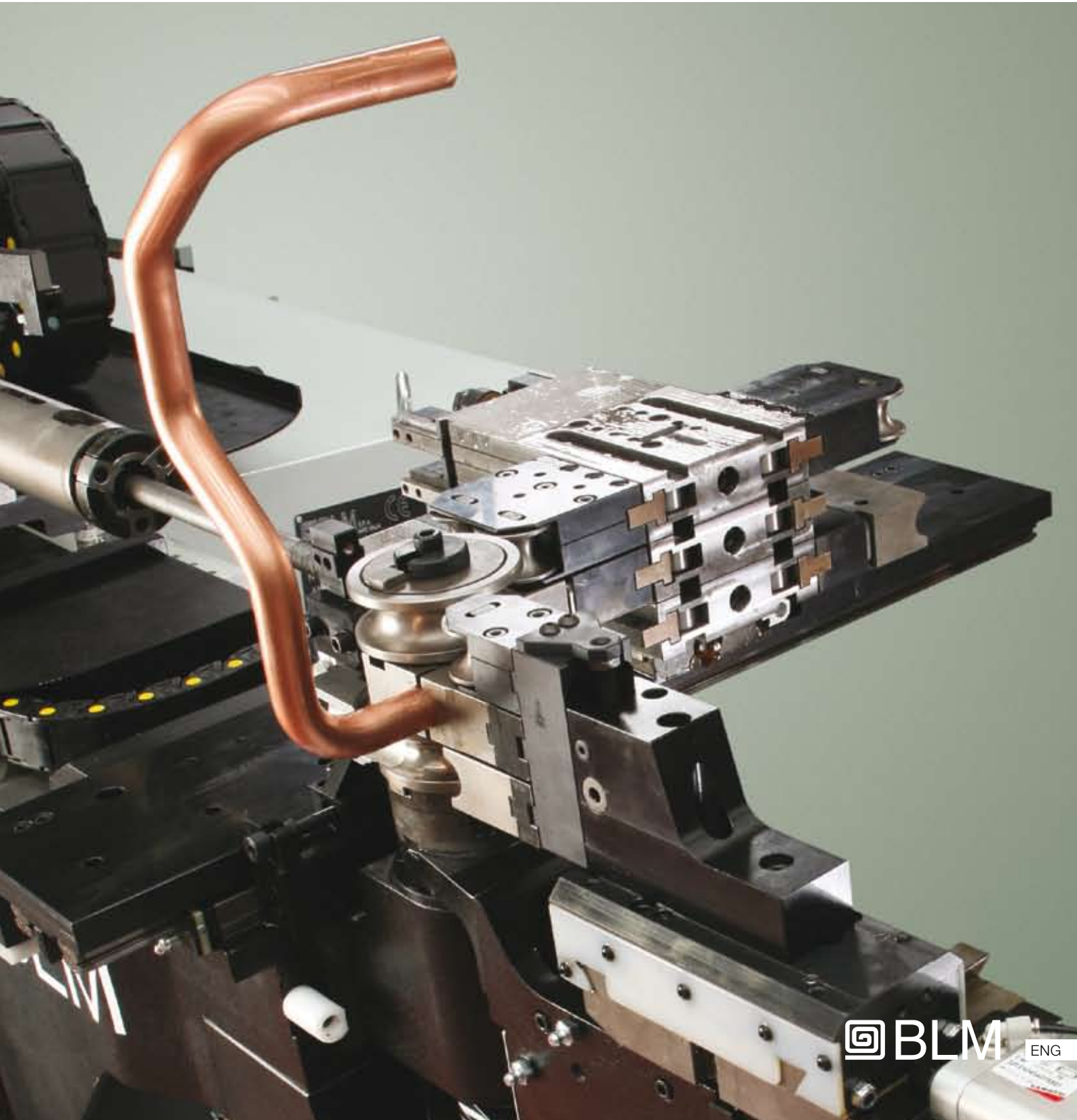


All-Electric Tube Bending Machine SMART





All-Electric Tube Bending Machine SMART



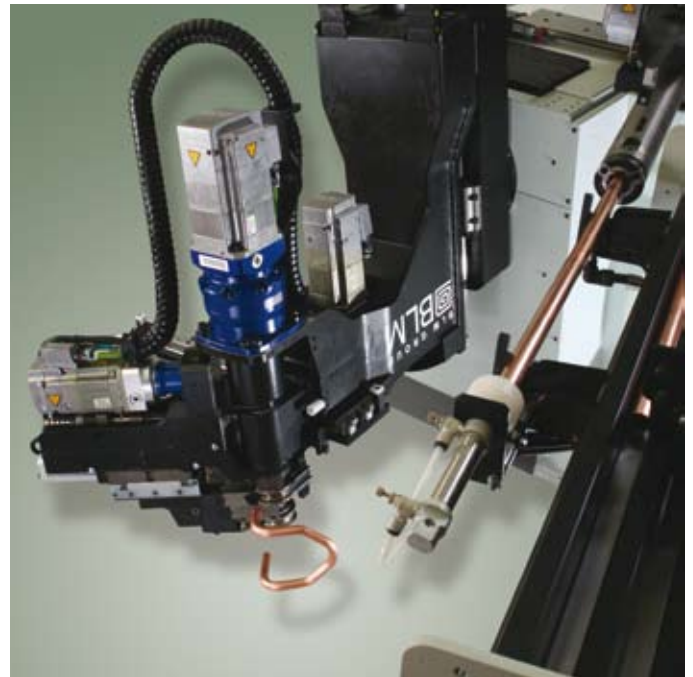
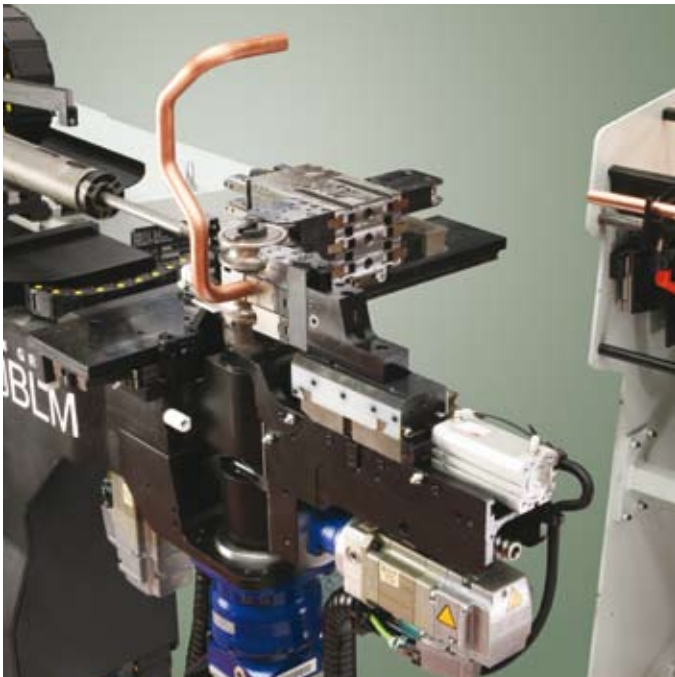
Latest generation all electric CNC tube bending machine



An all-electric (8-axes), combined right and left-hand CNC tube bending machine with in-built automatic loading and unloading. The **BLM SMART** meets the following requirements: right and left-hand bend capability in automatic cycle; multi-stack tooling facility allows components to be bent with different bend radii and with compound bends with little or no straight between them; the fully automatic loading and unloading system allows the machine to run for long periods without supervision; very compact and with small footprint. Particularly suitable for the bending of complex components with different bending radii and tubes pre-assembled with fittings, endforms etc, commonly used within the automotive (brake pipes, air conditioning pipes) and HVAC sectors.



