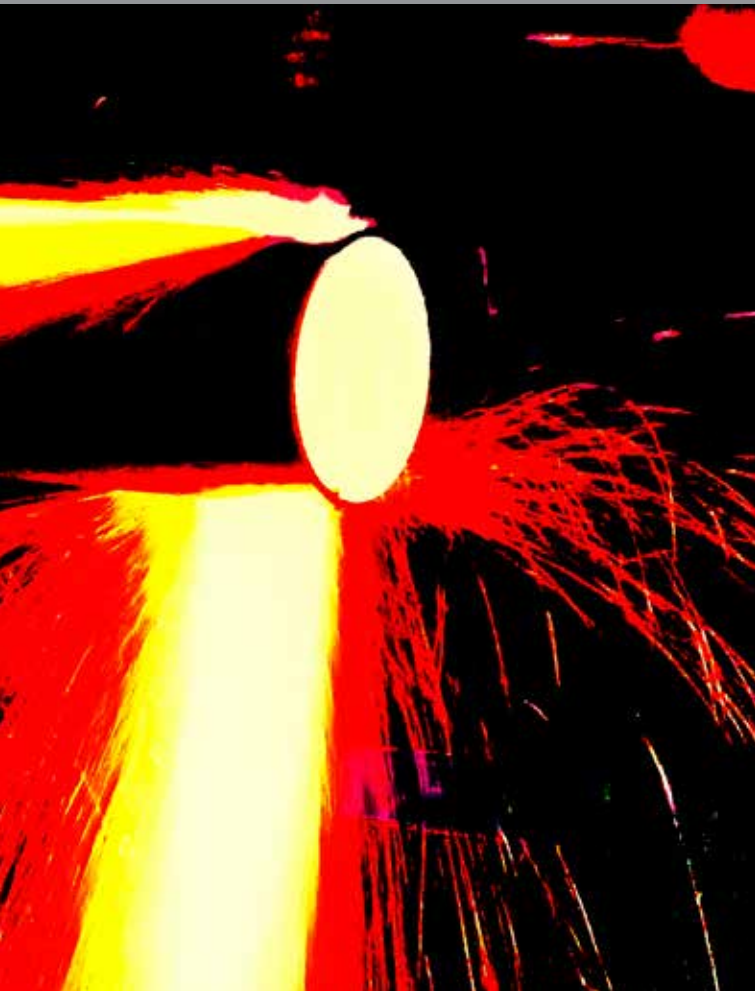


3D thermal profiling



Mechanized welding



The company

Innovative technologies, intelligent software, robust mechanical engineering and modern design are the four cornerstones of our German-made products.

At our plant in Opladen we produce 3D profile cutting machines for round pipes, square & rectangular pipes and beams as well as mechanized welding systems for the toughest requirements in the metalworking industry. The machines are employed in all segments of thermal cutting and welding and represent the first and the most important stage in a modern production process. Making use of these machines, we also build automated pipe shops.

The high quality of workmanship and the many years of experience of our staff are an assurance of integrated solutions for complex cutting and welding tasks – worldwide.

■ History

MÜLLER OPLADEN is a tradition-steeped German mechanical engineering company that can look back on an almost century-long history since its founding in 1918. Today, the company is run by a family member, now in the third generation.

■ Philosophy

Our philosophy is based on an understanding of our customers' needs and solutions geared to these requirements. This also entails serving our customers in a spirit of partnership throughout the life-cycle of our machines.

■ Research and development

In collaboration with our customers, our engineers are constantly developing new solutions. Thanks to our extensive experience in the fields of CAD, software programming, developing electronic control systems, isometric projection and application-oriented cutting and welding processes, we can ensure that our technologies are always state-of-the-art.

■ Service

The over 1,000 machines at work each day in 60 countries demonstrate the reliability of our products. Our service centres in Germany, Russia, the United Arab Emirates, India, Singapore, the USA and Brazil ensure direct communication and machine availability.



Assembly in Opladen

■ **Products – thermal 3D profile cutting machines**

Since the construction of the first mechanical oxy-fuel pipe profile cutting machine with 3 axes in the early 1950s, it has since undergone consistent further development. Today, our machines equipped with up to 9 axes are capable of profiling round pipes, square & rectangular pipes and beams.

The machines of the current generation can also be equipped with plasma cutting technology and efficient materials handling systems (logistics). Our software solutions for process planning and data interchange between the machine and the CAD/CAM systems optimize the production process on the customer site.



Torch head of a pipe profile cutting machine

■ **Products – mechanized welding systems**

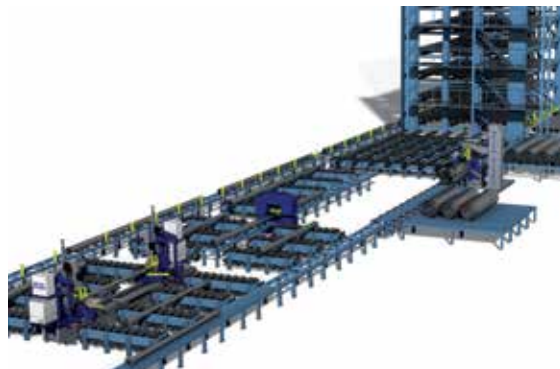
Since taking over the ARC KON engineering firm specializing in mechanized welding fixtures in 2003, we have steadily expanded our mechanized welding business unit. Along with such standard products as positioners, roller beds and columns & booms, we can now offer customized solutions. These customized solutions support the welding process by automating and coordinating the movements of the workpiece and welding head. The effectiveness, robustness and easy handling of our products ensure high-quality and efficient production.



Mechanized welding head

■ **Products – automated pipe shops**

Thanks to various machinery projects, we have now extended our capabilities nowadays beyond pure machine manufacture and offer system solutions for pipe shops with automated processes and integrated logistics.



Example of an overall layout for a pipe shop

Core sectors

You will find us wherever pipes, tanks, beams and other components for the metalworking industry have to be thermally three-dimensionally cut or welded. Owing to our leading position in the 3D pipe profiling machine segment, we serve customers on all five continents mainly in the following sectors:

- Offshore plant construction
- Steel construction
- Pipeline and process plant engineering
- Shipbuilding
- Wind turbine building
- General plant and equipment construction

Listed below are some of our more than 1,000 reference customers in 60 countries.



Offshore plant construction: platform



Offshore plant construction: top side



Wind turbine building

Selected reference customers

Selected reference customers	Country
Aker Solutions	Norway
Bosnor	Mexico
Kencana Petroleum	Malaysia
Larsen & Toubro	India, Oman, Qatar, Saudi Arabia, UAE
Saipem	Brazil, Canada, Congo, Italy, Nigeria
Subsea 7	Angola, Nigeria
Techint	Brazil

Agility Group	Norway
CUEL	Thailand
Dragados	Mexico, Spain
Lukoil	Russia
Keppel Fels	Singapore
Lamprell	UAE
PPL	Singapore

Interfer	Germany
Kobau / Weserwind	Germany
Navacel	Spain
Tata Steel	United Kingdom
Stahlrohr	Germany
Steel Engineering	United Kingdom
Vitkovice Power Engineering	Czech Republic



Steel construction

Selected reference customers	Country
Afcons	India
Cimolai	Italy, Venezuela
Cimtas Celik	Turkey
Eiffage Metal	France
Kurganstalmost	Russia
Unger Steel	Austria, UAE
Zamil Steel	Saudi Arabia



Shipbuilding

Cochin Shipyard	India
GSI	China
HDW	Germany
Nakilat	Qatar
IHC Merwede	Netherlands
Navantia	Spain
Samsung	South Korea



Pipeline and process plant engineering

Alstom	Germany
Cairn	India
Energy Weldfab	USA
Gazgep	Hungary
GEA	Germany, USA
Ponticelli	France, Nigeria
Tranter	China, Germany, USA



General plant and equipment construction

Arcelor Mittal	Luxemburg
Bombardier	Germany
Bornemann Pumpen	Germany
Gottwald Port Technology	Germany
KSB	Germany
Siemens	Germany
Tyco Waters	Australia

Thermal 3D profile cutting machines

Our thermal 3D profile cutting machines are available in the RB Compact, RB Classic, RB Heavy-Duty and PB Robo series. The machines of the RB Compact, RB Classic, RB Heavy-Duty series intended essentially for round pipes operate with macro-controlled software. This means that the machines can be quickly programmed online, offline or via CAD/CAM modules for the profiles to be cut with the aid of already available cutting macros.

The machines of the PB Robo series designed mainly for beams have a freely programmable software architecture that facilitates the autonomous generation of the cutting profiles offline with the use of CAD/CAM modules.

Plasma and oxy-fuel are available as cutting processes. The main differences between the various series can be seen from the table on the opposite page.

