HAEUSLER
the forming factory

4-ROLLS-PLATE BENDING MACHINE

VRM – *THICKEST SHEETS, FAST AND SAFE BENDING*

VRM – 4-ROLLS-PLATE BENDING MACHINES

FAST, PRECISE AND SAFE
WITH HIGH PRODUCTIVITY

The quality and durability of the Haeusler VRM is based on unique design solutions that are the result of 90 years of development history.

The narrow bending geometry paired with the «up side down» cylinder arrangement makes the VRM the all-rounder among the round bending machines. The constant clamping of the sheet between the top and bottom rollers makes the bending process fast and safe. The VRM is ideally suited for the production of pipes and containers, onshore and offshore industry, shipyards and heavy engineering.

1

MAXIMUM PRODUCTIVITY THANKS TO HIGH TORQUES
The use of rotary drives with very high torques makes it possible to finish the end products in just a few work steps, thereby increasing your productivity.

2

LONG SERVICE LIFE THANKS TO OPTIMISED ROLLER MATERIAL
HAEUSLER only uses the most suitable roller material for our bending machines. The material forged as close as possible to the final contour at our partner forges. This means this maximises service life for our customers, as the forging process is constantly optimised and adapted to the roller material.

3

VERY HIGH PRECISION
Thanks to the special and patented arrangement of the side roller cylinders, the guide lengths of the side roller have been more than doubled compared to other suppliers. As a result, maximum bending accuracy can be achieved on a permanent basis and wear is reduced to a minimum.

4

MAXIMUM SECURITY
The constantly clamped sheet metal between the top and bottom roll guarantees a high level of safety. No sheet loss during bending.

5

PERFECT BENDING RESULTS
The optimised bending geometry of the HAEUSLER VRM and the BENDtronic control system with integrated artificial intelligence enable the bending of the narrowest diameters with the smallest possible bending ends.

VRM

→ **FIND OUT MORE:**
haeusler.com/en/vrm

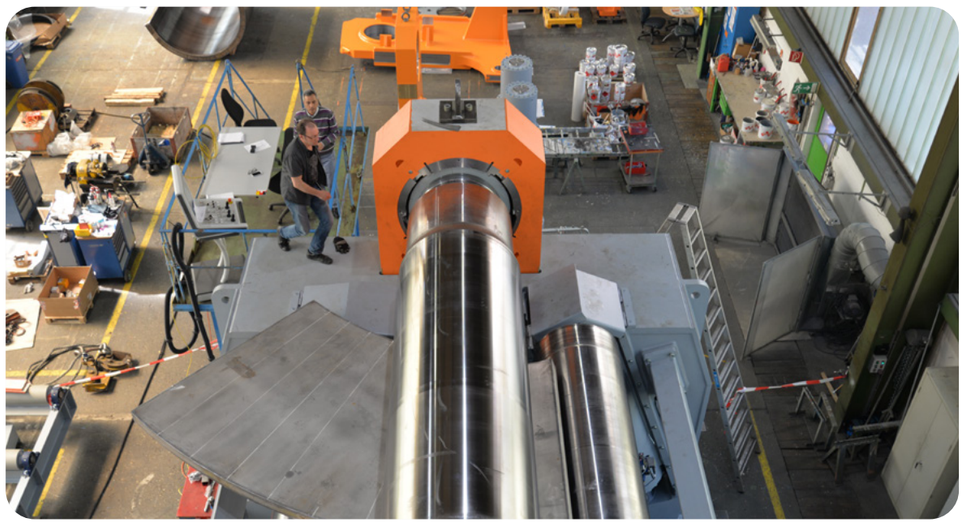
TECHNOLOGY

BIG AND FAST
WITH MAXIMUM TORQUE

The **drives** of plate bending machines are primarily defined by the installed power and the maximum available torques. The greater the **maximum torques** (pull-through forces), the greater the infeed of the side rollers at which roll bending is possible. The greater forming therefore leads to shorter cycle times.

The **base frame**, like the entire machine structure, is extremely torsion-resistant. The extremely compact design and the fact that no dynamic process forces are transferred to the foundation significantly reduce the costs of constructing the foundation.

All VRM machines are equipped with **linearly adjustable bending rollers**. This enables a narrow bending geometry and therefore has particular advantages when forming materials with a higher yield strength. These advantages are also evident when bending small radii and cones.



