



**Engineering and Construction
of Mechanical Machines**

by Galbiati Group

**Custom Built Machines
for
Metallurgy Industry**

“Skin-Pass” Stand



Fully assembled “**Skin-Pass**” stand including piping and wiring; total weight 200 ton. See also: **Mills: machining and shoulder roughing Mills: pre-assembly, piping and inspections Mill Stand Chokes, AG Cylinders, and Accessories Sheet mill: 4,300 mm width – Video**

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<http://galbiatigroup.it/custom-built-machines/%e2%80%9cskin-pass%e2%80%9d-stand/>



Mill stand chokes, AG Cylinders, and Accessories



Special accessories for mill stands: **AG Cylinders, Sliding Blocks, Rails, Base Plates**, hydraulic strip feed and unloading systems, etc. Backup mill stand chokes, and **Bending & Shifting Blocks** are also manufactured and preassembled within our supply. **See also: Rolling mills: roughing and finish machining of housings Rolling mills: pre-assembly, piping and inspections Sheet Mill: 4,300 mm wide - Video**

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Rolling Mill Stands: Pre-assembly, Piping, and Inspection



Pre-assembly - Mill stand assembly area equipped with overhead travelling 160 ton, 14 m hook crane. Precise, detailed management of all contracted and outsourced items and accessories (more than 700 items). **Piping** –Most grease lubrication piping is manufactured with stainless steel pipes, diameters ranging from less than 10 mm to more than 5 inches, high pressure welded and provided with relevant fittings. Pipe lines are fastened to housings **in full accordance with customer's detailed drawings**. **Inspection** – After erection, housing alignment and Laser Tracker point system geometric controls are performed and recorded. Pre-assembly of all of the accessories, piping and wiring, as well as final painting is facilitated by the use of temporary walkways until the final work platforms are assembled. **See also: Rolling mills: roughing and finish machining of housings Mill stand chokes, AG Cylinders, and Accessories Sheet Mills: 4,300 mm width - Video**

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<http://galbiatigroup.it/custom-built-machines/rolling-mill-stands-pre-assembly-piping-and-inspection/>



Rolling Mill Stands: Housing Rough and Finish Machining



Machining of **each** housing is performed on a 5-axes, latest generation CNC machine tool. Final geometry is checked by a CAM2 Laser Tracker Xi system to ensure that all working and backup surfaces are within the requested dimensional tolerances, flatness, parallelism, and squareness. Rough machining can be performed up to more than 12 m width , above than 4.5 m height and maximum weight exceeding 120 ton on the machine tool rotating table. Depending on the rough steel cast geometry, more than 10 % of original weight can be removed during machining. **See also: Rolling mills: Pre-assembly, Piping, and Inspection Mill Stand Chokes, AG Cylinders, and Accessories Sheet Mills: 4,300 mm width – Video**

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Mechanical Rocking Shear

Mechanical rocking shear pre-assembly at Galbiati Group workshop. The blades are actuated by the coordinated rotation of two eccentric shafts, driven by two independent gear trains, each one powered by 900 kW electric motors at 1000 rpm. Total weight: more than 650 ton. After pre-assembly and test at Galbiati Group workshop, the entire rocking shear was dismantled in sub-assemblies and transported by sea to its final destination in India. On site, it was reassembled by qualified personnel and immediately entered production, to the complete satisfaction of the local engineers. The image below shows a detail of the preliminary assembly phase and **tooth** contact pattern check on the eccentric shaft coordinated rotation **gear trains**. Take special note of the oil film bearings and the thrust bearings, sized to support the enormous peak loads during the cutting phase. The image shows machining of the welded steel lower frame on a 120-ton rotating table **CNC boring** machine. **See the video See also: Strip Pendular Shear Hydraulic Rocking Shears Gear Trains for Mechanical Rocking Shears**

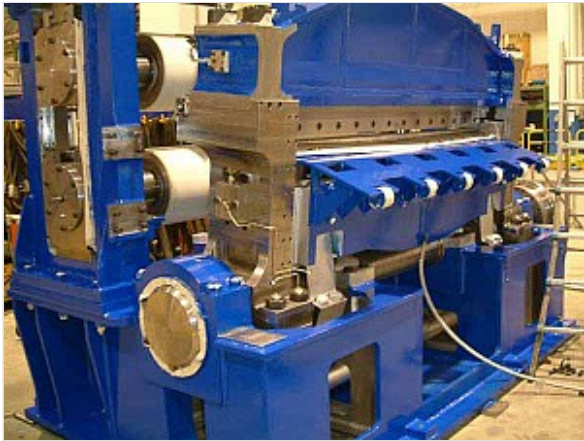


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Pendular Shears for Continuous Thin Sheet Metal Cutting



Pendular shears for continuous thin sheet metal cutting up to 3 m width at the end of pre-assembly in Galbiati Group workshop. The blade is driven by the rotation of the entire blade-holder unit on oil film bearing journals. All drives are hydraulic/mechanical coordinated by a computer system in order to adapt to the wide variety of sheet to be cut. All drives are hydraulic/mechanical coordinated by a computer system in order to adapt to the wide variety of sheet to be cut. **See also: Mechanical Rocking Shear Mechanical Rocking Shear – Video Hydraulic Rocking Shears Gear Trains for Mechanical Rocking Shear**

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Hydraulic Rocking Shears



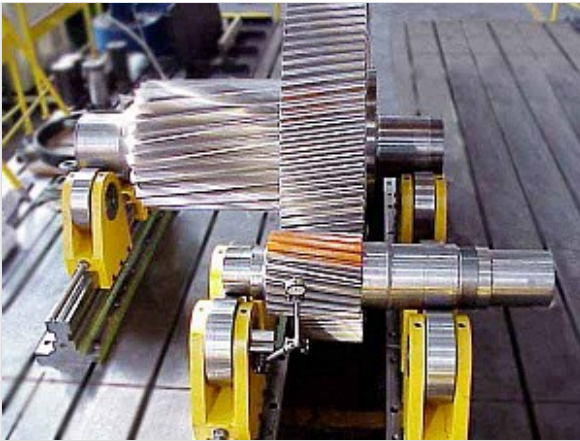
Two **hydraulic rocking shears** at the end of the pre-assembly phase in the Galbiati Group workshop. The **blade is driven** by the coordinated movement of two, approx. 1000 mm diameter, hydraulically driven pistons. Rated up to 450 bar. Total weight: more than 450 ton each. **See also: Mechanical Rocking Shear Mechanical Rocking Shear – Video Pendular shear for thin sheets Gear Trains for Mechanical Rocking Shear**

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Gear Trains for Mechanical Drive Shears



In addition to co-designing **complete shears** in close cooperation with our customers, Galbiati Group can, if needed, supply only the **gear trains for mechanical shears (rocking shears, swing blade shears, reciprocating shears, pendular shears, divide shears, etc.)**. In these cases, as the frame for the gear train is not available, the gear seats are simulated with axels on the static rotation bench in order to make certain that geometry, contact surface, and backlash are correct. **See also: Mechanical Rocking Shear Mechanical Rocking Shear – Video Pendular shear for thin sheets Gear Trains for Mechanical Rocking Shear**

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