



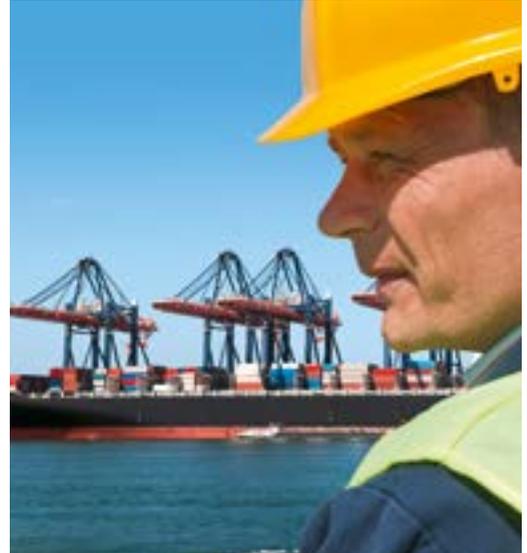
Heavy Duty

Machines for Plant Construction,
Shipbuilding and Offshore Industry

polwelt

Bending to perfection.





Increased Productivity thanks to Efficiency and Precision

Many kilometers of tubing are built into ships and offshore installations. Complex chemical facilities, refineries and power plants also have similarly long tubing networks. Given these quantities, one thing is clear: Tube machining plays an important role. Its manufacture needs to be very efficient. Entire tubing systems need to be made as swiftly and as precisely as possible. And, both economic and ecological demands must be met.

To meet these demands, the efficient and precise processing of high-strength materials and of very large and thick/thin-walled tubing must be guaranteed. Depending on the task at hand, special tubes like double-walled or flanged tubes, which are ready for integration into existing systems, are also used.

Furthermore, with tubes for chemical plants, the nondamaging machining of tubing is vital. It is essential that the properties of special materials be taken into consideration which are not bendable when warm or which simply must not be heated up as it changes its structural condition.

Another challenge presents itself in the ship-building sector: In order to create greater loading volume for the increasingly complex on-board technology, tube systems need to be designed in a way that saves more space. For this reason, plant designs often use smaller bending radii. In these applications, the limits of what is possible need to be stretched in relation to existing bending technology, machines and tools.

This is precisely what drives us on: Our aim is to provide the best possible solution for your bending task. We have the matching, programmable Heavy Duty machine for every task: From precise bending of very different tubes with a wide variety of radii, to reshaping special materials and bending high-strength materials.

For versatile and complex tasks, a technology is needed that produces a significant improvement in productivity thanks to greater precision and efficiency.

Powerful even for the Highest of Demands

We have developed our Heavy Duty tube cold bending machines for the constantly increasing demands placed on the bending technology industry. These machines are designed for the efficient and precise bending of high-strength materials, of very large tubes as well as thick and thin-walled tubes. With our CNC-controlled Heavy Duty machines, you can manufacture even the most complex designs in one work step. As a result, 3D tube systems can be produced rapidly without a single welding seam – a major plus when it comes to productivity.

Our Heavy Duty tube cold bending machines produce a wide range of bending radii, even radii which are smaller than the tube diameter itself. They are also designed to withstand constant use under heavy strain and have the strongest bending force. This is because the technology we develop is always based on a very stable base machine. This base reliably absorbs the enormous forces exerted during bending and has enough energy reserves in the clamping functions area.

In addition, our Heavy Duty system also bend double-walled and flanged tubes which can be integrated directly into existing systems. To prevent leftover tubing lengths during production, we have incorporated tube leftover length optimization and length measurement into our machine systems. These versatile and powerful options are available to you up to a tube diameter of 419 x 21.4 mm, enabling you to significantly increase your productivity.

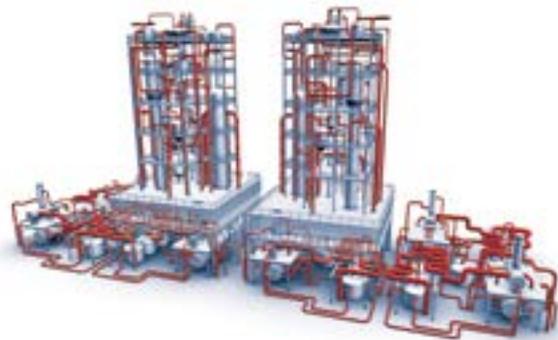
We have decades of experience when it comes to handling special materials as well as the necessary expertise, and focus on the advantageous tube cold bending technology to make accurate tube machining possible.

All-round expertise

We develop suitable solutions for the most sophisticated production tasks. It doesn't matter if you need machines with over 40 meters of tube expansion length or a full tube workshop with integrated tube magazine and automatic tube feeder: Maximum productivity, the highest degree of availability and future-proof manufacturing technology are our guarantees for your success. This includes constant spare parts availability and the manufacture of individual components at our own factory and no delays. Not only do you benefit from fast response times, but also from minimized downtime in critical cases.

