

DALEX

SCHWEISSTECHNIK

MF-TRAFOS

DALEX MEDIUM-FREQUENCY-TRANSFORMERS

MF 80/90/180/250/500/700



DALEX Schweißmaschinen GmbH & Co. KG



ERFAHRUNG SCHWEISST ZUKUNFT
EXPERIENCE WELDS FUTURE

www.dalex.de

**Compact, flexible
highly-efficient**



MEDIUM FREQUENCY-TRANSFORMERS

From the smallest of hand-operated guns through industrial robots right down to high performance pedestal welding units: DALEX mid-frequency transformers with rectifier from our own manufacturing all stand for quality, reliability and economy.

A special inverter controller rectifies the three phase mains power supply and converts it to 1000 Hz alternating current. This voltage is passed to a compact, closely coupled transformer and through water-cooled bundle of diodes rectified again on the secondary side. This creates a direct current for welding that can be rapidly and accurately regulated.

type **MF 80/90**



TECHNICAL DATA

nominal power at 20 % DC	80 - 90 kVA
no-load direct voltage	6.3 - 8.3 V
weight	17 kg
number of diods	2 pieces

type **MF 160/180**



TECHNICAL DATA

nominal power at 20 % DC	130 - 180 kVA
no-load direct voltage	7.0 - 10.2 V
weight	26,4 kg
number of diods	4 / 6 pieces

type **MF 250/300**



TECHNICAL DATA

nominal power at 20 % DC	250 - 300 kVA
no-load direct voltage	10.2 - 16.0 V
weight	33 kg
number of diods	4 / 6 pieces

type **MF 500**



TECHNICAL DATA

nominal power at 20 % DC	500 kVA
no-load direct voltage	11.8 V
weight	54,5 kg
number of diods	6 pieces

type **MF 700/1000**



TECHNICAL DATA

nominal power at 20 % DC	700 - 1000 kVA
no-load direct voltage	8.4 - 15.9 V
weight	167 kg
number of diods	10 pieces

transformers in special execution on request

PLANNED USE

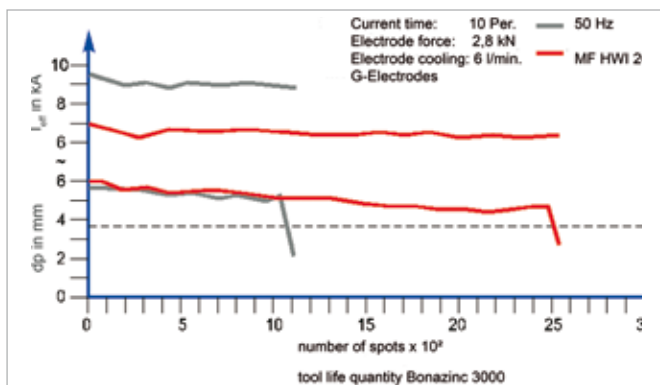
- short-time welding (f. e. annular projections), partially as replacement of capacitor discharge welding machines
- welding of galvanized sheets
- joining of different materials as well as nonferrous metals
- welding of coated materials

CHARACTERISTICS

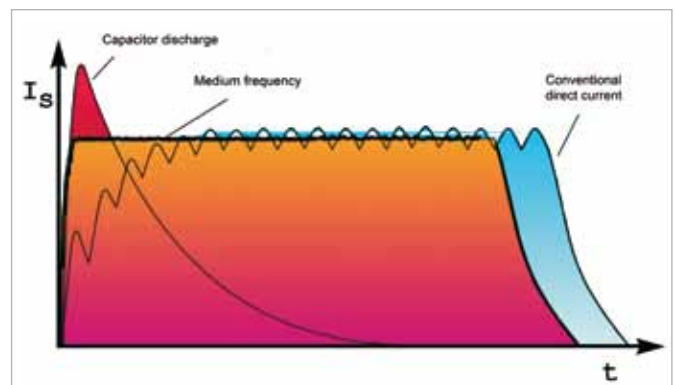
- low self-impedance
- series connection of all cooling circuits
- sec. voltage suppressor wiring beginning with MF 180
- diodes are tightened max. as a pair
- high capability with small size

