

PIPE BENDING SYSTEMS



**SYSTEMS THAT
MAKE A DIFFERENCE**

Product overview – simply smart



simply smart.

A SYSTEM MUST BE SMART

WE THINK SYSTEMATICALLY FOR YOUR SUCCESS

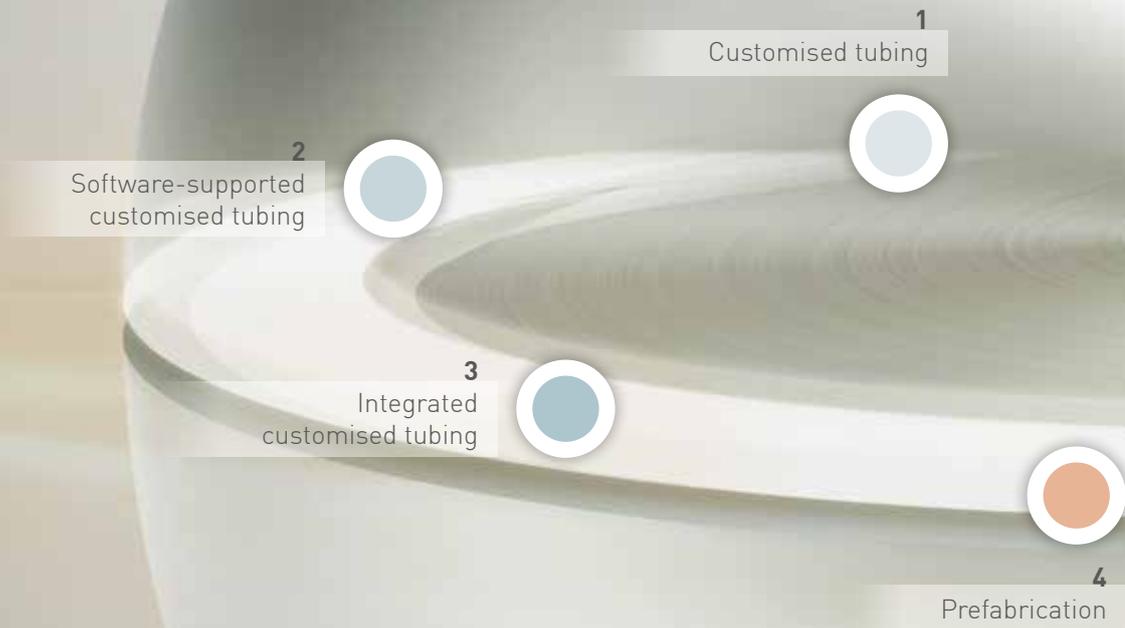
For more than five decades, TRACTO-TECHNIK has been a reputable partner in processing pipes. During this time we have acquired comprehensive experience in the mechanical working and machining of pipes. One thing to have emerged from this is the system for processing media-bearing pipes: PIPE BENDING SYSTEMS. This reflects our core competence: Thinking in terms of system solutions for the processing of pipes. The best system for single-part and small-series production with great product variety.

We think around the problem: If a system is to function, it needs to be just as intelligent as it is uncomplicated. Simply smart. For our customers, we produce a successful and smart complete system. As experts in integrated,



customised tubing and in its prefabrication, our experienced staff generate solutions that go far beyond the standard and prove convincing at all levels of the industry. Our expertise as a system provider distinguishes us clearly from our competitors, because we take command over all facets of the system. This involves not only the provision of innovative machine technology, ingenious measuring technology and intelligent software solutions, but also an excellent consulting service to accompany you in all projects from beginning to end, plus outstanding service. An all-round concept.

simply smart.



