



Product Overview

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Plant II • Tube Bending Technology

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CONTENT

1. CNC Tube Bending Machines (TUBOTRON)	3
2. 1-axis-controlled Tube Bending Machines (TUBOBEND)	6
3. Assembly Machines for Hydraulic Tubing (TUBOMAT a.o.)	8
4. Tube End Forming Machines (TUBOFORM)	9
5. Ram Bending Machines (PB)	10
6. Automated Production of Template Pipes (SCOPELINK, ROBOFIX)	11
7. Tube Measuring Systems (TUBOSCAN, TUBOCONTROL)	12
8. Software- and IT- Solutions for Pipe Fabrication (PIPEFAB)	14

1. CNC Tube Bending Machines (TUBOTRON)

TUBOTRON 20

- Programmable sequence control with menu-driven user guidance via SIMATIC panel PC
- Exposed, compact bending head for maximum bending space
- Hydraulic long-neck chuck for positioning in pressure die area with tube resumption
- Hydraulic tube clamping with programmable clamping pressure
- Hydraulic and anticipated mandrel retraction
- Automatic minimal metred mandrel lubrication
- Interface for tediagnostic service (RS 232 / RS 485)
- Maximum tube diameter (OD): Ø 20 mm
- Right-left bending capability (option)
- Stack tooling, multi-radius capability (option)



TUBOTRON 25

- Programmable sequence control with menu-driven user guidance via SIMATIC panel PC
- Exposed, compact bending head for maximum bending space
- Hydraulic long-neck chuck for positioning in pressure die area with tube resumption
- Hydraulic tube clamping with programmable clamping pressure
- Hydraulic and anticipated mandrel retraction
- Automatic minimal metred mandrel lubrication
- Interface for tediagnostic service (RS 232 / RS 485)
- Maximum tube diameter (OD): Ø 25 mm
- Stack tooling, multi-radius capability (option)



TUBOTRON 30

- Programmable sequence control with menu-driven user guidance via SIMATIC panel PC
- Exposed, compact bending head for maximum bending space
- Hydraulic long-neck chuck for positioning in pressure die area with tube resumption
- Hydraulic tube clamping with programmable clamping pressure
- Hydraulic and anticipated mandrel retraction
- Automatic minimal metred mandrel lubrication
- Interface for tediagnostic service (RS 232 / RS 485)
- Maximum tube diameter (OD): Ø 30 mm
- Stack tooling, multi-radius capability (option)



TUBOTRON 50

- Programmable sequence control with menu-driven user guidance via SIEMENS operator panel or SIMATIC panel PC
- Exposed bending head for maximum bending space
- Hydraulic long-neck chuck for positioning in pressure die area with tube resumption
- Hydraulic tube clamping with adjustable clamping pressure
- Following pressure die
- Hydraulic and anticipated mandrel retraction
- Automatic minimal metred mandrel lubrication
- Interface for tediagnostic service (RS 232 / RS 485)
- Maximum tube diameter (OD): Ø 50 mm
- Options: Pressure die assist, ...



TUBOTRON 90

- Programmable sequence control with menu-driven user guidance via SIEMENS operator panel or SIMATIC panel PC
- Exposed bending head for maximum bending space
- Hydraulic long-neck chuck for positioning in pressure die area with tube resumption
- Hydraulic tube clamping with adjustable clamping pressure
- Following pressure die with adjustable hydraulic pressure
- Hydraulic and anticipated mandrel retraction
- Automatic minimal metred mandrel lubrication
- Interface for tediagnostic service (RS 232 / RS 485)
- Maximum tube diameter (OD): Ø 90 mm
- Options: Pressure die assist, ...



TUBOTRON 170

- Programmable sequence control with menu-driven user guidance via SIMATIC panel PC
- Hydraulic long-neck chuck for positioning in pressure die area with tube resumption
- Hydraulic tube clamping with programmable clamping pressure and distance control
- Following pressure die with programmable hydraulic pressure and distance control
- Hydraulic and anticipated mandrel retraction
- Automatic minimal metred mandrel lubrication
- Interface for tediagnostic service (RS 232 / RS 485)
- Maximum tube diameter (OD): Ø 170 mm
- Options: Pressure die assist with programmable hydraulic pressure, booster facility, quick-change system for bending tools, ...