The CNC axes are as follows:

1. Rotation of the workpiece inside the chuck system (Y-axis)
2. Longitudinal movement of the cutting head along the workpiece axis (X-axis)
3. Oscillatory movement of the cutting head (B-axis)
4. Rotation of the cutting head (C-axis)
5. Height adjustment of the cutting head by a measuring system in the event of surface deviations of the workpiece (Z-axis)
6. Torch distance correction in relation to the cutting angle during the cutting process (W-axis)
7. Transverse movement of the cutting head at 90° to the workpiece axis (V-axis)



Pipe profile cutting machine RB 600/6 Compact with 6 CNC axes for round pipes with a maximum diameter of 610 mm



Pipe profile cutting machine RB 950/1500/6 Classic with 6 CNC axes for round pipes with a maximum diameter of 1,524 mm



Pipe profile cutting machine RB 950/2500/6 Heavy-Duty with 6 CNC axes for round pipes with a maximum diameter of 2,540 mm

Profile cutting machine PB 200/7 ROBO 200 T with 7 CNC axes for beams with a maximum width of 200 mm



Comparison of the main technical data of the RB Compact, RB Classic, RB Heavy-Duty and PB ROBO series

Technical data:	RB Compact	RB Classic
Application fields:	Workshops/construction sites	Industry
Workpiece types:	Round pipes	Round pipes, square & rectangular pipes
Transportability:	Transportable, stationary	Stationary
Maximum pipe length in mm:	12,000	18,000
Maximum pipe weight in kg:	4,000	20,000
Minimum cuttable pipe diameter in mm:	50	50*/80
Maximum cuttable pipe diameter in mm:	812	2,032
Maximum load of pipe carriage in kg:	2,500	7,500
Round pipe cuttability:	x	x
Square & rectangular pipe cuttability:	-	x
Beams cuttability:	-	-
Dished end cuttability:	-	-
Cutting area behind chuck:	-	x
Machine design with cutting conveyor without chuck:	-	x**
Automatic workpiece logistics:	-	x
RB, PB Robo combination solutions:	-	-
Maximum number of CNC axes:	6	7
Drive design of CNC axes:	Standard	High dynamics
Direct control of CNC axes via CAD/CAM:	-	x
Pipe tracing:	Electromechanical	Electromechanical, laser
Torch carriage track construction:	Column construction	Column or floor construction
Mobile operator's platform:	-	x
Height-adjustable operator's platform:	-	-
Torch guidance system:	Azimuth torch head	MP torch head
Oxy-fuel cutting:	x	x
Maximum cuttable cutting length, oxy-fuel, in mm:	90	150
Maximum torch tilt angle, oxy-fuel, in °:	60	70
Omniflow automatic gas control system:	-	x
Plasma cutting:	x	x
High-definition plasma cutting:	-	x
Minimum cuttable pipe wall thickness, plasma, in mm:	5	1
Maximum cuttable cutting length, plasma, in mm:	45	80
Maximum torch tilt angle, plasma, in °:	45	45
Machine/plasma system communication interface :	-	x
Cutting angle correction:	-	x
Start-position optimization:	-	x
Joint compensation:	-	x
Automatic piercing and piercing optimization:	-	x
Library of standard cutting macros:	x	x
Library of special cutting macros:	-	x
Freely programmable software architecture:	-	-
Process planning software:	-	x
Nesting software:	-	x
CAD/CAM software:	-	x

* Applicable to machines with a pipe diameter of 1,220 mm

** Up to a maximum pipe diameter of 1,220 mm

RB Heavy-Duty		PB Robo	
	Industry		Industry
Round pipes	Round pipes, dished ends	Beams, square & rectangular pipes, round pipes	
	Stationary		Stationary
	30,000		12,000
	30,000		12,000
	200		50*80
	4,064		1,220
	15,000		7,500
	x		x
	-		x
	-		x
	x		-
	x		x
	-		-
	-		x
	x		-
	6		9
	High dynamics		High dynamics
	x		x
	Electromechanical, laser		Electromechanical
	Floor construction		Floor construction
	x		-
	x		-
	MP torch head		Robot torch head
	x		x
	180		120
	70		70
	x		-
	x		x
	x		x
	1		1
	80		80
	45		45
	x		-
	x		-
	x		-
	x		-
	x		-
	x		-
	x		-
	-		x
	x		-
	x		x
	x		x

RB Compact series Thermal 3D profile cutting machines

The RB Compact series comprises standardized, compact machines with the key basic functions for round pipes up to a diameter of 812 mm and a pipe weight of up to 4 tonnes. The machines are all equipped with 6 CNC-controlled axes.

Detailed information can be supplied on request.

RB 600/6 Compact

with 6 CNC axes for round pipes with a maximum diameter of 610 mm inclusive of the Kjellberg PA-S45 W plasma cutting system, oxy-fuel cutting system, fixed chuck and height-adjustable, hydraulic scissor-type pipe carriage



RB 800/6 Compact

with 6 CNC axes for round pipes with a maximum diameter of 812 mm inclusive of the Hypertherm HPR130XD plasma cutting system, oxy-fuel cutting system, height-adjustable chuck, manual ball gutter and hold-down



Technical information / Machine series:	RB 400/6 Compact	RB 600/6 Compact	RB 800/6 Compact
Weight of standard machine in kg:	4.500	5.000	5.500
Number of CNC axes:	6	6	6
Max. workpiece weight in kg:	4.000	4.000	4.000
Min. - max. clampable round pipe diameter in mm:	50 - 406	50 - 610	50 - 812
Max. size of chuck opening in mm:	-	-	-
Min. - max. clampable square & rectangular pipes dimension in mm:	-	-	-
Min. - max. clampable beams width in mm:	-	-	-
Min. - max. clampable diameter for dished ends in mm:	-	-	-
Min. - max. cuttable workpiece length in mm: *	300** - 12.000	300** - 12.000	300** - 12.000
Min. - max. wall thickness in mm for cutting with oxy-fuel /plasma in mm: *	5-60 / 5-45	5-60 / 5-45	5-60 / 5-45
Max. torch angle in °: ***	+/- 60 / 45	+/- 60 / 45	+/- 60 / 45

* With torch in vertical position

** With additional clamping device up to 150 mm (depending on pipe parameters)

*** Up to 55° when special plasma cutting sources are used



RB Classic series Thermal 3D profile cutting machines

The RB Classic series covers our classical machines primarily for round pipes with a maximum diameter of up to 2,032 mm and up to a pipe weight of 20 tonnes. This series is also suitable for square & rectangular pipes. The maximum dimensions for square & rectangular pipes can be seen in the table of technical data.

Thanks to numerous technical optional extras, these technologically complex machines can be individually adapted to customers' specific needs. The various machines of the RB Classic series can be equipped with up to 7 CNC axes. The 7th CNC axis is necessary for cutting square & rectangular pipes. Detailed information can be supplied on request.

RB 400/800/6 Classic

with 6 CNC axes for round pipes with a maximum diameter of 812 mm inclusive of the Kjellberg HiFocus 360i plasma cutting system, oxy-fuel cutting system, stationary multi-point extraction system, height-adjustable chuck and fixed-height pipe carriage



RB 650/1200/7 Classic RV

with 7 CNC axes for round pipes with a maximum diameter of 1,220 mm and square & rectangular pipes of 420 mm x 420 mm maximum inclusive of the Kjellberg HiFocus 360i plasma cutting system, oxy-fuel cutting system, height-adjustable chuck and fixed-height pipe carriage

RB 1200/6 Classic ROSF

with 6 CNC axes for round pipes with a maximum diameter of 1,524 mm inclusive of the Hypertherm HPR400XD plasma cutting system, oxy-fuel cutting system, stationary multi-point fume extraction system and motorized conveyors for infeed, cutting and outfeed



Technical information / Machine series:	RB 400/600/6 Classic	RB 400/800/6 Classic	RB 650/1200/6 Classic	RB 950/1500/6 Classic	RB 950/2000/6 Classic
Weight of standard machine in kg:	7,000	7,500	9,000	11,000	13,000
Number of CNC axes:	6-7	6-7	6-7	6-7	6-7
Max. workpiece weight in kg:	12,000	12,000	12,000	15,000	20,000
Min. - max. clampable round pipe diameter in mm:	50 - 610	50 - 812	50 - 1,220	80 - 1,524	80 - 2,032
Max. size of chuck opening in mm:	400	400	650	950	950
Min. - max. clampable square & rectangular pipes dimension in mm:	100 x 100 / 260 x 260	100 x 100 / 260 x 260	100 x 100 / 420 x 420	100 x 100 / 640 x 640	100 x 100 / 640 x 640
Min. - max. clampable beams width in mm:	-	-	-	-	-
Min. - max. clampable diameter for dished ends in mm:	-	-	-	-	-
Min. - max. cuttable workpiece length in mm: *	300** - 18,000	300** - 18,000	300** - 18,000	300** - 18,000	300** - 18,000
Min. - max. wall thickness in mm for cutting with oxy-fuel /plasma in mm: *	5-150 / 1-80	5-150 / 1-80	5-150 / 1-80	5-150 / 1-80	5-150 / 1-80
Max. torch angle in °: ***	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45

* With torch in vertical position

** With additional clamping device up to 150 mm (depending on pipe parameters)

*** Up to 55° when special plasma cutting sources are used



Heavy-Duty series Thermal 3D profile cutting machines

Our Heavy-Duty series comprises machines for round pipes and for dished ends with a maximum diameter of up to 4,064 mm and up to a workpiece weight of 30 tonnes. The technology is based on that of the RB Classic series. Owing to the large workpiece dimensions and weights, the machines of this series have an extremely solid design. The machines are all equipped with 6 CNC-controlled axes. Detailed information can be supplied on request.