A SYSTEM MUST BE SCALABLE

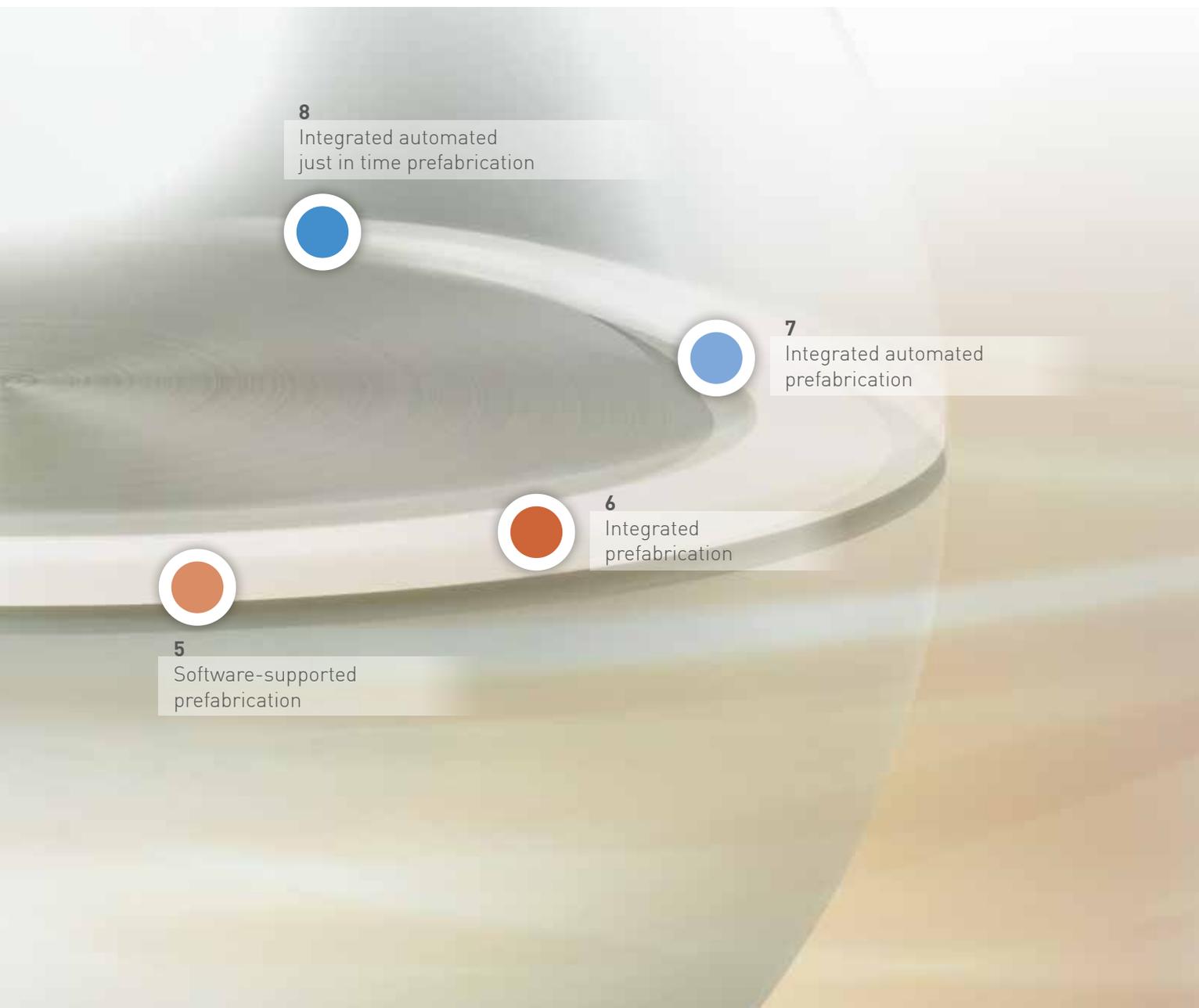
FUNCTIONAL AND FLEXIBLE FOR YOUR PROCESSES

Sometimes at the beginning of a project it is not yet possible to foresee which additional problems are likely to emerge as work unfolds, and consequently which competences are likely to be required in the future. PIPE BENDING SYSTEMS fits your requirements and we think of ourselves in this context as your system partner. That means: We accompany you right from the planning stage up to the maintenance stage in all of your processes.

We specialise in:

- Customised tubing
- Manual prefabrication
- Automated prefabrication

Thanks to the interplay between our machine technology, measuring technology and software solutions in different combinations and levels of deployment, in the final analysis a scalable system emerges that offers our customers an optimal solution for every application.



8
Integrated automated
just in time prefabrication

7
Integrated automated
prefabrication

6
Integrated
prefabrication

5
Software-supported
prefabrication

	MACHINE	SOFTWARE	MEASURING
Level 1	TUBOMAT TUBOBEND	-	-
Level 2	TUBOMAT TUBOBEND	PIPEFAB BE	TUBOCONTROL
Level 3	TUBOMAT TUBOBEND	PIPEFAB BE/HE	TUBOCONTROL TUBOSCAN
Level 4	TUBOMAT TUBOBEND	-	-
Level 5	TUBOMAT TUBOBEND	PIPEFAB BE	TUBOCONTROL
Level 6	TUBOBEND TUBOTRON	PIPEFAB BE/HE	TUBOCONTROL TUBOSCAN
Level 7	TUBOTRON	PIPEFAB HE	TUBOCONTROL TUBOSCAN
Level 8	TUBOTRON	PIPEFAB HE	TUBOCONTROL TUBOSCAN



CUSTOMISED TUBING

LEVEL 1: CUSTOMISED TUBING

Manual measurement data serve as input data for the manufacture of customised tubing. Bending data must be determined without software support and then entered into the machine's controller.