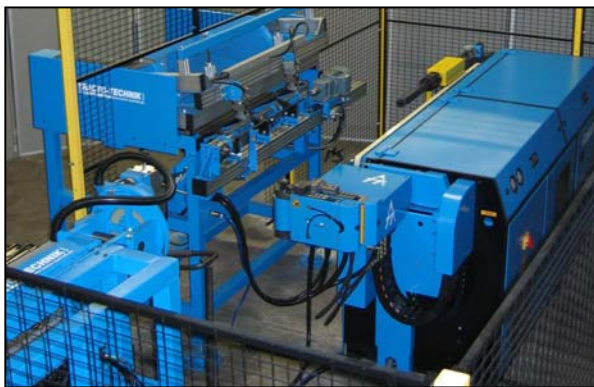


Automatic Tube Loading and Unloading Systems

Our fully automatic loading and unloading systems for TUBOTRON CNC tube bending machines are individually offered according to the respective demands and the bending application. Thereby it's important that the bending space of the machine remains conserved most extensive.

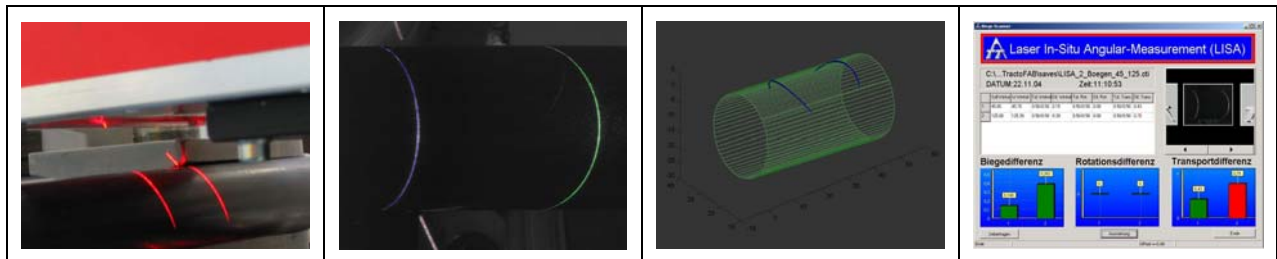
By automation of the ambient working processes the cycle times for tube bending are reduced to a minimum. Waiting times are avoided due to direct integration of the handling system's control within the bending machine's control as well as separate programming of the loading and unloading grippers.

- Large tube storage
- Automatic separation of the tubes
- Precise longitudinal alignment of the tubes
- Welded seam detection system (option) with precise rotatory alignment of the tubes
- Loading from the front (for mandrel bending) or sideways for bending without mandrel
- Unloading and storage of the finished bent tube figures



LISA: Optical In-Situ Bending Angle Measuring System for CNC Tube Bending Machines

- Process attending quality assurance for serial and single production
- Optical measurement based on the laser triangulation method, accuracy is better than $\pm 0,1^\circ$
- No powers affecting the tube while being measured
- Software includes measuring and evaluation functions as well as calibration and diagnostic functions
- Complete documentation of the measuring results
- Evaluation of correction values for flexible process control in serial production



2. 1-axis-controlled Tube Bending Machines (TUBOBEND)

TUBOBEND 20 (D)

- Exposed and swivel bending head for maximum bending space
- Electronic control with automatic sequencing of bending angles
- Display of desired and actual bending angles
- Turnable control unit
- Mobile and flexible to use
- Maximum tube diameter (OD): Ø 16 mm (steel), Ø 22 mm (non-ferrous)
- Options: bending mandrel, mandrel lubrication, hydraulic clamping, plane of bend device and length stop, ...



