T BEND – MANDREL BENDING MACHINES
RIGHT/LEFT BENDING
WITH CNC–CONTROL

transfluid
The solution for tubes.

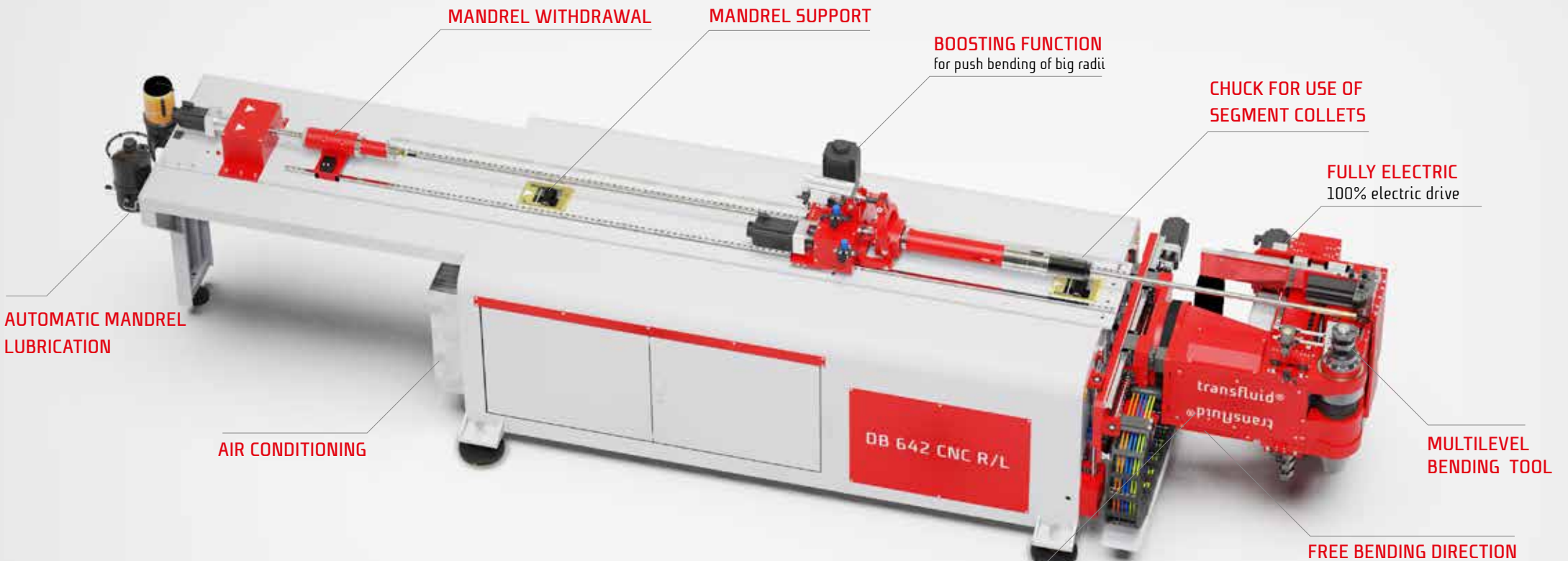# T BEND – MANDREL BENDING MACHINES RIGHT/LEFT BENDING WITH CNC-CONTROL

For better efficiency. The electric axes can be programmed in synchronicity to give optimum cycle times. Tools for bending on multiple levels with automated tool change makes it possible to achieve various radii and the most complex geometries on tubes.

With our clockwise/counterclockwise bending machines – also available with push bending function – the most complex bends become reality with great accuracy.

