Tube Benders

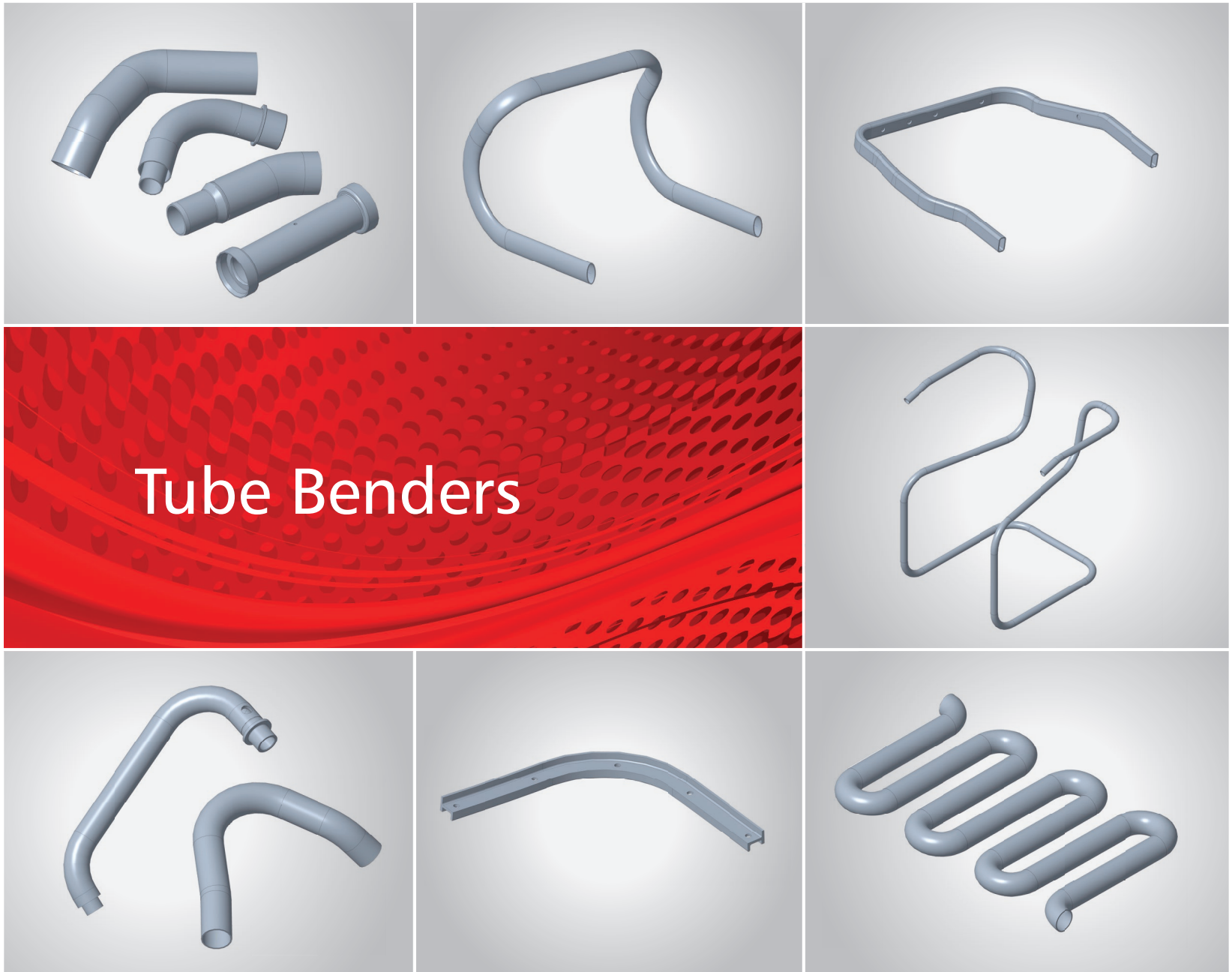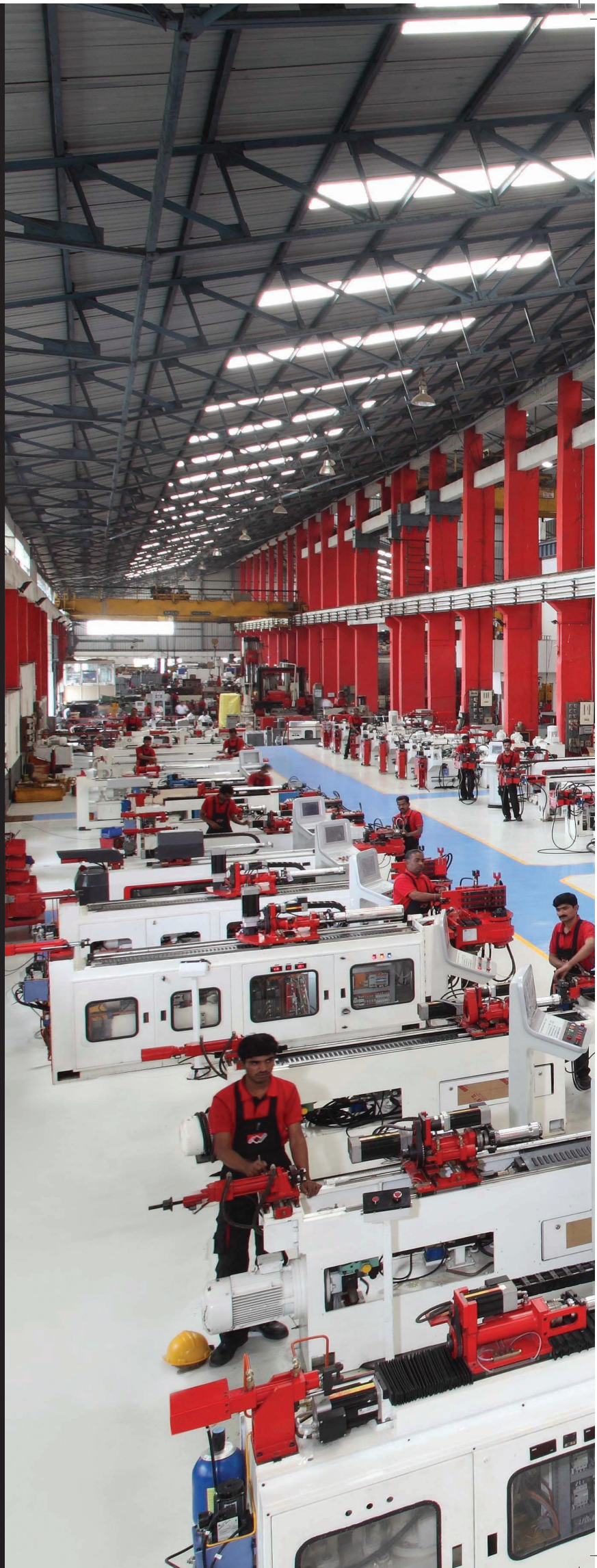**Electropneumatics &**
Hydraulics (India) Pvt. Ltd.

Machine
Manufacturing
Division

Electropneumatics

- Designing and manufacturing metal forming equipment since 1972
- Indigenous capabilities in all engineering domains
- Machines for sheet forming, moulding, compacting, assembly and testing, chassis and TLT applications, tube/section bending and customised solutions
- More than 6,000 installations worldwide

Tube Benders

- Market leaders in India for more than five decades
- Complete range of benders, tooling and automation for draw bending along with boost/1D/large radius/different material/complex profile benders for special applications
- For automotive, furniture, boiler, railway, shipbuilding and other sectors
- High productivity, low energy consumption, low maintenance, consistent/repeatable bend quality

Electropneumatics tube benders are many of India's first

1982	3-axes CNC tube bender
1985	Tube bender, capacity OD 324 x t 17mm
1997	3-axes CNC wire bender
2000	Boost bender for R = 1D bends
2001	Multi-radius, bi-direction CNC tube bender
2006	10-axes all-electric CNC tube bender 3-axes CNC rotary-head type wire bender
2008	Complete range of multi-stack, electric tube benders
2010	Largest 3-axes CNC tube bender, capacity OD 419 x t 21 mm
2012	5-axes CNC multi-stack heavy duty tube bender for rectangular sections
2013	CNC servo electric hybrid tube bender range
2015	CNC 2-axes servo electric tube bender
2016	New generation CNC controls and smart user interface
2018	Anti-collision simulation software
2020	1D bending of tubes up to OD 114 mm
2022	Automated tube bending cells with loading and unloading

Unique Advantages of Electropneumatics Benders

Energy saving up to 40%

Our servo-electric hybrid benders employ a servo motor-driven pump system for auxiliary functions like clamp, pressure die, pressure die assist, chuck and mandrel. They cut down your power costs, reduce hydraulics and its associated maintenance costs, reduce working noise level, and reduce cooling requirement due to less heat generation.

Convert your conventional energy-guzzling hydraulic bender into a smart, servo-electric hybrid bender and save on power costs.

ENERGY SAVING UP TO 40%

Smarter, quieter, cleaner bending technology

All our CNC benders use Electropneumatics-make optimised servo drives and motors on a CANBUS network with minimum wiring. In high end models, auxiliary actuators can also be made electric. This enables soft actuator start and stop (lower noise levels), reduced messy, high-maintenance hydraulics, less energy consumption and programmable control and diagnostics of the bending sequence.

Superlative accuracies

Superior manufacturing and assembly capabilities along with precise, controllable servo motions make bending predictable, repeatable and exact.

Minimum cycle time, maximum productivity

Efficient control of high speed servo axes and actuators along with simultaneous axes motion help save time in every part cycle, assuring you of maximum output and productivity.

Multi-sequence part facility offers users the feature of bending multiple parts in sequence to form a part assembly without having to change program for each new part.

Unique Advantages of Electropneumatics Benders

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Thin-walled tube bending

Friction boost or Independent Pressure Die Assist (IPDA) is a standard feature of our benders that controls thinning when bending. An independent hydraulic source for the pressure die assist helps to synchronise the speed for different tube cross-sections and centre line radius.

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1D bending of thin SS tubes

1D bending solution for more compact, complex component required in exhaust and chassis parts. Controlled thinning using features like carriage boost for SS441/SS304 up to OD 101.6 mm.

7

Long or continuous tube bending

Tube recapture feature allows bending of tubes of a length that is more than trolley travel and also continuous coil tube bending for higher output.

8

Non-ferrous bending

Specially designed tool for hard materials like stainless steel, titanium, etc. and soft materials like brass, copper, cupronickel, aluminium, etc. allow complicated bends to be made with ease on our machines.

Bending large CLR and bend angles

Parts with bends of big Centre Line Radius (CLR) and large bend angles (beyond PDA travel) can be bent in one setting with the split mode.