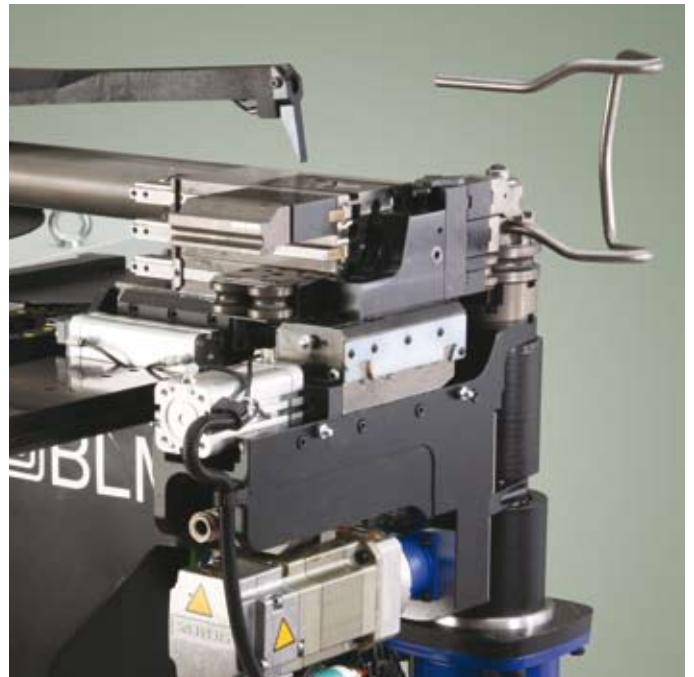
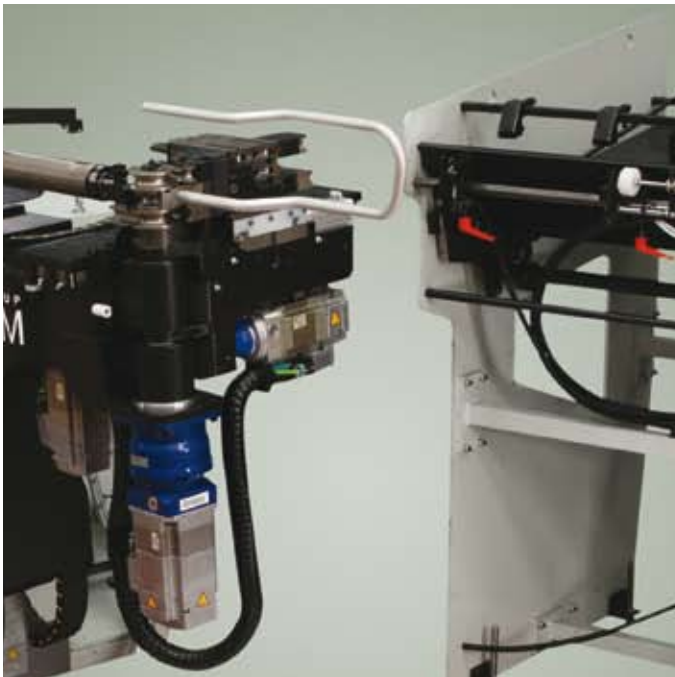
Advantages Smart Bending Machine



- automatic loading of the new tube takes place whilst the bent part is being unloaded, minimising 'dead' time during the cycle to maximise productivity;
- the precise control and positioning of the electric axes ensure the ideal working parameters can be reproduced exactly, right-first-time and every-time, without reliance on operator expertise or intervention; guaranteeing consistent productivity, accuracy repeatability and quality;
- combines conventional, variable radius, and boost bending in the same automatic cycle (available torque up to 400 kg);
- once a part has been programmed, the correct set-up data is automatically generated and stored within that part programme;
- when a part programme is selected all the critical settings for the machine and tooling are automatically managed by the CNC i.e. clamping, pressure die, mandrel position/retraction, and centre line radius etc;
- the VGP 3D programming software shows on screen, in real time, a visual simulation of the tube being bent. Automatically counteracting any possible collision points and optimising by simultaneous axis movements, the VGP 3D selects automatically the fastest and most practical bend cycle to deliver the fastest possible cycle time;
- clean to run (no oil) and quiet in operation, usual noise levels 65 DBA;
- environmentally friendly, with typical power consumption savings of around 80%;
- easy to interface with customers existing tooling.