RB 1200/2500/6 Heavy-Duty

with 6 CNC axes for round pipes with a maximum diameter of 2,540 mm inclusive of oxy-fuel cutting system, fixed chuck and height adjustable, hydraulic pipe carriage

RB 1500/3500/6 Heavy-Duty RK

with 6 CNC axes for round pipes with a maximum diameter of 3,505 mm and dished ends with a maximum diameter of 3,505 mm inclusive of the Hypertherm HPR 400 plasma cutting system, oxy-fuel cutting system, height adjustable operator stand, tilting chuck and hydraulic pipe carriages



Technical information / Machine series:	RB 950/2000/6 Heavy-Duty	RB 1200/2500/6 Heavy-Duty	RB 1200/3000/6 Heavy-Duty	RB 1500/3500/6 Heavy-Duty	RB 1500/4000/6 Heavy-Duty
Weight of standard machine in kg:	18,000	22,000	24,000	26,000	28,000
Number of CNC axes:	6	6	6	6	6
Max. workpiece weight in kg:	30,000	30,000	30,000	30,000	30,000
Min. - max. clampable round pipe diameter in mm:	200 - 2,032	200 - 2,540	200 - 3,048	200 - 3,556	200 - 4,064
Max. size of chuck opening in mm:	950	1,200	1,200	1,500	1,500
Min. - max. clampable square & rectangular pipes dimension in mm:	-	-	-	-	-
Min. - max. clampable beams width in mm:	-	-	-	-	-
Min. - max. clampable diame- ter for dished ends in mm:	200 - 2,032	200 - 2,540	200 - 3,048	200 - 3,556	200 - 4,064
Min. - max. cuttable work- piece length in mm: *	300 - 30,000	300 - 30,000	300 - 30,000	300 - 30,000	300 - 30,000
Min. - max. wall thickness in mm for cutting with oxy-fuel / plasma in mm: *	5-180 / 1-80	5-180 / 1-80	5-180 / 1-80	5-180 / 1-80	5-180 / 1-80
Max. torch angle in °:	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45

* With torch in vertical position



PB Robo series Thermal 3D profile cutting machines

The PB Robo series covers robot-controlled machines that are mainly intended for the comprehensive cutting of beams (H, U, L and I). They are also capable of cutting round pipes and square & rectangular pipes. Beams can be cut up to a web width of 1,200 mm and up to a weight of 12 tonnes. The maximum dimensions for round pipes and square & rectangular pipes can be seen in the table of technical data.

If the various workpieces – beams, square & rectangular pipes or round pipes – are to be profiled, the machines are equipped with 9 CNC-controlled axes.

Detailed information can be supplied on request.

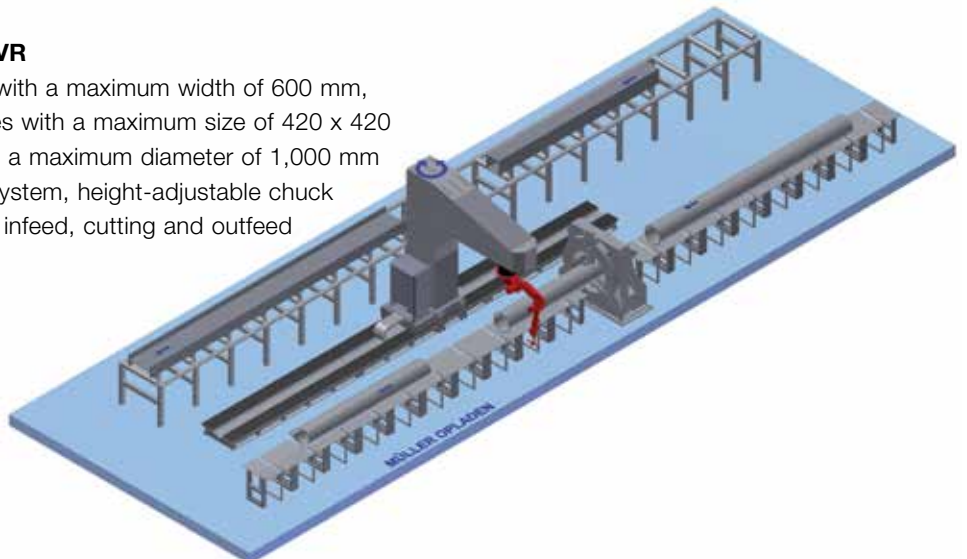


PB 1200/8 Robo TR

with 8 CNC axes for beams with a maximum width of 1,200 mm and round pipes with a maximum width of 1,220 mm inclusive of oxy-fuel cutting system, fixed chuck, beam cutting bed and height-adjustable, scissor-type pipe carriage

PB 600/420/1000/9 Robo TVR

with 9 CNC axes for beams with a maximum width of 600 mm, for square & rectangular pipes with a maximum size of 420 x 420 mm and for round pipes with a maximum diameter of 1,000 mm inclusive of oxy-fuel cutting system, height-adjustable chuck and motorized conveyors for infeed, cutting and outfeed

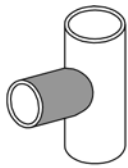


Technical information / Machine series:	PB 200 Robo	PB 600 Robo	PB 800 Robo	PB 1200 Robo
Weight of standard machine in kg:	7,000	12,000	13,000	16,000
Number of CNC axes:	7-9	7-9	7-9	7-9
Max. workpiece weight in kg:	4,000	8,000	12,000	12,000
Min. - max. clampable round pipe diameter in mm:	50 - 406	50 - 610	50 - 812	50 - 1,220
Max. size of chuck opening in mm:	400	400	400	650
Min. - max. clampable square & rectangular pipes dimension in mm:	100 x 100 / 260 x 260	100 x 100 / 260 x 260	100 x 100 / 260 x 260	100 x 100 / 420 x 420
Min. - max. clampable beams width in mm:	50 - 200	50 - 600	50 - 800	100 - 1,200
Min. - max. clampable diameter for dished ends in mm:	-	-	-	-
Min. - max. cuttable workpiece length in mm: *	300 - 12,000	300 - 12,000	300 - 12,000	300 - 12,000
Min. - max. wall thickness in mm for cutting with oxy-fuel /plasma in mm: *	5-120 / 1-80	5-120 / 1-80	5-120 / 1-80	5-120 / 1-80
Max. torch angle in: °	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45	+/- 70 / 45

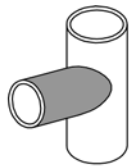
* With torch in vertical position



Standard macros for cutting profiles Thermal 3D profile cutting machines



Saddle 90° set-on concentric



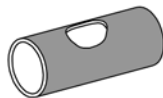
Saddle 90° set-on excentric



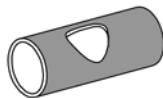
Saddle < 90° set-on concentric



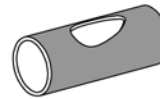
Saddle < 90° set-on excentric



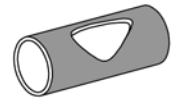
Cut out 90°
set-on concentric



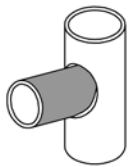
Cut out 90°
set-on excentric



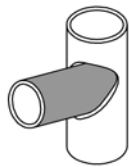
Cut out < 90°
set-on concentric



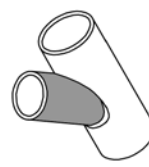
Cut out < 90°
set-on excentric



Saddle 90° set-in concentric



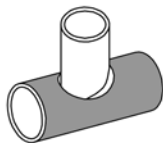
Saddle 90° set-in excentric



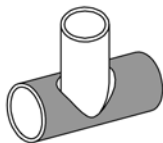
Saddle < 90° set-in concentric



Saddle < 90° set-in excentric



Cut out 90°
set-in concentric



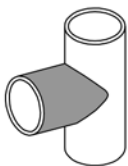
Cut out 90°
set-in excentric



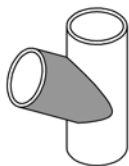
Cut out < 90°
set-in concentric



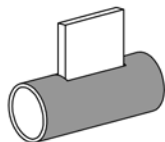
Cut out < 90°
set-in excentric



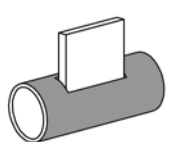
Saddle double-mitre 90°



Saddle double-mitre < 90°



Slot concentric



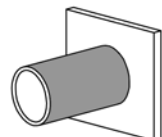
Slot excentric



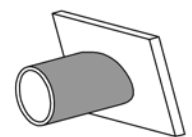
Double-mitre



Double-mitre

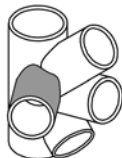


Mitre 90°

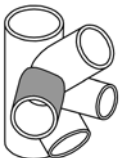


Mitre < 90°

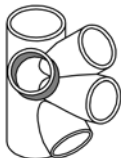
Examples of special macros for cutting profiles



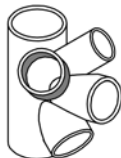
Multiple saddle 90° concentric



Multiple saddle 90° excentric



Multiple saddle < 90° concentric



Multiple saddle < 90° excentric



Elbow saddle concentric



Elbow saddle excentric



Elbow saddle offset concentric



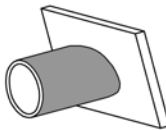
Elbow saddle offset excentric



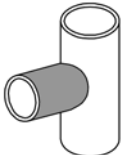
Offshore saddle concentric



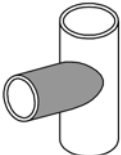
Offshore saddle excentric



Offshore mitre



Saddle 90° set-on concentric
variable bevel



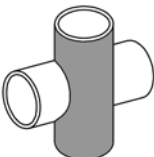
Saddle 90° set-on excentric
variable bevel



Saddle < 90° set-on concentric
variable bevel



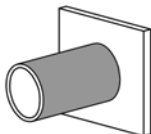
Saddle < 90° set-on excentric
variable bevel



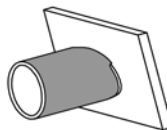
Cross cut-out excentric square



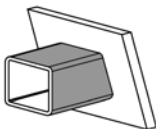
Cross cut-out excentric angular



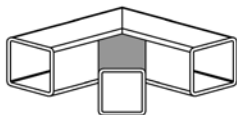
Mitre 90° for fillet weld



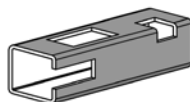
Mitre < 90° for fractional
fillet weld



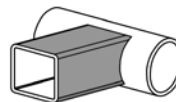
Mitre square & rectangular pipe



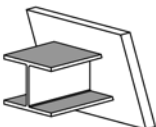
Double-mitre square & rectangular pipe



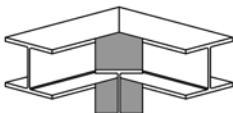
Slots square & rectangular pipe



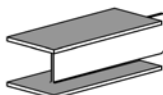
Saddle square & rectangular pipe



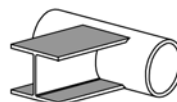
Mitre beam



Double-mitre beam



Notching beam



Saddle beam

Software

Thermal 3D profile cutting machines

Our 3D profile cutting machines make our customers' production processes more efficient. Our machines for the thermal cutting of 3D contours are not therefore isolated elements, but part of an integrated process chain.