ADVANTAGES

- direct current in high quality
- minimal inductive loss
- energy saving
- regulation and time adjusting in ms
- fast upslope
- long life of electrodes
- compact and lightweight transformer
- high quality of welding spot
- wide range welding application
- symmetrical load of supply network
- low trend of spatter formation



LIFE OF ELECTRODES - MF DIRECT CURRENT / ALTERNATING CURRENT



COMPARISON OF WELDING CURRENT CURVES

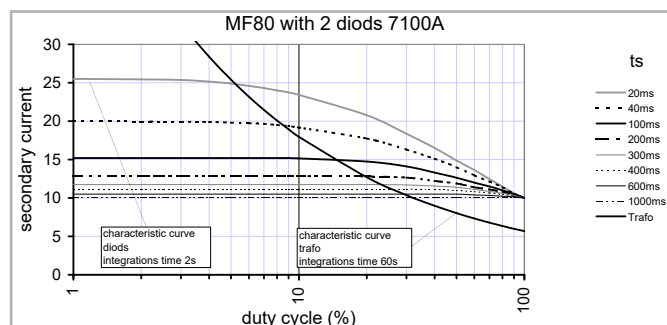
MEDIUM FREQUENCY TRANSFORMER

MF 80



TECHNICAL DATA

nominal power (20 % DC)	80 kVA
no-load direct voltage*	6.3 V
weight	17 kg
number of diodes	2 pieces



MF 80 with 2 diodes 6.3 V

type designation	MF80/500/6.3/0
order-number	M80.66278.3



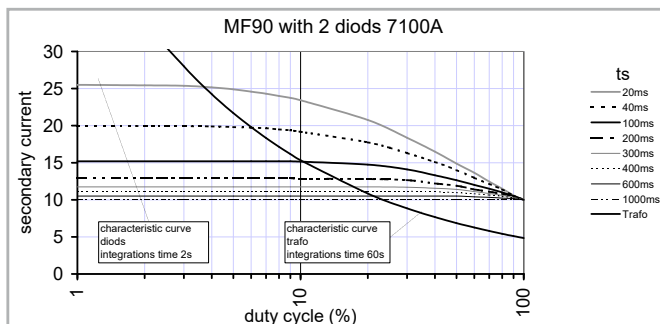
MEDIUM FREQUENCY TRANSFORMER

MF 90



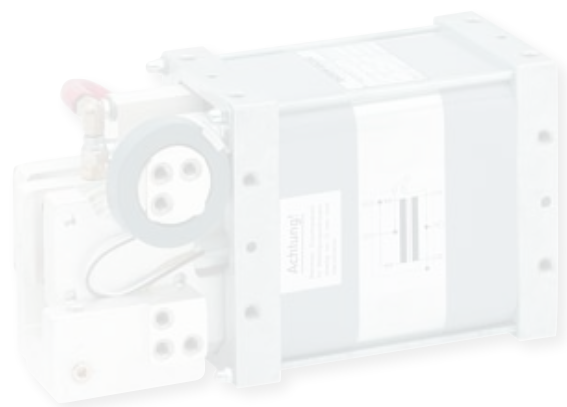
TECHNICAL DATA

nominal power (20 % DC)	90 kVA
no-load direct voltage*	8.3 V
weight	17 kg
number of diodes	2 pieces