1D mandrel-less bending of thick-walled tubes

In thick-walled tubes for boiler, chemical and process industries, our benders meet the stringent requirements of ovality and thinning as per IBR norms through synchronisation and programmability of speed and position through servo controls. Specially designed tool set is used for this application.

Precision tooling and inspection gauges for any application

We have expertise in developing the most complicated parts for the most varied applications in almost all materials. We design and build tools for 1D bends in thick and thin tubes, large CLR bends, compound bends, split tools, heated tools, stacked tools and wide range of tools from tube OD 4.8 mm to 419 mm.
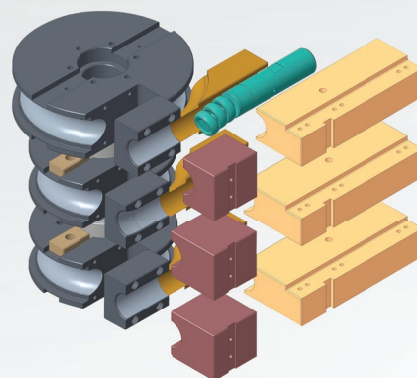
Unique Advantages of Electropneumatics Benders
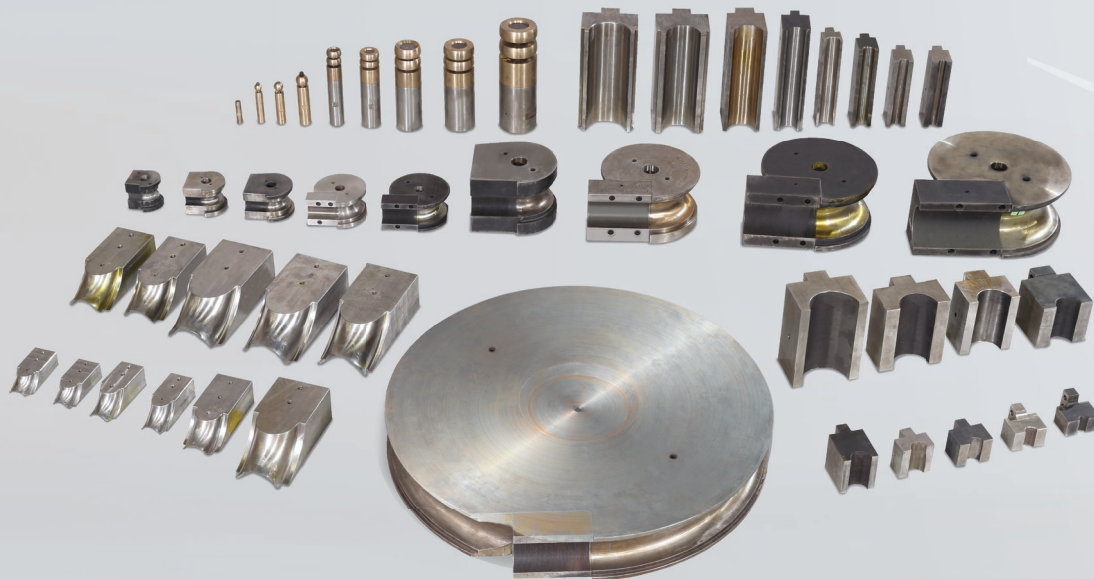
Roll push bending

Useful for manufacturing long radius components above 10D bending radius in single set up. Combination of centre line radius above 10D and draw bend radius up to 3D can be produced. Available in all multi axes models. Maximum tube OD suitability can be confirmed on request with UTS and percentage elongation.

Applications- Automotive and furniture parts

12

Off-line anti-collision simulation software

Do part bending feasibility on machine without wasting machine production time, tube material or making expensive tools.

- Simulates complete bending process in 3D
- Collision detection- tube to machine part, tube to die, tube to tube
- Estimate approximate cycle time
- Program and check parts offline to reduce machine downtime
- Collision enable/disable option to complete part bending simulation

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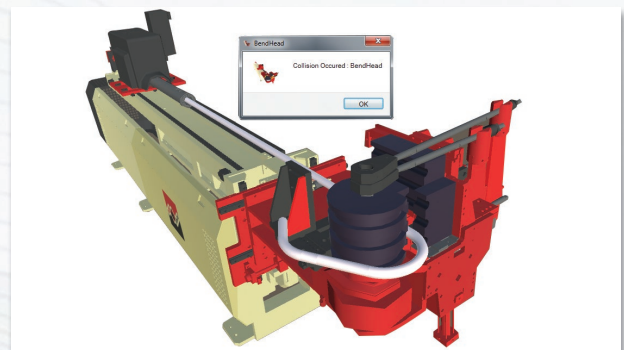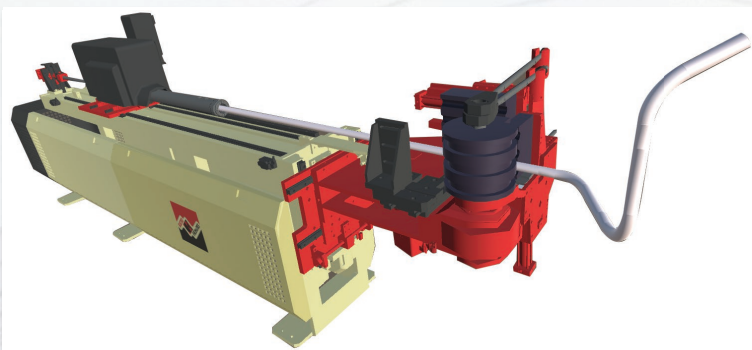
SmartBend CNC powerful machine software with intuitive user-friendly interface

Real-time Linux-based operating system ensures stable operation and allows complex computing for even the most sophisticated part. The clutter-free, self-explanatory, super user friendly operator touch-screen interface makes operating, trouble shooting and tracking machine functions easy and effective with minimum clicks. Time to program a new part is significantly reduced and productivity considerably improved.
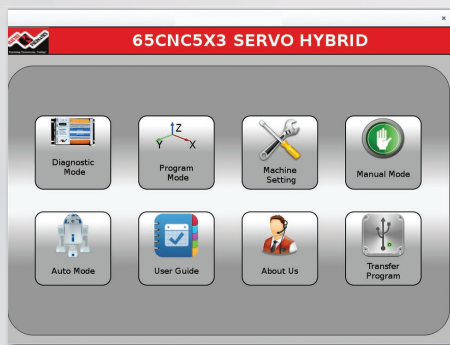
- Data transfer and upload through USB/ethernet
- Unlimited program storage capacity
- Data entry as X-Y-Z coordinates or Push-Turn-Bend (Y-B-C) values
- Security code for program and parameter data
- X-Y-Z to 3D component image display
- X-Y-Z to P-T-B conversion and vice versa
- Program back-up facility
- Capability of programming in inches or millimeters
- Individual axes speed setting for each bend
- Diagnostic error display

- No. of bends/parts counter
- Step mode, manual/single bend/ auto mode and split bend mode
- Programmable closed loop position-speed control
- Spring back calculation and offline compensation facility
- Recapture function
- Bend Invert
- Import 3D DXF files and convert into XYZ/PTB data
- File management for parts and tools
- Integration with robot/loading-unloading automation
- Industry 4.0 ready
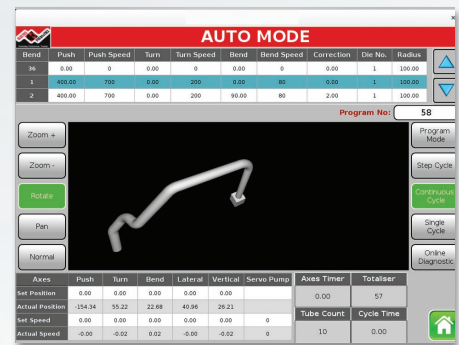
Optional features, on request

- Energy saving servo pump for auxiliary functions
- Mandrel oil lubrication
- Seam detection
- Integration with robot

- Remote diagnostics
- Elongation compensation
- Shift wise production data storage
- Carriage boost for 1D bending and thinning control

- Safety mat, safety flap and safety area scanner on bend arm
- Bending simulation for feasibility
- 3-D drawing reading facility
- Industry 4.0 compatibility

NC Single Axis Tube Benders

NCX

80NCX (2M)

Electropneumatics hydraulic semi-automatic NC Tube Benders can handle tubes in round, rectangular, square and other sections. The NCX models can produce parts with multiple bend in a single plane using plane locator.
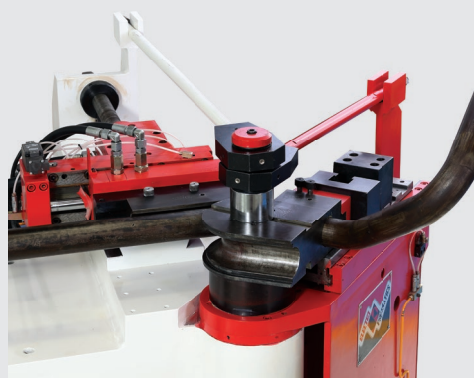
Specifications

Model	Unit	30NCX	65NCX	80NCX	100NCX
Max. tube capacity (D x t)*	mm	32 x 2	65 x 4	80 x 2	114 x 6
Min. tube capacity (D)*	mm	6	10	10	25
Max. bend radius (CLR)	mm	120	300	300	500
Min. bend radius (CLR)	mm	9	15	15	38
Min. bend radius (CLR)	in terms of D	1.5D	1.5D	1.5D	1.5D
Length over mandrel	m	2	2	2	2
Bend angle range	deg	5 - 180	5 - 180	5 - 180	5 - 180
Max. bend speed (accuracy)	deg/s (deg)	30 (±0.2)	24 (±0.2)	18 (±0.2)	12 (±0.2)
Connected load (approx.)	kW	3.7	7.5	7.5	15

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415V, 50Hz, 3-phase AC.

30NCX (2M)
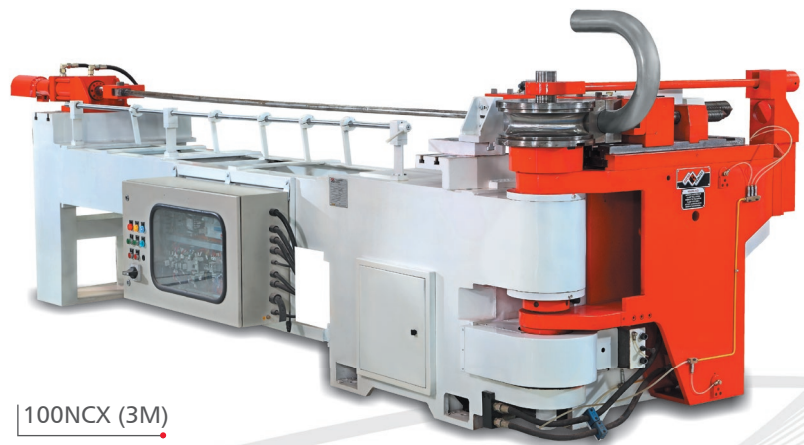
100NCX (3M)

Features

- Programmable bending angle (DOB) in automatic open loop control
- Memory capacity of 50 programs with 15 bends/program
- Electropneumatics-make Micro PLC with 3" touch screen MMI
- Independent pressure die assist (friction boost)
- Anticipated mandrel withdrawal
- Air blast cooler

Options

- Increased bend radius (on select models)
- Extra mandrel length and extended arm for specific applications
- Modified versions with split tools, heated tools, etc. to suit component requirements
- Safety mat and safety flap on bend arm
- Hydraulic oil cooler
- Counter-clockwise bending

CNC Two-Axes Tube Benders

CNC2X

65CNC2X (3M)

Electropneumatics low cost 2-Axes Servo CNC Tube Benders are precise, productive and suitable for bending tubes having multiple bends in different planes for moderate to high volume batch production. The tube is held in a powered chuck mounted on a trolley having programmable auto indexing capability for push as well as turn axis. As compared to manual indexing of tubes in NC benders, all the bends are carried out automatically and precisely according to the program.