3

T BEND - MANDREL BENDING MACHINES
FULL ELECTRIC
WITH CNC-CONTROL

MANDREL WITHDRAWAL

MANDREL SUPPORT

BOOSTING FUNCTION
for push bending of big radii

**CHUCK FOR USE OF
SEGMENT COLLETS**

FULLY ELECTRIC
100% electric drive

**AUTOMATIC MANDREL
LUBRICATION**

transfluid®

DB 642 CNC R/L

AIR CONDITIONING

**MULTILEVEL
BENDING TOOL**

FREE BENDING DIRECTION
The bending direction is free
programmable, switching from right hand
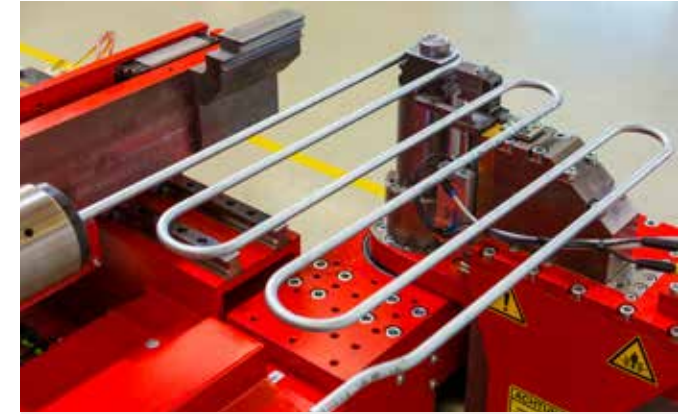to left hand and back, all on one tube.

For better efficiency. The electric axes can be programmed in synchronicity
to give optimum cycle times. Tools for bending on multiple levels with auto-
mated tool change makes it possible to achieve various radii and the most
complex geometries on tubes.

360° BENDING HEAD
Can be positioned horizontally
and vertically including 360° ro-
tation axis for change of bending
direction

OUR PORTFOLIO OF MACHINES

Type	DB 622-CNC-R/L	DB 630-CNC-R/L	DB 642-CNC-R/L	DB 2060-CNC-R/L
Range	3/16" - 7/8"	3/16" - 1 1/8"	1/4" - 1 5/8"	1/4" - 2 3/8"
Max. capacity	7/8" x .072" (mild steel) 7/8" x .049" (stainless steel)	1 1/8" x .072" (mild steel) 1 1/8" x .049" (stainless steel)	1 5/8" x .120" (mild steel) 1 5/8" x .120" (stainless steel)	2 3/8" x .154" (mild steel) 2 3/8" x .095" (stainless steel)
Max. Radii	2.6"	3.5"	6.6"	7.1"
Usable length	6.5 ft (standard) 10 ft 15 ft 20 ft (special)	6.5 ft (standard) 10 ft 15 ft 20 ft (special)	6.5 ft 10 ft (standard) 15 ft 20 ft (special)	6.5 ft 10 ft (standard) 15 ft 20 ft (special)
Speed of bending axis	300 °/sec.	275 °/sec.	180 °/sec.	100 °/sec.
Number of CNC axes	11	11	11	11
Power bending axis	servo-electric	servo-electric	servo-electric	servo-electric
Operating voltage	480 Volt - 50 Cyl - 3 Ph. - 16 KW	480 Volt - 50 Hz - 3 Ph. - 22 KW	480 Volt - 60 Hz - 3 Ph. - 30 KW	480 Volt - 60 Hz - 3 Ph. - 30 KW
Voltage of the control	24 Volt DC	24 Volt DC	24 Volt DC	24 Volt DC
Length	185"	232"	232"	315"
Width	63"	65"	65"	63"
Height	57"	57"	59"	71"
Weight approx.	6,173 lb	8,157 lb	8,157 lb	20,062 lb

BASIC EQUIPMENT:

THE 360° BENDING HEAD

The Bending head of our fully electric CNC R/L series can be positioned horizontally and vertically, including 360° rotation axis for a change of bending direction (right- or left-hand).


MULTILEVEL BENDING

Each bending head can be equipped with minimum two tool sets, e.g. with different bending radii or form-clamps, max. changing height for standard machine is 60 mm.

BENDING TOOLS FOR TUBES WITH ALREADY FORMED TUBE ENDS.

FREE BENDING DIRECTION

Positioning of bending head via combined diagonal and rotation axis, right-and-left-hand bending in one operation.