MF 90 with 2 diodes 8.3 V

type designation	MF90/500/8.3/0
order-number	M90.66279.3



*various no-load voltage on request

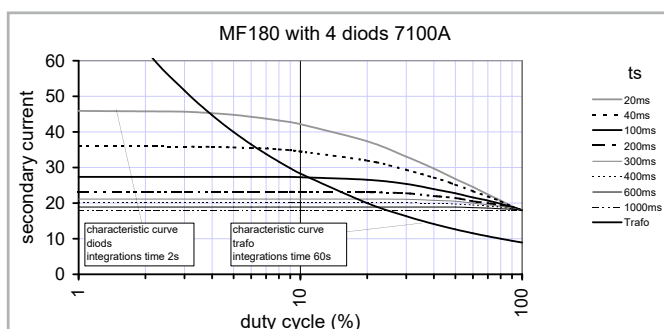
MEDIUM FREQUENCY TRANSFORMER

MF 180



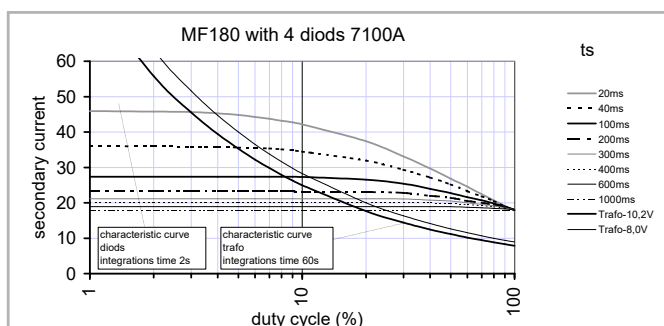
TECHNICAL DATA

nominal power (20 % DC)	130 - 180 kVA
no-load voltage*	7.0-10.2 V
weight	26,5 kg
number of diodes	4 / 6 pieces



MF 180 with 4 diodes 8.0 V

type designation	MF180/500/8.0/0
order number	M180.66294.3



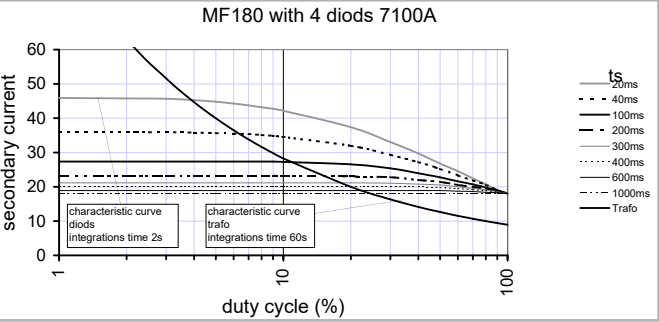
MF 180 - 2 step with 4 diodes 8.0-10.2 V