TUBOBEND 30

- Exposed, compact bending head for maximum bending space
- Electronic control with automatic sequencing of bending angles
- Display of desired and actual bending angles
- Hydraulic mandrel retraction
- Removable control unit
- Mobile and flexible to use
- Maximum tube diameter (OD): Ø 30 mm
- Options: plane of bend device and length stop, mandrel lubrication, following pressure die, ...



TUBOBEND 42

- Electronic control with automatic sequencing of bending angles
- Display of desired and actual bending angles
- Length stops
- Hydraulic mandrel retraction
- Machine divisible in modules for ease of transportation
- Mobile and flexible to use
- Maximum tube diameter (OD): Ø 42 mm
- Options: mandrel lubrication, following pressure die, internal and external deburring device, cutting ring assembly device, ...



TUBOBEND 48

- Electronic control with automatic sequencing of bending angles
- Display of desired and actual bending angles
- Hydraulic mandrel retraction
- Machine divisible in modules for ease of transportation
- Mobile and flexible to use
- Maximum tube diameter (OD): Ø 48 mm
- Options: plane of bend device and length stops, mandrel lubrication, digital 2-axes positioning display, internal and external deburring device, cutting ring assembly device, flaring device, chamfering device, ...



TUBOBEND 50

- Exposed bending head for maximum bending space
- Electronic control with automatic sequencing of bending angles and display for desired and actual angle
- Hydraulic clamping with adjustable clamping pressure
- Hydraulic mandrel retraction
- Maximum tube diameter (OD): Ø 50 mm
- Options: plane of bend device and length stop, mandrel lubrication, following pressure die,...



TUBOBEND 80 L

- Exposed bending head for maximum bending space
- Electronic control with automatic sequencing of bending angles and display for desired and actual angle
- Hydraulic clamping
- Hydraulic mandrel retraction
- Following pressure die
- Maximum tube diameter (OD): Ø 80 mm
- Options: adjustable clamping pressure, plane of bend device and length stop, mandrel lubrication, ...



TUBOBEND 80

- Exposed bending head for maximum bending space
- Electronic control with automatic sequencing of bending angles and display for desired and actual angle
- Hydraulic clamping with adjustable clamping pressure
- Following pressure die
- Hydraulic mandrel retraction
- Maximum tube diameter (OD): Ø 80 mm
- Options: plane of bend device and length stop, mandrel lubrication, ...



TUBOBEND 90

- Exposed bending head for maximum bending space
- Electronic control with automatic sequencing of bending angles and display for all bending data
- Hydraulic clamping with adjustable clamping pressure
- Following pressure die
- Hydraulic mandrel retraction
- Maximum tube diameter (OD): Ø 90 mm
- Options: plane of bend device and length stop, mandrel lubrication, interface for telediagnostic service, ...



3. Assembly Machines for Hydraulic Tubing (TUBOMAT a.o.)

TUBOMAT 642

- Electric control with quadruple bending angle pre-selection and digital display
- Hydraulic mandrel retraction
- Circular saw with cooling and automatic feed
- Internal and external deburring device
- Cutting ring assembly device with automatic pressure adjustment
- Mobile and flexible to use
- Maximum tube diameter (OD): Ø 42 mm
- Options: plane of bend device and length stop, mandrel lubrication, flaring device, chamfering device, ...



TUBOMAT 648

- Electronic control with automatic sequencing of bending angles
- Display of desired and actual bending angles
- Hydraulic mandrel retraction
- Circular saw with cooling and automatic feed
- Internal and external deburring device
- Cutting ring assembly device with automatic pressure adjustment
- Mobile and flexible to use
- Maximum tube diameter (OD): Ø 50 mm
- Options: plane of bend device and length stop, mandrel lubrication, flaring device, chamfering device, ...



