our engineers and designers have managed to make the best even better.

The result is the new HighPULSE generation, which is based on proven technology and still offers even more operation comfort and functionality in many details.

The new HighPULSE.

Robust carrying handles
for maximum safety

Cover for operation panel
with lock, transparent, for more safety on the construction site and in the workshop

HighPULSE 351 K

The new HighPULSE 351 K measures only 170 mm in width. This special version is designed for suspension from a rail. The machine is extremely slim and compact and ideal for limited spaces. Mains power and gas are supplied from above, no cables run on the floor. All controls are easy to reach.

Asymmetrical rotatable device
for a wide operation radius of the wire feeder and welding torch.

Operation panel
easy to use, either integrated in the power source or at the wire feeder.

Air filter at the front
easy to exchange.

HighPULSE 280/350 K

The small and compact machines are equipped with an integrated wire feeder and are portable. For welding with gasless flux cored wires the polarity can be exchanged. As an option the water cooling unit WK 300 can be mounted easily.
The trolley TW 112 comes with extra large wheels (200 mm), a gas bottle holder and an optional drawer for the accessories.

New operation panel.

Highest flexibility due to two options!

The Merkle HighPULSE comes with a new design of the operation panel, it offers a number of first-class advantages.

- Easy to use, even with gloves
- Large LED displays for all important functions
- Universal multi-function display with language selection
- Clear arrangement of all functions

Version 1:
All control buttons of the welding unit are integrated in the power source and can be operated directly at the front.

Version 2:
The complete operation panel is integrated in the separate wire feeder. This allows an easy operation of the Merkle HighPULSE with a maximum flexibility, regardless of the position of the welding machine.

External remote controller for series HighPULSE

The external remote controller is mounted in a robust housing and comes with 2 handles and a magnet holder on the back. It includes the following functions: Adjustment of energy and arc length trim, selection 2-/4-stroke operation, gas test, wire inching. At the large display all important parameters are shown: amperage, voltage, wire feed speed, as well as throat, material thickness, welding wire, and wire diameter. Welding jobs can be selected and displayed at the remote controller.

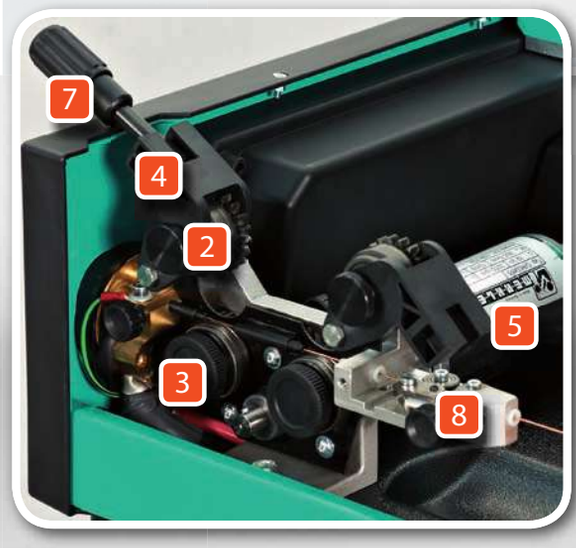
1. Large LED displays with preview for
   - welding current
   - welding voltage
   - wire feed speed
   - material thickness
2. Automatic hold function
   (saves the last displayed welding parameters)
3. Setting of the arc length
4. Setting of the energy
5. Selection of operating modes:
   - 2-stroke operation
   - Continuously on the front panel
   - 4-stroke operation with start current
6. Selection of energy setting:
   - Continuously on the front panel
   - Continuously on the wire feeder
   - Continuously at the TEDAC® torch
   - Job mode available on TEDAC®torch or rotary switch
7. Selection of welding processes:
   - MIG/MAG
   - PulseARC
   - Interpulse welding
   - MMA/stick electrode welding
   - Option: TIG DC
8. Rotary switch for program selection and programming of the multi-functional display
9. Wire inching
10. Gas test (with automatic switch-off)

The Merkle wire feeder.

Perfect wire feeding!