With our CAM modules developed in-house, we are able to link our machines to up- and downstream process steps and help to reduce production time and material costs.

Independently of these CAM solutions, it is the macro-based COROBS software that is responsible for generating the cutting contours for the RB Compact, RB Classic and RB Heavy-Duty machine series. With the input of a small number of parameters in a preselected cutting macro, the movements of the CNC axes are quickly computed. The cutting process can start immediately after computation.

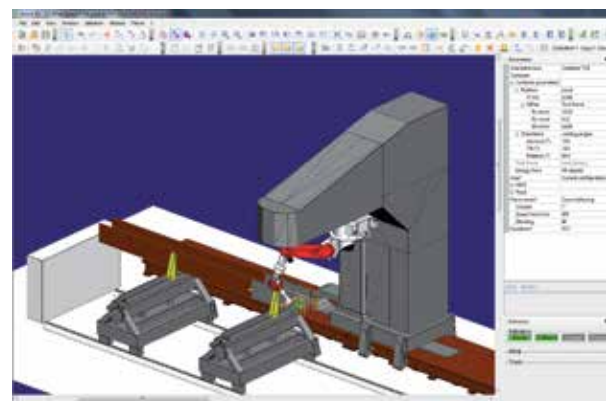
Data input in a cutting macro takes place online at the machine, offline at an external workstation or in an automated process through the adoption of CAD data. This macro-based software solution permits the rapid project-based generation of cutting contours so that production at the machine can get underway swiftly.

Page 18 shows the standard cutting macros that are supplied in a library with each machine. Page 19 shows a selection of special macros that can be optionally included in the standard library in accordance with customer needs or the branch of industry concerned. The cutting contours for the PB Robo machine series are generated with the aid of a freely programmable software architecture.

In COROBS-ROBO, data import from a CAD system is followed by the automatic definition of the cutting curves and the associated creation of a cutting file. COROBS-ROBO then sets the start and end points for the cutting task. After this, the overall cutting process of a cutting file is simulated with the depiction of the machine, the robot torch head and the workpiece before the start of cutting proper. Our internally developed CAM solutions are organized in our MOPRO software and provide process planning solutions as well as control and reporting functions.

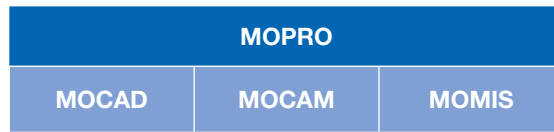


COROBS macro-based machine software



COROBS-ROBO freely programmable software architecture

MOPRO builds on the basic MOCAD, MOCAM and MOMIS modules that operate independently of each other. This means that individual modules can also be employed.

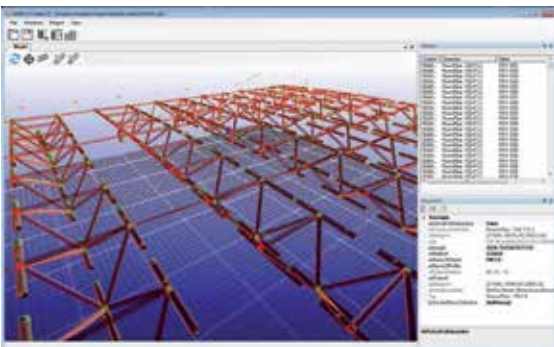


The tables show the main functions of MOPRO. Detailed information can be supplied on request.

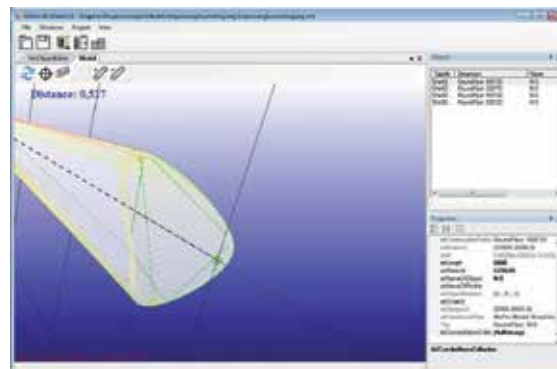
MOCAD
Import of data and models from external CAD systems such as
AutoCAD
Aveva (Tribon)
BoCAD
Graitec
Intergraph
Tekla Structures

MOMIS
Provision of extra information for quality management and controlling
Recommendation of cutting process parameters for the workpiece in question
Generation of machine malfunction reports
Indication of maintenance intervals
Calculation of cutting times and costs per pipe cut or model
Presentation of machine workload

MOCAM	
MOMID	Manual offline data input of cutting parameters for the generation of the cutting file in COROBS at an external workstation
MORPEP	Simple design of pipe joints and conversion into cutting files Modification of existing complex designs (including the removal of irrelevant drawing symbols such as bores, markings, plates) Integration of welding bevels Generation of the cutting file
MOVIEW	3D visualization of the generated cutting files with presentation of the dimensions and the weld and/or indication of the programmed parameters
MONEST	Assignment of the programmed cutting files to available pipe material in order to minimize wastage
MOREP	Generation of work reports with lists of cutting contours, pipe data or associated projects



MOCAD: Importation of a CAD model



MOVIEW: Pipe dimensioning and indication of the weld bevel

Pipe logistics Thermal 3D profile cutting machines

The productivity of our machines is boosted considerably by automated workpiece handling with logistics integrated in the machine concept. The illustration below shows a typical materials flow for round pipes with a loading and off-loading table, a cutting conveyor and handling systems. The pipe is transferred from the loading table onto an infeed conveyor

behind the chuck system. From here the pipe is pushed through the opening of the chuck onto the cutting conveyor in front of the chuck, where it is clamped and cut. Via an outfeed conveyor, the profiled pipe is then discharged onto the table in front of the machine, where it awaits further processing.



A typical efficient materials flow arrangement for round pipes

In addition to the motorized roller bed solution, the machines can also be supplied with conventional pipe support carriages suitable for a maximum pipe diameter of up to 4,064 mm and a maximum pipe weight of up to 15 tonnes. If the pipe is placed on 2 carriages, the pipe can be displaced by the manual or motorized movement of the carriages. The support rollers of the pipe carriage are manually or hydraulically adjusted to the pipe diameter with a scissor mechanism. For a maximum pipe diameter of 610 mm and a maximum pipe weight of 2 tonnes, ball gutters can be used on which the pipe is than moved.



Motorized roller conveyor for pipes with a maximum diameter of 1,524 mm and a maximum weight of 15 tonnes



Motorized ball gutter



Pipe carriages for pipes with a maximum diameter of 1,524 mm and a maximum weight of 15 tonnes. Pipe carriages with pneumatic drive



Manual ball gutter

Welding positioners Mechanized welding systems

Welding positioners designed for maximum loads of 50 kg to 40,000 kg have universal applications in the manual and mechanical welding of circumferential seams and in the accurate positioning of workpieces.

The standard versions of our positioners have the following features:

- Machine frame in a heavy-duty welded design
- Manual, electric or hydraulic slewing adjustment
- Fully machined turntable plates of various sizes with centring grooves and T-slots from the model MO-DT-500 and higher
- Standard control

Possible optional extras:

- Hollow bores of various diameters
- Circumferential seam welding and process controls
- Extensive system accessories such as three-jaw chucks and positioners

In addition to slewing positioners, we can also supply the following alternative series:

- Horizontal positioners
- Vertical positioners
- Slewing and hydraulically height-adjustable positioners
- Multi-axis positioners

Detailed information can be supplied on request.



MO-DT-1000



MO-DT-15000-HV with hydraulic height adjustment

	Max. load* in kg:	Shaft Ø in mm:	Slewing range in °:	Speed in RPM:*
MO-DT-30	30	–	+/- 90	0,125 – 5.0
MO-DT-50-HW-30	50	30	+/- 90	0.125 – 5.0
MO-DT-100-HW-125	100	125	+/- 90	0.125 – 5.0
MO-DT-200-HW-125	200	125	+/- 90	0.125 – 5.0
MO-DT-300-HW-125	300	125	+/- 90	0.125 – 5.0
MO-DT-500-HW-200	500	200	+/- 90	0.06 – 2.4
MO-DT-1000	1,000	–	120	0.06 – 2.4
MO-DT-2000	2,000	–	120	0.05 - 1.0
MO-DT-3000	3,000	–	120	0.05 - 1.0
MO-DT-5000	5,000	–	120	0.05 - 1.0
MO-DT-10000	10,000	–	120	0.05 - 1,0
MO-DT-15000	15,000	–	120	0.05 - 1.0
MO-DT-20000	20,000	–	120	0.05 - 1.0
MO-DT-30000	30,000	–	120	0.05 - 1.0
MO-DT-40000	40,000	–	120	0.05 - 1.0

* For centric workpieces

Motorized roller beds Mechanized welding systems

Our roller beds designed for maximum workpiece loads of 750 kg to 80,000 kg are used for the rotation and positioning of heavy, rotationally symmetrical workpieces like tanks or boilers for further machining or welding.