type designation	MF180/500/8.0-10.2/2
order number	M180.66296.3

*various no-load voltage on request

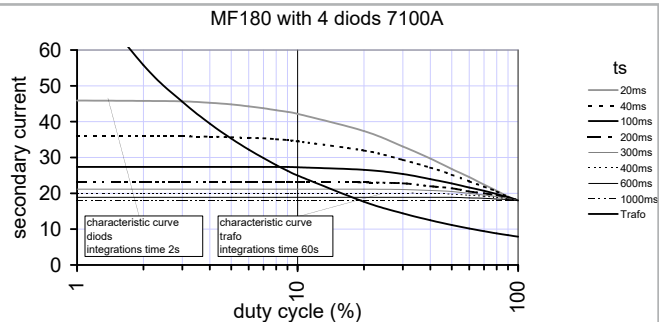
MEDIUM FREQUENCY TRANSFORMER

MF 180



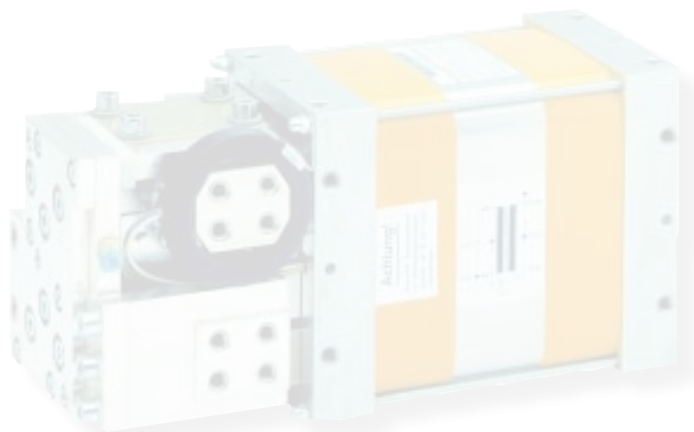
MF 180 with 4 diodes 9.0 V

type designation	MF180/500/9.0/0
order number	M180.66289.3



MF 180 with 4 diodes 10.2 V

type designation	MF180/500/10.2/0
order number	M180.66295.3



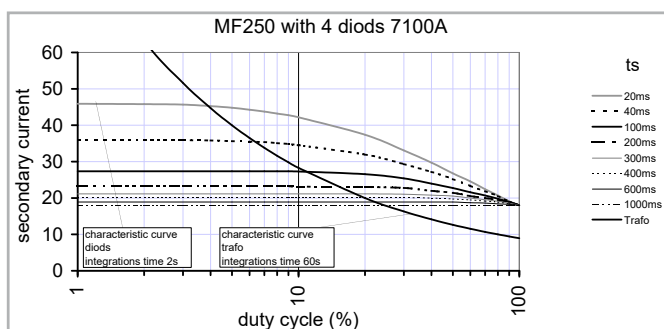
MEDIUM FREQUENCY TRANSFORMER

MF 250



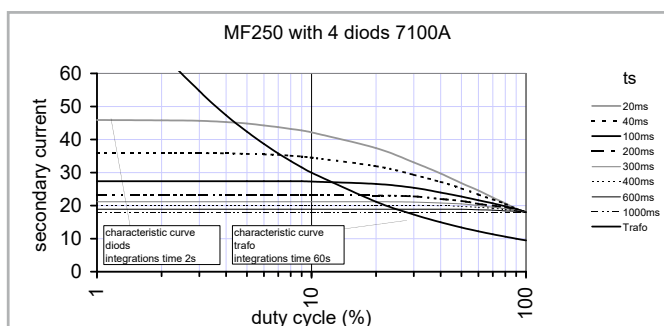
TECHNICAL DATA

nominal power (20 % DC)	250 - 300 kVA
no-load voltage*	10.2 - 16.0 V
weight	33 kg
numbers of diodes	4 / 6 pieces



MF 250 - 2 step with 4 diodes 10.2-11.8 V

type designation	MF250/500/10.2-11.8/2
order number	M250.66321.3
execution with 6 diodes on request	



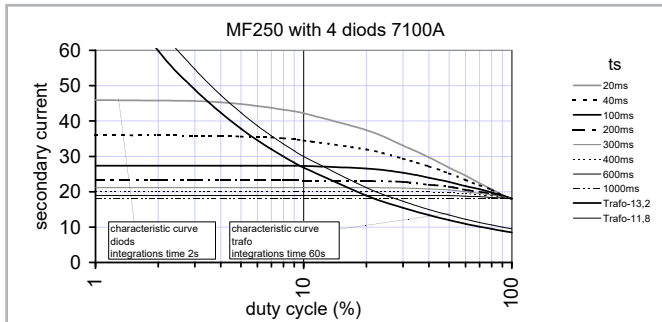
MF 250 with 4 diodes 11.8 V

type designation	MF250/500/11.8/0
order number	M250.66299.3
execution with 6 diodes on request	