TUBOMAT

PERFORMANCE/ADVANTAGES

- Reduction in warehousing of fittings
- Reduction in welded seams (and inspections thereof) or screw connections
- Higher flexibility
- Reduction in risk and cost

LEVEL 2: SOFTWARE-SUPPORTED CUSTOMISED TUBING

On the basis of material-specific guidelines, pipe bending data can be calculated and documented from the measurement data with the help of pipe bending software. The transfer to the bending machine can be carried out manually or by means of a data interface.



TUBOBEND

PERFORMANCE/ADVANTAGES

- Material-specific guidelines (database)
- Reduction in waste
- No reworking required
- Reproducibility
- Reduction in work times
- Division of labour (measuring, bending)
- Process safety



PIPEFAB BE



LEVEL 3: INTEGRATED CUSTOMISED TUBING

Through the use of software and measurement technology, in addition to the networking of workstations, there emerges a continuous digital data flow from the measurement data to the manufacturing data, and that flow also incorporates the quality assurance.

PERFORMANCE/ADVANTAGES

- Networking of workstations
- Continuous, consistent data flow
- Integration of machine technology, software and measuring technology
- Cross-functional work (construction, manufacture, assembly)
- Documentation and traceability
- Reproducibility
- Optimised work preparation
- Production-specific data generation
- Reduction in work times and costs
- Modular structure
- Secure single-component production



TUBOBEND



PIPEFAB HE



TUBOSCAN

1

2

3



PREFABRICATION

LEVEL 4: PREFABRICATION

As entry data for the manual prefabrication, CAD data (technical drawings) are available. Bending data must be determined without software support and then entered into the machine's controller. Simple components and pipe bends can thus be manufactured through centralised production.



TUBOBEND

PERFORMANCE/ADVANTAGES

- Simple bending data

LEVEL 5: SOFTWARE-SUPPORTED PREFABRICATION

With the aid of software and on the basis of material-specific guidelines, CAD data of the components can be converted into manufacturing data, transferred to bending machines and documented.



TUBOBEND

PERFORMANCE/ADVANTAGES

- Material-specific guidelines (database)
- Conversion of CAD data into manufacturing data
- Reduction in waste
- No reworking required
- Reproducibility
- Reduction in work times
- Process safety
- Effective manufacture of multifarious components



PIPEFAB BE



LEVEL 6: INTEGRATED PREFABRICATION

The networking of the workstations and the integration of machines, software and measuring technology enable an effective central manufacture of the components. A continuous data flow from construction to quality assurance is guaranteed.

PERFORMANCE/ADVANTAGES

- Networking of workstations
- Continuous, consistent data flow
- Integration of machine technology, software and measuring technology
- Cross-functional work (construction, manufacture, assembly)
- Documentation and traceability
- Reproducibility
- Optimised work preparation
- Production-specific data generation
- Reduction in work times and costs
- Extendible, growing system
- Safe single-part and small series production
- Process optimisation and process safety
- Integrated quality control



TUBOTRON



PIPEFAB HE



TUBOSCAN

4

5

6



AUTOMATED PREFABRICATION

LEVEL 7: INTEGRATED AUTOMATED PREFABRICATION

Networked workstations and the integration of software and measuring technology with CNC machine technology enable an effective central manufacture of single-part or mass-produced components. A comprehensive planning of manufacturing is possible.

PERFORMANCE/ADVANTAGES

- Networking of workstations
- Continuous, consistent data flow
- Integration of CNC machine technology, software and measuring technology
- Cross-functional work
- Reduction in material / trim-loss optimisation
- Extension of manufacturing possibilities
- Reduction in cycle times
- Optimisation of set-up time
- Increase in productivity
- High performance in the overall process
- Optimisation of manufacturing planning
- High variance
- Production-specific data generation
- Direct transfer of control data
- Extendible, growing system
- Elimination of operator mistakes
- Multiple machine operation
- Safe single-part and series production
- Integrated quality control



TUBOTRON



PIPEFAB HE



TUBOSCAN S



LEVEL 8: INTEGRATED, AUTOMATED JUST IN TIME (JIT) PREFABRICATION

With a daily update of the planning requirement in the context of the integrated, automated prefabrication, a Just-In-Time manufacturing can be realised. The most extensive networking of the workstations, together with the use of comprehensive software functionalities ensure for an optimised work flow.