Specifications

Model		Unit	30CNC2X	65CNC2X	80CNC2X	100CNC2X
Max. tube capacity (D x t)*		mm	32 x 2	65 x 4	80 x 2	114 x 6
Min. tube capacity (D)*		mm	6	10	10	25
Max. bend radius (CLR)		mm	120	300	300	500
Min. bend radius (CLR)		mm	9	15	15	38
Min. bend radius		in terms of D	1.5D	1.5D	1.5D	1.5D
Length over mandrel		m	3	3	3	3
Bend angle range		deg	5 - 180	5 - 180	5 - 180	5 - 180
Max. speed (accuracy)	Push (Y)	mm/s (mm)	400 (±0.1)	200 (±0.1)	200 (±0.1)	200 (±0.1)
	Turn (B)	deg/s (deg)	150 (±0.1)	100 (±0.1)	100 (±0.1)	80 (±0.1)
	Bend (C)	deg/s (deg)	50 (±0.2)	24 (±0.2)	18 (±0.2)	12 (±0.2)
Connected load (approx.)		kW	5.6	9.4	9.4	17

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415 V, 50 Hz, 3-phase AC.

30CNC2X (3M)
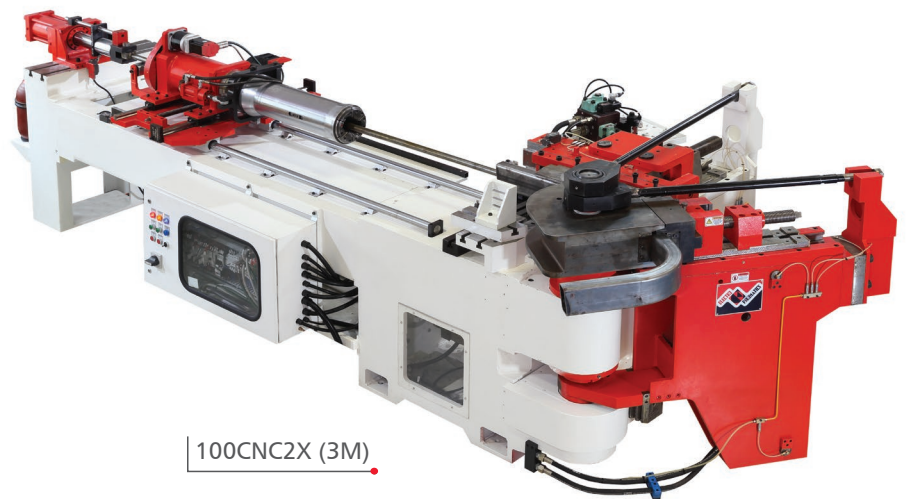
100CNC2X (3M)

Features

- Push, turn axes powered by AC servo motors
- All axes fully programmable- no manual settings
- Programmable position control for bend and position-speed control for push and turn
- CANBUS network interface with reduced wiring
- Data entry as Push-Turn-Bend (Y-B-C) values
- Independent pressure die assist (friction boost)
- Adaptive spring back compensation
- Split bend facility for large bend radii
- Anticipated mandrel withdrawal

Options

- Automatic mandrel lubrication
- Water cooled heat exchanger
- Conversion of existing single axis bender also possible as a retrofit

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CNC Three-Axes Tube Benders
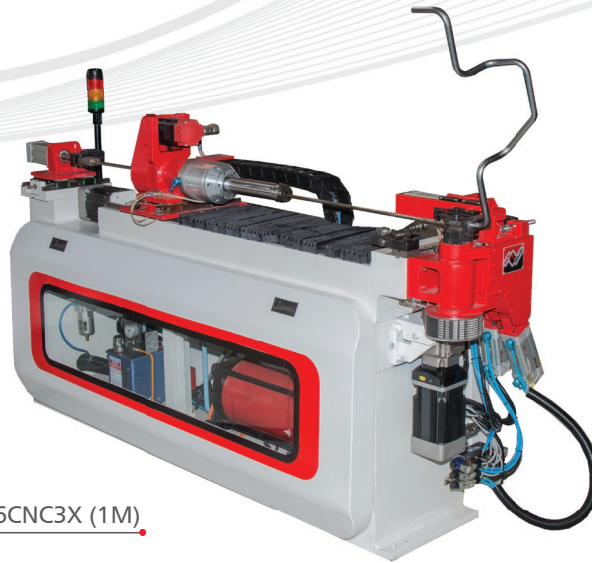
CNC3X

30CNC3X (3M)

Electropneumatics 3-Axes CNC Tube Benders are ideally suited for bending of automotive parts because of their high productivity. These machines have a direct-acting/toggle clamps, pressure die and pressure die assist along with a mandrel extractor, power chuck and tube support. They are available in all-electric or combination of electric-hydraulic versions.
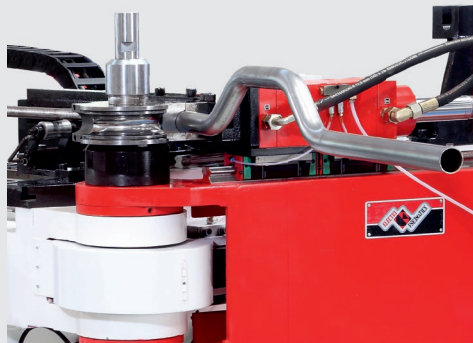
Specifications

Model		Unit	16CNC3X	30CNC3X	65CNC3X	100CNC3X	150CNC3X	200CNC3X	325CNC3X	400CNC3X
Max. tube capacity (D x t)*		mm	16 x 2	32 x 2	65 x 3	114 x 6	168 x 11	219 x 13	324 x 17	419 x 21
Min. tube capacity (D)*		mm	6	6	10	25	50	76	89	114
Max. bend radius (CLR)		mm	70	120	250	500	600	660	1000	1260
Min. bend radius (CLR)		mm	10	9	15	38	100	150	178	228
Min. bend radius		in terms of D	1.5D	1.5D	1.5D	1.5D	2D	2D	2D	2D
Length over mandrel		m	1	3	3	4	6	6	6	6
Bend angle range		deg	0 - 180	0 - 180	0 - 180	0 - 180	0 - 180	0 - 180	0 - 180	0 - 180
Max. speed (accuracy)	Push (Y)	mm/s (mm)	1200 (±0.1)	1200 (±0.1)	1000 (±0.1)	400 (±0.1)	200 (±0.2)	150 (±0.2)	100 (±0.2)	75 (±0.2)
	Turn (B)	deg/s (deg)	500 (±0.1)	300 (±0.1)	300 (±0.1)	120 (±0.1)	50 (±0.2)	30 (±0.2)	24 (±0.2)	15 (±0.2)
	Bend (C)	deg/s (deg)	150 (±0.1)	150 (±0.1)	60 (±0.1)	30 (±0.1)	15 (±0.2)	2 (±0.2)	2 (±0.2)	1 (±0.2)
Connected load (approx.)		kW	6	13	35	37	70	-	-	-

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415V, 50Hz, 3-phase AC.

16CNC3X (1M)

65CNC3X

65CNC3X (3M)

Features

- Electropneumatics SmartBend CNC system with 12.1" colour touch screen monitor and keyboard
- CANBUS network interface with reduced wiring
- Programmable axes motions in closed loop position-speed feedback mode
- Data entry as Push-Turn-Bend (Y-B-C) values or X-Y-Z co-ordinates
- Capability of programming in inches or millimeters
- Multi-sequence bend capability for up to five parts with common bend radius and diameter
- Program retrieval by alphanumeric code and password protection for data entry
- Spring back calculation and off-line compensation facility
- Comprehensive diagnostics during online and offline operation
- Independent pressure die assist (friction boost)
- Anticipated mandrel withdrawal
- Remote access using team viewer software

Options

- Extra mandrel length and extended arm for specific applications
- Modified versions with split tools, heated tools, etc. to suit component requirements
- Safety mat and safety flap on bend arm
- Automatic mandrel lubrication
- Hydraulic chilling unit
- Counter-clockwise bending
- Automatic seam detection system
- Anti-collision simulation software
- Industry 4.0 compatibility
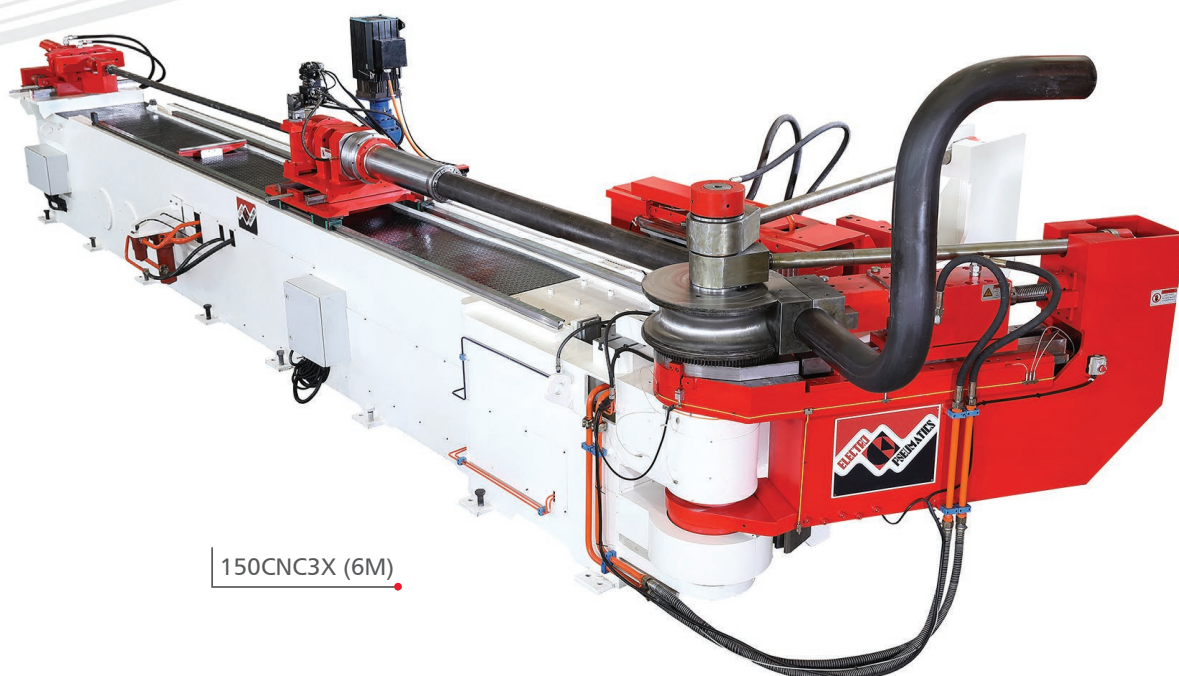
CNC Three-Axes Tube Benders