HOLLOW SHAFT

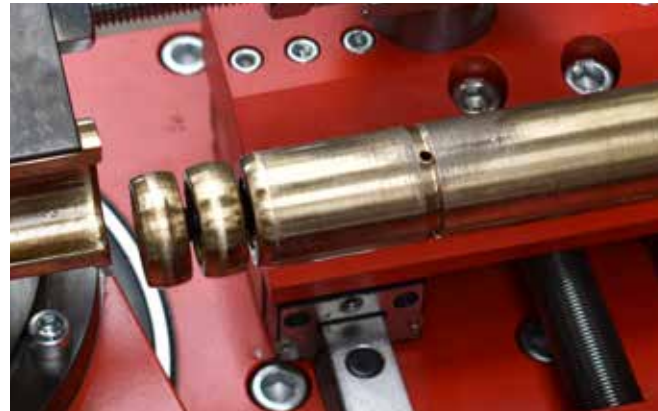Allows small-bend-radius tooling.

6
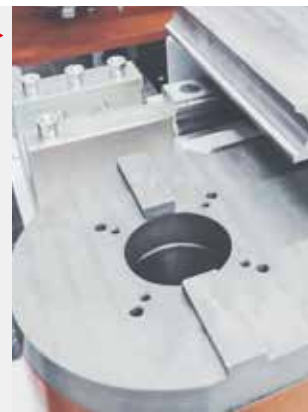
BASIC EQUIPMENT:

BENDING MANDRELS

Bending mandrels in different contours or materials.

AUTOMATIC MANDREL LUBRICATION

Minimum quantity lubrication for automatic mandrel lubrication, adjustable lubricant quantity.
Available for inside diameters as small as .53".
Lubricant quantity can be easily adjusted and minimized.

MANDREL WITHDRAWAL

Automatic and programmable.

CLAMPING

Material clamping in the collet is pneumatic.

Forming your tube before bending? Custom clamps can be provided.

FOOTSWITCH

Footswitch to open or close the collet, for easy loading and unloading.

FOLLOWING PRESSURE DIE

Following pressure die for bends up to 180°
(for radii up to max. 2xD, for lager bending radii the pressure die can be repositioned to ensure a constant contact up to 180° bending angle).

PRESSURE DIE

The wide-opening pressure die allows the collet to move directly behind the bend tool when the tube ends are short.

BASIC EQUIPMENT:

POWERFUL CONTROL PANEL

- Control via Simatic PC IPC 427 E, Core i5
- Storage capacity: 250 GB (SATA)
- Data volume: 8 GB
- Operating system: Windows 10 IoT Enterprise 2019 (64 Bit)
- Equipped with 22" Widescreen monitor
- Memory capacity up to 10.000 tube geometries with 40 positions each
- Start and stop bending with buttons on the control panel
- Manual mode allows keyboard/mouse control of all functions

SOFTWARE

t project allows easy input of bending data and a detailed simulation of potential collisions.

REMOTE DIAGNOSTICS

Gives service technicians remote access to machine controls.

