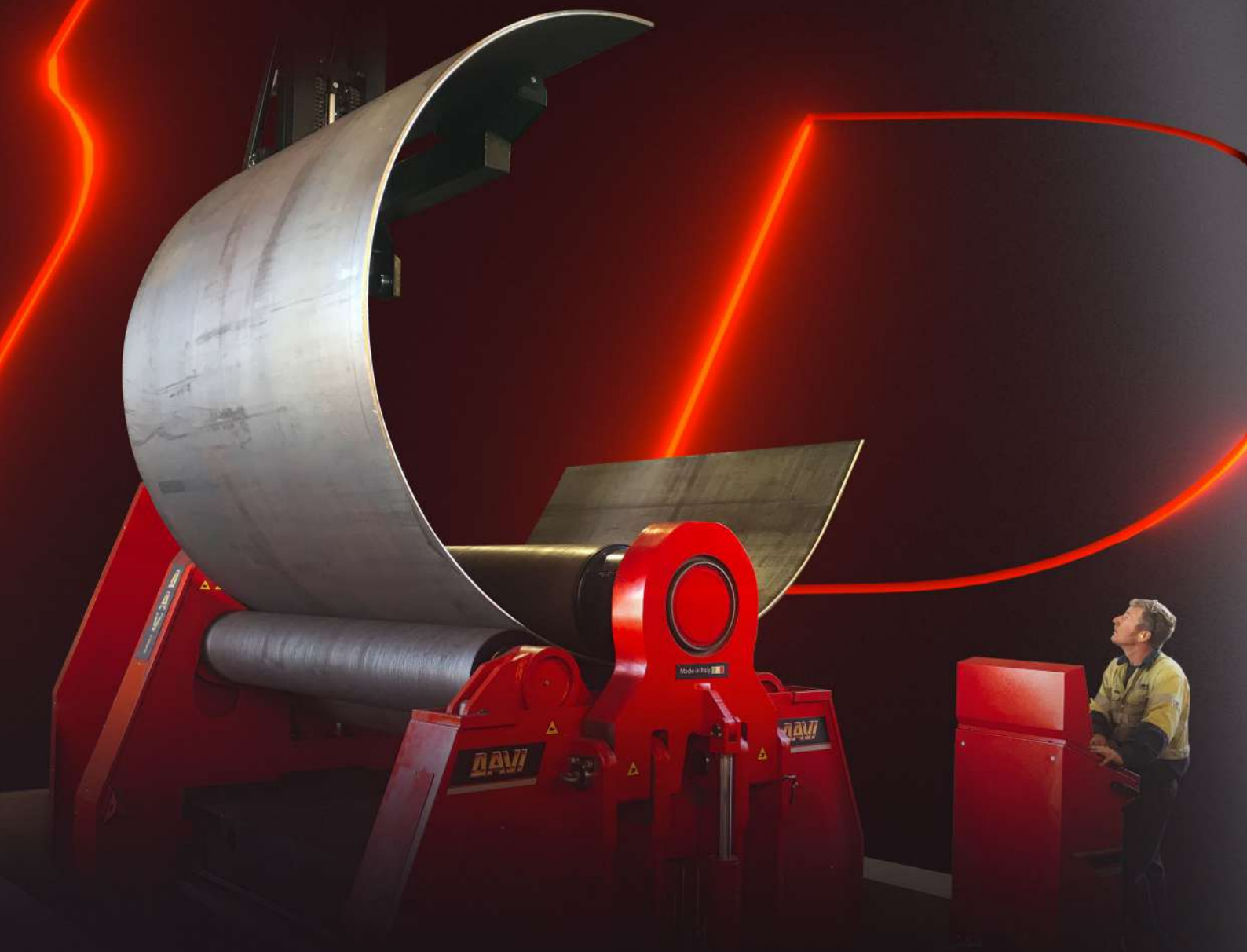
MCB

Technical Features Summary



DAVI

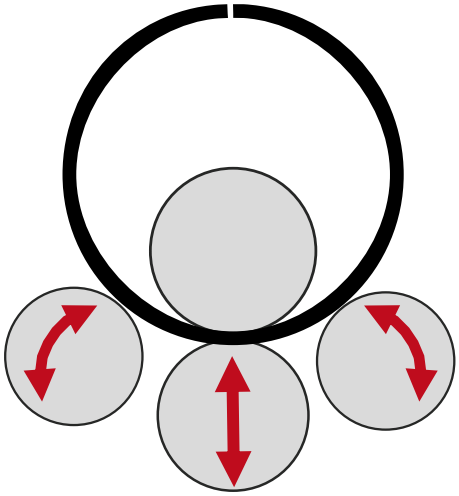
Davi MCB

4-Roll plate bending machine

Whenever **repeatability, productivity** and **ease of use** are of essence, the 4-roll is the technology of choice. In a 4-roll machine, latest development of the rolling technology, the bottom roll clamps the plate guaranteeing a **perfect control over its position** throughout the whole forming process.

The side rolls, actuated by the innovative Davi **planetary guides** technology, provide the necessary bending force **achieving the tightest diameters per capacity on the market** (1.1 of the top-roll) obtaining the highest accuracy thanks to the **perfect parallelism** offered by the **patented Servo-Tronic© system**.

Compared to other technologies, 4-roll machines stand out for allowing **fully CNC-automated production processes**, significantly **decreasing the reliance on operators' skills** and, hence, making it the **most suitable tech for mass-production.**





Shortest Flat End

Thanks to sturdy and closed frame

The **frame** constitutes, effectively, **the back-bone of the machine**. All stresses during plate forming must be withstood by this critical component and, eventually, transmitted to the foundations.

Davi machines feature **the most compact and closed frame on the market**, which allows to:

• improve the **rigidity of connection** to the ground as well as **machine stability**

• minimize deflections and displacement for the **maximum rolls positioning accuracy**

• construct a **much shallower and less expensive pit**, due to reinforcement beams installed between frames **(intra-frame design)** rather than base platform

Based on **extensive Finite Element Method (FEM) studies** conducted by Davi R&D, it is observed that the frame is particularly **under stress while pre-bending**.