The standard versions of our roller beds have the following features:

- Drive unit including base frame and centrally displaceable motorized roller consoles
- Locking with securing pins
- Steplessly controllable rotary drives by means of self locking worm gears with built-on DC motor
- Support unit (same design as drive unit but without drive)
- Standard control

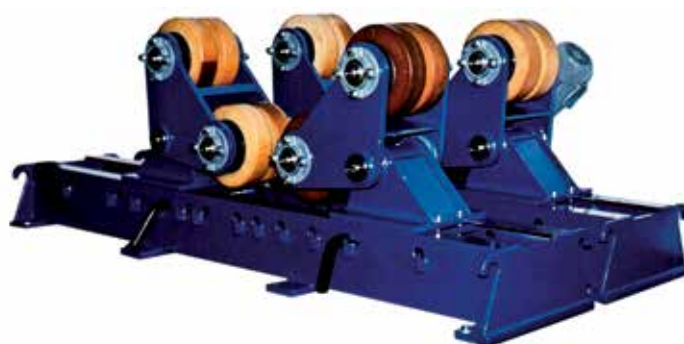
Possible optional features:

- Steel rather than Vulkollan or solid rubber wheels
- Undercarriage
- Self-centring version
MO-RB-SZ-20000-Synchron for workpiece loads 5,000 kg to 40,000 kg

Detailed information can be supplied on request.



MO-RB-40000



MO-RB-SZ-20000-Synchron

	Max. load in kg:*	Vessel diameter in mm:	Ground area (LxW) in mm:	Height in mm:	Roller diameter in mm:	Speed range in cm/min:*
MO-RB-750	750	100 - 2,000	2,200 x 600	375	250	5 - 200
MO-RB-1500	1,500	100 - 2,000	2,200 x 600	375	250	5 - 200
MO-RB-3000	3,000	100 - 3,000	2,310 x 1,000	530	250	5 - 200
MO-RB-6000	6,000	100 - 3,000	2,310 x 1,000	530	250	5 - 200
MO-RB-10000	10,000	150 - 4,000	3,900 x 1,350	710	400	4.5 - 180
MO-RB-15000	15,000	150 - 4,000	3,900 x 1,350	710	400	4.5 - 180
MO-RB-20000	20,000	100 - 4,000	3,900 x 1,350	710	400	4.5 - 180
MO-RB-30000	30,000	100 - 4,000	3,900 x 1,350	710	400	4.5 - 180
MO-RB-40000	40,000	100 - 4,000	4,200 x 1,450	780	500	3 - 120
MO-RB-80000	80,000	100 - 4,000	4,500 x 1,650	810	500	3 - 120

* For centric workpieces

Columns & booms Mechanized welding systems

Our columns and booms – ranging from 1.5 x 1 metres up to 8 x 8 metres for column stroke and boom range – are used for the positioning and guidance of welding heads, welding torches and other tools. Columns & booms can thus be combined with positioners and/or roller beds in a variety of applications such as the welding of circumferential or longitudinal seams or the build-up welding of alloys on workpieces.

The standard versions of our columns & booms have the following features:

- Lean or heavy-duty design, depending on the maximum boom load, the smoothness of motion (low vibration) and boom length
- Guides on the column & boom consisting of gear racks and linear guides
- Standard control

Possible optional extras:

- Undercarriage
- Operator's seat mounted at the front end of the boom (heavy-duty version only)

In addition to the standard models mentioned above, we can also design column & boom combinations with other lengths.

Detailed information can be supplied on request.

MO-AT-8000x8000 / Heavy-Duty



MO-AT-1500x1000 / Lean



MO-AT-7000x7000 / Heavy-Duty



	Version:	Total height in mm:	Column stroke in mm:	Boom range in mm:	Max. boom load in kg:
MO-AT-1500x1000	Lean	2,200	1,500	1,000	60
MO-AT-3000x3000	Lean	4,600	3,000	3,000	150
MO-AT-4000x4000	Lean	5,600	4,000	4,000	150
MO-AT-5000x5000	Heavy-duty	7,300	5,000	5,000	250
MO-AT-6000x6000	Heavy-duty	8,300	6,000	6,000	400
MO-AT-7000x7000	Heavy-duty	9,300	7,000	7,000	400
MO-AT-8000x8000	Heavy-duty	10,300	8,000	8,000	400

Customized solutions Mechanized welding systems

Since taking over the ARC KON engineering firm in 2003, we have steadily expanded our mechanized welding systems business. We are now ideally placed to offer not only such standard products as positioners, roller beds and columns & booms, but also customized solutions.

Thanks to our many years of experience and the training of our welding engineers, we mainly use TIG, MIG-MAG, submerged arc and plasma keyhole welding processes.

The product range can be extended on request to include a wide variety of system components such as torch fixtures, tractors and supports enabling us to realize solutions tailored to our customers.

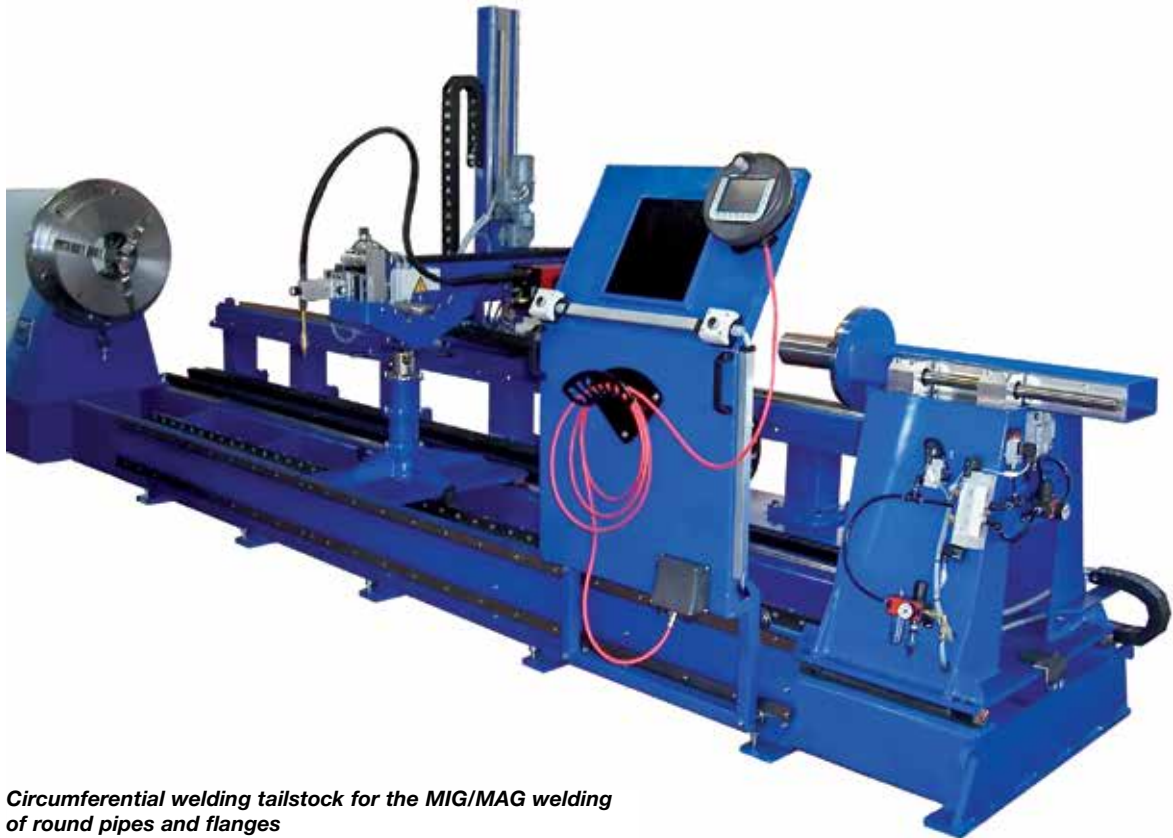
The illustrated machines are examples of customized solutions composed of our own system modules.



Automatic multi-axis positioner with integrated column & boom for the MIG-MAG and TIG welding of valves