FULLY ELECTRIC

100% electric drive of all 11 axes. Compared to hydraulic machines, energy savings of up to 50% can be achieved.
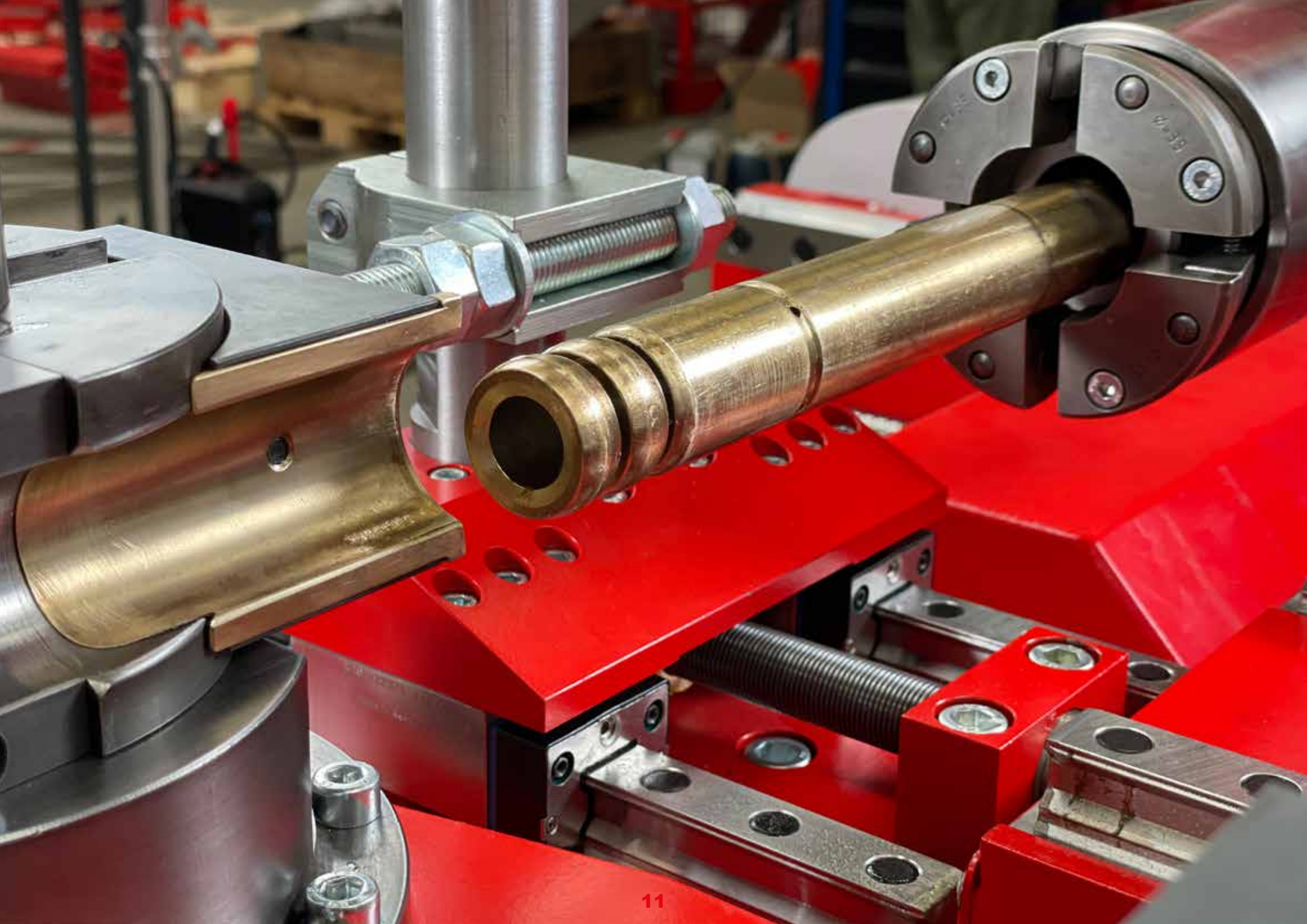
AIR CONDITIONING

Protects the electrical carbinet.

CONTROL UNIT

The control unit is equipped with high–quality electronic components from leading suppliers. This ensures a long service life and a reliable supply of spare parts over a long period of time.

BOOSTING FUNCTION

The collet is equipped with a powerful motor for push bending. Especially when bending thin-walled materials and very small bend radii this feature can improve the bend quality, and the wall thinning can be reduced.

PUSH BENDING

Special tooling is available for push bending large radii.

REPEATED GRIPPING

For bending tubes exceeding the max. usable length of the machine and bent without mandrel.

Bending with a mandrel is possible up to the maximum useable length of the machine plus approx. 1260 mm.

Mechanical pneumatic length stop in the front of the collet.

HAND SCANNER

For loading bending programs.

ADJUSTABLE CARRIAGE FOR WIPER DIE

Prevents the deformation in the form of wrinkles that occurs when the material exceeds its elastic limit and sets in the curve.

MANDREL SUPPORT

For a correct positioning of the mandrel, the machine is equipped with a mandrel support.