Alongside these outstanding features, our systems are easy and intuitive in operation. They can also be connected up seamlessly to all relevant networks and programs.

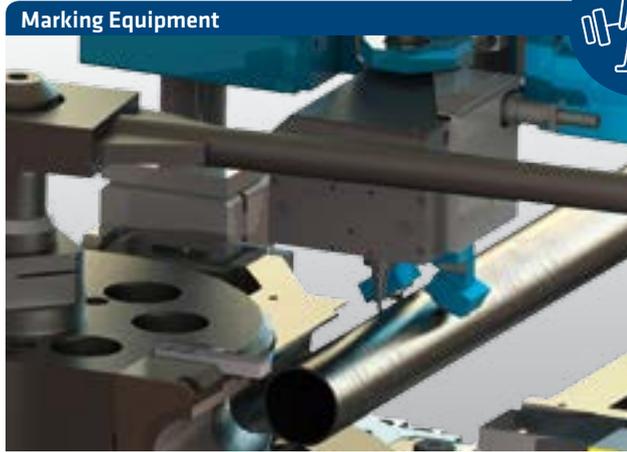
Our experienced team will gladly assist you with the planning and implementation of a system that is designed to meet your needs.



Solid machine model

The machines in the HD series are designed for continuous use under heavy strain. Their particularly high levels of rigidity prevent the twisting of the machine body when high clamping forces are exerted, thereby producing high-quality bending results.

These user-friendly machines can also be connected up seamlessly to all relevant networks and programs. Similarly, the high degree of automation enables streamlined series and/or single-item production.



Optimally Customized to Meet Your Needs

Our modularly configurable machine and accessories range offers you maximum flexibility. A tube bending machine which is tailored precisely to your specific production requirements noticeably contributes to maximizing your productivity and plays a decisive role in your competitive ability. We begin each new project with a comprehensive consultative meeting in order to find the bending solution which best corresponds to your job definition.

We assist you when it comes to selecting the matching equipment – be that additional stacked bend tooling, marking equipment or automatic tube loading.

Your Optional Extras

SpringMatic

The SpringMatic measuring system, which can be integrated optionally, determines the springback of the tube after the first bend. It is then immediately „re-bent“. The result is maximum precision. It is plain to see that this system concept guarantees great financial benefits for our customers.

Flange Tube Equipment

With our flange tubing equipment, you can bend flange and socket tubes economically. Based on our expertise and many years of experience, we have configured the machines in such a way, for example, to take flange positions into account. This way, supplementary flanging of finished tube bends can be avoided and costs minimized.

Marking Equipment

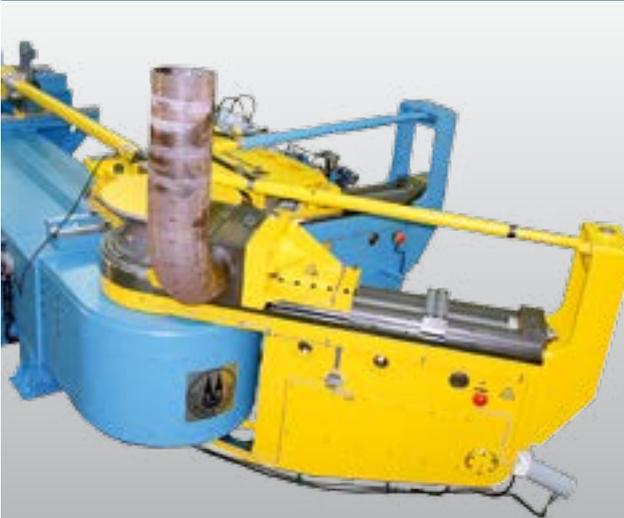
The marking equipment can be used to identify the positions easily on the tube during the bending process at which, for example, welding operations or bypasses are to be executed after bending. This means that time-consuming calculations for subsequent identification of the corresponding points on the bent tube can be dispensed with.

Automatic Loading System

If desired, we will gladly equip your system with an automatic tube loading system customized to your needs. These are available in a wide range of models for tubes with diameters of up to 420 mm.



SR 320



Economical and Easy to Use

The semi-automatic mandrel bending machines of the SR line permit the especially economical manufacturing of small lines and single bends. Equipped with special tools, these machines bend thin and thick-walled tubes with a maximum diameter of 419 x 21.4 mm. The SR machine line guarantees optimum bending results and is the cost-efficient alternative to our CNC machines. Similarly, the SR machines impress with their easy-to-use, intuitive operation. This is because instructions are entered via touch-screen and bend angle corrections are taken into account immediately.

