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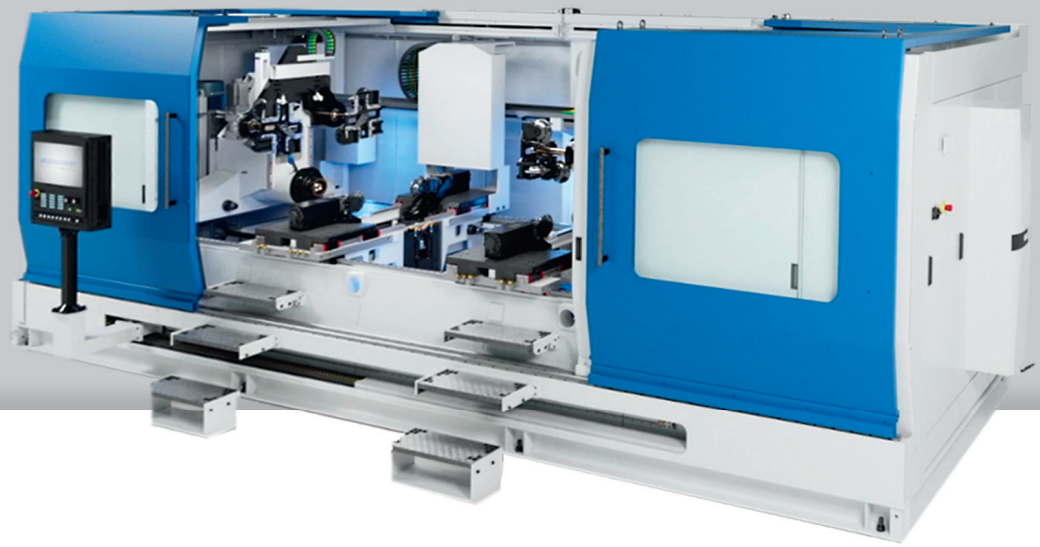

DEEP ROLLING AND FINISHING MACHINE 7627

APPLICATION AND USE

The 7627 is the latest generation of the HEGENSCHEIDT deep rolling machines for the machining of railway axles and other long components, for example in the aircraft, automotive, construction and agricultural machinery industries. The specialized machine, which is designed to the requirements of the market, offers an economical, energy- and resource-saving process for increasing the fatigue strength of components and especially of wheelset axles. The different mechanisms of the process (smoothing, hardening and residual stress formation) lead to multiple material and component improvements that make the rolled shafts more resistant to stresses during operation.

This HEGENSCHEIDT machine is a the result of the long term experience in the field of rolling technology and impresses with a well-thought-out machine concept, simultaneous processing with up to 3 slides, low energy consumption, a simple clamping system and fully automatic operation. Workpieces up to 2.800 mm in length and 400 mm in diameter can be automatically machined.

ADDED VALUE

- Increase of component strength, operational safety and service life
- Focused introduction of residual compressive stresses/ elimination of harmful residual tensile stresses
- Reduction of crack formation and crack propagation through “crack-stop effect”
- Reduced corrosion effects
- Increased impact resistance due to increased surface hardness
- Workpiece suited machining due to freely parameterizable pressure ramps
- Full rolling force of up to 50 kN over +/- 90° swivel angle
- Process monitoring via separate sensor (inline) and processing protocol
- Fully automatic operation (optional)
- Low energy consumption
- Tool management with automatic tool changer (optional)
- Automatic C-dimension measurement (optional)
- Prepared for fully automatic part transfer from handling system
- 1-3 roller units (can be retrofitted, the number depends on the required cycle time)
- User-guided programming of the shafts
- SINUMERIK ONE machine control system

TECHNICAL SPECIFICATION

MACHINE DATA		
Machine dimensions (L x W x H)	mm	7.050 x 3.100 x 2.660
Machine weight	t	18
GENERAL SPECIFICATION		
Speed main drive	min^{-1}	0 … 330
Drive power 100% ED	kW	12 (optional 24 via 2 drives)
Torque on workpiece	Nm	325 (optional 2x 325 via 2 drives)
Feed force X-axis max.	kN	50
Lifting force Y-axis prism (hydraulic) max.	kN	25
Deep rolling force	kN	5 … 50 (reduction to 3 ... 37 possible)
Deep rolling swivel angle	°	+/-90 (at full rolling force)
Deep rolling roller diameter	mm	100 - 159
Tool changing stations (optional)	No.	16, (4 tools per cylinder with 4 cylinders)
Measuring system in the machine		metric
Technical utilization rate (availability)	%	95 (according to VDI 3423)
Control system		Siemens SINUMERIK ONE
WORKPIECE DATA		
Workpiece diameter min.	mm	100 (smaller possible)
Workpiece diameter max.	mm	400
Workpiece length max.	mm	2.800
Workpiece weight max.	t	1
Material		steel
Center point angle	°	75, 60, 90 or according to customer requirements
Torque transmission workpiece		friction disc*
ACCURACIES		
Roughness Rz before rolling | after rolling (typical)	µm	~20 | ~3,5
Realizable roughness RA after rolling	µm	0,8
Roughness improvement	%	40 … 80 (depending on rolling pressure)
Increase in surface strength	%	up to 45 EA1 | up to 25 EA4
Residual compressive stress surface	MPa	-400 ….-600
Residual compressive stress 2 mm (typical) depth	MPa	-300…-400

* Similar axles can be clamped with the same combination of friction disc and centerpoint without downtime.

HEGENSCHEIDT-MFD GmbH | Hegenscheidt Platz | 41812 Erkelenz | hegenscheidt.mfd@nshgroup.com | + 49 (0) 2431 860