SAFETY COVER

Safety guarding system consisting of an safety cover.
The machine is built according to the latest safety regulations.
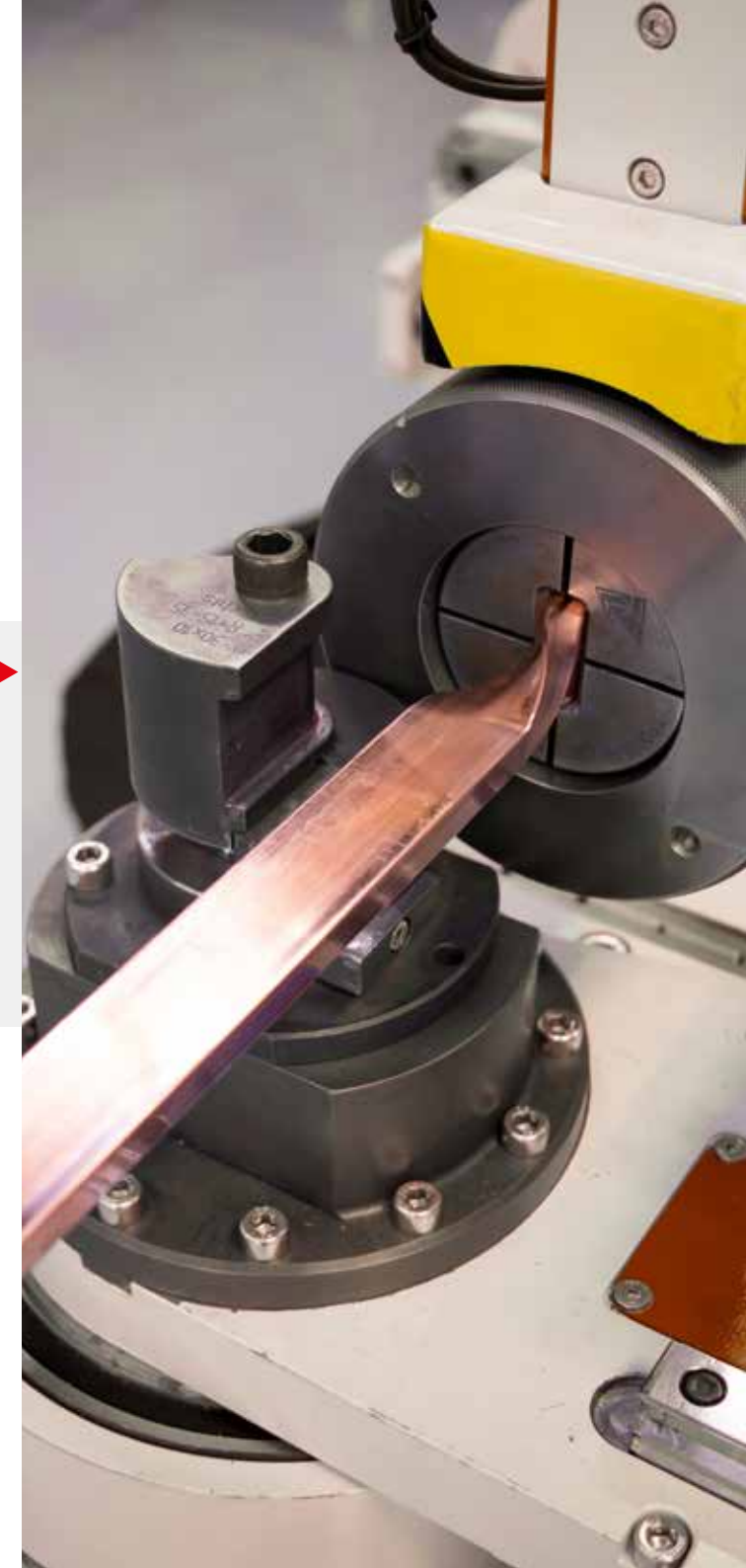
SCANNER

Mounted below the bending head for CE-compliant securing of automatic machines.
These are multi-area scanners, which in combination with t-project, can automatically manage up to 8 warning fields and adjust them, depending on the tube length.