CNC3X

400CNC3X (6M)
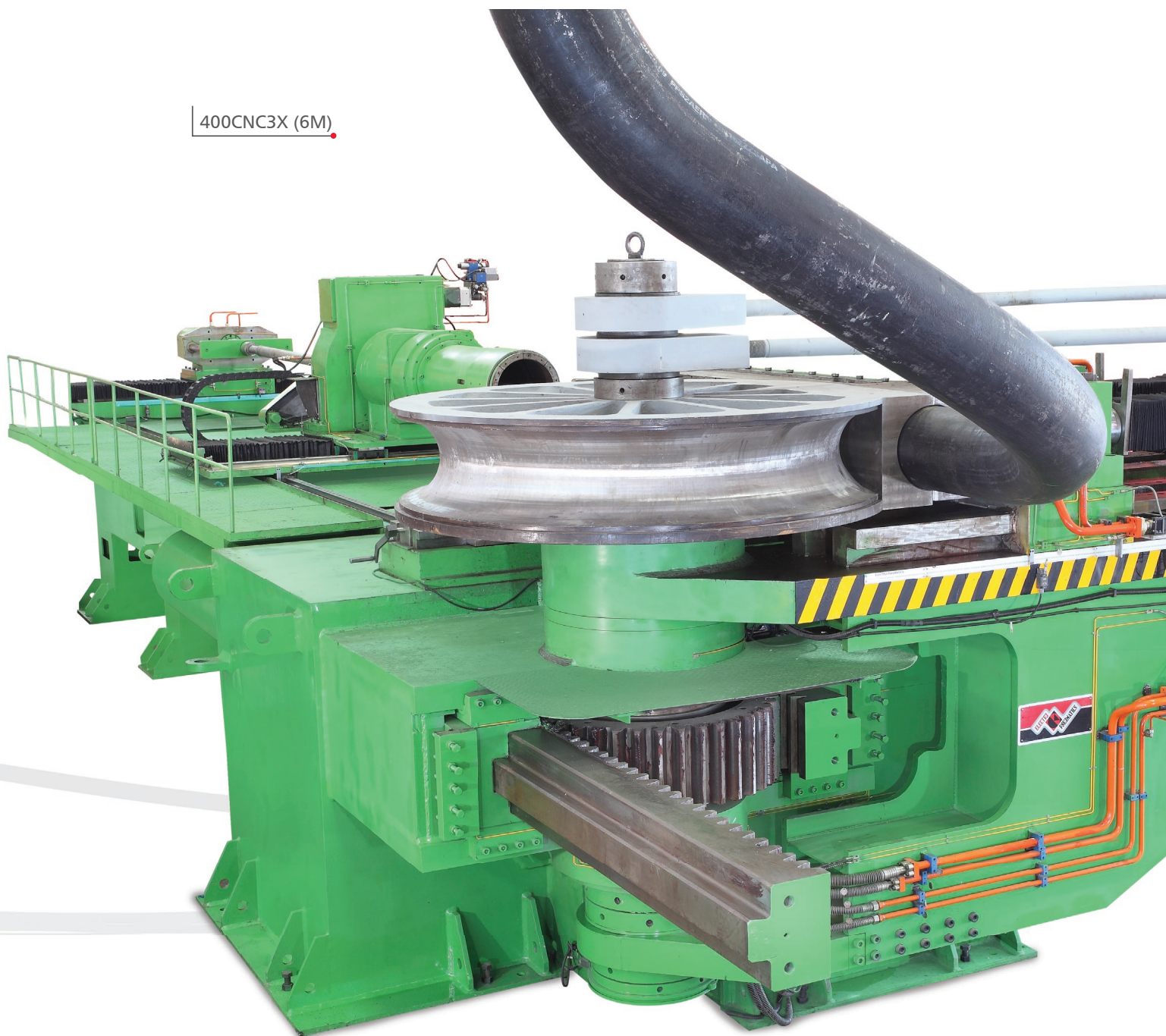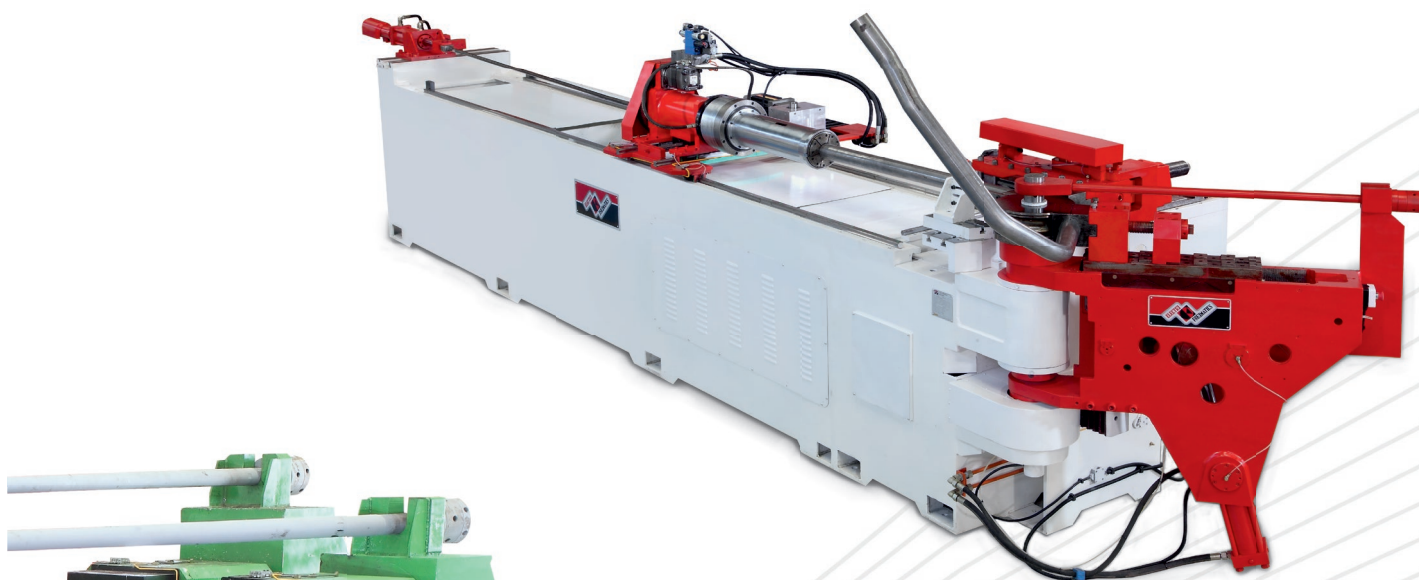
100CNC3X (4M)

150CNC3X (6M)

CNC Five-Axes Tube Benders

CNC5X

38CNC5X3 (3.5M)

Electropneumatics 5-Axes CNC Tube Benders have a wide variety of features and a combination of electric and hydraulic drives for the programmable axes. They are designed to bend complex parts of different materials in high-volumes for all industries, specifically automotive.

Specifications

Model		Unit	19CNC5X3	38CNC5X3	50CNC5X3	65CNC5X3	90CNC5X3	115CNC5X2	130CNC5X3
Max. tube capacity (D x t)*		mm	19 x 2	38 x 2	50 x 3	65 x 3	90 x 3	114 x 3	130 x 5
Min. tube capacity (D)*		mm	3	6	13	10	25	25	38
Max. bend radius (CLR)		mm	80	180	220	250	300	500	500
Min. bend radius (CLR)		mm	24	20	20	24	38	50	76
Min. bend radius (CLR)		in terms of D	1.5D	1.5D	1.5D	1.5D	1.5D	2D	2D
Max. radius difference (max.-min.)		mm	35	50	80	90	90	60	150
Tooling stack		nos.	3	3	3	3	3	2	3
Length over mandrel		m	2	3.5	4.0	3.8	5	7	5
Bend angle range		deg	0 - 180	0 - 180	0-180	0 - 180	0 - 180	5 - 180	0 - 180
Max. speed (accuracy)#	Push (Y)	mm/s (mm)	1200 (±0.1)	1200 (±0.1)	1200 (±0.1)	1000 (±0.1)	850 (±0.1)	800 (±0.1)	630 (±0.1)
	Turn (B)	deg/s (deg)	360 (±0.1)	300 (±0.1)	300 (±0.1)	300 (±0.1)	180 (±0.1)	200 (±0.1)	160 (±0.1)
	Bend (C)	deg/s (deg)	180 (±0.1)	150 (±0.1)	120 (±0.1)	100 (±0.1)	50 (±0.1)	35 (±0.1)	100 (±0.1)
	Lateral (X)	mm/s (mm)	180 (±0.1)	150 (±0.1)	150 (±0.1)	100 (±0.1)	100 (±0.1)	150 (±0.1)	50 (±0.1)
	Vertical (Z)	mm/s (mm)	100 (±0.1)	100 (±0.1)	120 (±0.1)	100 (±0.1)	50 (±0.1)	100 (±0.1)	25 (±0.1)
Connected load (approx.)		kW	12	23	65	64	83	69	170

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415V, 50Hz, 3-phase AC.

#In addition to Y, B, C, X, Z axes, clamp, clamp bracket, pressure die, pressure die assist and mandrel are also AC servo driven.