Detailed features

1. Precise 4-roller gear with 4 motorized wire feed rollers. Wire feed speed 0.5 – 25 m/min (model DV-26) or high performance drive 0.5- 30 m/min (model DV-31).
2. Big wire feed rings allow a constant wire feed speed at a low pressure. 2 grooves respectively for 2 different wire diameters.
3. Change of the wire feed rings without any tools.
4. Easy wire insertion due to superb accessibility and snap lock mechanism.
5. Dust-tight drive motor guarantees a constant wire feed speed.
6. Euro torch connector as a standard, directly mounted without need for alignment.
7. Pressure adjustment of both rollers.
8. Wire straightening device for perfect and constant wire feeding (DV-31).
9. Cut away side panels facilitate easy insertion of the wire spool.
10. Insulated interior, gas and water hoses and all cables are well protected from environmental damage due to a unique closed case design.
11. 2 x 4 rubber feet ensure operation in both, vertical and horizontal position.



Double wire feeder DV-31 TWIN

Two different wires shall be welded with the same machine? The annoying changing of the wire and the torch is no longer required with the double wire feeder DV-31TWIN.

Two different programs can be selected, the machine switches automatically to the selected torch by just pressing the torch trigger. As an option the operation panel of the HighPULSE can be integrated in the wire feeder. A wheeled version is also available.

Asymmetrical swiveling axis at the rear allows a wide working area.

Standard horizontal mounting.

Vertical mounting of the wire feeder can be achieved within seconds.

Four welding processes.

Perfect results for every application!

DeepARC

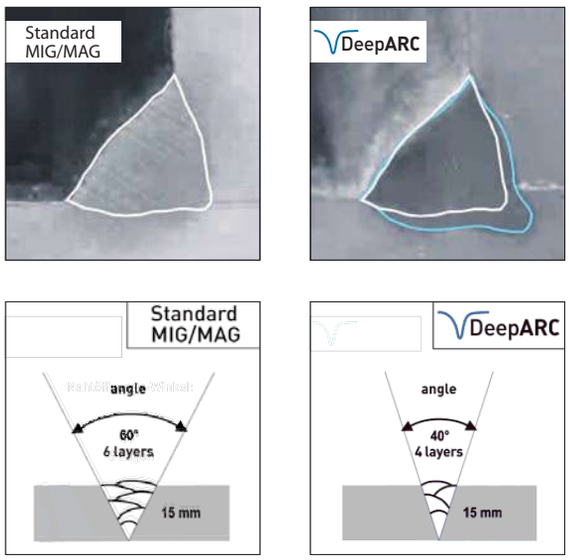
Witness yourself the new high speed formula of MIG/MAG welding! An extremely narrow welding arc (similar to a plasma arc) is achieved through a highly dynamic voltage control system in the HighPULSE series welding units.

This new welding arc defines itself through several characteristics. The DeepARC process is perfect for use with mild and stainless steels as well as for aluminum and aluminum alloys. The DeepARC process is available as an option in all units of the series HighPULSE.

There is a multitude of application advantages with the DeepARC process: 30 % deeper penetration, excellent root penetration, no problem of undercut and up to 100 % faster welding speed. Due to the concentrated arc the opening angle of thick work pieces can be reduced and the welding can be done with significantly fewer layers. The small, low-energy spatters do not stick to the workpiece.

Merkle DeepARC.
Faster welding with deep penetration!

- 30% deeper penetration
- 100% faster welding
- 100 % no spatter adherence



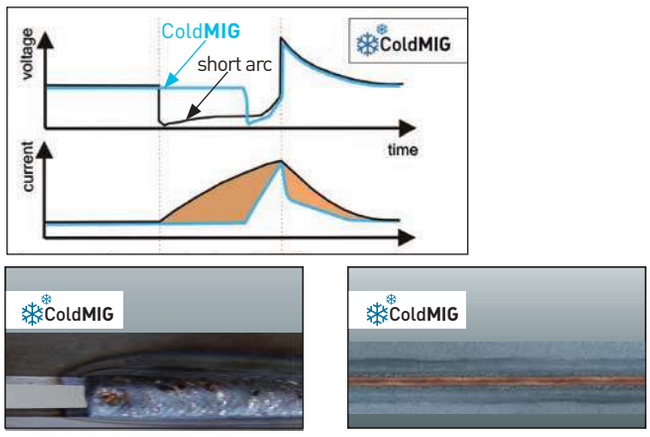
ColdMIG

The Merkle ColdMIG process sets new standards in welding with up to 30 % less heat input. Thin metal sheet welding (0.6 – 3.0 mm) is achieved to perfection in manual and automated operation.

