

PQF Rolls Redressing Machine

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The PQF Rolls Redressing Machine has been realized for the 18" Seamless tube Plant in Tianjin (P.R. of China) for TPCO (Tianjin Pipe Corporation).

The Machine is designed for the roll profile redressing of the three-rolls of the PQF mill cartridges, leaving assembled on proper cartridge the three rolls.

This practice has the aim to avoid the dismounting of the rolls from the cartridge for the single roll profile redressing on a standard Lathe, the remounting of the rolls on the cartridge and the further rolls position checking in a dedicated Calibrating Stand.

All these manual operations are particularly difficult due to the big dimension of these cartridges.

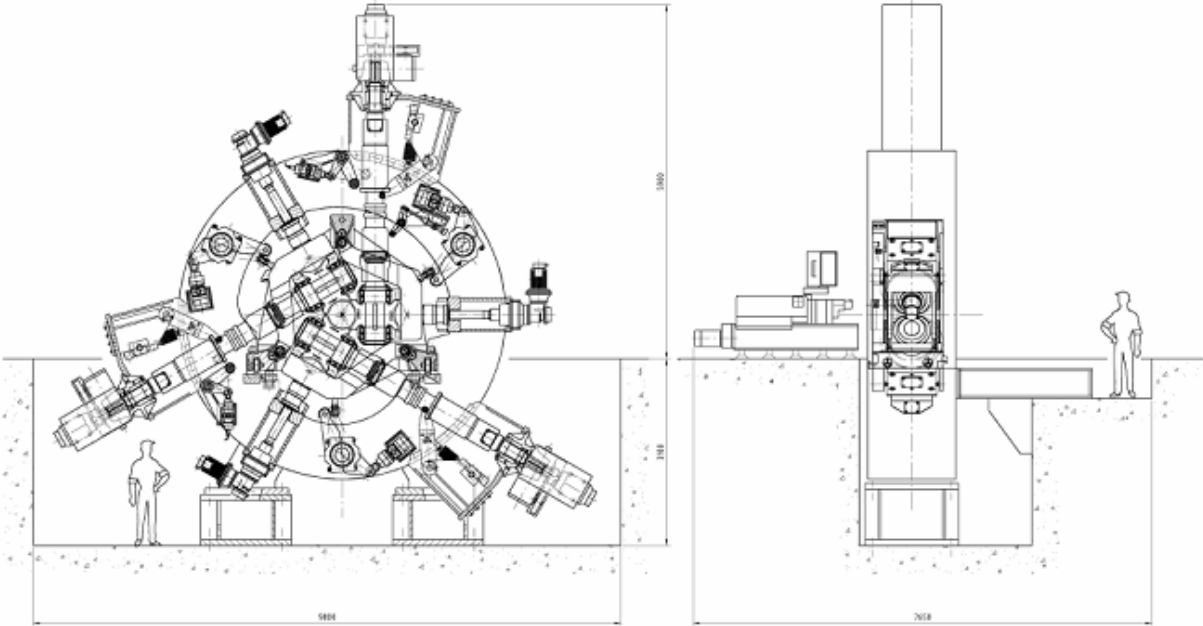
The results of the adoption of this dedicated Roll Redressing machine are:

1. Time saving to carried out all the a.m. operations.
2. Costs saving for necessary manpower to carried out all the a.m. operations
3. Overall space saving in the roll workshop; one single machine substitute three different equipment (standard Lathe, roll assembly/disassembly bench and Calibrating stand).

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The roll lathe is mainly consisting of a tool holder head (carriage), horizontally displaceable, and housing, arranged in a vertical plane, into which the cartridge with the three assembled rolls is inserted and locked for the machining, as per hereunder-reported reference sketch.



Therefore the cartridge is mounted in a rigid housing; the housing contains the three roll drives and the three roll position adjusting and locking devices.

At the coupling side the roll is engaged, through a spindle, to the drive, which provides the suitable roll machining speed.

The redressing roll position is adjusted in the same housing by electro-mechanical device, and a linear sensor transducer detects the actual position in order to send this data to the PQF hydraulic capsules control system.

For inserting or removing the cartridge in/from the housing, a hydraulic cylinder is used.

The lathe is provided with chip collecting system.