TUBOGRAT 48/60

- Compact and rugged table-top unit for mobile and flexible utilisation
- Special deburring tools made from high-speed steel
- Clean internal and external deburring due to fixed tool rotation speed
- Integrated collection box for metal chips
- Tube diameter range (OD): Ø 6 - 48 mm or Ø 20 - 60 mm
- User-friendly and easy to service



TUBOGRAT K

- Compact and rugged table-top unit for mobile and flexible utilisation
- Special deburring tools with adjustable depth stop
- Clean internal and external deburring due to fixed tool rotation speed
- Integrated collection box for metal chips
- Tube diameter range: tooling for different ranges available
- User-friendly and easy to service



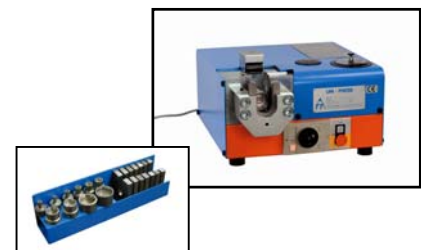
TRACTOPRESS

- Compact and rugged table-top unit for mobile and flexible use
- Assembly of most customary cutting rings
- Proof assembling due to automatic pressure adjustment
- Integrated cooling for hydraulic oil
- Short assembling and set-up times
- Tube diameter range (OD): Ø 6 - 42 mm
- Storage box for assembling tools (option)



VARIOMAT

- Compact and rugged table-top unit for mobile and flexible use
- Very well suited for both, assembly of most customary cutting rings and flaring (37° SAE, 10°) of tubes
- Manual pressure adjustment with digital display
- Integrated cooling for hydraulic oil
- Short assembling and set-up times
- Tube diameter range (OD): Ø 6 - 42 mm
- Storage box for cutting ring assembly tools (option)



4. Tube End Forming Machines (TUBOFORM)

TUBOFORM A 8

- Axial forming with standard or customer specific tooling
- Applications: expanding, reducing, end sizing, contour forming, folding, compressing, stamping, flaring, curling, notching, ...
- Electronic control with program storage
- Protective cover with safety switch
- High profitability due to short cycle times
- User-friendly and easy to service
- Tube diameter range: Ø 3 - 25 mm
- Options: automatic loading/unloading, lubrication device, ...



TUBOFORM RM 90

- Radial forming with standard or customer specific multi-tooling
- Applications: expanding, reducing, end sizing, bead forming, ...
- Electronic control with program storage
- Protective cover with safety switch
- High profitability due to short cycle times
- User-friendly and easy to service
- Tube diameter range: Ø 20 - 74 mm
- Options: automatic loading/unloading, catch-pill for oil-spillage, ...



TUBOFORM RS 8/13

- Radial forming with standard or customer specific single-tooling
- Applications: expanding, reducing, punching, notching, ...
- Electronic control with program storage
- Protective cover with safety switch
- High profitability due to short cycle times
- User-friendly and easy to service
- Tube diameter range: Ø 6 - 130 mm
- Options: automatic loading/unloading, catch-pill for oil-spillage, ...



5. Ram Bending Machines (PB)

PB 42

- Free-standing and pivoting bending unit for maximum bending space
- Regulation of the bending angle by adjusting the limit switch for the hydraulic ram
- Mobile push button bending control
- Rugged device for mobile and flexible use
- Short set-up times due to plug-in bending tools
- Machine suited for simple bending applications and thick-walled tubes
- Maximum tube diameter (OD): Ø 42 mm



PB 42 plus

- Free-standing and pivoting bending unit for maximum bending space
- Regulation of the bending angle by adjusting the limit switch for the hydraulic ram
- Mobile push button bending control
- Internal and external deburring unit
- Integrated seating device for cutting ring assembly and/or flaring
- Rugged device for mobile and flexible use
- Short set-up times due to plug-in bending tools
- Machine suited for simple bending applications and thick-walled tubes
- Maximum tube diameter (OD): Ø 42 mm