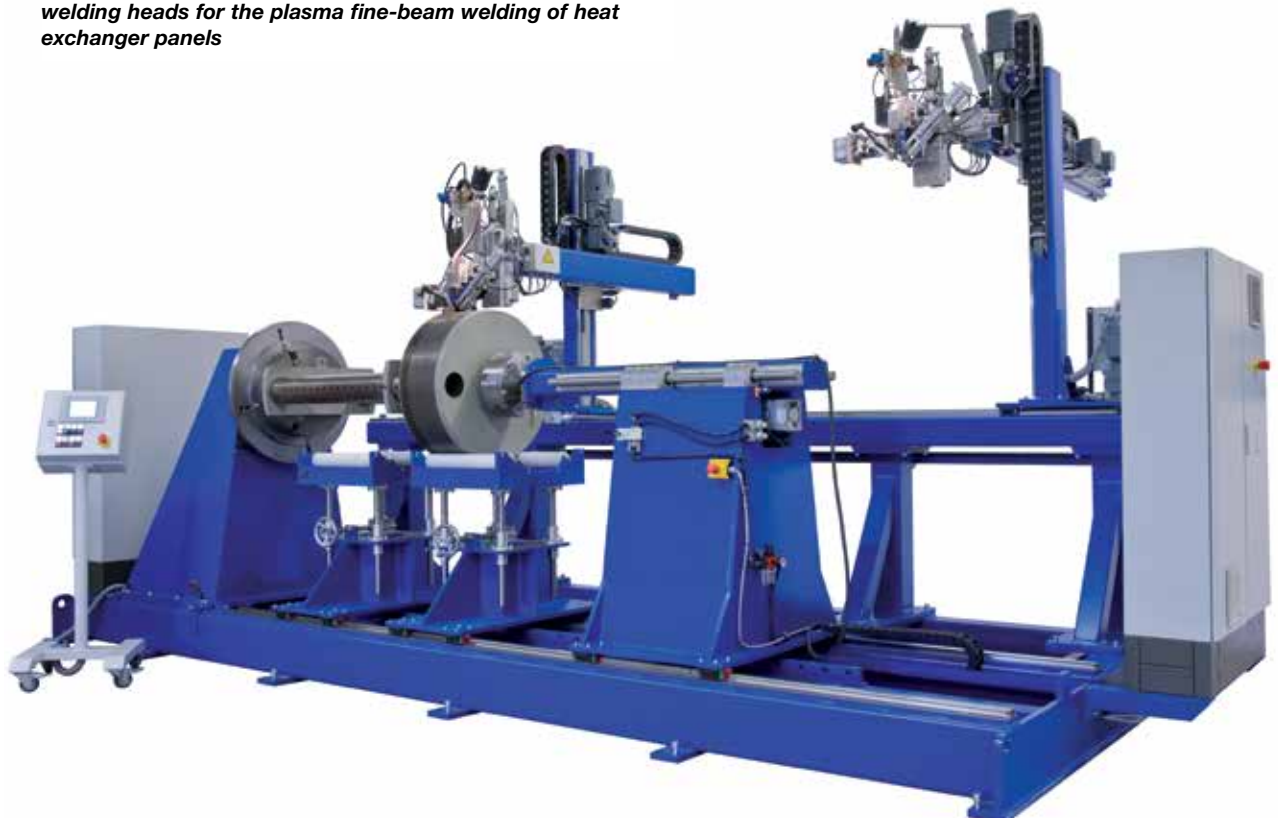


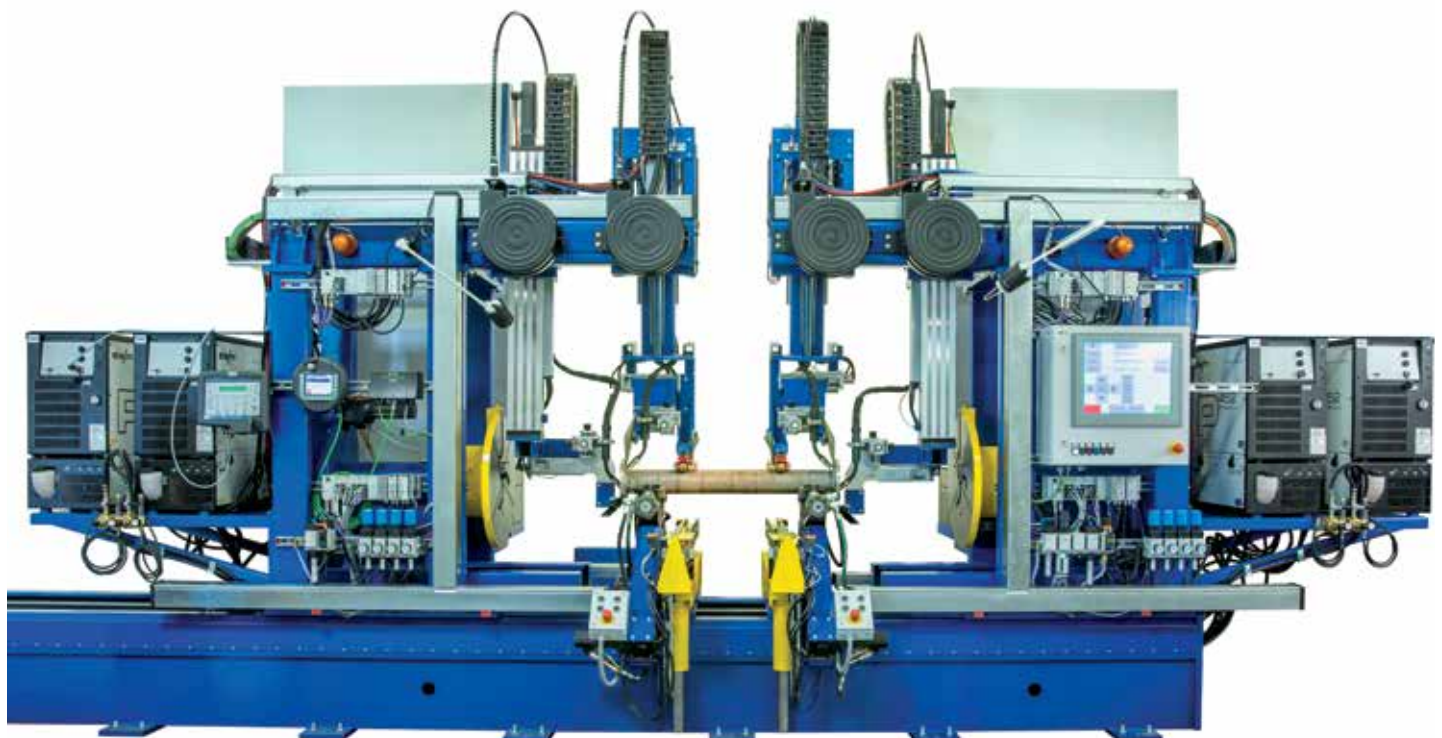
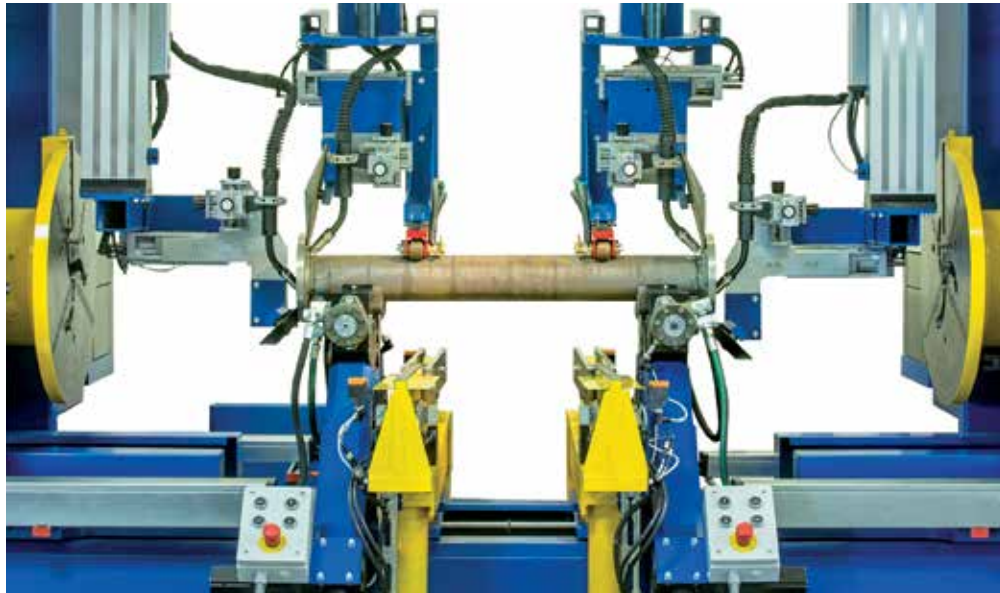
Internal welding jig for the submerged arc welding of longitudinal seams in pipes



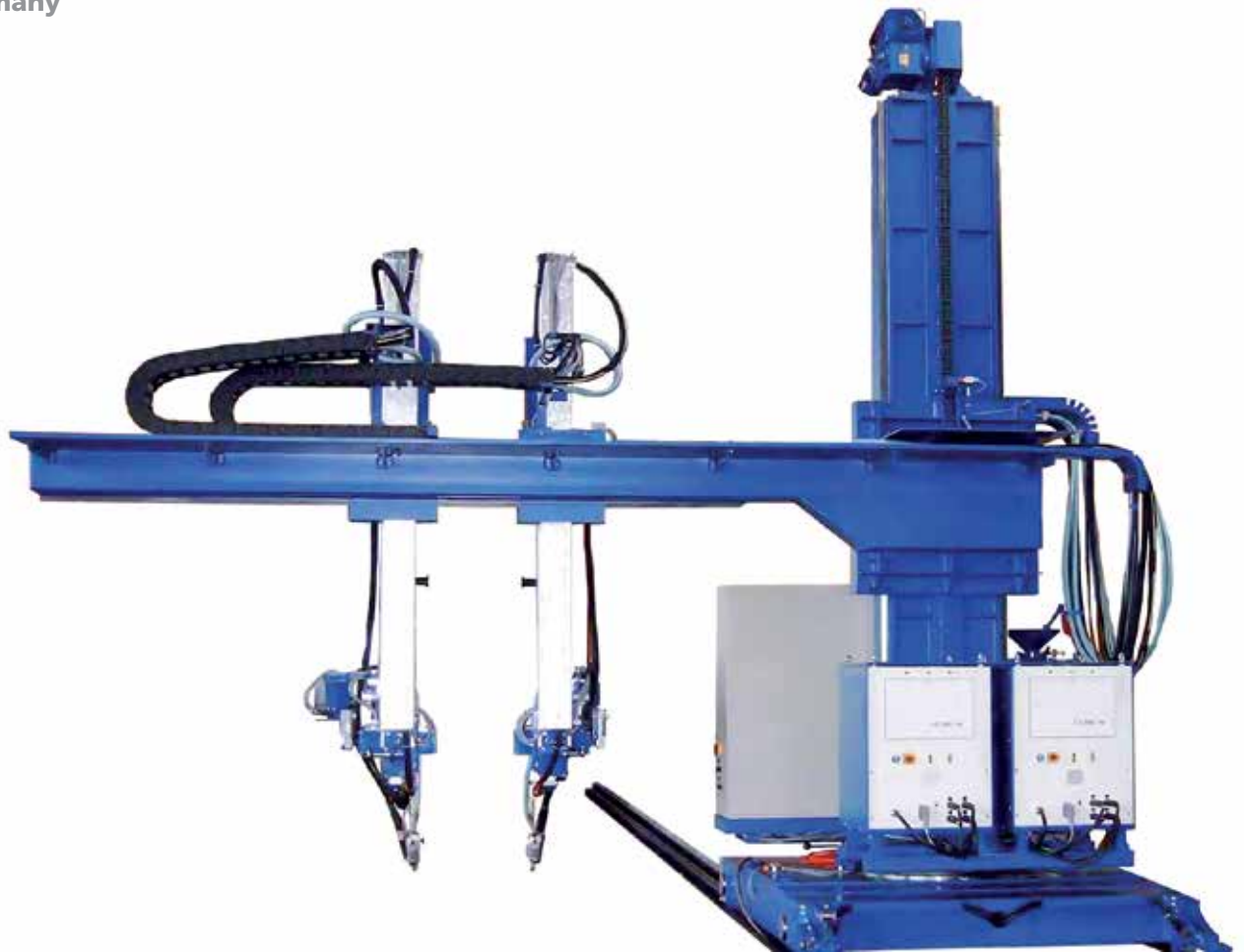
Circumferential welding tailstock for the MIG/MAG welding of round pipes and flanges

