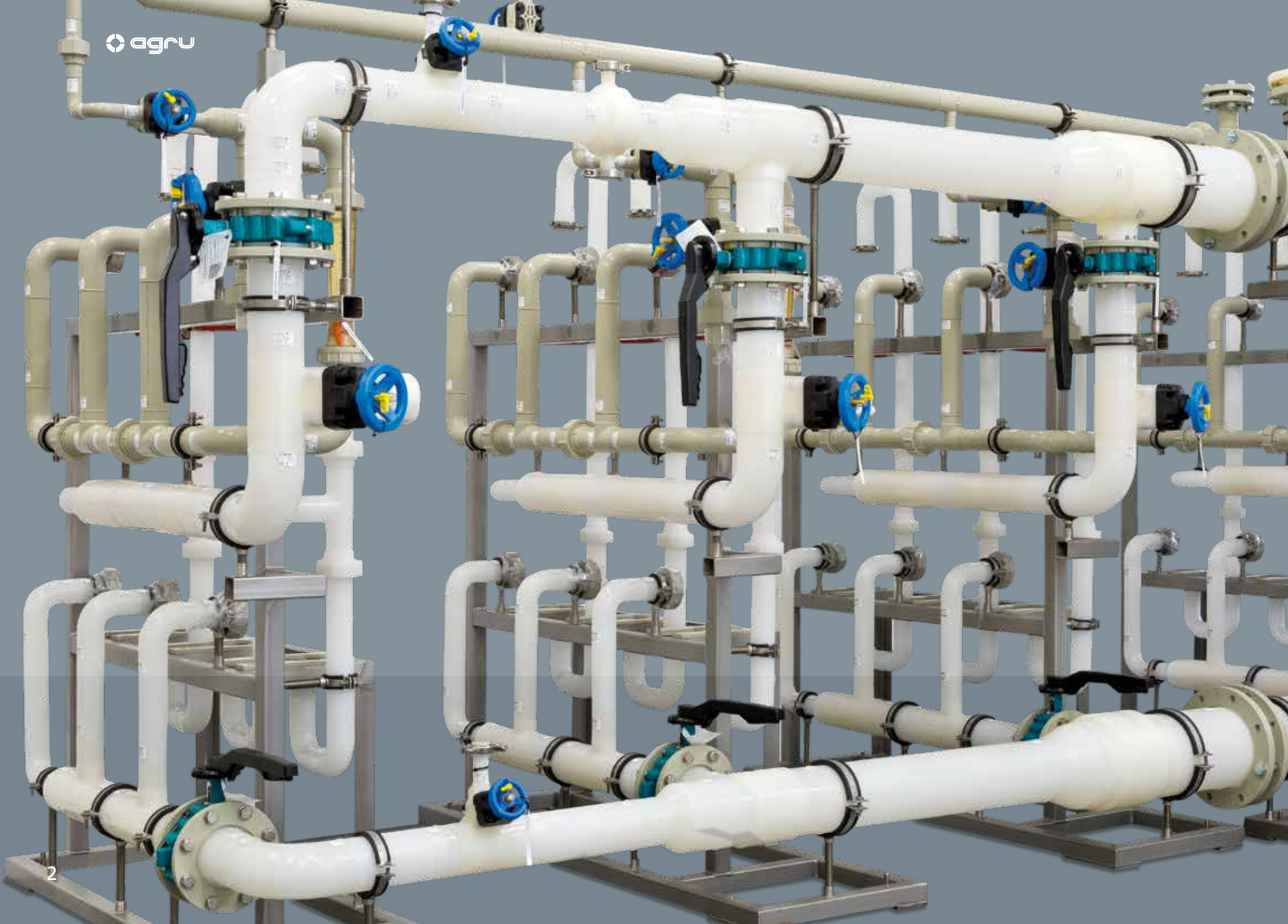


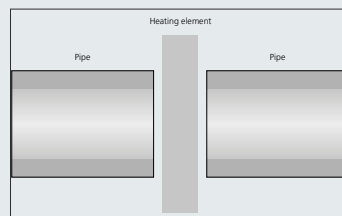
PREMIUM  
WELDING  
TECHNOLOGY  
FOR PLASTIC PIPING SYSTEMS





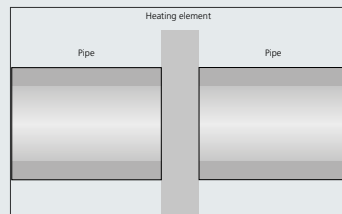
# WELDING TECHNIQUES

## Infrared welding (IR)



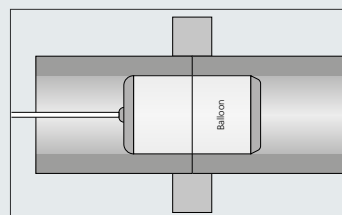
In infrared welding (non contact heating element butt welding), the pipe components are heated without contact and with a constant distance between the heating element and the pipe components. After the pipe components are heated up and the heating element has been removed, they are welded under constant joining pressure.