PERFORMANCE/ADVANTAGES

Extending Level 7:

- Reduction in warehousing
- Manufacturing tailored to requirement
- Highly automated manufacturing/assembly
- Clocked assembly/continuous flow production



TUBOTRON



PIPEFAB HE



TUBOSCAN S



MACHINES

TUBOMAT: PROCESSING CENTRE FOR HYDRAULIC PIPES



MACHINE TYPE	BENDING PERFORMANCE (STEEL TUBE)	MAXIMUM BENDING RADIUS
TUBOMAT	Ø 48,3 x 4,0 mm	145 mm

The processing functions of sawing, deburring, cutting ring assembly, flaring and chamfering can be individually integrated.

TUBOBEND: SEMI-AUTOMATIC PIPE BENDING MACHINES



MACHINE TYPE	BENDING PERFORMANCE (STEEL TUBE)	MAXIMUM BENDING RADIUS
TUBOBEND 20	Ø 16,0 x 2,0 mm	45 mm
TUBOBEND 30	Ø 30,0 x 3,0 mm	90 mm
TUBOBEND 42	Ø 42,0 x 3,0 mm	90 mm
TUBOBEND 50	Ø 50,0 x 5,0 mm	200 mm
TUBOBEND 60	Ø 60,3 x 4,5 mm	200 mm
TUBOBEND 80	Ø 76,1 x 6,0 mm	190 mm ¹
TUBOBEND 90	Ø 88,9 x 5,0 mm	250 mm

¹Option: 250 mm

BENDING DRIVE	BENDING DIRECTION	MAXIMUM BENDING SPEED	BENDING ACCURACY
Electro-hydraulic	Right	20 °/s	± 0,2 °

BENDING DRIVE	BENDING DIRECTION	MAXIMUM BENDING SPEED	BENDING ACCURACY
Electro-hydraulic	Right	90 °/s	± 0,2 °
Electro-hydraulic	Right	45 °/s	± 0,1 °
Electro-hydraulic	Right	20 °/s	± 0,2 °
Electro-hydraulic	Right	30 °/s	± 0,1 °
Electro-hydraulic	Right	20 °/s	± 0,1 °
Electro-hydraulic	Right	20 °/s	± 0,1 °
Electro-hydraulic	Right	16 °/s	± 0,1 °

MACHINES

TUBOTRON: CNC PIPE BENDING MACHINES



MACHINE TYPE	BENDING PERFORMANCE (STEEL TUBE)	MAXIMUM BENDING RADIUS
TUBOTRON 20 (20 RL ¹)	Ø 20,0 x 1,5 mm	100 mm
TUBOTRON 25 (25 MR)	Ø 25,0 x 2,5 mm	150 mm
TUBOTRON 30 (30 MR)	Ø 30,0 x 4,0 mm	200 mm
TUBOTRON 50	Ø 50,0 x 5,0 mm	200 mm
TUBOTRON 60	Ø 60,3 x 4,5 mm	200 mm
TUBOTRON 90	Ø 88,9 x 6,0 mm	250 mm
TUBOTRON 120	Ø 139,7 x 5,0 mm	420 mm
TUBOTRON 170	Ø 168,3 x 8,0 mm	510 mm
TUBOTRON 170 HD	Ø 168,3 x 11,0 mm	510 mm

¹ tool configuration above/below

RL = Right-Left bending machine • MR = Multi-Radii bending machine • HD = Heavy Duty

TUBOTRON VARIO: FULLY ELECTRIC CNC PIPE BENDING MACHINES



MACHINE TYPE	BENDING PERFORMANCE (STEEL TUBE)	MAXIMUM BENDING RADIUS
TUBOTRON VARIO 40 MR	Ø 42,0 x 2,0 mm	160 mm ¹
TUBOTRON VARIO 40 RL	Ø 42,0 x 2,0 mm	160 mm ¹