Davi exclusive design features a much higher rigidity of the overall structure hence guaranteeing maximum accuracy even in the most demanding **pre-bending and re-rolling operations**.





Tightest Achievable Diameters

Thanks to planetary guides

The bending power of a 4-roll machine is exerted to the plate by two side rolls.

Unlike other solutions on the Market, Davi exclusive design provisions a planetary actuation of the side rolls whereas, rather than being guided up and down, the mechanism rotates around a pivoting point.



Thanks to this system:

• **maximum performance** thanks to force multiplier effect by leverage arm (distance between pivoting point and cylinder force application point)

• **reduced top-roll deflection** due to **circular force application**

• **forming the tightest diameters** thanks to favorable geometry (with side rolls wrapping around small diameters cans)



Best Rolls Parallelism

Thanks to patended Servo-Tronic© System

The rolls movement is actuated by hydraulic cylinders installed at the two ends of the machine.

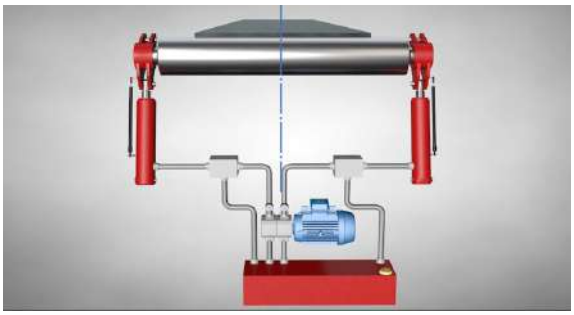
The patented **Servo-Tronic© system** keeps the machine's rolls **parallel at all times** thanks to its dual, independent but integrated, parallelism control system.

In fact, the oil feeding each roll cylinder is **mechanically kept at the very same pressure and mass flow** thanks to dedicated pumping groups and circuits supported by electro-valves **in charge of fine tuning only**.

This way, even in case of electronic failure, the **rolls parallelism is hydraulically and mechanically maintained** and the machine **can keep operating with excellent results**.

The Servo-Tronic© allows for:

- **maximum accuracy** of the rolls positioning
- limited reliance on electronics with **reduced downtimes** in case of its failure
- **best geometrical tolerances** on the workpiece
- **automatic compensation for unbalanced loads**





Higher Tilting Capacity

Thanks to pendular gearboxes arrangement

Both top and bottom rolls are motorized as a standard.