## Butt welding



The welding faces of the parts to be joined are aligned under pressure onto the heating element (alignment). Then the parts are heated up to the welding temperature under reduced pressure (pre-heating) and joined under pressure after the heating element has been removed (joining).

## Beadless welding (B)



Beadless welding involves heating up the to be welded pipe components from the outside. A balloon is inflated inside the pipe for counter-pressure. The pipe components are welded under constant joining pressure, creating a beadless weld both inside and outside.

## Electro fusion socket welding (EF)

In this process the to be welded surfaces (pipe surface and inside of EF-socket) overlap. They are heated up to welding temperature with electric power using resistance wires (heating wires) positioned in the fitting and thereby welding them. For PVDF, AGRU offers the option of inserting a balloon inside so that the gap between the pipes is welded.



# CONTENTS

Welding techniques .....	3
Benefits .....	4
Applications .....	6-7

## INFRARED WELDING

SP 110-S V3 .....	8
SP 250-S V3 .....	9
SP 315-S V3 .....	10
SP 63 mobile .....	11

## BUTT WELDING

ST CNC 2.0 .....	12
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## BEADLESS WELDING / ELECTRO FUSION SOCKET WELDING (EF)

EF 110-B .....	13
SP 110-B .....	14

Machine overview .....	15
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SWC .....	16
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Quality assurance .....	17
-------------------------	----

Weldnet .....	18-19
---------------	-------

AGRU – a global brand .....	20
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# BENEFITS

360° access

Ergonomic

Safe

Optimised for clean rooms

Suitable for all AGRU piping systems

Computer-controlled welding processes

Simple dimension change without tools

Intelligent sensors for ideal results

Industry 4.0





## Clamping system

- No displacement thanks to vertical and lateral adjustment
- Magnetic clamping inserts
- Clamping force can be custom-adjusted



## Key

- RFID access for certified welding operators
- Also used for identification, registration and data collection



## Transparency

- All welding parameters, such as temperature, joining pressure and time, are documented
- Printer with special labels that can only be removed from the pipes by destructive means

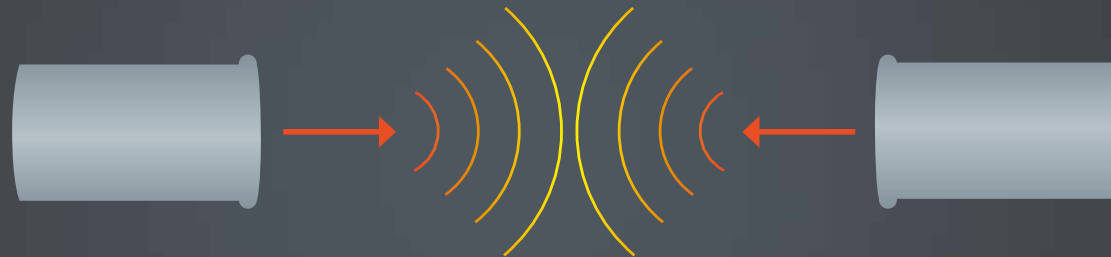


## Operation

- Touchscreen or control panel
- 3D visualisation
- Direction through the welding process available in multiple languages
- Variable planing loss of up to 13 mm

## Sensors

Integrated sensors monitor stroke, force, temperature and time to regulate, control, reproduce and document the welding process



## Transport box

- Full range of accessories integrated in the welding machine
- Transportable, stackable and foldable boxes



# APPLICATIONS



PE 100  
PE 100-RC

Poly-Flo  
PE 100-RC

PPR  
PPH  
PP-Pure

Poly-Flo  
PP

PE-el

Polypure  
(PP natural)

PFA

PVDF  
PVDF-UHP

ECTFE

PVDF  
HV-Liner

## Universal

- Semiconductor industry
- Industrial applications
- Chemicals industry
- Hospitals and laboratories
- Food and beverage industries
- Dairy industry
- Pharmaceutical industry

# WE LIKE IT

“ Safe and automatic welding process guaranteed.”

“ Perfect, very easy to use.”

“ Congratulations on the big progress in IR welding.”

“ Fascinated by the reliable welding quality.”