¹ for rotary draw bending, option: free-form bending over booster

MR = Multi-Radii bending machine • RL = Right-Left bending machine

BENDING DRIVE	BENDING DIRECTION	MAXIMUM BENDING SPEED	ACCURACY OF ALL AXES
Servo-electric	Right	450 °/s	± 0,05 ° / ± 0,05 mm
Servo-electric	Right	170 °/s	± 0,05 ° / ± 0,05 mm
Electro-hydraulic	Right	140 °/s	± 0,05 ° / ± 0,05 mm
Electro-hydraulic	Right	43 °/s	± 0,05 ° / ± 0,05 mm
Electro-hydraulic	Right	43 °/s	± 0,05 ° / ± 0,05 mm
Electro-hydraulic	Right	43 °/s	± 0,05 ° / ± 0,05 mm
Electro-hydraulic	Right	16 °/s	± 0,1 ° / ± 0,1 mm
Electro-hydraulic	Right	8 °/s	± 0,1 ° / ± 0,1 mm
Electro-hydraulic	Right	8 °/s	± 0,1 ° / ± 0,1 mm

BENDING DRIVE	BENDING DIRECTION	MAXIMUM BENDING SPEED	ACCURACY OF ALL AXES
Servo-electric	Right	180 °/s	± 0,05 ° / ± 0,05 mm
Servo-electric	Right/Left	180 °/s	± 0,05 ° / ± 0,05 mm

MACHINES

TUBOFORM A: AXIAL PIPE END PROCESSING TECHNOLOGY

TUBOFORM C: CONNECTION TECHNOLOGY (CUTTING RING ASSEMBLY/FLARING)



MACHINE TYPE	PIPE RANGE	MAXIMUM FORMING FORCE
TUBOFORM A3	Ø 3,0–12,0 mm	25 kN
TUBOFORM A5	Ø 3,0–20,0 mm	60 kN
TUBOFORM C	Ø 6,0–42,0 mm	173 kN

TUBOGRAT: PIPE END DEBURRING TECHNOLOGY



MACHINE TYPE	PIPE RANGE	ROTATION SPEED OF DEBURRING TOOLS
TUBOGRAT 48	Ø 6–48 mm	140 / 280 min ⁻¹
TUBOGRAT 60	Ø 20–60 mm	140 / 280 min ⁻¹
TUBOGRAT K 60	Ø 2–59 mm	140 / 280 min ⁻¹
TUBOGRAT K 77	Ø 40–77 mm	140 / 280 min ⁻¹

MEASURING

TUBOSCAN S: OPTICAL PIPE MEASURING TECHNOLOGY (INCL. TEZETCAD SOFTWARE)



MEASURING SYSTEM	MEASURABLE PIPES	MEASURING VOLUME
TUBOSCAN S 60	$\emptyset > 2 \text{ mm}$	540 x 420 x 200 mm
TUBOSCAN S 100	$\emptyset > 2 \text{ mm}$	1.000 x 800 x 400 mm
TUBOSCAN S 200 ¹	$\emptyset > 2 \text{ mm}$	2.000 x 800 x 600 mm

¹Option:run-through long tubes/reversible operation

TUBOSCAN: COORDINATE MEASURING ARMS (INCL. TEZETCAD SOFTWARE)



MEASURING ARM TYPE	MEASURING VOLUME	SINGLE-POINT REPRODUCIBILITY
HEXAGON ABSOLUTE SERIES 73 (6-AXIS)	1,2 ... 4,5 m	0,014 ... 0,120 mm
HEXAGON ABSOLUTE SERIES 75 (6-AXIS)	1,2 ... 4,5 m	0,010 ... 0,070 mm

Further measuring arm models (e.g. 7-axis configuration) or models of other manufacturers (e.g. FARO) are optionally available.

SOFTWARE

PIPEFAB: PIPING SOFTWARE SOLUTIONS



FUNCTIONALITY	PIPEFAB BE (BENDING EDITION)	
	STARTER	BASIC
Project administration	X	X
Administration and maintenance of master data	X	X
Single-user installation/client-server installation	X / -	X / 0
Generation of single-pipe isometrics/spools	X / -	X / -
Calculation and issuing of bending data	X	X
Inspection of clamping length, start-/ end-lengths	X	X
Generation and transfer of NC bending data	-	X
Bending simulation with graphic display	-	X
Import of CSV data / export of CSV data	0 / -	X / 0
Interface for import of CAD data (.pcf)	-	-
3D representation of the pipe course	-	0
Junction components (separable joints)	-	-
Isometric exchange of parts	-	-
Screw connections, T-pieces, father-son parts	-	-
Issuing of parts lists and cutting lists	-	-
Generation of manufacturing batches	-	-

X = Standard • 0 = Option • - = Not included



**PIPEFAB HE
(HYDRAULIC EDITION)**

COMFORT (+)

X	X
X	X
X/O	- / X
X/-	X / X
X	X
X	X
X	X
X	0
X/X	0 / 0
-	0
X	X
-	X
-	X
-	X
-	X
-	0



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