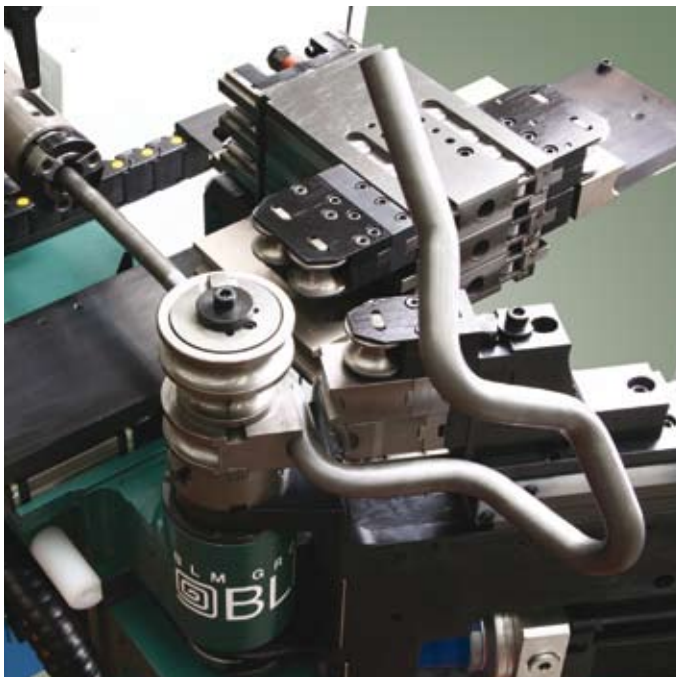


Technical Details



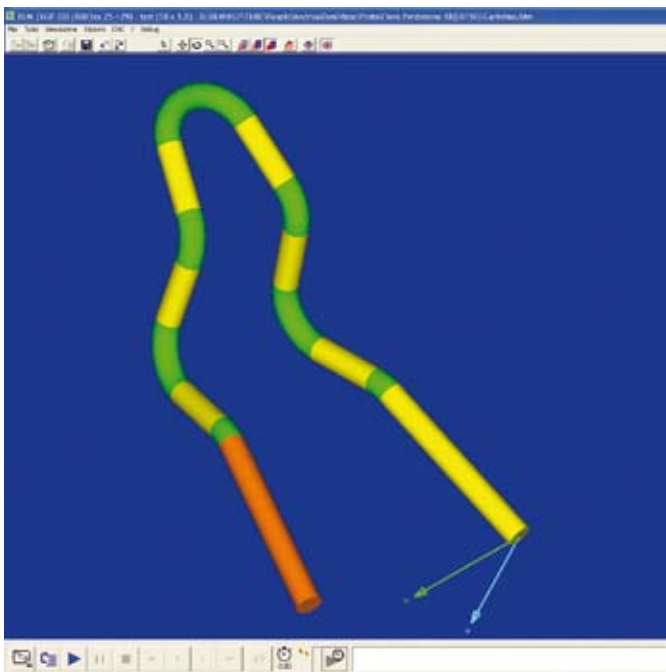
TECHNICAL DETAILS SMART

- all axes movement, including the bending head, are driven through geared motors, this eliminates backlash and the absence of a chain drive deliver the highest accuracy, repeatability, and reliability;
- automatic setting of clamping, pressure die and collet axes guarantee positional, and torque settings;
- siemens digital CNC controller with double CPU for faster program processing and control;
- latest generation Siemens drivers with regenerative feedback into the line supply;
- detection of the single axis position by absolute encoders, no more sensors for detecting the zero position therefore improved performances and reliability;
- when a new bend programme is selected the machine automatically runs its 'safeguard' cycle, with all speeds and pressures reduced by half to eliminate possible collision damage through inadvertent setting errors;

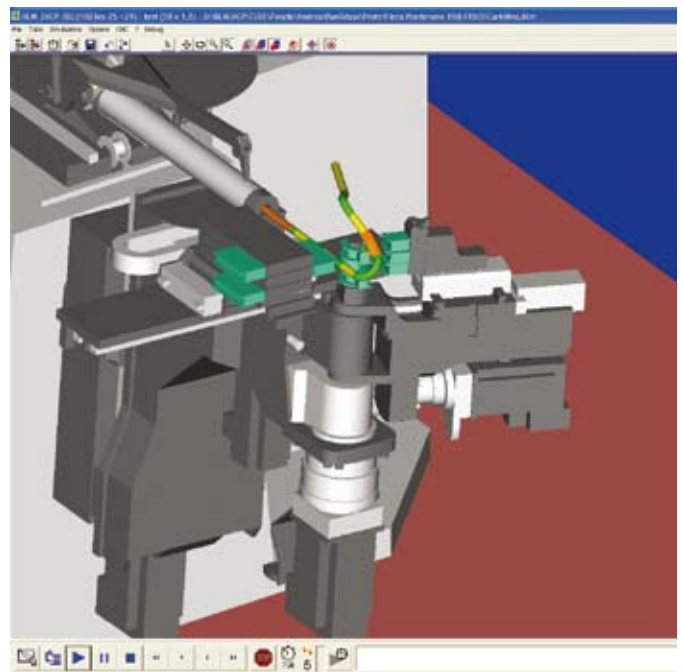


- loading of the tube is integrated in the machine and can take place on either the left or right hand side of the machine;
- finished components are unloaded directly by the machines bend head;
- can be easily integrated into any automated manufacturing process;
- the BLM SMART can be managed by means of a remote work station via an Ethernet;
- all hardware and software for the tele-service connection via the internet is included.