19CNC5X3 (2M)
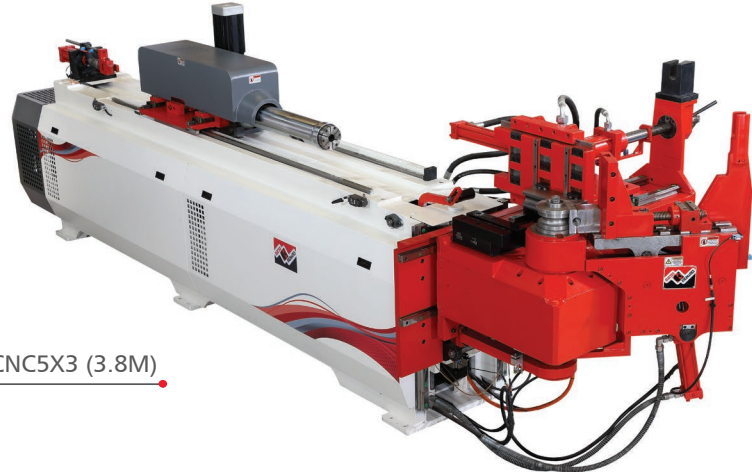
65CNC5X3 (3.8M)

90CNC5X3 (5M)

Features

- Electropneumatics SmartBend CNC system with 12.1" colour touch screen monitor and keyboard
- 3-radii bending capability by 3-stack tooling in single set up
- Push, turn, bend, lateral and vertical electric axes powered by AC servo motors
- Programmable closed loop position-speed control with optimised parallel axes motions
- Independent pressure die assist (friction boost)
- Anticipated mandrel withdrawal
- Remote access using team viewer software
- Auto diagnosis feature for trouble shooting
- Servo pump driven auxiliary functions for energy efficiency

Options

- Automatic mandrel lubrication
- Hydraulic oil chiller
- Automatic seam detection system
- Anti-collision simulation software
- Safety mat and safety flap on bend arm
- Industry 4.0 compatibility

CNC All-Electric Tube Benders

Electropneumatics All-Electric Tube Benders have bi-directional bending capability. This machine is ideally suited for bending of complex tubular parts of automobile seating, chair frames in single set-up for the furniture industry, etc. They are highly productive and give parts with superior repeatability and quality.

These bi-directional benders have 9-axes with 3-radii bending capability using 3 stacks for different bend radii. The bend head automatically moves to adjust its position vertically for different bend dies and moves lateral for different radius of bend.

32CNC9X3 (3M)
LH and RH bending

Specifications

Model		Unit	32CNC9X3-LR	38CNC10X3-LR	50CNC9X2
Max. tube capacity (Dxt)*		mm	32 x 2	38 x 4	51 x 3
Min. tube capacity (D)*		mm	6	10	6
Max. bend radius (CLR)		mm	120	350	129
Min. bend radius (CLR)		mm	20	20	15
Min. bend radius (CLR)		in terms of D	1.5D	1.5D	1.5D
Max. radius difference (max.-min.)		mm	35	50	50
Tooling stack		nos.	3	3	2
Length over mandrel		m	3	3	3
Bend angle range		deg	0 - 180	0 - 190	0 - 190
Axes drives		-	Electric	Electric	Electric
Max. speed (accuracy)	Push (Y)	mm/s (mm)	1200 (±0.1)	400 (±0.1)	1200 (±0.1)
	Turn (B)	deg/s (deg)	360 (±0.1)	60 (±0.1)	300 (±0.1)
	Bend (C)	deg/s (deg)	180 (±0.1)	50 (±0.1)	120 (±0.1)
	Lateral (X)	mm/s (mm)	150 (±0.1)	50 (±0.1)	100 (±0.1)
	Vertical (Z)	mm/s (mm)	100 (±0.1)	30 (±0.1)	100 (±0.1)
	Tube clamp	mm/s (mm)	200 (±0.1)	60 (±0.1)	60 (±0.1)
	Pressure die	mm/s (mm)	200 (±0.1)	60 (±0.1)	60 (±0.1)
	Pressure die assist	mm/s (mm)	400 (±0.1)	120 (±0.1)	120 (±0.1)
	Mandrel actuation	mm/s (mm)	100 (±0.1)	25 (±0.1)	25 (±0.1)
Connected load (approx.)		kW	25	25	44

*For ferrous tubes with UTS of 45 kg/mm². Bending direction clockwise and/or anti-clockwise. Power supply: 415V, 50Hz, 3-phase AC.

38CNC10X3-LR
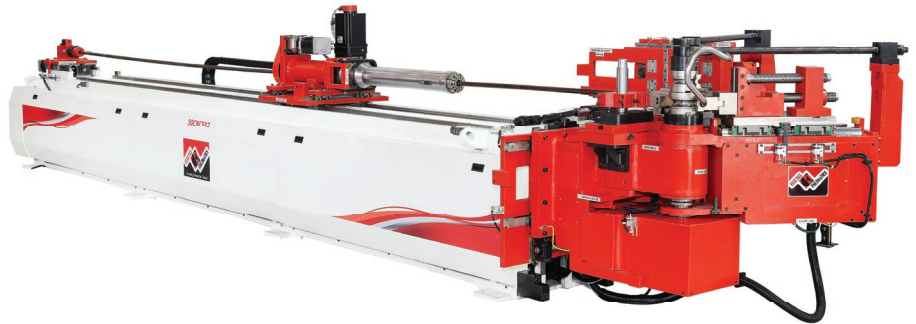
50CNC9X2 (5M)

Features

- Bi-directional bending enables complicated profiles to be made
- All 9 axes driven by AC electric servo for better speed, accuracy and flexibility
- 3 stacks for bending 3 radii
- High productivity by optimized parallel axes motions
- Clean and quiet operations
- Data entry as push-turn-bend (Y-B-C) values or X-Y-Z co-ordinates
- Comprehensive online diagnostics
- Electropneumatics make Smartbend CNC system with our powerful and simple Linux based touch screen CNC software with intuitive user interface
- Programmable closed loop position-speed control with optimized parallel axes motions
- Independent pressure die assist (friction boost)

- Anticipatory mandrel withdrawal
- Automatic self-lubrication for LM guide
- Remote access using team viewer software
- Auto diagnosis feature for trouble shooting

Options

- Automatic mandrel lubrication
- Off-line anti-collision simulation software
- Automatic seam detection system
- Safety mat
- Safety flap on both side of bend arm
- Area laser scanner
- Industry 4.0 compatibility

CNC Five-Axes 1D Tube Benders

Electropneumatics 5-Axes 1D Tube Benders are designed to execute 1D tight bends with excellent control over thinning, ovality and wrinkles. Parts having multiple bend radii in exhaust systems S-bends or having less distance between successive bends can be bent in single set up in this machine. The machine has a servo motor driven hydraulic pump making it highly energy efficient and low maintenance.

The bend head is fixed and the carriage with the chuck assembly adjusts its position vertically for different bend dies and for lateral movement for different bend radius.
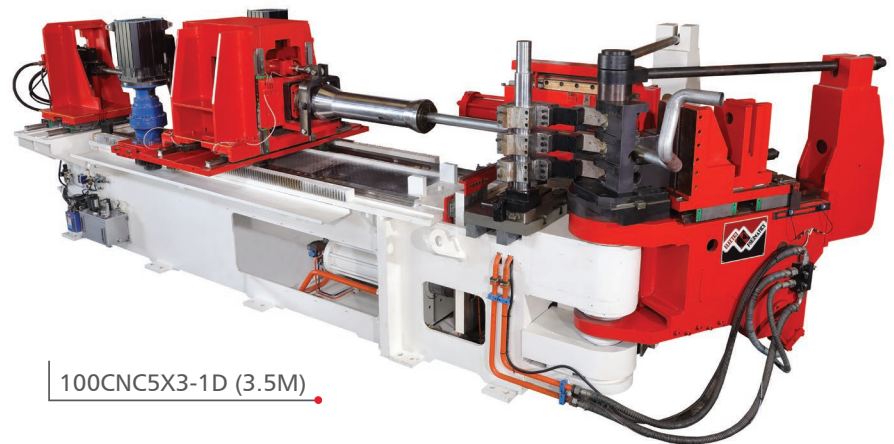
65CNC5X3-1D (3.8M)
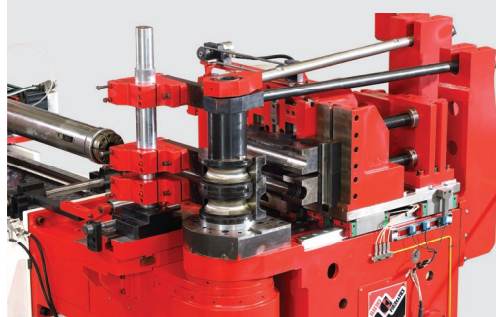
Specifications

Model		Unit	65CNC5X3-1D	100CNC5X3-1D
Max. tube capacity (Dxt)*		mm	63.5 x 2, for SS	101.6 x 2.11, for SS
Min. tube capacity (D)*		mm	25.4	38
Max. bend radius (CLR)		mm	250	300
Min. bend radius (CLR)		in terms of D	25.4	38
Max. radius difference (max.-min.)		mm	80	100
Tooling stack		nos.	3	3
Length over mandrel in normal mode		m	3.8	3.5
Length over mandrel (for 1D bending)		m	2	2
Carriage boost			Available	Available
Bend angle range		deg	0 - 180	0 - 180
Axes drives		-	Electric	Electric
Max. speed (accuracy)	Push (Y)	mm/s (mm)	750 ($\pm$0.1)	270 ($\pm$0.1)
	Turn (B)	deg/s (deg)	300 ($\pm$0.1)	160 ($\pm$0.1)
	Bend (C)	deg/s (deg)	90 ($\pm$0.1)	30 ($\pm$0.1)
	Lateral (X)	mm/s (mm)	100 ($\pm$0.1)	100 ($\pm$0.1)
	Vertical (Z)	mm/s (mm)	100 ($\pm$0.1)	50 ($\pm$0.1)
Connected Load (approx.)		kW	78	137

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415V, 50Hz, 3-phase AC.

100CNC5X3-1D (3.5M)

Features

- 3-radii bending and/or components with low distance between bends can be bent by 3-stack tooling in a single set up

- Push, turn, bend, lateral and vertical axes powered by AC servo motors

- Auxiliary functions i.e. clamp, pressure die assist, chuck and mandrel driven by servo electric hybrid system consisting of hydraulic pump driven by A.C. servo motor for energy efficiency, have less heat generation and reduced noise

- Programmable closed loop position-speed control with optimized parallel axes motions

- Independent pressure die assist (friction boost)

- Anticipatory mandrel withdrawal

- Carriage boost facility for bending tight bends less than 1.5 up to 1.0 D and for thinning control

- Automatic self-lubrication for LM guide

- Remote access using team viewer software

- Auto diagnosis feature for trouble shooting

Options

- Automatic mandrel lubrication

- Off-line anti-collision simulation software

- Automatic seam detection system

- Automatic tube support system for longer length

- Safety mat

- Safety flap on both side of bend arm

- Area laser scanner

- Industry 4.0 compatibility

CNC Boost Benders

CNC2X-B, CNC4X-B

65CNC2X-B (2M)

Electropneumatics CNC Boost Benders meet the stringent ovality/thinning requirements of bending thick-walled, tight-radius tubes required in the boiler, chemical and process industries. Synchronisation and programmability of speed and position through servo controls results in excellent control on the bend quality.

