



STROJÍŘNY  
POLDI



## ROLLS





POLDI Steel Works was established in 1889. The mechanical engineering part of production dates back to the 1890's.

The production of forged rolls commenced in 1910. Since then the technology of roll production has been developed and perfected within the plant.

Today's product is based on generations of experience as well as modern advanced production technology.

In STROJÍRNY POLDI, a.s., rolls for cold rolling are made from forgings supplied by companies which meet stringent quality requirements. For the manufacturing of rolls, either steel from electric arc furnaces, vacuum degassed or possibly steel made in ladle furnace by secondary refining can be used. For special applications, electro-slag re-melted steel or vacuum re-melted steel can be used.

In order to achieve the best properties for the rolls, our own know-how is used because heat treatment has a decisive influence on roll properties. The roll barrel is hardened in a medium-frequency induction hardening machine. A machine for induction hardening of roll bearing seats is also available.

In order to fully meet requirements, our forged rolls are machine finished and ground to the Customer's dimensions and surface quality specifications.



since 1889

"Great history. Excellent future"



# ROLLING, PRESSING, MOVING...

## MANUFACTURING PROGRAM ROLLS:

- Forged work rolls for cold rolling of sheet steel
- Forged work rolls for cold rolling of plates of non-ferrous metals
- Back-up rolls for rolling stands
- Straightening rolls
- Cast immersion rolls for galvanizing lines
- Rolls for special applications

AT STROJÍRNY POLDI, A.S., EXACTING ATTENTION IS PAID TO QUALITY. ALL ROLLS ARE SUBJECT TO SPECIFIC TESTS THROUGHOUT THE ENTIRE PRODUCTION CYCLE. THESE TESTS INCLUDE:

- Ultrasonic inspection for inherent defects
- Inspection of the purity and structure of the steel
- Inspection of hardness of the hardened layer with portable hardness testers by Equotip, Vickers, Shore and Rockwell
- Measuring of internal stress levels by acoustic emission method
- Dimensional checks and surface quality inspection
- Other tests according to the request of our customers

## TECHNOLOGY FOR ROLL MACHINING

Exact requirements and complex sets of conditions during cold rolling of sheet metal results in rolls meeting the specifications for their usage. The required utility values are assured by the distinct chemical composition of the steel, selective use of steelmaking technology, heat treatment and the construction of the rolls.

STEEL GRADES FOR THE MANUFACTURING OF ROLLS ARE DIVIDED INTO FOUR MAIN GROUPS:

- Low-alloyed steel – less than 4 % Cr
- Medium-alloyed steel – about 5 % Cr
- High-alloyed steel – about 12 % Cr
- High-speed steel – about 4 % Cr and more than 7 % of other alloying elements (V, W, Mo, Co)

Besides steel, special Rolls are also made of grey, nodular or special cast iron

## HEAT TREATMENT

The induction hardening process of forged rolls is performed in the medium frequency induction hardening plant, using frequencies of 160Hz to 1100Hz, automatic performance control and hardening temperature controls. In this plant, rolls up to a diameter of 630 mm and a length of 4200 mm can be hardened.

The depth of the hardened layer depends on the frequency selected and the properties of the steel-grade that is used. This is usually between 6 – 20 mm.

After the induction hardening of the roll, it is tempered at low temperatures in tempering furnaces with forced air circulation. This operation ensures that the surface hardness is uniform, induced stress is released and the structures are stabilized.





### QUALITY CRITERIA FOR FORGINGS

- Adherence to the chemical composition of steel, including contents of elements
- Steel cleanliness
- Forging reduction
- Required grain
- Suitable structure and mechanical properties
- Removal of induced stress after the forging operation

Manufacturing potential of rolls	Maximum dimensions		
	Dia	Length	Mass
Work rolls for cold rolling of ferrous and non-ferrous metals	630 mm	4 200 mm	5 000 kg
Back-up rolls	630 mm	4 200 mm	5 000 kg
Straightening rolls	350 mm	4 200 mm	5 000 kg
Rolls for galvanizing lines	700 mm	4 200 mm	5 000 kg

Services provided	Maximum dimensions		
	Dia	Length	Mass
Re-hardening of rolls in induction hardening machine	630 mm	4 200 mm	5 000 kg
Repair of damaged roll necks	630 mm	4 200 mm	5 000 kg



Rolls are usually preserved, packed and shipped in wooden cases or on wooden pallets

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