FUNCTION

FUNCTION AND FEATURES

HAEUSLER 4-ROLLER

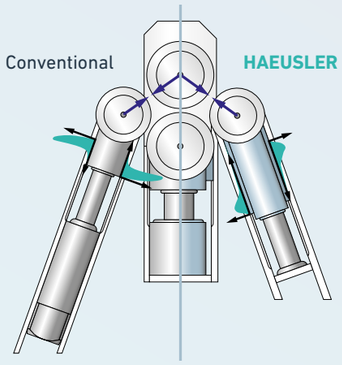
Haeusler 4-roller bending machines are designed to be robust and durable. Each of the four rollers has a specific function and is optimally designed accordingly.

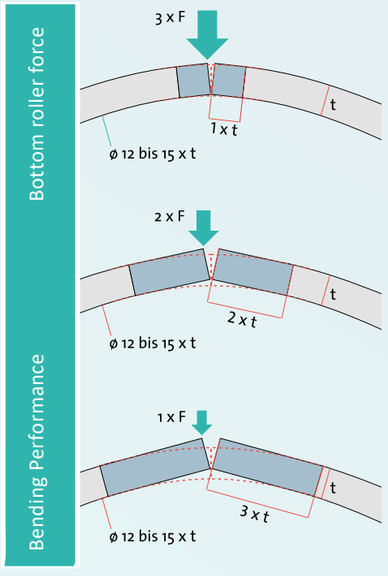
During every bending process the machine's **top roller** will carry the heaviest load resulting from the bending forces induced by the bottom and side roller. The top roll's diameter thus becomes a critical parameter which will determine both minimum bending diameter and roll deflection under load.

Side roll positioning will define the resulting bending diameter. The bending forces created during the process will be guided from the side roller carriage onto the machine frame. The longer these guiding areas, the lower the material stress will be, thus reducing wear and tear and improving machine precision and longevity. HAEUSLER's patented design of using "top down"cylinders (moving cylinder tube, resting piston rod) allows for 100% longer guiding lengths compared to conventional designs.

The **bottom roller** and it's installed maximum bottom roller force define how long the remaining flat ends will be during pre-bending. Bottom roller force and achievable flat ends are the most important characteristics in determining the capacity of a plate bending machine.

Each of the 4 rollers is subjected to extremely high loads during the bending process. This is why HAEUSLER only uses highly tempered steel for the rollers. This completely rules out surface cracks, which can occur with surface-hardened rollers.

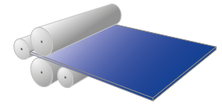




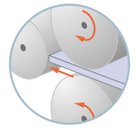
PRINZIP

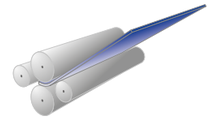
4- ROLL BENDING DIAGRAM

ADVANTAGES OF ADJUSTABLE ROLLERS

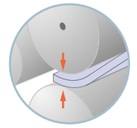


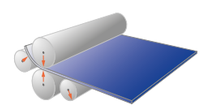
Easy plate alignment using one of the side rolls as a stopper



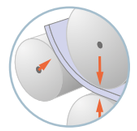


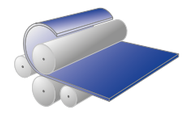
Automatic minimiziation of the flat end length



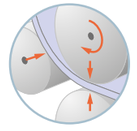


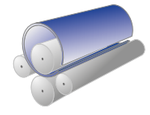
Very high degree of process automation and minimal use of cranes, etc. thanks to permanent clamping of the work piece between top roll and bottom roll



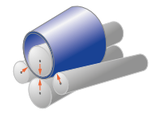


Guaranteed rotation traction on work piece even for very thin sheets

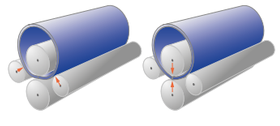




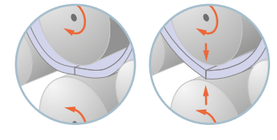
Easy plate and precise edge handling allows for work piece tack welding on the machine



Easy cone rolling and cone pressing using angled side roll positions and cone bending accessories



Very good calibrating capability for apple- or pear-shaped work pieces



ACCESSORIES

TAILOR-MADE
ACCESSORIES

UPPER SUPPORT

Upper supports simplify the bending of large diameters, as the plate to be bent can be held and supported at the 12 o'clock position during the bending process.

SIDE SUPPORT

Lateral supports can be fitted on both sides of the machine and support the operator when bending large diameters.