VGP 3D, the difference



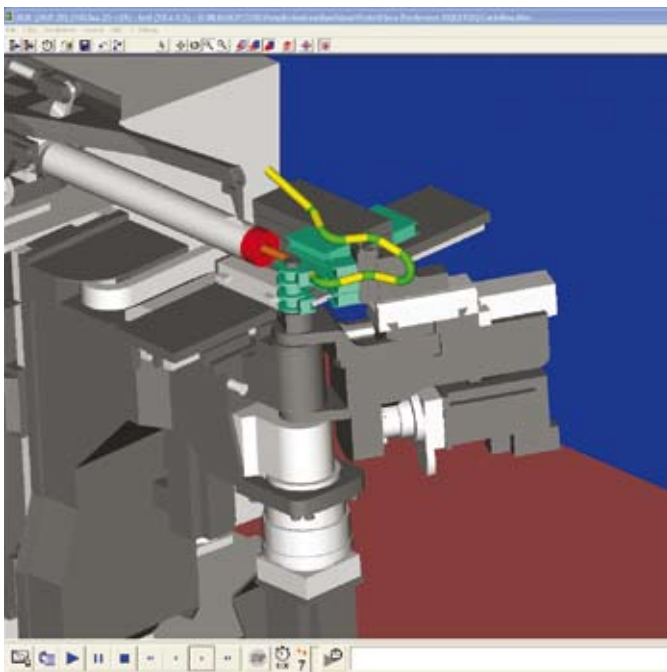
1) Programming



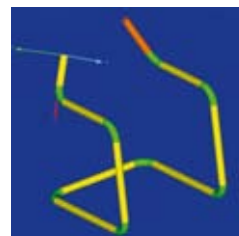
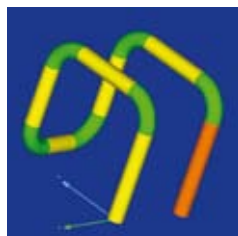
2) Simulation and display of possible crashes

PROGRAMMING AND 3D SIMULATION SOFTWARE OF THE PART PROGRAM

- by simply inputting the components bend coordinates, the complete bending program is graphically simulated prior to bending;
- pre-production calculation of the real cycle time is known, so production costs and component pricing can be more precise;
- component feasibility can be checked without physically testing on the machine or making prototype tooling;
- very quick solution feedback to customers;
- likely collision risks are highlighted and the most efficient avoidance route selected automatically;
- quickest working cycle generated by the VGP software.



3) Calculation of the possible piece programs
and of the relating cycle times



Technical Data

Max tube O.D. capacity (round tube) non-ferrous	Ø 28 x 1,5 mm
Max tube O.D. capacity (round tube) ferrous	Ø 22 x 2 mm - Ø 25 x 1,2 mm
Max tube O.D. capacity (round tube) Inox	Ø 20 x 1,5 mm
Max wire capacity	Ø 14 mm
Controlled axes	nr. 8
X axis accuracy	± 0,05 mm
Y axis accuracy	± 0,05°
Z axis accuracy	± 0,05°
X axis speed (brushless motor)	1800 mm/s
X axis speed with optional boost facility (400kg)	900 mm/s
Max bending radius (increasable on demand)	50 - 70 mm
Min bending radius (decreasable on demand)	20 mm
Machine bed length (increasable on demand) - from tool post to collet - from tool post to mandrel retraction	1300 mm 2670 mm
Max bore through collet housing	25 mm
Automatic mandrel lubrication	standard
Number of mandrel rods	nr. 3 (8 - 10 - 16)
Max installed power	12 kw
Average absorbed power	2,5 kw
Noise level	below 65dba
Machine and CNC weight	2000 daN
Machine dimensions	3300 x 1200 x 1550 mm
Average bens/hr	n.r. 3000 ÷ 3600



CONTROL SYSTEM: for the management of maximum 64 axes with continued motion interpolation and control of the axis motion path precisely matching with the 3D simulation, digital drivers SIEMENS SINAMICS with integrated digital interface DRIVE-CLiQ versus all system components, including motors and transducers, electric brushless motors with position management by absolute encoders.

OPERATOR INTERFACE: graphical interactive programming with 3D machine model. Industrial PC SIEMENS SIMATIC PANEL PC577B with INTEL MOBILE CELERON 1.86 GHz/512 MB, 80 GB hard drive for program and tooling data storage. Windows XP ProEmbSys SP2 operating system. Connections: 2xEthernet, 5xUSB, 1xRS232. Operator panel TOUCH SCREEN (TFT colour display 15", membrane keyboard). SIEMENS MCP483 machine keypad. Remote link facility for remote diagnostics (requires internet connection to the machine). Connection to an analogue line can be supplied as an option. Interface to BLM MT5 measuring system.

STANDARD: variable radius/boost bending facility up to 200Kg, anticipated mandrel retraction, safety guarding.

OPTIONS: off-line programming software, variable radius accessories, pressure die with spring return, wiper die holder, machine bed length extension, weld seam detection, punching unit, automatic loaders, vegetable oil lubrication system.



BLM GROUP



TUBE BENDING

endforming
lasertube cutting system
sawing, deburring and washing
cutting & end machining
laser cutting for sheet and tube
handling
3d measuring
manufacturing cell
non touch measuring systems
process control software



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