Its high gap bridging capacity, the low heat input and the optimum welding facility of mixed materials and coated sheet metals are other world class features. The ColdMIG process is available for all HighPULSE machines as an option.

Merkle ColdMIG.
Welding with minimum heat input!

- 30% less heat input
- 100 % gap bridging
- 100 % perfect for brazing



HighUP

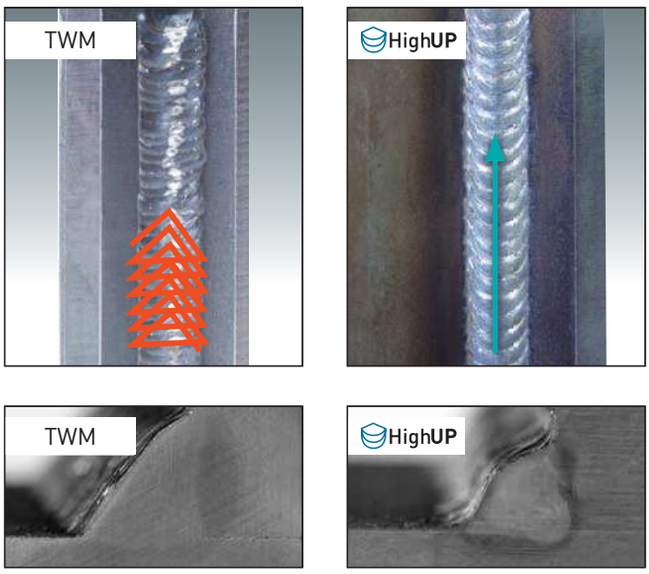
HighUP is the new Merkle process enabling a total elimination of the difficult to use, triangular weave method (TWM) of vertical up welding. Because the HighUP process allows vertical up welding up to 100 % faster with a safe penetration and an amazingly easy handling.

The Merkle HighUP process combines a hot high current phase (such as PulseARC, approx. 25 %) and a lower current phase (such as MAG, approx. 75 %) and enables a very easy to use, and to control, welding process.

HighUP can be used on most available materials such as low to high alloyed steels or aluminium and its related alloys. Problems with undercut or flank penetration defects are now a thing of the past thanks to Merkle`s HighUP process. Be the first to the top, and that in next to no time.

Merkle HighUP.
Vertical-up welding made easy!

- Up to 100 % faster welding
- 100 % safer penetration
- 100 % easier to control



ProSWITCH

NEW!

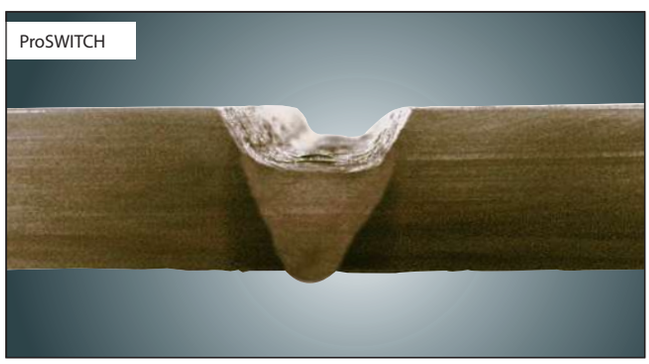
The new ProSWITCH mode allows the combination of different MIG welding processes. Like this a wide range of new applications is available.

All processes can be combined: short or spray arc, PulseARC, DeepARC or ColdMIG. The sequence, the quantity of processes, and the interval times can be determined freely be the operator.

For example, the root welding of a v-joint can be realized without a backing. The combination of the hot PulseARC (good flank penetration) with the energy reduced ColdMIG process (cooling down of the melting pool) opens up new applications

Merkle ProSWITCH.
Easy combination of different welding arcs!