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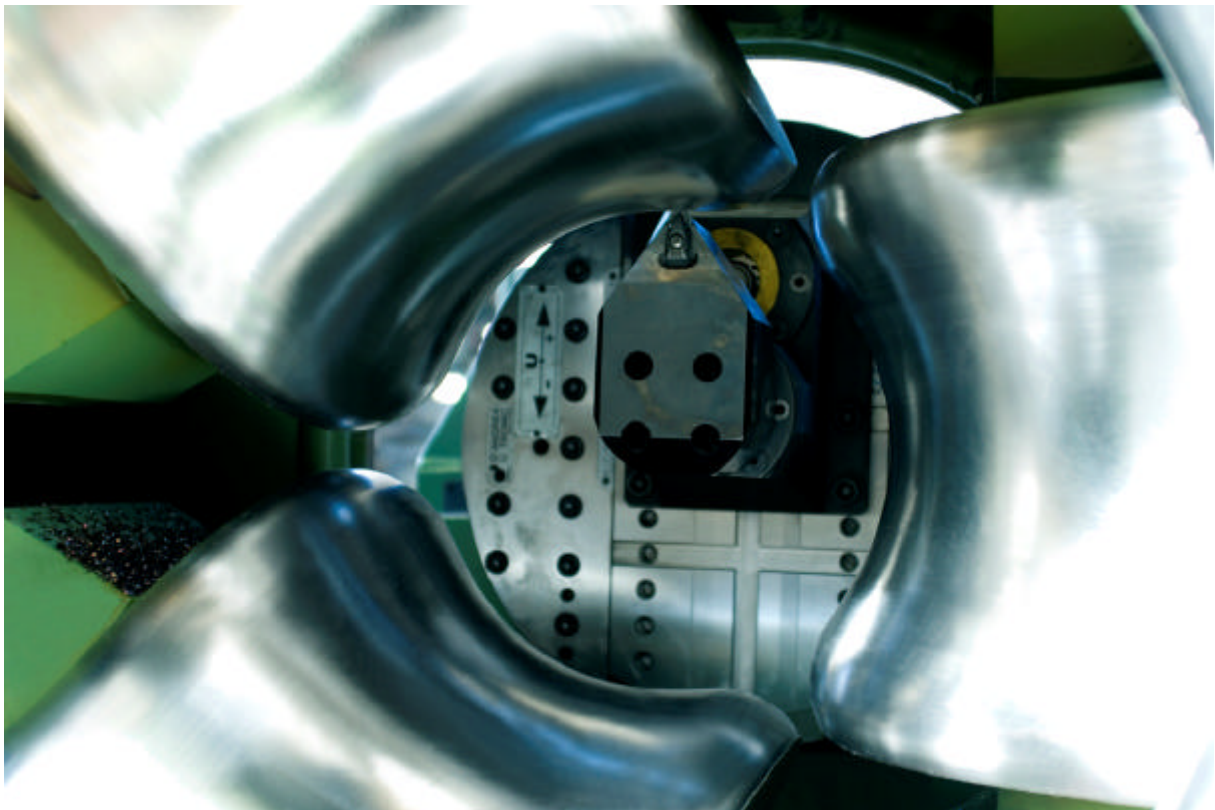
The displaceable carriage (tool holder head) consists of a bed positioned in front of the housing containing the rolls.

The machining of the roll grooves is performed automatically with a cutter head, CNC controlled, with rotating axis for positioning and angular feeding suitable to machine the roll grooves.

The tool holder head is provided with 3 CNC axes: longitudinal (Z axis)), rotational (C axis), and with the radial displacement of the cutting tool (U axis).

Automatic technological control of power and torque is also foreseen.

The machining is foreseen for one roll at a time.

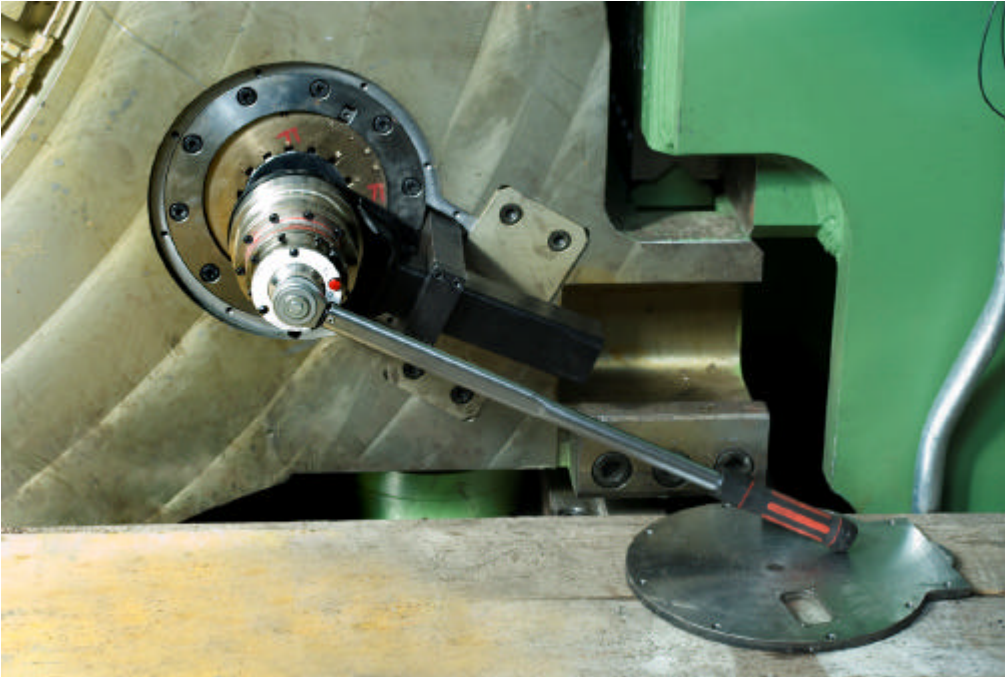


The machining of rolls is realized by different tools and in several passes, for roughing and finishing of their groove and shoulder profiles.

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Before the machining the roll levers have to be manually adjusted, by means of eccentric devices, to the right position according the final redressed roll diameter



The cartridges are identified, for their managing and for tool life data logging.

Main Technical Features

Max. Power for each roll rotation	Kw	12
Max nominal torque on each rolls	Nm	5000
Infinitely variable rolls rotation	rpm	8-80
Max. Longitudinal carriage travel	mm	1000
Tool rotation speed	rpm	0÷4
Electrical power supply	KVA	80

Main housing dimensions	8200 mm x 7500 mm x 1300 mm sides' approx
Overall machine dimensions (Including a tool holder head/carriage)	9000 mm x 10000 mm x 4300 mm sides' approx