BUSBARS

Adaptation of the bending machine for bending busbars/ conductor rails/ flat conductors.

MICRO LUBRICATION UNIT

Central lubrication for automaticall lubrication of all moving parts in the machine.

LOADING & UNLOADING SYSTEMS DESIGNED AND MANUFACTURED BY TRANSFLUID®

We offer a great variety of loading systems for all the machines, depending on the material, tube diameter and tube length. Tubes that have already been formed and have added components can also be loaded without any issues. The appropriate orientation is therefore very important, when loading the tube into the production cell. External workpieces, such as nuts, flanges, supporting sleeves can be added to the system in a controlled manner and included in any subsequent processing steps. A great variety of loading volumes is possible.

The right system for every need

For short tubes there are systems gripping from below with insertion axis, for long tubes, there are systems handling from above. Both options can be used in our combination systems. They guarantee ideal access for the operator, so they can complete the set-up and any maintenance operations in the best possible way.

All these systems are specially designed and produced by transfluid for our bending machines. This ensures optimal integration and functionality.
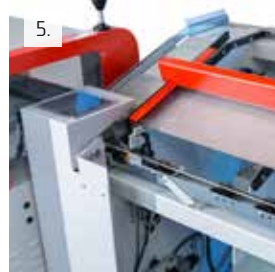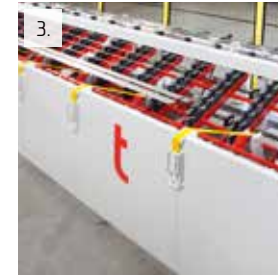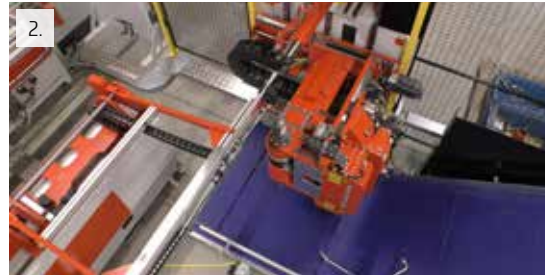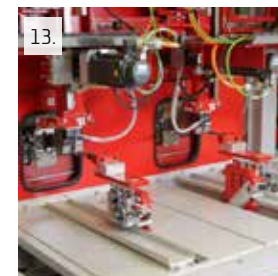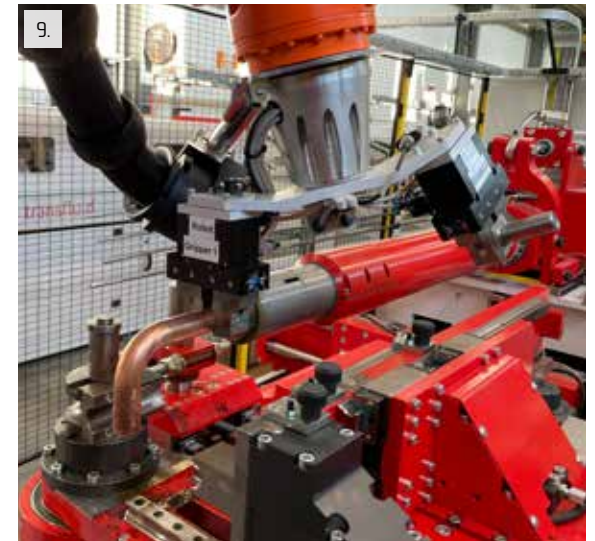

LOADING SYSTEMS:

1. Alignment station
2. Swivel arm feeder
3. Conveyor feeder
4. Chain feeder
5. Loading tables
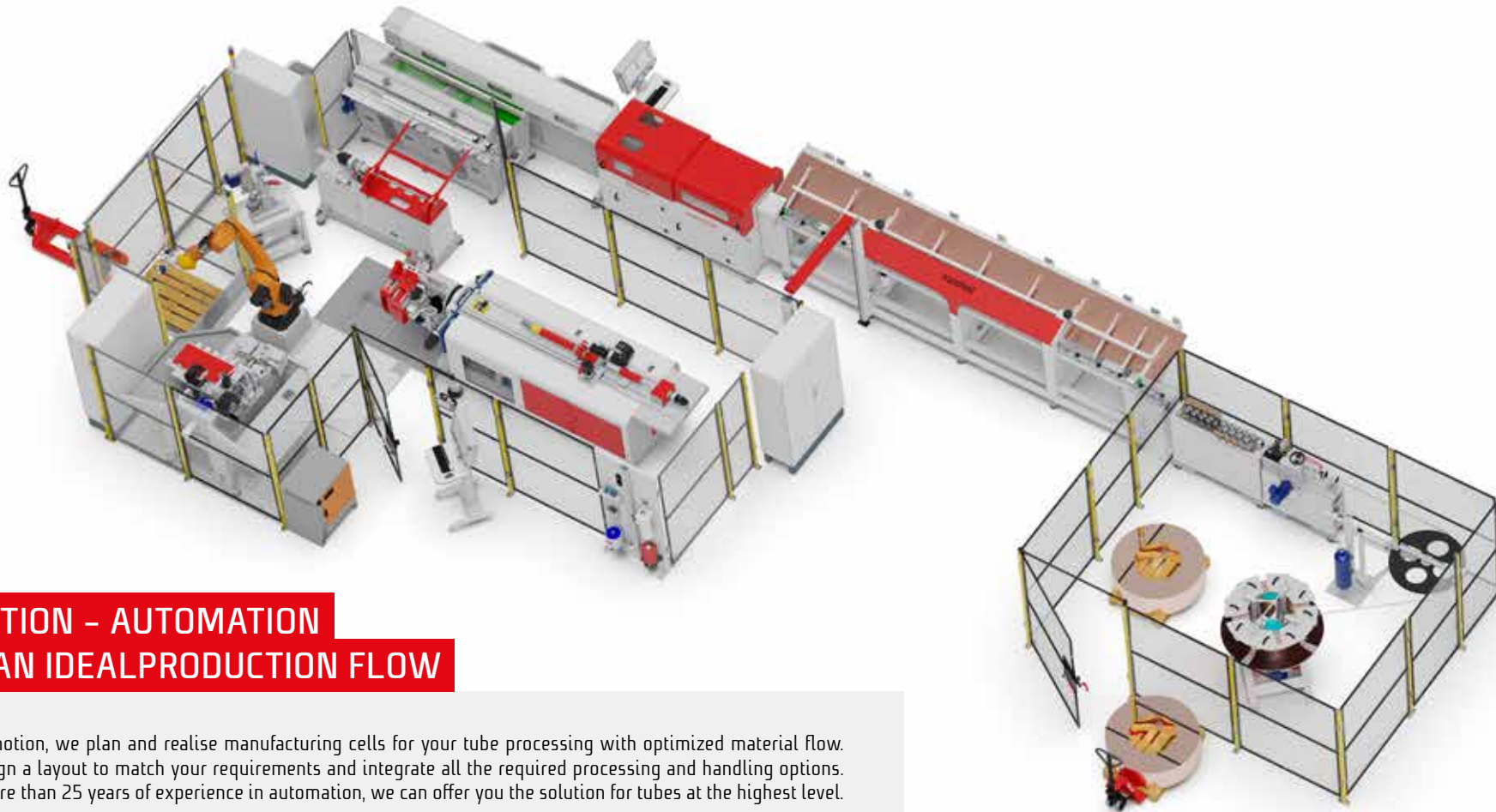6. Bowl feeder
7. Step feeder

HANDLING AND GRIPPER SYSTEMS:

8. Outer gripper
9. Handling robots
10. Rotating module
11. Overfloor handling
12. Overfloor handling
13. Underfloor handling
14. Inner and outer gripper

T MOTION – AUTOMATION FOR AN IDEALPRODUCTION FLOW

With t motion, we plan and realise manufacturing cells for your tube processing with optimized material flow. We design a layout to match your requirements and integrate all the required processing and handling options. With more than 25 years of experience in automation, we can offer you the solution for tubes at the highest level.