Circumferential welding tailstock with two synchronized welding heads for the plasma fine-beam welding of heat exchanger panels

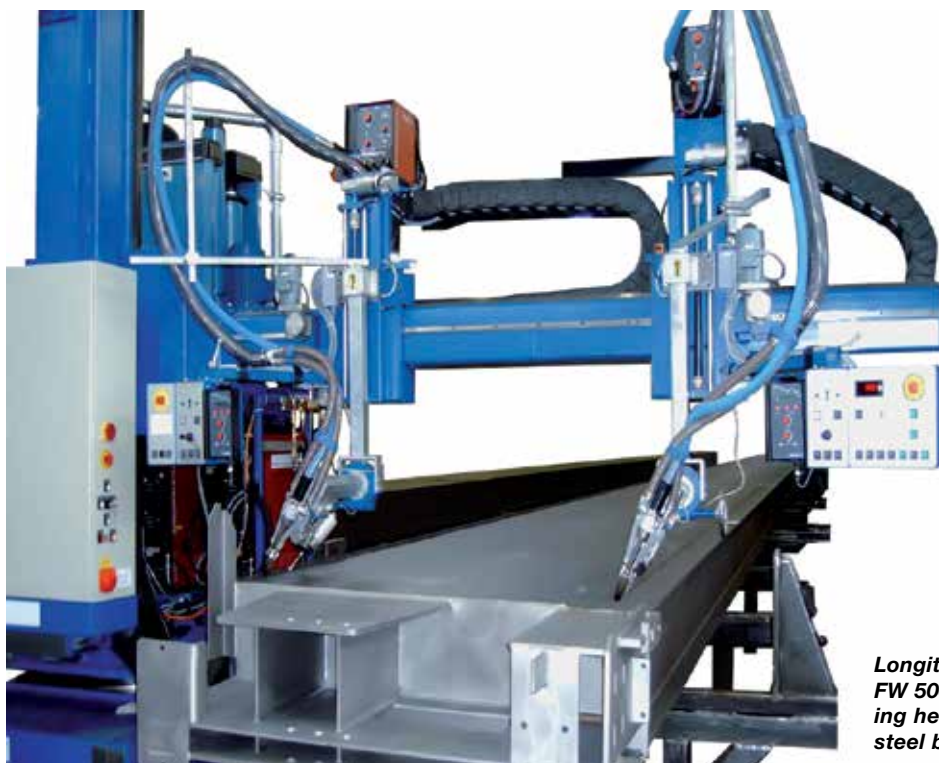




Pipe flange welding machine RFSM 300/6000/7 for the simultaneous internal and external MIG welding of flanges and sockets with four torches

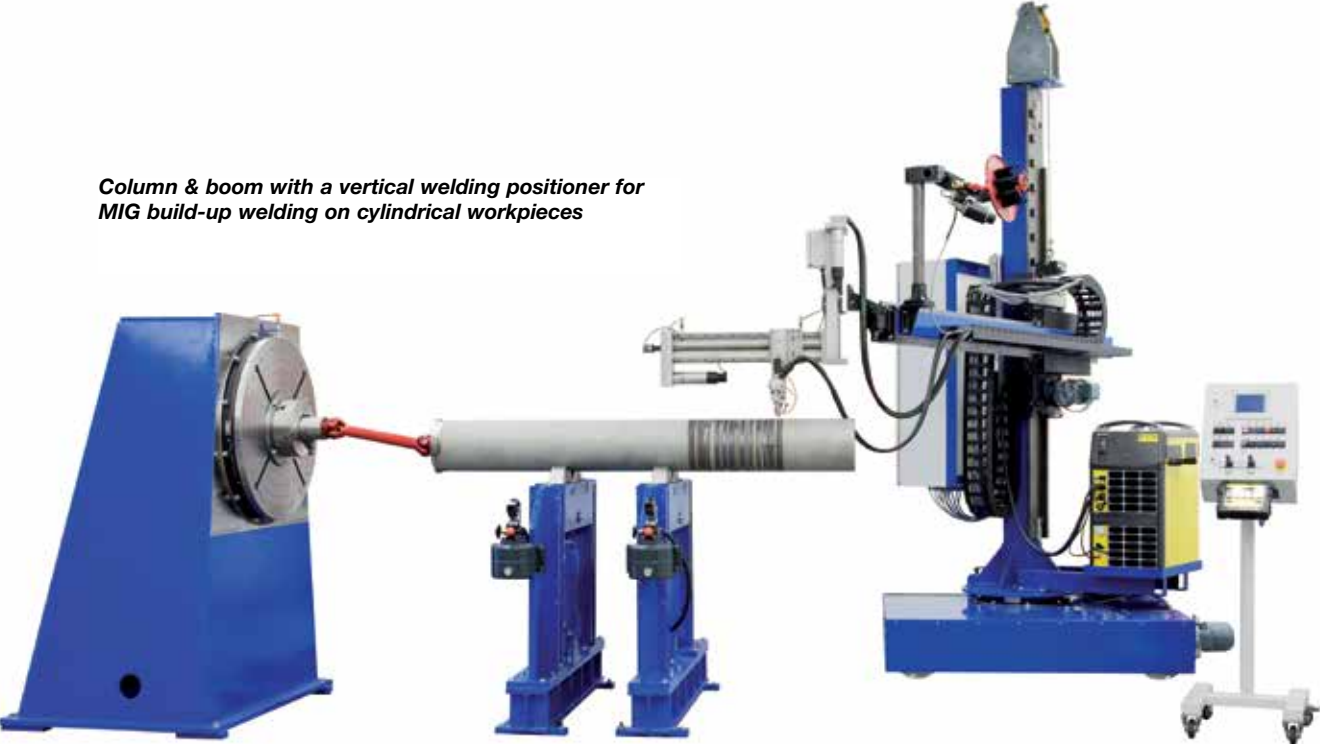


Longitudinal welding jig BFW-QHFW 600-70000 with two welding heads for the MIG welding of the roofs and sidewalls of passenger carriages

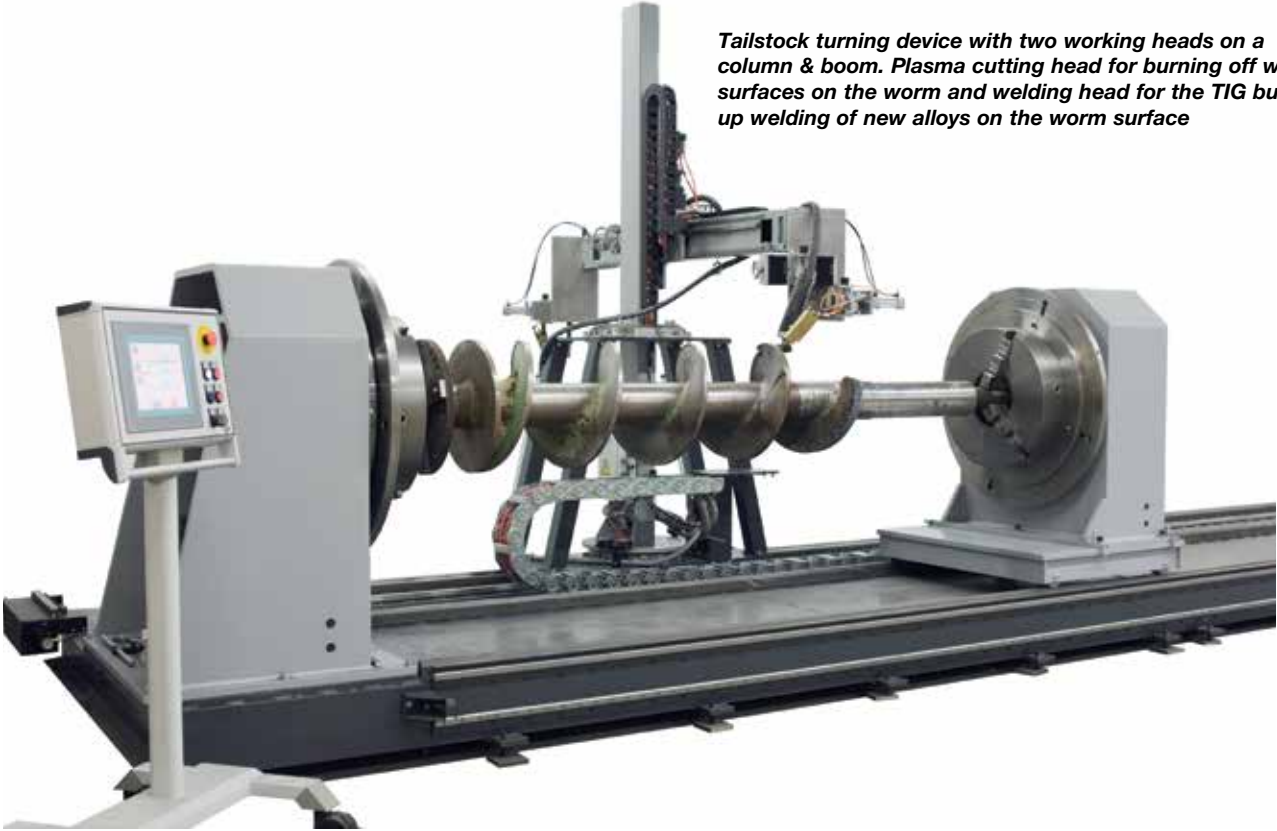


Longitudinal welding jig BFW-QHFW 500-25000 with two welding heads for the MIG welding of steel beams