- Combination of different MIG processes
- Perfect welding results
- Easy operation



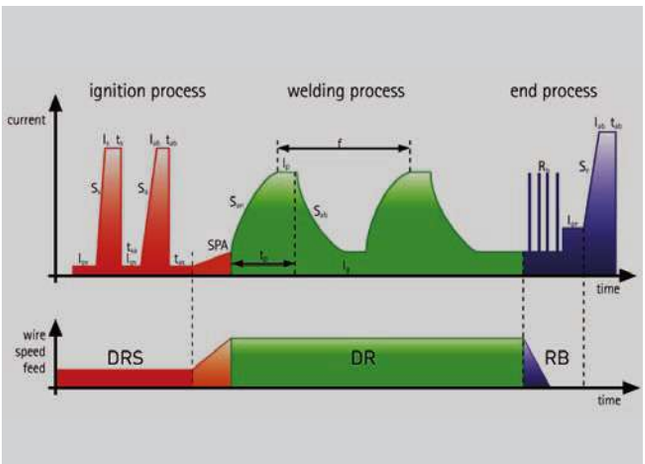
The Merkle PulseARC technology.

Economical, safe, versatile!

- Extremely spatter free welding due to the non short-circuit characteristics, one drop transfer:
  - tremendous time saving due to reduction of working hours for cleaning
  - high output of wire melting
  - longer life of torch consumables
  - less down time due to cleaner consumables
- Safe, spatter reduced ignition due to a new ignition process controlled by 13 parameters:
  - 2 independent ignition pulses
  - precise soft start of the wire
  - slag droplet is removed from the wire end at the end of each weld to ensure a safe re-ignition.
- Optimal processing of aluminium and aluminium alloys and stainless steel.
- Optimized welding programs for:
  - different materials
  - different wire diameters
  - different protective gases
- Multiple variations of pulse parameters: Manipulation of the arc characteristics and the penetration.
- Alloy elements are maintained due to adaption of the pulse parameters when using high alloyed wire.

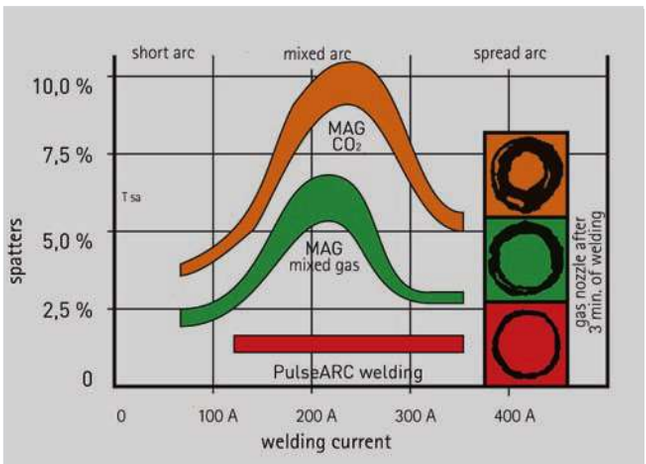
PulseARC welding programs:

Structure of the pulse welding programs:
Welding process control with 35 free programmable parameters. Perfect ignition due to 13 variable parameters within the ignition process. 144 different pulse forms programmable. Generation of different forms of welding characteristic curves and parameters are possible.



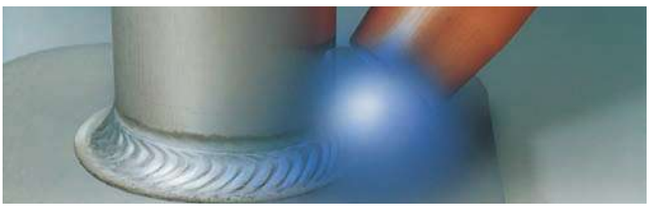
Comparison between MAG and PulseARC:

The diagram shows the spatter emission in relation to the welding current in percent. The comparison demonstrates the outstanding advantages of the PulseARC welding compared to the traditional MIG/MAG welding using CO_2 or mixed gas as shield gas.



Interpulse process:

With this process we enter a new dimension in welding aluminium and stainless steel. A second pulse process is added to the base pulse. All our synergic pulse welding units can be equipped with Interpulse technology as an option.