*various no-load voltage on request

MEDIUM FREQUENCY TRANSFORMER

MF 250

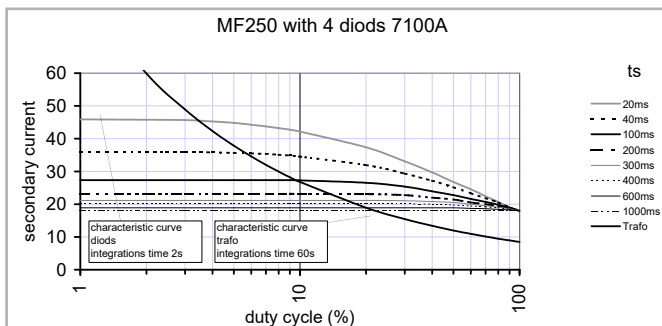


MF 250 - 2 step with 4 diodes 11.8-13.2 V

type designation MF250/500/11.8-13.2/2

order number M250.66327.3

execution with 6 diodes on request

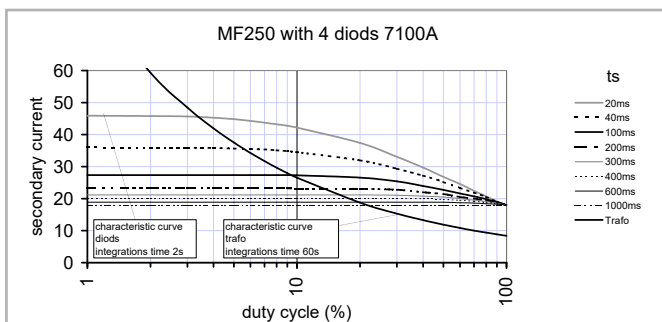


MF 250 with 4 diodes 13.2 V

type designation MF250/500/13.2/0

order number M250.66300.3

execution with 6 diodes on request



MF 250 with 4 diodes 16.0 V

type designation MF250/500/13.2-16.0/2

order number M250.66301.3

execution with 6 diodes on request

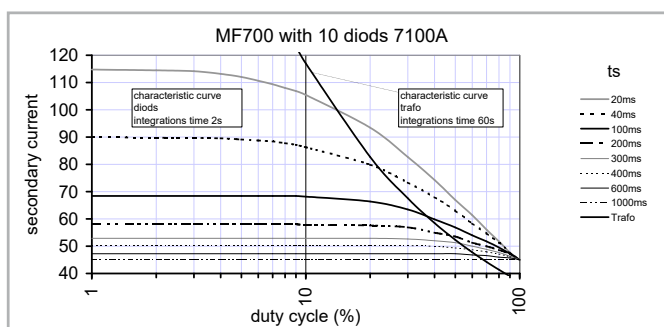
MEDIUM FREQUENCY TRANSFORMER

MF 700



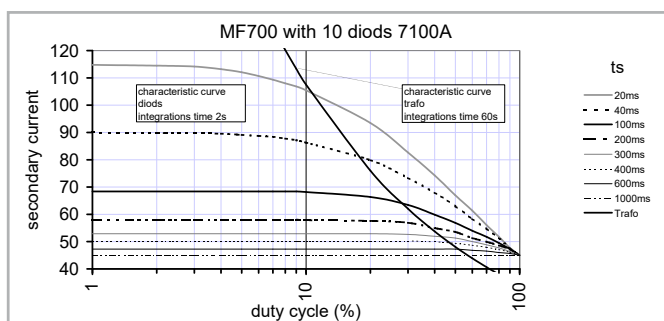
TECHNICAL DATA

nominal power (20 % ED)	700 - 1000 kVA
no-load voltage*	8.4 - 15.9 V
weight	167 kg
numbers of diodes	10 pieces



MF 700 2 step with 10 diodes 8.0-9.4 V

type designation	MF700/500/8.5-9.4/2
order number	M700.66324.3



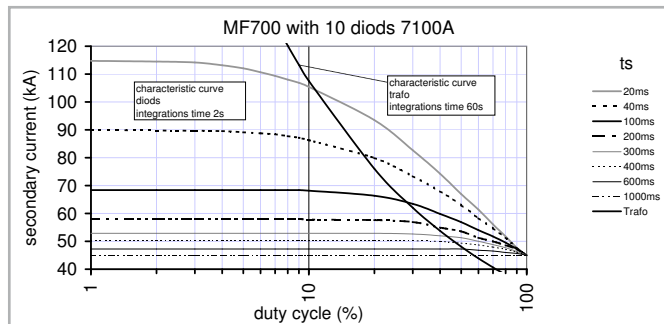
MF 700 2 step with 10 diodes 10.7 - 11.8 V