CNC 265 HD



Solid and Efficient

The CNC mandrel bending machines of our Heavy Duty line are the all-rounders of our range: Unlike the semi-automatic SR machine, the tube is clamped into the index head with the automatic CNC machines and positioned in the space using the transport unit and index head. After the first bend, it is immediately moved along and twisted if required. This swiftly produces 3D tube systems without a single welding seam. The basis for the development and manufacture of this machine which is tailored to your demands is a very stable basic machine with extremely high rigidity. It is designed to absorb the enormous bending forces exerted on it. Thanks to the enormous power reserves in its clamping functions, it is able to provide you with outstanding bending results.

Technical Data

Illustrations may include optional equipment. Special versions by request. Subject to technical modification. Further optional equipment is available on request.

		SR 60	SR 80	SR 100	SR 165	SR 220	SR 265	SR 320	SR 350	SR 420
Max. Ø tube x wall thickness										
▶ Tensile strength: 450 N/mm ²	mm	60 x 5,5	89 x 7,6	114,3 x 8,6	168,3 x 11	219,1 x 12,7	273 x 15,1	323,9 x 17,5	355 x 19,1	419 x 21,4
▶ Tensile strength: 750 N/mm ²	mm	60 x 3,2	89 x 3,2	114,3 x 4	168,3 x 5	219,1 x 6,3	273 x 8,8	323,9 x 8,8	355 x 8,8	419 x 8,8
Max. section modulus	cm ³	11,8	36,5	70,2	200,8	401,8	747,7	1.224,6	1.606,7	2.528,6
Max. centerline bending radius (CLR)	mm	200	290	500	600	800	1.250	1.500	1.750	2.000
Min. centerline bending radius (CLR)	mm	20	30	50	70	100	150	200	200	250
Tube length (basic machine)	mm	2,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Max. bending angle										
▶ forward, steplessly adjustable	RPM	8	5	3	2	0,5	0,2	0,2	0,2	0,2
▶ return, constant	RPM	10	7,5	5	4	1,9	0,7	0,7	0,7	0,7
Power requirement	kW	11	18,5	18,5	22	22	30	30	30	30
Bending direction		Clockwise – on request counter clockwise								
Weight of machine approx.	kg	5,250	7,500	11,000	11,000	12,500	15,000	15,000	15,000	15,000



CNC 220 HD MW



Numerous Possibilities

Large quantities of a wide range of tube types and different tube diameters must be machined efficiently when it comes to ship-building and plant manufacturing, for example. Downtime as a result of modifying bending machines is an unnecessary waste of time and money. In response to these challenges, we have developed our CNC HD MW solution with which you can save up to 70% on refitting time as opposed to the conventional systems available on the market. The CNC HD MW machines are based on our automatic CNC HD line and include all of the outstanding properties of this machine series. By using stacked bend tooling in this model, long refitting processes can be avoided, meaning you can benefit from short downtimes, increased machine efficiency and reduced production costs.

Optional Extras

► Machines SR, CNC HD and CNC HD MW

- Automatic mandrel lubrication equipment
- Automatic central block lubrication
- Programmable radius setting
- Programmable mandrel adjustment
- Wiper die holder and lubrication
- Air oil cooler
- Bending of flange tubes and folded tubes with loose flanges
- Booster system

CNC 60 HD	CNC 80 HD	CNC 100 HD	CNC 165 HD	CNC 220 HD	CNC 265 HD	CNC 320 HD	CNC 350 HD	CNC 420 HD	CNC 60 HD MW	CNC 80 HD MW	CNC 100 HD MW	CNC 165 HD MW	CNC 220 HD MW
60 x 5,5	89 x 7,6	114,3 x 8,6	168,3 x 11	219,1 x 12,7	273 x 15,1	323,9 x 17,5	355 x 19,1	419 x 21,4	60 x 5,5	89 x 7,6	114,3 x 8,6	168,3 x 11	219,1 x 12,7
60 x 3,2	89 x 3,2	114,3 x 4	168,3 x 5	219,1 x 6,3	273 x 8,8	323,9 x 8,8	355 x 8,8	419 x 8,8	60 x 3,2	89 x 3,2	114,3 x 4	168,3 x 5	219,1 x 6,3
11,8	36,5	70,2	200,8	401,8	747,7	1,224,6	1,606,7	2,528,6	11,8	36,5	70,2	200,8	401,8
200	290	350	600	800	1,000	1,250	1,500	1,750	150	225	300	425	550
20	30	50	70	100	150	200	200	200	30	50	75	90	120
2,000	2,000	3,000	4,000	5,000	5,000	6,000	6,000	6,000	2,000	2,000	3,000	4,000	5,000
8	5	3	2	0,5	0,2	0,2	0,2	0,2	8	5	3	2	0,5
10	7,5	5	4	1,9	0,7	0,7	0,7	0,7	10	7,5	5	4	1,9
25	25	25	40	40	40	40	40	40	25	25	25	40	40
Clockwise – on request counter clockwise									Clockwise – on request counter clockwise				
5,250	7,500	11,500	15,000	27,500	45,000	62,500	67,500	93,000	10,500	12,000	15,700	18,900	36,000