# SP 110-S V3

The new generation  
up to OD 110 mm (4")

**FOR ALL AGRU PIPING SYSTEMS FROM  
OD 20 MM (1/2") UP TO OD 110 MM (4")**  
PVDF-UHP, PVDF, PP-R, PP-H, PP-Pure, Polypure,  
ECTFE, PFA, Poly-Flo (PE 100-RC, PP),  
PVDF HV-Liner and PE 100-RC

### **AUTOMATIC WELDING**

Top weld quality with 100% reproducibility

### **MAXIMUM PERFORMANCE**

Extensive experience based on 25 years of  
infrared welding technology

### **ALL-IN-ONE BOX**

Machine and accessories in a foldable and  
stackable box suitable for clean rooms



# SP 250-S V3

The new generation  
up to OD 250 mm (10")

**FOR AGRU PIPING SYSTEMS FROM  
OD 90 MM (3") UP TO OD 250 MM (10")**  
PVDF-UHP, PVDF, PP-R, PP-H, PP-Pure, Polypure,  
ECTFE, Poly-Flo and PE 100-RC

## **AUTOMATIC WELDING**

Top weld quality with 100% reproducibility

## **MAXIMUM PERFORMANCE**

Extensive experience based on 25 years of  
infrared welding technology

## **ALL-IN-ONE BOX**

Machine and accessories in a foldable  
and stackable box suitable for clean  
rooms



INFRARED WELDING (IR)



## SP 315-S V3

The new generation for components up to OD 315 mm (12")

**FOR AGRU PIPING SYSTEMS FROM OD 90 MM (3") UP TO OD 315 MM (12")**  
PVDF-UHP, PVDF, PP-R, PP-H, PP-Pure, Polypure, ECTFE, Poly-Flo and PE 100-RC

### **AUTOMATIC WELDING**

Top weld quality with 100% reproducibility

### **MAXIMUM PERFORMANCE**

Extensive experience based on 25 years of infrared welding technology

### **ALL-IN-ONE BOX**

Machine and accessories in a foldable and stackable box suitable for clean rooms

# SP 63-MOBILE V3

The mobile machine

**FOR AGRU PIPING SYSTEMS FROM  
OD 20 MM (1/2") UP TO OD 63 MM (2")**

PVDF-UHP, PVDF, PP-R, PP-H, PP-Pure,  
Polypure, ECTFE, PFA (on request)  
and PE 100-RC

**AUTOMATIC WELDING**

Fully automated weld data recording and  
weld label provide 100 % traceability  
Preprogrammed weld parameters for all  
weldable sizes

**FIRST-RATE WELDING ON SITE**

The SP 63 mobile is designed for welding in  
difficult conditions, such as tie in welds

**MAXIMUM PERFORMANCE**

Suitable for pipe rack installation with  
integrated remote weld unit (horizontal and  
vertical weld positions)



INFRARED WELDING (IR)



## ST CNC 2.0

The high-quality and durable CNC-controlled butt-welding machine

**FOR AGRU PIPING SYSTEMS FROM  
OD 40 MM UP TO OD 630 MM**

PP-R, PP-H, PP-Pure, Polypure und PE 100-RC

### AVAILABLE TYPES

- SAGCNC20160 | OD 40 - 160 mm
- SAGCNC20315 | OD 90 - 315 mm
- SAGCNC20355 | OD 90 - 355 mm
- SAGCNC20500 | OD 200 - 500 mm
- SAGCNC20630 | OD 315 - 630 mm

# EF 110-B

The mobile instrument  
for beadless electrofusion  
socket welding

**FOR AGRU PIPING SYSTEMS FROM  
OD 20 MM (1/2") UP TO OD 63 MM (2")**  
PVDF-UHP, PVDF

**FIRST-RATE BEADLESS WELDING  
ON SITE**

The EF 110-B is a mobile tool designed  
for welding in difficult conditions

**SMOOTH INSIDE SURFACES**

Beadless welds ensure smooth surfaces and  
prevent residual fluid build-up

EF 110-B can also be used for PE and PP  
up to OD 110 mm (4") by standard electro-  
fusion welding method



BEADLESS WELDING



# SP 110-B

The machine for beadless welding

**FOR AGRU PIPING SYSTEMS FROM OD 20 MM (1/2") UP TO OD 110 MM (4")**  
PVDF-UHP, PVDF, PP-R, PP-H, PP-Pure, Polypure and PE 100-RC

**SMOOTH PIPE SURFACES INSIDE AND OUTSIDE**

Beadless welds ensure smooth surfaces and prevent residual fluid build-up

**HIGH-PURITY PIPING**

Engineered for the precision requirements of the semiconductor, food and life sciences industries