6. Automated Production of Template Pipes (SCOPELINK, ROBOFIX)

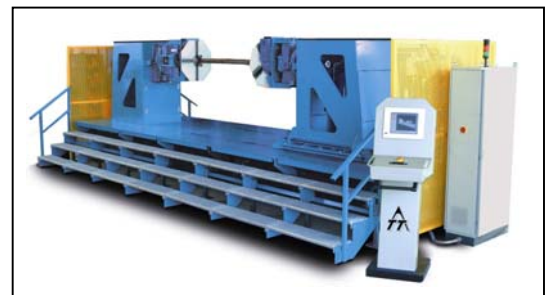
SCOPELINK

- Electro-mechanical measuring system for fast (about 15 min.) and precise measuring of planned pipe courses
- Modelling of the pipe course between two flanges or sleeves by means of fixed and variable lengths, angular and rotation elements
- Direct geometric data transfer into the pipe workshop allows of immediate production of the template pipe even if the site is located far away (Internet or LAN access required)
- Rugged Outdoor PC with pre-installed measuring software



ROBOFIX

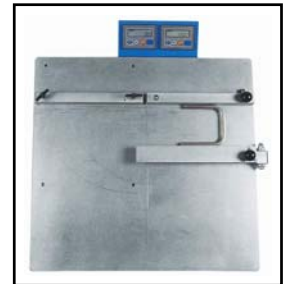
- Highly precise 3D positioning of the pipe flanges according to the on-site measured assembling situation, considering the correct rotation angle and the hole locations of the flanges
- Direct input of the positioning data acquired by the SCOPELINK measuring device is possible
- Mobile control board with Touch-PC, control and visualisation software is pre-installed
- Positioning device capable for spot welding of 4-, 6-, 8- or 10-hole flanges



7. Tube Measuring Systems (TUBOSCAN, TUBOCONTROL)

TUBOCONTROL

- 2D measuring table for determination of lengths and angles on single bends or simple tube geometries
- Rugged and precise measuring system for mobile and flexible use
- Wear-resistant scanning of angles and lengths via magnetic tapes
- Different measuring possibilities by rearranging the length stops
- Measuring range (angles): 0 - 190°
- Measuring range (lengths): 0 - 480 mm or 0 - 1000 mm



TUBOSCAN C

- Ultra portable, compact and lightweight design with carbon graphite composite arms for ease of transportation
- Measuring by means of different probes (tip, balls)
- Intelligent quick-change probes can be changed on-the-fly without tools or the need to re-calibrate
- Counterbalance offsets the arm weight and allows for one-handed operation
- Connection to PC or Laptop via USB port
- Axes configuration: 6 axes
- Measuring envelope: 1800 / 2400 / 3000 / 3600 mm
- Tube measuring software with numerous practical functions



TUBOSCAN M

- Compact and lightweight design for ease of transportation
- Measuring by means of different probes (tip, balls) or by touch-less tube measuring fork
- Counterbalanced arm weight allows for one-handed operation
- Connection to PC or Laptop via USB port
- Axes configuration: 5 axes / 6 axes
- Measuring envelope: 1670 mm
- Tube measuring software with numerous practical functions



TUBOSCAN ML

- Ultra portable, compact and lightweight design with carbon graphite composite arms for ease of transportation
- Optical tube measuring by line laser technology
- Counterbalance offsets the arm weight and allows for one-handed operation
- Connection to PC or Laptop via USB + IEEE 1394 (Firewire) port
- Axes configuration: 6 axes
- Measuring envelope: 1670 mm
- Tube measuring software with numerous practical functions



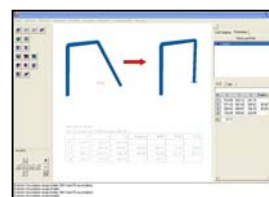
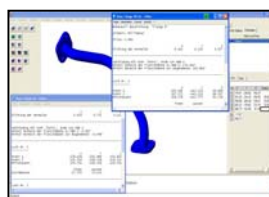
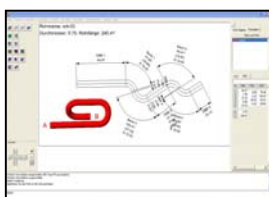
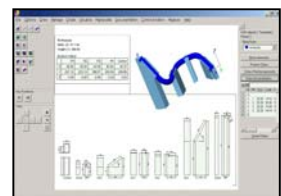
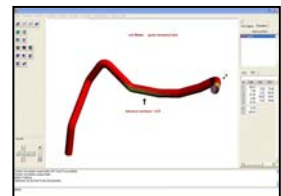
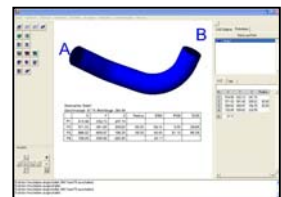
TUBOSCAN STICK