Specifications

Model		Unit	65CNC2X-B	100CNC2X-B	100CNC4X-B
Max. tube capacity (Dxt)*		mm	63.5 x 7.1	114 x 6	114 x 6
Max. tube capacity (Dxt)* in boost mode (mandrel-less)		mm	50.8 x 5.6	63.5 x 8.0	63.5 x 8.0
Min. tube capacity (D)*		mm	10	24	24
Min. tube capacity (D)* in boost mode (mandrel-less)		mm	25	38	38
Max. bend radius (CLR) in normal mode		mm	300	500	500
Max. bend radius (CLR) in boost mode		mm	120	150	125
Min. bend radius (CLR) for serpentine bends		mm	120	150	150
Min. bend radius (CLR) for D/t<9		in terms of D	1D	1D	1D
Length over mandrel		m	2	2	4
Bend angle range		deg	5 - 180	5 - 180	5 - 180
Max. speed (accuracy)	Bend (C) in normal mode	deg/s (deg)	18 (±0.2)	12 (±0.2)	12 (±0.2)
	Bend (C) in boost mode	deg/s (deg)	10 (±0.2)	6 (±0.2)	4-6 (±0.2)
	Push (Y)	mm/s (mm)	-	-	400 (±0.1)
	Turn (B)	deg/s (deg)	-	-	120 (±0.1)
Booster unit			Hydraulic clamp & boost unit for axial compression with programmable controls for synchronised bend-boost speed		
Connected load (approx.)		kW	25	25	30

*For ferrous tubes with UTS of 45 kg/mm^2. Standard bending direction is clockwise. Power supply: 415V, 50Hz, 3-phase AC.

100CNC2X-B (6M)
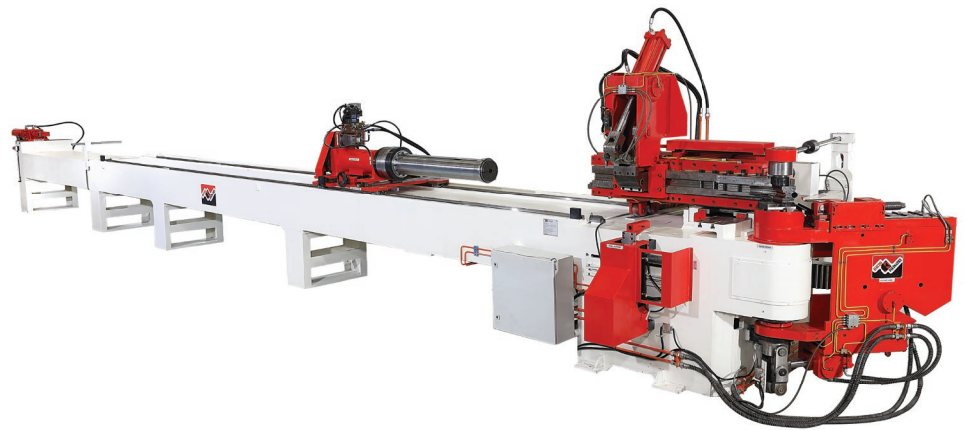
100CNC4X-B (4M)+(8M)

Features

- Electropneumatics SmartBend CNC system with 12.1" colour touch screen monitor and keyboard

- Minimum R = 1D bending on tubes with D/t ratio < 9

- Achievable parameters on R = 1D in 'boost' mode
  Ovality: 8 - 10%,
  Thinning: 12 - 13%

- Fully programmable closed loop (servo) 'bend-boost' speed and position control

- Unlimited tube length and capability of serpentine bends

- Mandrel-less and tie rod-less operation in 'boost' mode

- Suitable for both boost and normal (higher capacity) bending

- Remote access using team viewer software

Options

- Extra mandrel length

- Split tool arrangement for R > 57 mm

- Industry 4.0 compatibility

Special Tube Benders

Electropneumatics has indigenous expertise in developing customised solutions for the most demanding bending requirements. We work with our customers to offer the right equipment and automation, either as a single product or a production line, that can give the best productivity and quality using the latest techniques. These custom-designed machines can bend sectional profiles, tight-radii, different tube materials, thin-walled and thick-walled tubes, solid rods in cold or hot condition.

Section Benders

These machines bend non-round sections like square or rectangular tubes for chassis long members of off-road vehicle, trucks and commercial vehicles, and sections used in luggage frames, furniture frames, automobile accessories, etc.

130CNC5X2 (5M)
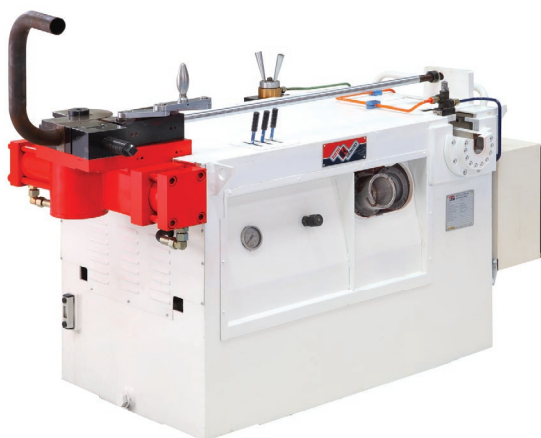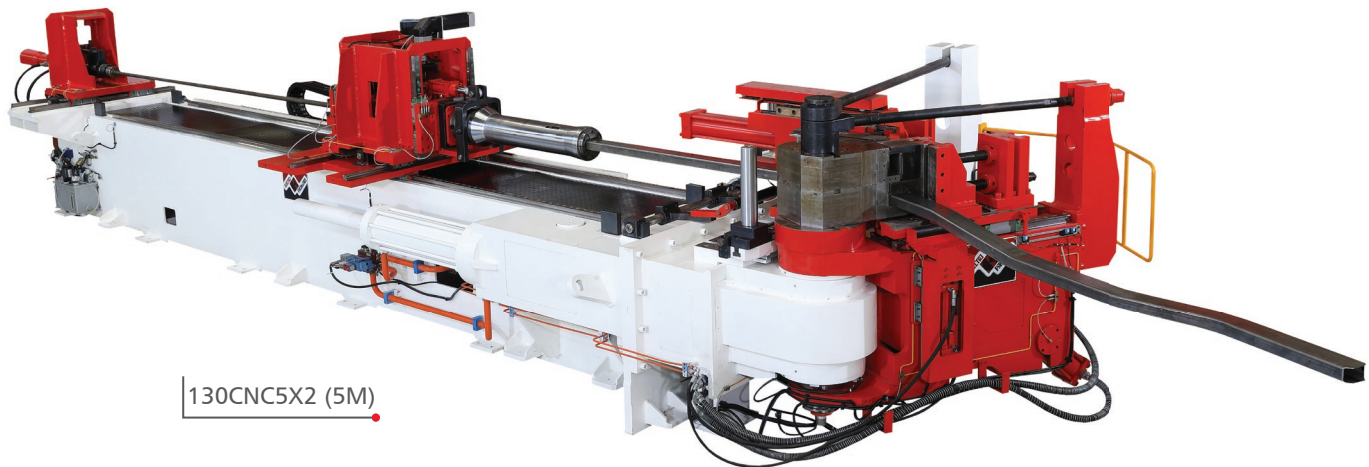
Portabends

A universal mobile multi-purpose tube working station, it has a sawing, ID/OD deburring, bending and ferrule pre-setting unit. They are most suitable for hydraulic piping work in hydraulic shops, hydraulic machine tool factories and also for on-board and off-shore tasks.

Stretch Benders

The CNC Hydraulic Stretch Benders have eight hydraulic servo controlled axes. The speeds of all these axes are synchronised with respect to each other in a programmed manner. The machine produces complex multi-plane bend shapes of rolled sections used in automobile windows, door frames, etc.
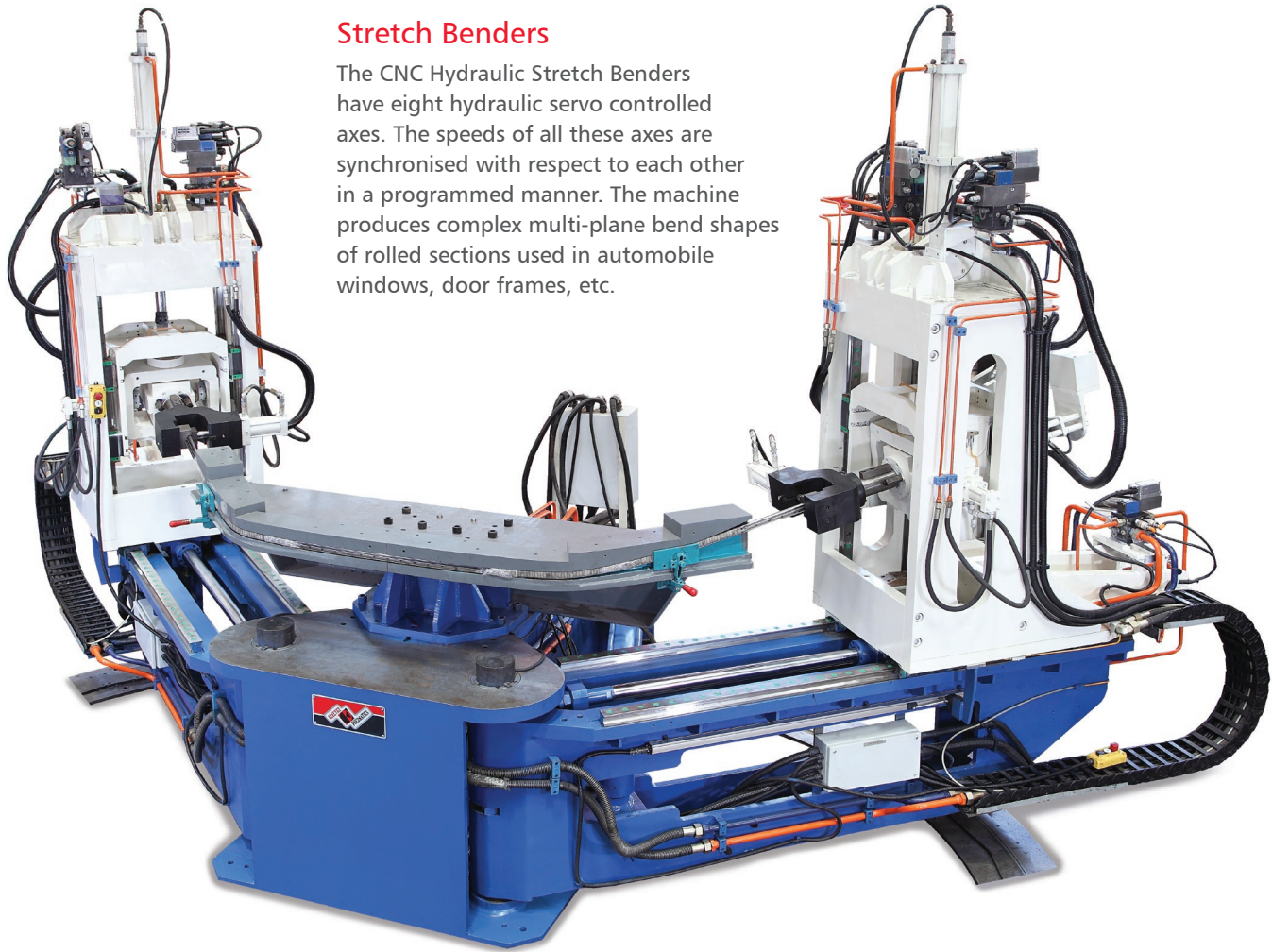