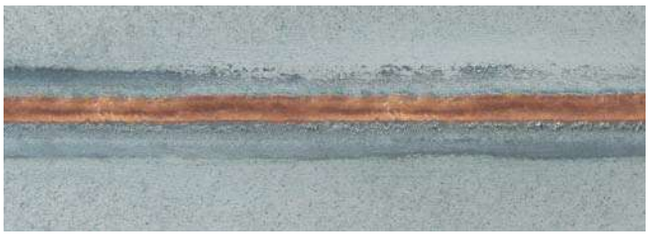


The advantages of the Interpulse process:

- Scaled weld and welding quality similar to TIG welding process.
- Welding speed as high as in MIG welding.
- Exact manipulation of the scaled weld.
- Reduced heating up of the material.
- Reduced distortion of the work piece.
- Easy adjustment by only one potentiometer (different pulse parameters are adapted automatically).

MIG brazing:

Galvanized or aluminum coated sheets can be brazed together by the MIG brazing process.



- When using a wire with a low melting point a brazed joint can be achieved without melting the sheets utilizing a specially designed program.
- Due to the low temperatures, the coating will not burn in large areas. The weld is resistant to corrosion. The machines series HighPULSE have brazing programs as a standard.
- In the ColdMIG process the heat input is again drastically reduced.

Q.MACS:

Q.MACS (Quality Management Analysis Control System) is capable of monitoring, controlling and recording all welding parameters, whilst simultaneously providing values for machine time, arc-on time, wire and gas consumption. Extensive functions allow the job management of a single welding unit or a network of machines.

- Recording of welding parameters: The measured parameters are displayed as colored curves on the screen, can be printed and saved.
- Controlling of welding parameters: Limits for all parameters can be set. A warning is activated if a limit is exceeded.
- Welding data analysis: The welding time, machine´s working time, wire and gas consumption are calculated automatically.
- Job management: A multitude of functions for the pragramming and the management of jobs are available for online and offline applications..

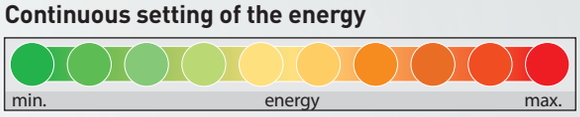
Merkle TEDAC®system.

Direct control on the torch!

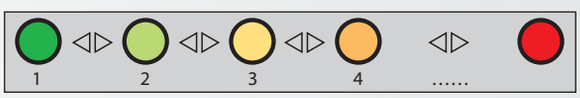
The Merkle TEDAC® system offers continuous energy control where it counts – directly on the torch itself. Using the slide switch mounted on the top of the TEDAC® torch handle the energy can be adjusted during the welding process.

Using a visible, multicolour LED indicator any energy modifications will be shown directly on the TEDAC® torch.
The TEDAC® torches are perfect for any work in difficult to reach positions due to the fact that the operator can control the welding process from the TEDAC® system and does not need to return to the power source to change settings.
Thanks to the standard Euro connector no additional control wires are required.

Continuous setting of the energy



Recall of programmed jobs



The multi-coloured LED shows the selected energy or program (job).

Standard Euro connector, no further control cables are necessary.

Ergonomically formed handle, torch trigger with a micro switch for guaranteed more than 10 mio. operations.

Merkle HighPULSE generation.

Technical data.