- Measurement and design of three-dimensional tube courses with a cordless, hand-held measuring stick
- Determination of tube coordinates by means of the latest 3D navigation technology
- Receptor unit equipped with high-resolution optical sensors
- Connection of the control unit to PC or Notebook via USB port
- Loading unit for the stick (functions also as holding device)
- Reference element for automatic calibration
- Tripod stand for positioning of the receptor unit
- Transport and storage of all components in a rugged case
- Tube measuring software with numerous practical functions



Tube Measuring Software

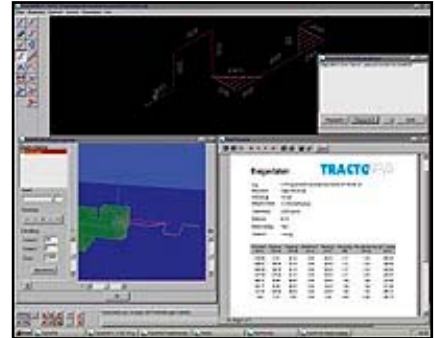
- LITE version contains the basic measuring functions for tubes
 - Measuring and visualisation of tubes (wires, hoses)
 - Calculation, documentation and storage of XYZ and bending data
 - Nominal-actual value comparison of measured tubes with its master tube
 - Leapfrog function for continuous measuring of tubes, which exceed the measuring envelope of the coordinate measuring arm
 - Measuring of 180° bends (U-bends)
- Full version with numerous helpful calculation features included
 - Automatic generation of sizing tools with complete documentation
 - Visualisation of 3D measured tube figures according to 2D drawings
 - Measuring, visualisation, documentation and comparison of add-on pieces (e.g. flanges)
 - Import of tube data from various CAD systems via IGES interface
 - Many additional functions, such as alignment, comparison and correction of tubes, collision checks, ...
- Design Module for definition and modification without limitation
 - Determination of tube courses within a default workspace, considering interference geometries
 - 3D tube distortion function with automatic on-line data modification
- Export of XYZ and LRA tube bending data via interfaces
- Linkage of existing NC tube bending machines



8. Software and IT Solutions for Pipe Fabrication (PIPEFAB)

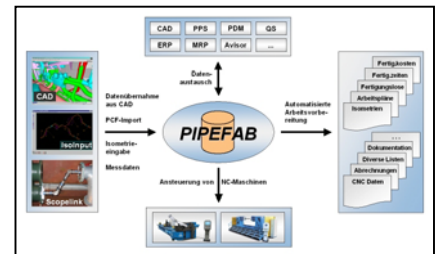
PIPEFAB B - Tube Bending Software

- Fast and simple generation of isometric drawings of tube figures with coordinate or vector data entry
- Direct data transfer from various CAD systems (via interface) or 3D tube measuring systems is possible
- Inclusion of add-on parts and fittings to the tube figure with automatic tube length modifications
- Calculation, storage and print-out of the bending data
- Options: online data transfer of the calculated bending data to the machine control, bending simulation with collision check



PIPEFAB - High-Performance Production Management Software Solution for the Piping Industry

- Software package for construction, calculation, production control and maintenance of pipe systems
- Organisation and control of complex production processes for pipe fabrication and pre-fabrication
- Fast and easy isometric sketching of pipe geometries
- Isometric data takeover from various CAD systems
- Cost optimised calculation of all production documents (production lots, work plans, costs, times, ...)
- Direct NC and CNC machine triggering
- Generation and administration of pipe lists and fitting lists as well as lists for armatures or other components
- Integration of various 3rd-party software products via interfaces (e.g. CAD systems, materials and resource management systems, accounting systems, ...)



Please call us for detailed information or visit our Website: <http://www.tracto-technik.de>.