ROLLER CONVEYORS

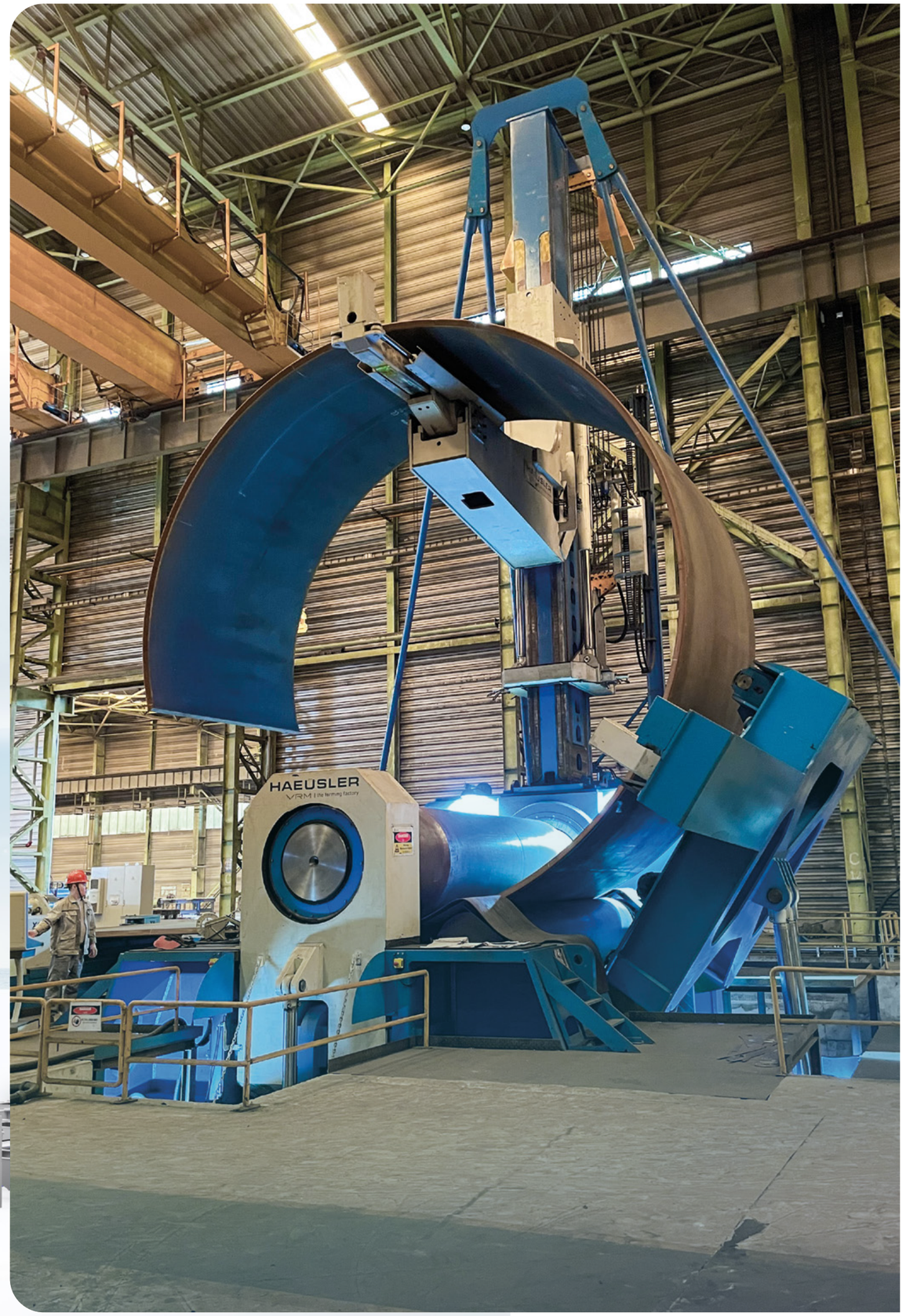
Infeed roller conveyors (optionally also with centring device) simplify the loading of the machine. Sheets are placed on the roller table and transported into the machine.

WINDCRAFT

WIND TURBINES

WIND PROJECTS AROUND THE WORLD

In co-operation with one of the world's most renowned wind tower manufacturers, HAEUSLER has developed all additional equipment which, together with the VRM, results in a system that guarantees extremely efficient production of high-quality wind tower and monopile segments.



INTELLIGENCE

BENDTRONIC®

PERFECTS YOUR PRODUCTION WITH SMART CONTROL

The HAEUSLER BENDtronic® control system with artificial intelligence makes it possible to control not only the movements of the machine, but also the bending result itself.