Equipped for all Tasks

Bending Tools with the Highest Quality

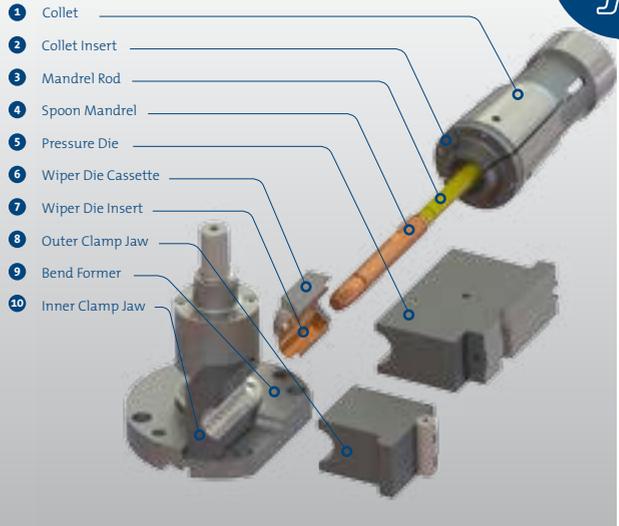
We design and manufacture the bending tools to match your bending tasks. Based on our years of experience and your requirements, we find the optimum tools for your system. We only use top-quality materials and sophisticated manufacturing processes in our tools. The bending tools are especially hardened, among other things. The result is a high degree of both wear resistance and dimensional stability which guarantees you high precision as well as a long-lasting production solution that operates at the highest level.

Our bending tools stand for the highest quality. Our designers develop and manufacture all of our tools together with you according to your requirements. This also means quick availability to you, as even the best materials need to be replaced after a long period of use. And this is not a problem! Based on the data we have saved, your new tools can be manufactured and delivered to you in the shortest period of time.

Constant spare parts availability and the manufacture of individual components at our factory without delay also ensure the necessary operational security. Not only do you benefit from fast response times, but also from minimized downtimes in case of emergency.



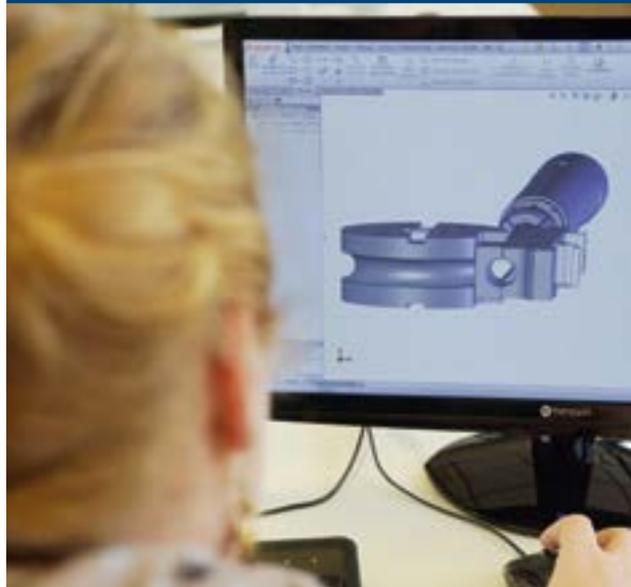
Bending Tool



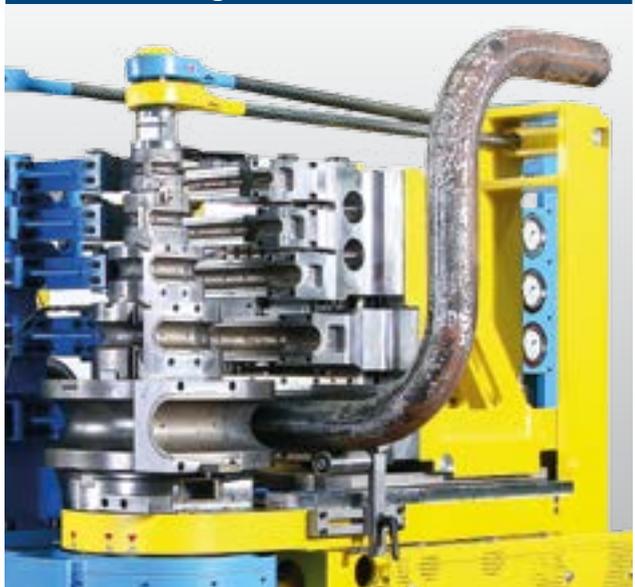
Single-stack Bending Tool



In-house Bending Tool Construction



Multi-stack Bending Tool



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