Technical Data	HighPULSE 280 K	HighPULSE 350 K	HighPULSE 452 KW	HighPULSE 552 KW	HighPULSE 352 DW	HighPULSE 452 DW	HighPULSE 552 DW
Primary:							
Power supply	3 x 400 V	3 x 400 V	3 x 400 V	3 x 400 V	3 x 400 V	3 x 400 V	3 x 400 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Continuous power	11.1 kVA	12.5 kVA	15.9 kVA	19.4 kVA	14.5 kVA	15.9 kVA	19. 4 kVA
Continuous current	16 A	18 A	23 A	28 A	21 A	23 A	28 A
Max. current	19 A	25 A	34 A	45 A	25 A	34 A	45 A
cos phi	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Secondary:							
Open circuit voltage	57 V	57 V	72 V	72 V	57 V	72 V	72 V
Welding voltage	15-28 V	15-31.5 V	15–36.5 V	15–41.5 V	15 - 31.5 V	15 - 36.5 V	15 - 41.5 V
Welding current	25-280 A	25-350 A	20–450 A	20–550 A	25 - 350 A	20 - 450 A	20 - 550 A
Duty cycle 35 % (10 min.)	280 A (40 °C)	-	-	-	-	-	-
Duty cycle 40 % (10 min.)		350 A (40 °C)	-	550 A (40 °C)			550 A (40 °C)
Duty cycle 50 % (10 min.)	-	-	450 A (40 °C)	500 A (40 °C)	350 A (40 °C)	450 A (40 °C)	500 A (40 °C)
Duty cycle 60 % (10 min.)	240 A (40 °C)	330 A (20 °C) 280 A (40 °C)	450 A (25 °C), 400 A (40 °C)	550 A (20 °C), 470 A (40 °C)	350 A (20 °C), 330 A (40 °C)	450 A (25 °C), 400 A (40 °C)	550 A (20 °C), 470 A (40 °C)
Duty cycle 100%	200 A (40 °C)	280 A (20 °C) 250 A (40 °C)	400 A (25 °C), 330 A (40 °C)	500 A (20 °C), 420 A (40 °C)	300 A (20 °C), 280 A (40 °C)	400 A (25 °C), 330 A (40 °C)	500 A (20 °C), 420 A (40 °C)
Protection class	IP 23	IP 23	IP 23	IP 23	IP 23	IP 23	IP 23
Cooling	AF	AF	AF	AF	AF	AF	AF
Arc length	automatic energy control		automatic energy control		automatic energy control		
Programs	MIG/MAG, PulseARC, MMA/stick electrode, MIG brazing. Optional: TIG (DC), Interpulse, ColdMIG, DeepARC, HighUP, ProSWITCH		MIG/MAG, PulseARC, MMA/stick electrode, MIG brazing. Optional: TIG (DC), Interpulse, ColdMIG, DeepARC, HighUP, ProSWITCH		MIG/MAG, PulseARC, MMA/stick electrode, MIG brazing. Optional: TIG (DC), Interpulse, ColdMIG, DeepARC, HighUP, ProSWITCH		
Program selection	material, wire diameter and gas at the display		material, wire diameter and gas at the display		material, wire diameter and gas at the display		
Wire feed	synergic wire feed control		synergic wire feed control		synergic wire feed control		
Operation modes	2-stroke, 4-stroke, interval, stitch		2-stroke, 4-stroke, interval, stitch		2-stroke, 4-stroke, interval, stitch		
energy control	control at the machine, TEDAC®torch, job mode		control at the machine, TEDAC®torch, job mode		control at the machine, wire feed unit, TEDAC®torch, job mode		
Adjustable parameters	choke inductance, pulse shape		choke inductance, pulse shape		choke inductance, pulse shape		
Power source	Inverter		Inverter		Inverter		
Digital display	current, voltage, wire feed speed and material thickess with pre-display and hold function		current, voltage, wire feed speed and material thickess with pre-display and hold function		current, voltage, wire feed speed and material thickess with pre-display and hold function		
Wire feeder unit	4-roller-drive DV-26 integrated		4-roller-drive DV-26 integrated		4-roller-drive DV-26 optional: DV-31, separate		
Torch cooling	option: separate water cooler WK 300		integrated water cooler		integrated water cooler		
Norm	EN 60974-1"S"/CE		EN 60974-1"S"/CE		EN 60974-1"S"/CE		
Gas bottle holder	optional with trolley TW 112 10 - 20 l cylinders		10 - 20 - 50 l cylinders		10 - 20 - 50 l cylinders		
Weight	33 kg	36.5 kg	115 kg	120 kg	130 kg	140 kg	145 kg
Dimensions L x W x H:	600 x 300 x 565		1100 x 490 x 895		1100 x 490 x 1200		

Technical changes reserved.

Welding machines. Welding torches. Automation.

09/2013

Perfection and welding speed are the important factors for success. Thanks to leading technology you are always a weld ahead with Merkle.

Merkle. Welding machines. Welding torches. Automation.

www.merkle.de

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