type designation	MF700/500/10.7-11.8/2
order number	M700.66340.3

*various no-load voltage on request

MEDIUM FREQUENCY TRANSFORMER

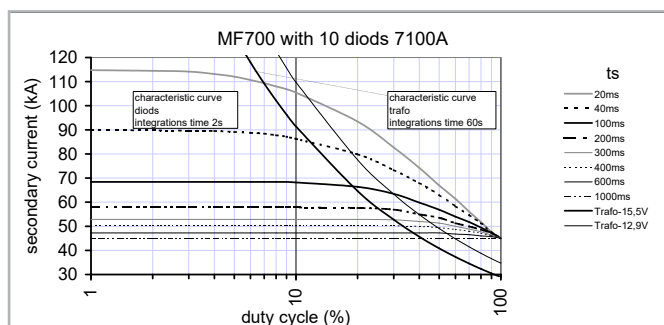
MF 700



MF 700 2-step with 10 diodes 11.8 - 12.5 V

type designation MF700/500/11.8-12.5/2

order number M700.66354.3



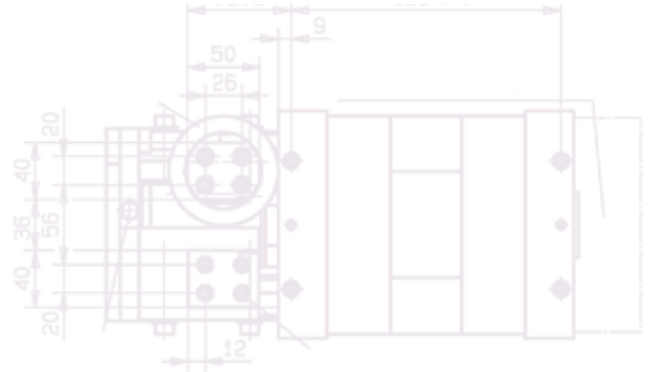
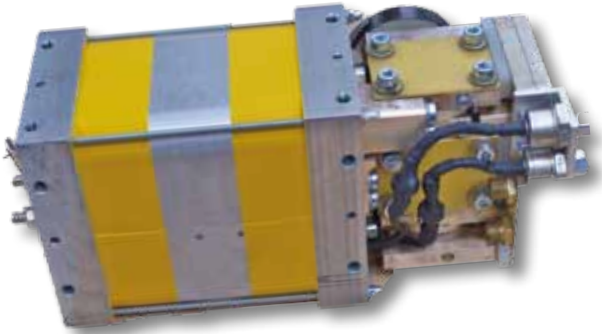
MF 700 2-step with 10 dodes 12.9 - 15.5 V

type designation MF700/500/12.9-15.5/2

order number M700.66356.3



2-STEP (MF) TRANSFORMER TECHNOLOGY



High quality welds demand exact parameterisation of reproducible characteristics, or in other words, the more reproducible the geometry of the parts, the structure, the surface etc., then the more uniform the quality of the weld is.

The trouble is, reality seems somehow different – oxide layers on Aluminium, scale on hot-formed steels, fabrication-related contamination (stamping & deep-drawing), corrosion-protective coatings and many more, have the habit of causing an increase in resistance, which can in turn strongly affect the quality of the weld – from small quality impairments through to completely failed welds.

These increases in resistance generally appear at the outer surface, which happens to be the first contact area with the electrode. If this layer is “penetrated”, then there will be material available for reproducible and thereby exact parameterable welding.

This is where **DALEX-developed 2-Step (MF) Transformer Technology** comes to the front of the stage. The 2-S transformer generates a voltage of up to 50 Volt depending on the welding resistance, whereby the increased resistance is overcome despite coatings or surface contamination. This reduces fluctuations and error susceptibility in the welding process and looks after the electrodes.

All in all, production processes are rationalised through the deployment of such technology, as the **lower wear on electrodes enables higher plant availability with fewer downtimes.**

The newly-developed control adaptation ensures that welding current measurement only starts when a certain current flow trigger is reached. This **considerably improves the quality.** Previous controls had measured the welding current from the signal “Welding current Start”, no matter whether and how much current was flowing. That leads - in the case of increased impedance - to the commencement of delayed current flow and causes quality fluctuations in the form of lower heat input / lenticular form and strength.

2-STEP (MF) TRANSFORMER TECHNOLOGY

By using the developed control adaptation, the time with the increased voltage is quasi pre-stored for "breaking through" the high-impedance covering layer, whereby the actual welding time is not changed; with the result that a **reproducible weld quality can be guaranteed**.