Column & boom with a vertical welding positioner for MIG build-up welding on cylindrical workpieces



Tailstock turning device with two working heads on a column & boom. Plasma cutting head for burning off worn surfaces on the worm and welding head for the TIG build-up welding of new alloys on the worm surface



Automated pipe shops

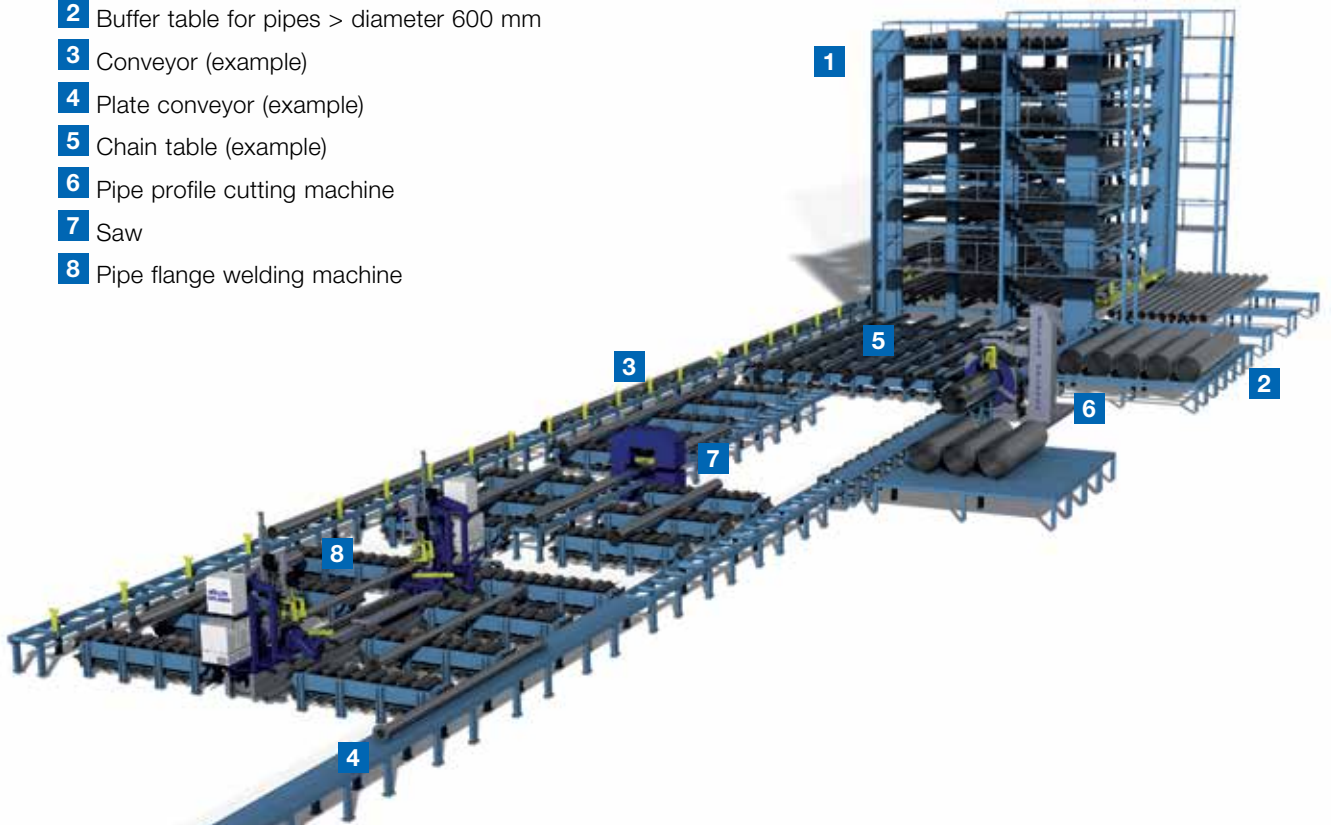
A modern pipe shop is a complex combination of various systems (materials handling systems, machines and software) for boosting efficiency. First of all, we analyse the current situation at the customer site and record the future target requirements. The initial investigations relate to materials flow in the pipe shop. This way, we can reduce actual production time.

The analysis is followed by the planning phase in which an overall strategy is prepared and presented to the customer in the form of a three-dimensional process simulation.

The overall strategy covers the combined processes and includes materials handling systems, machines and software.

A modern pipe shop can also include machines such as sand-blasting facilities, saws, pipe profile cutting machines, pipe flange welding machines for slip-on and head flanges and sockets, pipe bending machines and welding workstations with positioners.

- 1 Pipe silo for pipes < diameter 600 mm
- 2 Buffer table for pipes > diameter 600 mm
- 3 Conveyor (example)
- 4 Plate conveyor (example)
- 5 Chain table (example)
- 6 Pipe profile cutting machine
- 7 Saw
- 8 Pipe flange welding machine



Materials handling systems

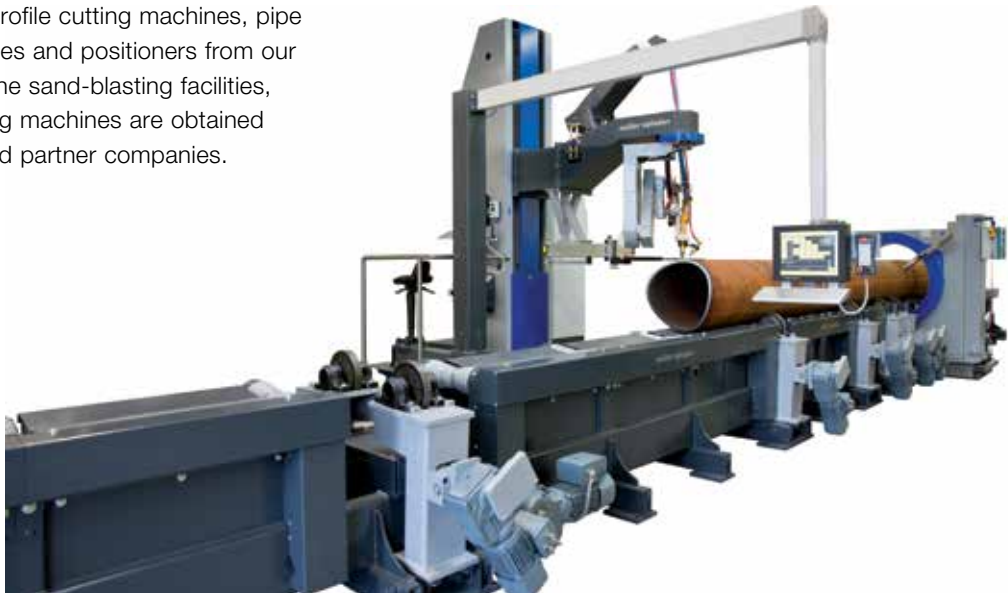
A combination of plate conveyors, conveyors, carriages and chain tables is capable of supplying pipes to workstations in minimum time without time-consuming crane manoeuvres. Pipe silos are used for storing a large quantity of in most cases different pipes in limited space for rapid retrieval, where they can be called off automatically for the production process in question. Buffer tables at machines and workstations prevent bottlenecks and prolonged waiting.

Machines

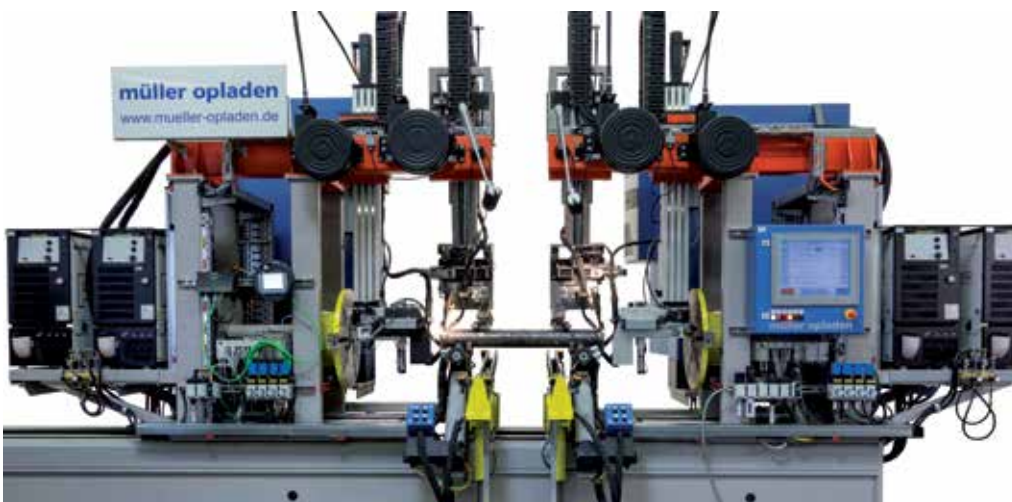
We provide the pipe profile cutting machines, pipe flange welding machines and positioners from our own product range. The sand-blasting facilities, saws and pipe bending machines are obtained from our highly reputed partner companies.

Software

A master software system controls communication between the materials handling systems and the machines (production control) to ensure the smooth transfer of pipes from storage via the individual production machines to their downstream use. The software itself allows a link-up with the customer's own software system for the compilation of packages and process documentation. An alternative option is to use software systems from our German partner.



Example of pipe profile cutting machine



Example of pipe flange welding machine

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