Robotic Bending Cells

The bending cell consists of a specially designed bending head mounted on a 6-axes robot integrated with a tube magazine for interference-free mandrel-less bending of intricate small diameter tubes. The cell is used for unmanned, consistent and high speed bending of tubes in high volumes.
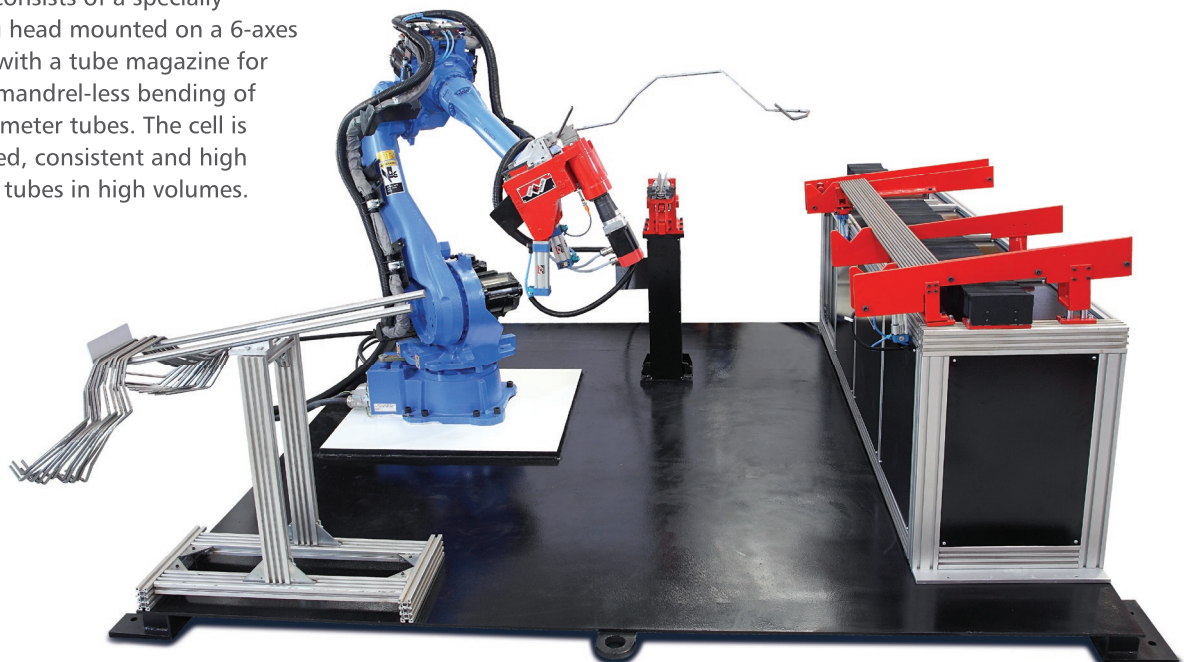
Special Tube Benders

CNC U-Benders for Long Copper Tubes

These special purpose 2-Axes CNC Benders for U-bending of smaller diameter, long copper tubes are used in HVAC industries. The machine is featured with automatic feeding from the coil, straightening, cutting as per the programmed length and is suitable for making tight bends (up to 1D) used in shell and tube type heat exchangers.
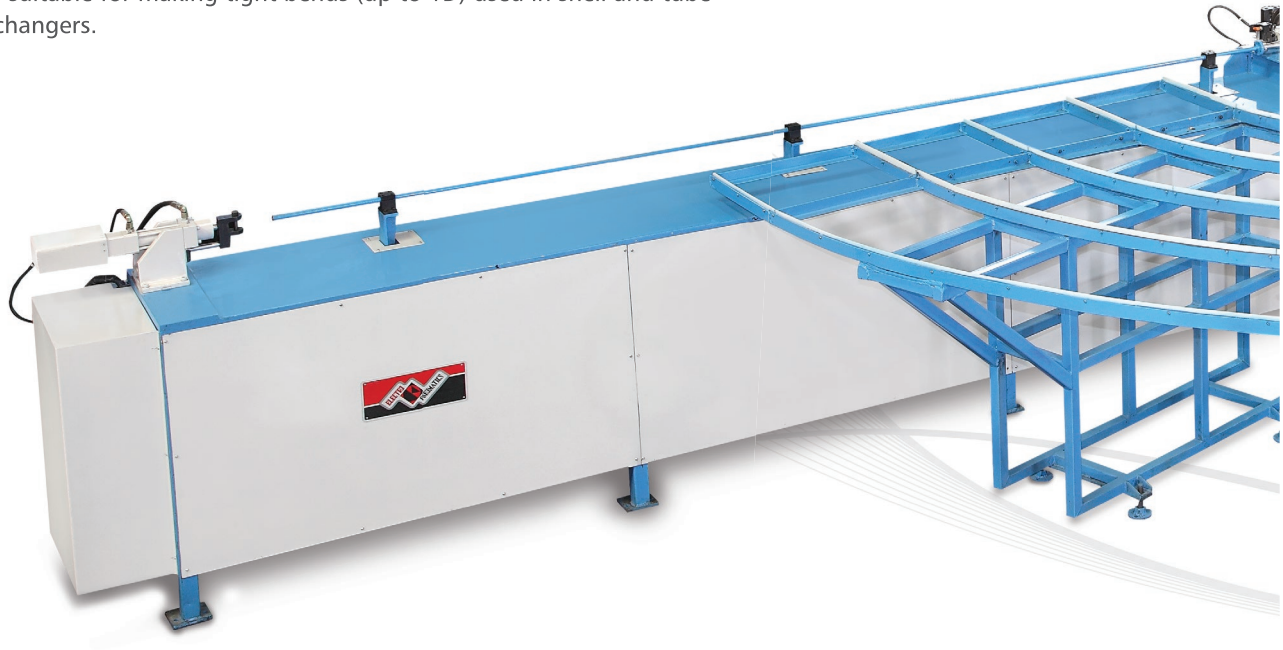
Automated Tube Bending Cell with Loader and Unloader

Bundle of tubes to be loaded at input stack/ hopper. Tubes are transferred one by one to the elevated table and tube singling is done. Hole detection and seam detection provision is given at singling station. Tube Loading Device will pick the tube & feed the tube to CNC bender. Bending of tube is completed in single set up.

Unloader will then move in, picks the bent tube and unload in the unloading bin. During overall cycle, simultaneous operations are done to reduce overall process time and ready for next feed of tube.
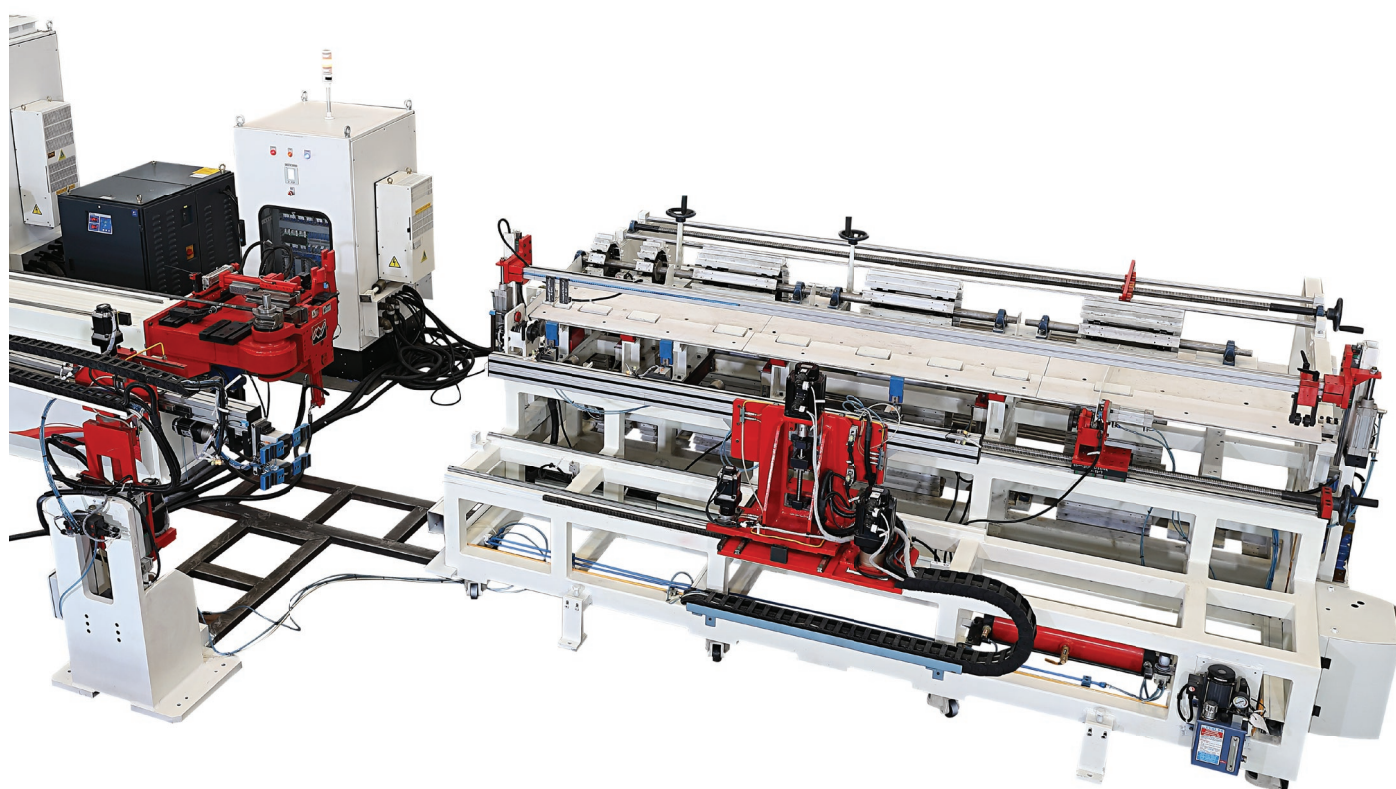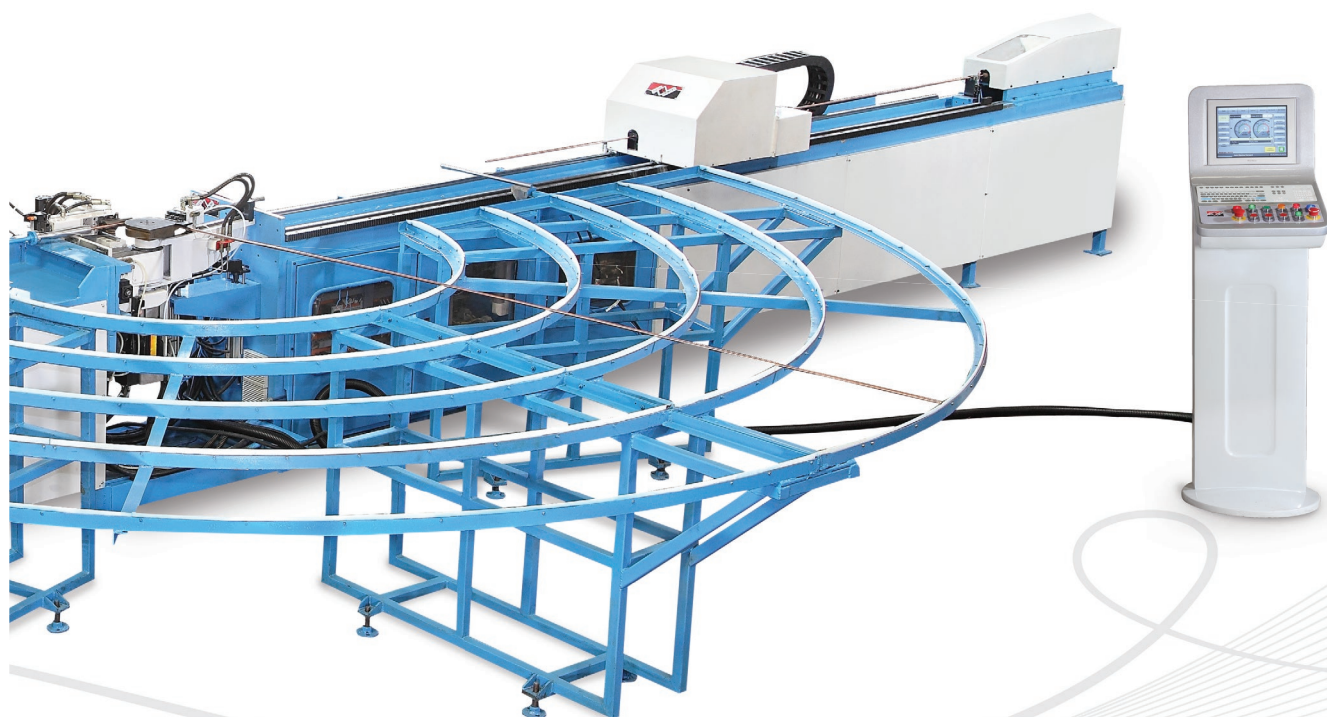
Tube Processing Machines