In order to be able to bend the desired product shapes and optimally support the operator, the BENDtronic® contains various tools:

CAPACITY CALCULATOR
Feasibility check of the tasks. In addition, the machine utilisation, the remaining straight ends and the expected springback are calculated.
→ *Optimal preparation*

AUTONOMOUS BENDING
With the help of the system's intelligent information feedback, a fully autonomous bending process is possible from the first sheet with no scrap.
→ *No rejects, personnel efficiency, repeatability*

APPLE CALCULATOR
Calculates the different possibilities to achieve the usually desired "apple shape" of a cylindrical part when rolling it.
→ *Options and time saving*

BEND CALCULATOR
Calculates the required positions of the rollers to achieve the desired radius.
→ *Simply round*

CALIBRATION CALCULATOR
Calculates in seconds the best recommended machine settings for calibration.
→ *No unnecessary bending tests*

INDUSTRIES

«SUITABLE FOR ALL INDUSTRIES»

WORLDWIDE FOR EVERY APPLICATION

WIND TURBINES
For the production of monopiles, piers and towers for wind turbines.

POWER PLANT CONSTRUCTION
Used for all bending and moulding work to reactor construction.

SHIPBUILDING
Shipyards bend thick steel walls with the VRM machine.

OFFSHORE
For the production of monopiles is this system is ideal.

SERVICES

WORLDWIDE *SUPPORT*

To ensure your productivity, HAEUSLER offers a wide range of support solutions – in other words: **«You are in good hands worldwide!»**

→ **HAEUSLER.COM/GLOBAL-SERVICE**

GLOBAL *SERVICES*

WORKSHOPS *& TRAININGS*

We train your operators and maintenance personnel at our premises or on your machines.

REPAIR *& MAINTENANCE*

As part of regular maintenance, we replace wearing parts or carry out a revision of the machine.

RETROFIT *& MODERNISATION*

Business management aspects often speak in favour of modernisation instead of purchasing a new machine.

SPARE PART *ORDER*

If a component is defective, HAEUSLER Global Service delivers almost every spare part worldwide.

KNOW-HOW *& PERFORMANCE*

Our knowledge in bending technology has been built up for over 85 years and passed on to subsequent generations.

CUSTOMISED *SERVICE PACKAGES*

You will receive premium service packages individually tailored to your needs.

MODELS

VRM IST **AUSWAHL**

2180 SERIES	**VRM-hy 3000-2180**	**VRM-hy 3500-2180**	**VRM-hy 4000-2180**
Rolls width (mm)	3000	3500	4000
Rounding capacity (mm)	195	185	175
Pre-bending capacity (mm)	160	150	140
2440 SERIES	**VRM-hy 3000-2440**	**VRM-hy 3500-2440**	**VRM-hy 4000-2440**
Rolls width (mm)	3000	3500	4000
Rounding capacity (mm)	215	205	190
Pre-bending capacity (mm)	175	165	155
2940 SERIES	**VRM-hy 3000-2940**	**VRM-hy 3500-2940**	**VRM-hy 4000-2940**
Rolls width (mm)	3000	3500	4000
Rounding capacity (mm)	245	230	215
Pre-bending capacity (mm)	200	185	175
3730 SERIES	**VRM-hy 3000-3730**	**VRM-hy 3500-3730**	**VRM-hy 4000-3730**
Rolls width (mm)	3000	3500	4000
Rounding capacity (mm)	245	245	245
Pre-bending capacity (mm)	235	220	205
4712 SERIES	**VRM-hy 3000-4712**	**VRM-hy 3500-4712**	**VRM-hy 4000-4712**
Rolls width (mm)	3000	3500	4000
Rounding capacity (mm)	290	290	290
Pre-bending capacity (mm)	280	260	250

STANDARD *FEATURES*

- HAEUSLER Hybrid Drive System HHDS®
- Movable 21.5» touch control panel including high-end BENDtronic® control system
- Continuously adjustable rotation speed between 0 and 8 m/min
- Machine prepared for remote maintenance
- Electro-mechanical holding system for the rotation of the top roller
- Automatic pressure readjustment of the bottom roller
- Automatic pressure compensation of the bottom roller cylinders
- Standard cooling system for ambient temperatures up to 35° C
- Automatic switch-off of the hydraulics for the position of the rollers
- Ultra-compact design to reduce or even eliminate foundation costs
- Safety ripcord

OPTIONALE *FEATURES*

- Cone bending device, for bending conically shaped workpieces
- Extended cooling system for ambient temperatures up to 45° C
- Upper support, for easier bending of large diameters
- Lateral support, for support when bending large diameters
- Gas pressure accumulator, for calibrating already welded cylinders
- BendIT-Office
- Autonomous bending
- Machine prepared for quick change of top rollers
- Interchangeable top rollers with different diameters, for bending small diameter wefts
- Hardened rollers if black and stainless material is to be bent
- Infeed roller conveyor for easy feeding of the sheets into the machine
- Centring device for the infeed roller table, for automatic centring of the sheets before bending

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In order to keep you up to date on current topics,
we are also present for you on the social web – follow
us on our social media channels and get information
about our company, products, career opportunities
and trade fair events.

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