Unlike other solutions available on the Market, exhibiting a **bolted-rigid coupling** of the gearbox structure to the machine frame, Davi exclusive pendular arrangement provisions **swingable** connection **between the motor gearboxes and the frame**.

DAVI pendular shaft-mounted gearboxes configuration allows for stress-free tilting of the rolls up to **100 mm (4")** every 3 meters (10 ft) rolls length.

The **Pendular Gearboxes** arrangement allows for:

- **free deflection of all the rolls** under load, with limited stress on shaft-hub connection to the benefit of **bearings reliability and durability**
- much higher **tilting capacity for cones forming**





Machine Ready for Accessories

Thanks to the highest level of customization on the market

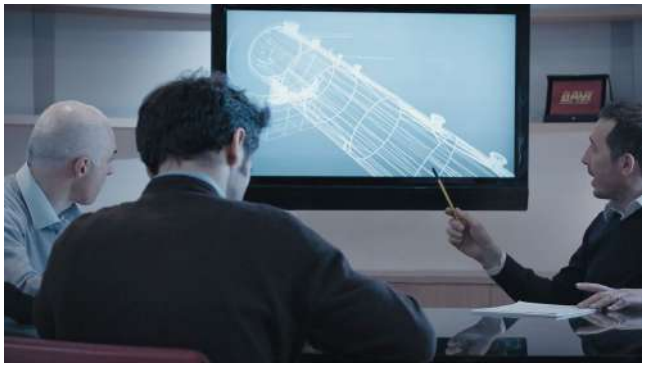
Davi R&D Department will process your requirements and help you select **the optimum technical and commercial solution** to maximize as much as possible the **return on your investment**.

For this reason, even the small and medium capacity machines **can be fully customized** to better support the most diverse production requirements and industrial sectors.

Davi MCB machines are equipped **with state-of-the-art control systems**, specifically designed by Davi R&D Department **to help you get the most out of your 4-roll plate rolling machine**.

Thanks to Davi Industry 4.0 CNC, **all your operators**, even the most inexperienced ones, will finally have the **capacity to comply with the required tolerances with maximum repeatability**: a real **boost to your competitiveness**.

Moreover, all Davi CNC systems are **expandable** to allow **retrofitting of auxiliary equipment** (such as vertical and side supports, gantry loaders, etc.) at any time you may need it.



With more than **50 years of experience** designing and supplying first class plate rolling machines, Davi understands that **every customer need is different**.





Best Operability and Maintainability

Thanks to the New Design of the Machine

The **improved design** of the machine allows for increased operability during the whole process, provisioning:

• **forged reinforced yoke** (no welding) with large pivoting points for reducing the top roll deflections

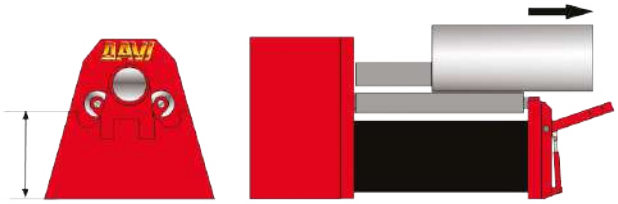
• **compact frames to easily eject the formed workpiece** and to **make extreme cones** with no interference

Moreover, the planetary guides technology **significantly reduces the required machine maintenance**, thanks to:

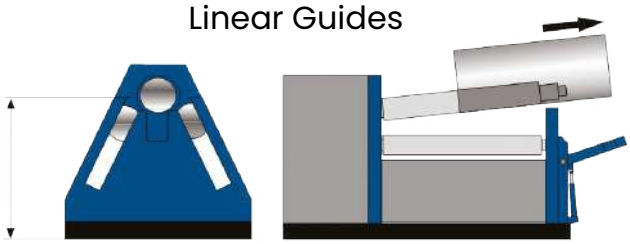
• **no need for regular lubrication** with **friction free** movements (permanently lubricated bearings)

• **maximum energy efficiency and durability** with **eliminated risk of guides wearing** on accumulated mill-scale

Planetary Guides



Linear Guides





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