Electropneumatics tube end formers offer total solution in tube processing which includes end forming, swaging and beading. Our end forming machines are built with the facility of two stage to five stage end forming options to achieve the optimum cycle time and increase productivity.

Electropneumatics offers tube end forming machines that cover a wide range of diameters and applications in the automotive, air conditioning and ventilation, HVAC, furniture, boiler, shipbuilding, piping, construction etc.

The end forming machines are meticulously designed, proven and reliable. The formed parts produced by this chip-less process have increased strength, good surface finish and tight tolerance.

Features

- Can process tubes from OD 16 up to 114 mm in carbon steel, stainless steel, alloy steel, aluminium, copper, brass and other materials
- Cold forming of intricate shapes and profiles- heading, flaring, swaging, expanding, reducing, beading, etc.

- Available in one, two or multiple stages with linear or rotary indexing
- Can form one or both tubes end simultaneously
- Special purpose machines to suit application
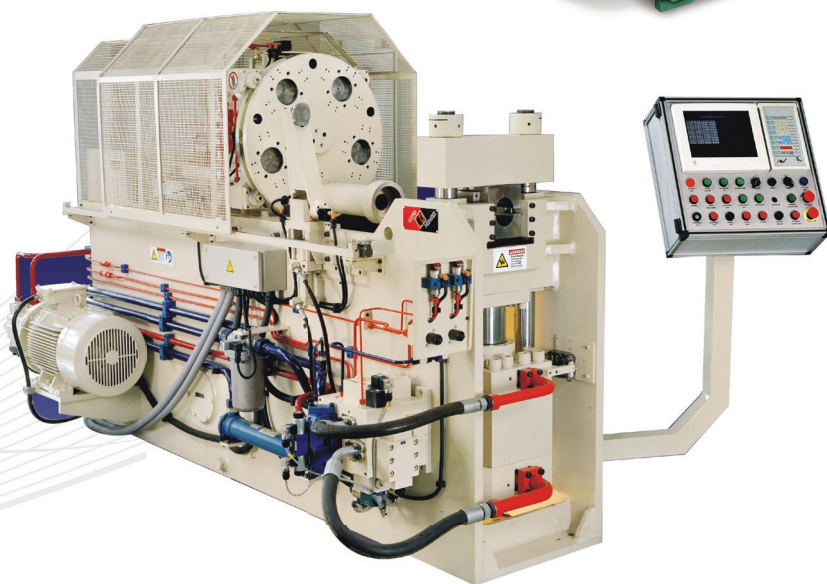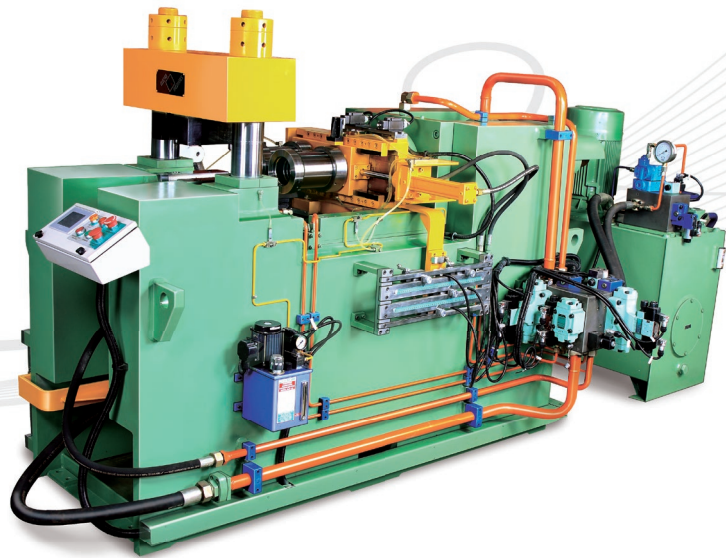- Custom-designed tools for all end forming operations
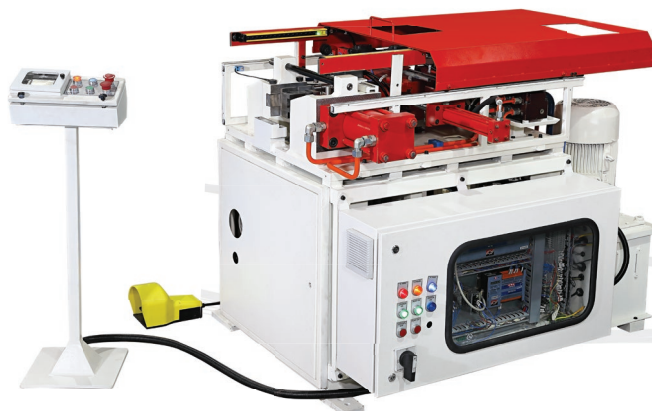
2-Stage, Linear Indexing Light Duty Tube Bender Former, TF-L2L
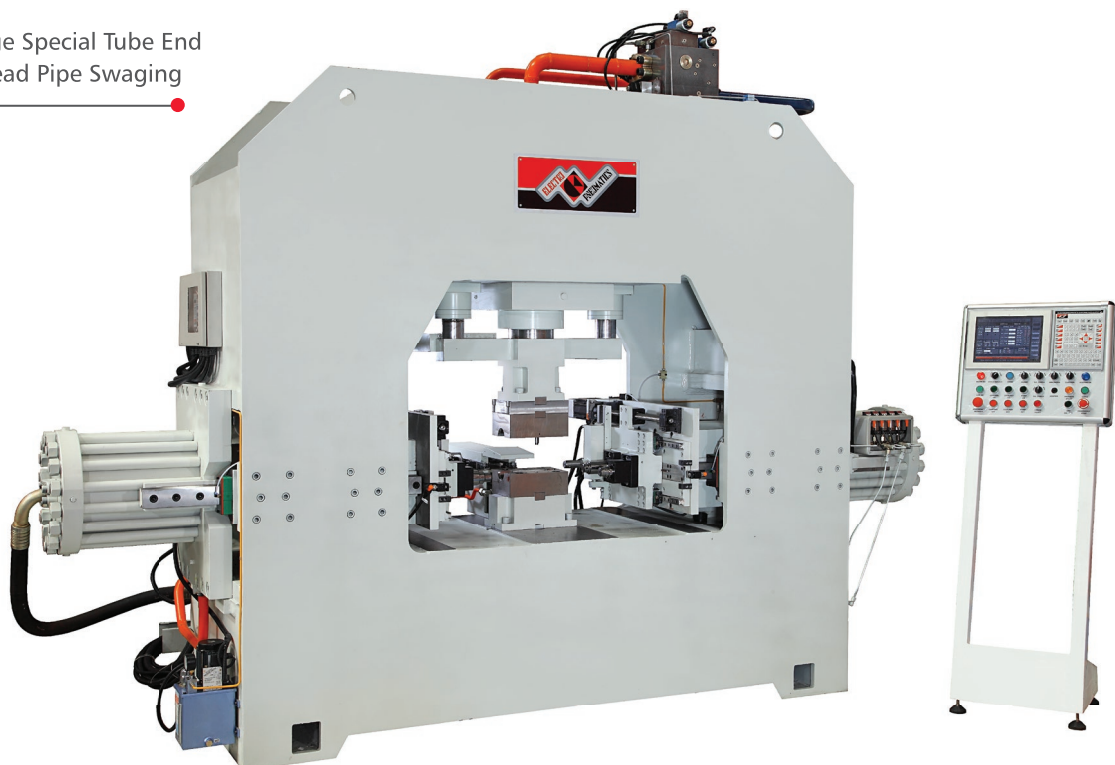
2-Stage, Linear Indexing Medium Duty Tube End Former, TF-M2L

2-Stage, Linear Indexing Heavy
Duty Tube End Former, TF-H2L

5-Stage, Rotary Indexing
Tube End Former

2-Way, 2-Stage Special Tube End
Former for Head Pipe Swaging

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