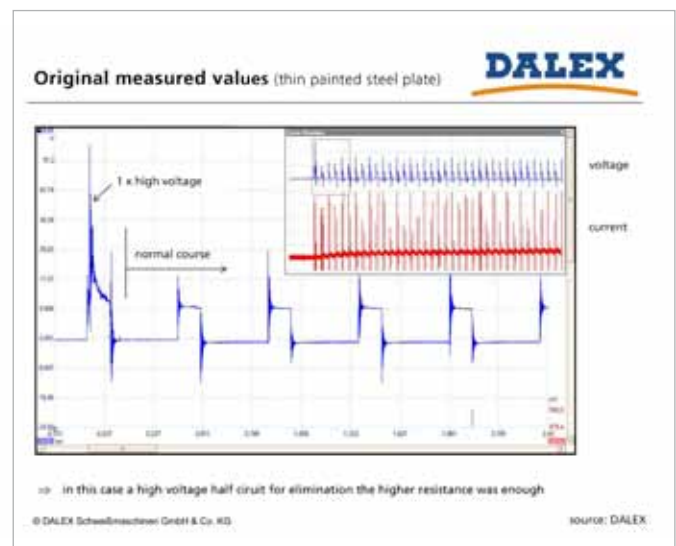
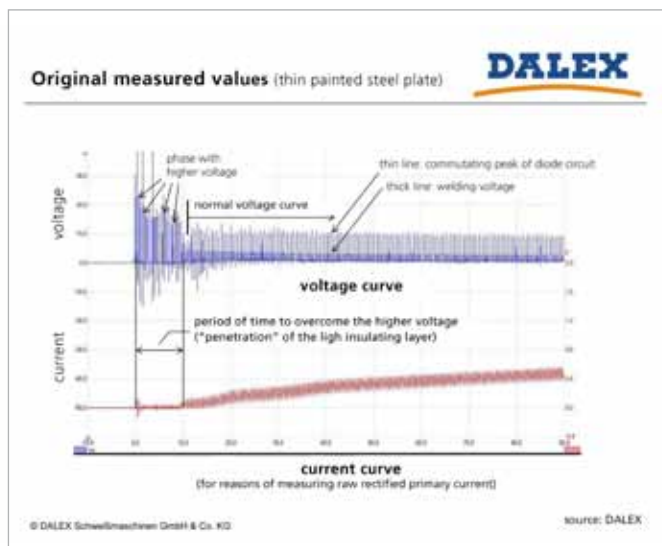
Significant **ADVANTAGES** to name a few:

- raises the safety of welded joints
- reduction of reject quotas
- reduction of non-productive time (testing outlay)
- lower electrode wear, better service life efficiency
- less time trimming caps

This system is not only interesting for new machines, but it can also be "reversely compatible", i.e. 2-step transformer technology can even be fitted to already existing MF machines and MF guns by exchanging the transformer.

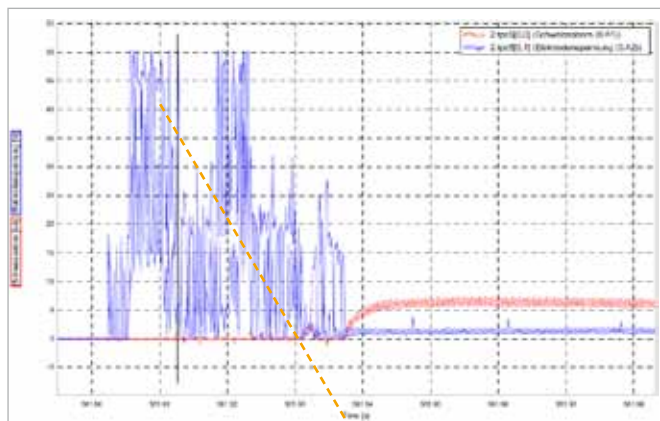
The outcome from independent recognised testing institutes has resulted in the following facet based on the testing of 'painted sheet metal': "Summing up, it can be stated that the comparison between both groups tested (welding with/without 2-step technology) leads to an undeniable conclusion. Welding with normal transformers produced only 7 from 50 welds and welding with transformers with an extra step (2-step technology) produced all 50 welds as correct welds; so welding with the 2-step system is clearly better by far."

This technology is available now and only from DALEX, no exclusivity rights exist at the moment – Trade Mark Rights have naturally been registered.