On request, we can add product marking, as well as optical, contactless camera control systems for comprehensive control of geometries or surfaces. The option to punch holes can also be integrated, as well as transfer lines to achieve the shortest possible cycle times, or systems for loading and controlled unloading, for you very own customised automation solution.

Plug in and Produce – With t motion, you are production-ready from the start and flexible in batch production, without any delays.

Customizable – Further process steps, like loading and unloading systems or additional tube processing tasks can be integrated without any problems.

Industry 4.0 – Interfaces with data caption systems for consumption and operation enable the digitalization and evaluation of the data.

Fast and accurate – The high degree of automation means fast cycle times and therefore efficient manufacturing.

Automotiv

Furniture

HVAC

Hydraulic

Miscellaneous

T PROJECT – SOFTWARE: VIRTUAL SUPPORT FOR HIGHER EFFICIENCY

Fewer steps to the finished workpiece: With t project you can see all the variables of the bending process before starting the production. Even complex bending geometries can be planned and executed in a material-adapted and collision-free manner. The virtual bending simulation determines exact bending times and cutting lengths and checks tube geometries for feasibility in advance.

Tube data and bending results are documented with accuracy and they can then be replicated 100% . The common interfaces are available for the import and export of data and connection to PDA or ERP over the network.

Our solution for your individual requirements

We have developed four versions of our t project software, which can be used as single or as networked versions. t project can be integrated centrally in the company's internal security system for optimum data security. Customer-specific modifications, expansions or interfaces are readily possible.

t project Basic

Input and calculation of tube processes

- Direct conversion of isometrics into bending data

- Automatically calculates correction values and over-bending parameters

- The dimension of the spatial diagonal from the beginning of the pipe A to the end of the pipe B enables the operator to easily check the bent part manually

- The software can interface with measuring devices and CAD and Office programs. Supported file formats include IGES, STEP, IT and PCF

t project Professional

Input and calculation of tube processes, including collision testing

- Same basic features as t project Basic

- Necessary tube length extentions are detected and added automatically

- Additional production safety: the collision test will determine the feasibility of the tube geometry before the actual bending process, which prevents collisions with the machine itself or its surroundings

- The software will suggest alternative options in case of predicted collisions

- The software will take all the measurements for the collision test from the CAD model of the bending machine

- Surrounding features in the room can also be included in the collision test (pillars, shelves, floor etc.)

- It is also possible to run simulations with tubes that already have flanges or other forming features.

t project Draft

Tablet version for mobile use

t project PM-N

Project management software

Our portfolio of machines

| t bend – Robotic bending machines | t bend – Mandrel bending machines with servohydraulic motors | t form – UMR Rollforming machines |

| t bend – Fully electric mandrel bending machines | t bend – Fully electric mandrel bending machines – 360° rotating bending head right/left | t form – REB Axial forming machines |

| t bend – Fitting bender | t bend – Compact mandrel bending machines | t bend – Mobile bending machine | t work – Tube chamfering machines – Pre-assembly |

t form – AM Collaring machine

t cut – RTO Chipless orbital cutting machines

t form – SRM Rollforming machines

t form – REB/SRM Combination machines

machines – Flaring machines – Tube deburring machines – Electro-hydraulic drive unit

T BEND – ROBOTIC BENDING TECHNOLOGY

Maximum bending freedom. The robotic bending technology combines the greatest versatility in manufacturing steps and simple handling. The robot head is equipped with a clockwise and counterclockwise bending head, so that bending can happen in both direction once clamped.

The eight synchronized and fully electric axes give maximum versatility when processing tubes. The bending process on tubes, including the endforms and add-on components can be done without any problems. The add-on components can be positioned automatically, if needed. A radii/plane changer with up to 6 tools per bending system is integrated to give maximum flexibility.

®

transfluid
The solution for tubes.

t®