# THE MACHINES



Name	Welding method	Material	Dimensions	Product code
SP 110-S V3	Infrared welding	PE, PP, PVDF, ECTFE, Poly-Flo, HV Liner	OD 20 mm - OD 110 mm	SAGSP110S30
SP 110-S V3	Infrared welding	PE, PP, PVDF, ECTFE, Poly-Flo, HV Liner, PFA	OD 20 mm - OD 110 mm	SAGSP110S40
SP 250-S V3	Infrared welding	PP, PVDF, ECTFE	OD 110 mm - OD 250 mm	SAGSP250S30
SP 315-S V3	Infrared welding	PP, PVDF, ECTFE	OD 110 mm - OD 315 mm	SAGSP315S30
SP 63 Mobile	Infrared welding	PP, PVDF, ECTFE	OD 20 mm - OD 63 mm	SAGSP063M00
ST CNC 2.0	Butt welding	PP-R, PP-H, PP-Pure, Polypure, PE 100-RC	OD 40 mm - OD 630 mm	SAGCNC20XXX
EF 110-B	Electro-socket welding	PE, PP, PVDF	OD 20 mm - OD 110 mm (PE, PP) OD 20 mm - OD 63 mm (PVDF)	SAGEF110B00
SP 110-B	Beadless welding	PE, PP, PVDF	OD 20 mm - OD 63 mm	SAGSP110B00
SP 110-B	Beadless welding	PE, PP, PVDF	OD 20 mm - OD 110 mm	-



SP 110-S V3



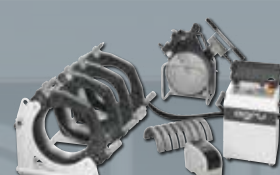
SP 250-S V3



SP 315-S V3



SP 63-Mobile V3



ST CNC 2.0



EF 110-B



SP 110-B



# SMART WELD CHECK

## Perfect welds

The AGRU SWC (Smart Weld Check) system is your professional solution for recording and evaluating IR welds through bead measurements.

The AGRU SWC system is delivered with a Bluetooth QR code scanner and a Bluetooth caliper. The internal memory can store up to 20,000 bead measurements. In addition, AGRU's SWC system offers a USB port to which a label printer can be connected to print out a label. This can be stuck close to the weld on the pipe.



# AGRU WELD CONNECT

- Communicate with the machine via Bluetooth
- Download and send the welding log
- Service analytics

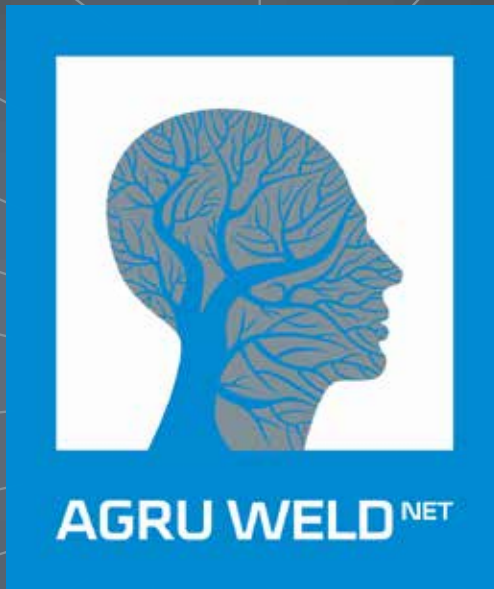


QUALITY ASSURANCE



## Weld quality assurance

- RFID welder card to identify certified welding operators
- Documentation of welding parameters
- Can be transferred via Bluetooth or USB
- Label printing
- SWC for subsequent bead measurement
- AGRU WELD Connect (app for communication with the machine via Bluetooth, service analytics, welding logs, etc.)
- AGRU Weld Net (central data collection for all machines)



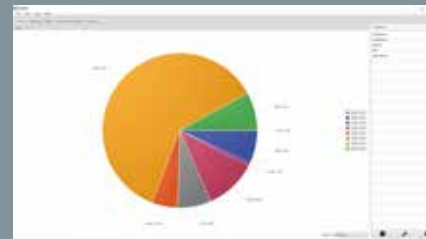
# BIG DATA

AGRU WELD<sup>NET</sup> is a software solution for

- preliminary and final costing for projects
- Data analysis
- Capacity planning
- Worldwide evaluation

AGRU WELD<sup>NET</sup> ensures that you always have a complete overview of your welding machinery. Whether for data transfers or welding documentation, the digital service platform facilitates a data exchange and communication between the machine and IT system. This produces ideal results, making it possible to plan processes flexibly and ensure their mutual compatibility. At different locations, worldwide.

AGRU WELD<sup>NET</sup>



ID	Name	Value	Status
1001	Welding Machine A	12000	Active
1002	Welding Machine B	8000	Inactive
1003	Welding Machine C	15000	Active
1004	Welding Machine D	9000	Active
1005	Welding Machine E	11000	Active

# AGRU - A GLOBAL BRAND



The Plastics Experts.



## GLOBAL PRESENCE

Worldwide welding machine service, sales and rentals

## HIGHLY QUALIFIED

Training and certification of welding operators

## COMPLETE RANGE OF PRODUCTS

Plastic piping systems and welding machines for every application

## SERVICE CENTRES

for our AGRU welding machines all over the world