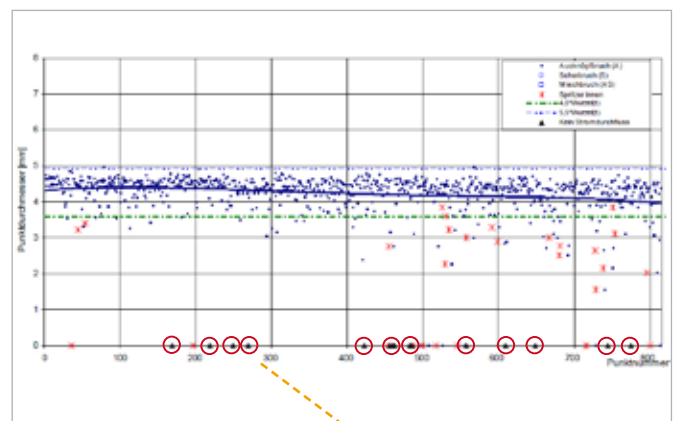


2-STEP (MF) TRANSFORMER TECHNOLOGY

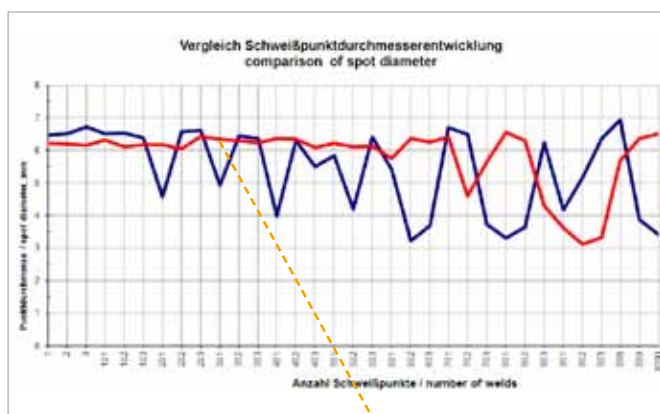
- automatically higher voltage if electrical resistance increases
- more safety welding having dirt, coat
- Lower electrode abrasion¹, Increase of machine utilization



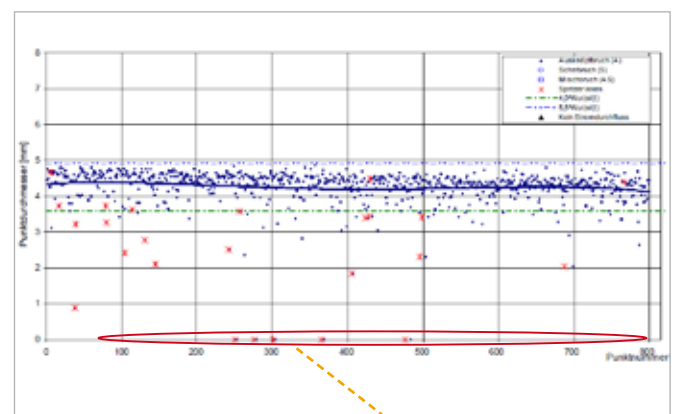
high voltage when starting



lower welding failures



lower variances



no failures

source right GSI SLV
Dresden

¹ depending on coating respectively surface

EXPERTISE

EXPERIENCE

AUTOMATION

PROJECTION WELDING

INNOVATION

CD-WELDING

ROBOTIC GUNS

KNOW
HOW

DEVELOPMENT

HANDGUNS

MF-TRAFO

SPECIAL SOLUTIONS

SEAM WELDING

COMPETENCE

WE WILL BE PLEASED TO ADVISE YOU - PLEASE CONTACT US

Get in touch with us

telephone **+49 (0) 2742 - 77-160** / E-Mail: info@dalex.de

YOU ARE INTERESTED IN FURTHER INFORMATION?

Our product brochures will give you more interesting and detailed information of the quality and the wide spectrum of DALEX products.

All our brochures can be downloaded at our website: www.dalex.de



ERFAHRUNG SCHWEISST ZUKUNFT
EXPERIENCE WELDS FUTURE



DALEX
Schweißmaschinen GmbH & Co. KG
Koblenzer Straße 43
D - 57537 Wissen

Tel. +49 2742-77-0
Fax +49 2742-77-101

Internet: www.dalex.de
E-Mail: info@dalex.de

 **made
in
Germany**