

ZDAS

Equipment for Railway Industry



Railway Wheel Production Line Equipment

- **CKZW 5600 pull-down press of a four-column design** is intended for upsetting of preheated blank. The press is furnished with four working cylinders. The upper ejector is installed in the upper crossbeam. The press is provided with a centring device and automatic tool-exchange-mechanism.
- **CKVZ 8000 push-down press of a four-column design** is intended for shaping of upset blank. The press is furnished with four working cylinders, lower and upper ejector. The press is also supplemented by a centring device and automatic tool-exchange-mechanism.
- **Rolling Mill** of a horizontal design, serves for precise hot-rolling of railway wheels. The wheel wall and rim are rolled to required diameter and height of the rim. The wheel is rolled in a horizontal position using a set of seven rolls.



Railway Wheel Production Line Equipment

- **CKVD 1000 four-column push-down press** designed for punching of shaped blank. The press is furnished with one working cylinder, lower ejector and upper holder. The press is supplemented by automatic tool-exchange-mechanism.
- **CKVP 4000 four-column push-down press of a double-acting type** designed for dishing of the railway wheel disk. The press contains three working cylinders. Two side working cylinders provide motion of the movable crossbeam, being guided on the columns of the press, with the upper tool part. The third, middle cylinder ensures motion of the slide within the guide mechanism of the middle crossbeam. The other part of the upper tool is mounted on the slide. The press can work either as a double-acting or single-acting one. The press is equipped with the lower ejector.

Production of Railway Wheel Semi-Products



► ŽDAS manipulators ensure transfer of hot work-pieces between single machines of the line.



◀ Punching of the wheel is performed by double-acting hydraulic cylinder. The outer part of the cylinder holds the semi-product and the inner part drives the piercing punch.

Forging of Railway Axles

Axles are forged from square billets, which are made from high quality vacuumed steel.

Steel is heated to the forging temperature and then an integrated forging set creates the basic shape of the axle.

The set consists of a CKNV 1000 forging press (traditional push-down high-pressure design), a QKK 1.5 forging manipulator and a rotary lifting table. The basic axle is a standard forging made on three sizes of the die. This allows for forging within the required parameters of ± 1.5 mm, with a high degree of forging. High mechanical properties of the axles are achieved thanks to the forged depth of diameter crossings – radial forging.

Once the forged axle goes through a computer controlled heat treatment, it achieves optimal mechanical properties. During the heat treatment, however, slight bending and shape deformation occur but this is adjusted with the straightening presses.

Forging and Straightening of Railway Axles



▲ Forged railway axle between the swages of a CKNV 1000 Press

Straightening and Inspection of Railway Axles

The operation returns the semi-finished axle to the required axial straightness and maintains the minimum chip machining allowances.

For this operation, ŽDAS offers a complete line which can work independently or in an integrated set with a CKNV forging press. The line is equipped with a hydraulic RL 200 or RL 400 straightening press.

After straightening, the axle is transferred to the cooling conveyor. A distinctive identification system throughout the entire forging and straightening line, as well as archiving the data for each axle, allow for any subsequent review.

After the necessary tests to verify dimensional and material characteristics, the axle is released for further processing.

Forging and Straightening of Railway Axles





CDRA Press for Assembly and Disassembly of Railway Wheel Sets

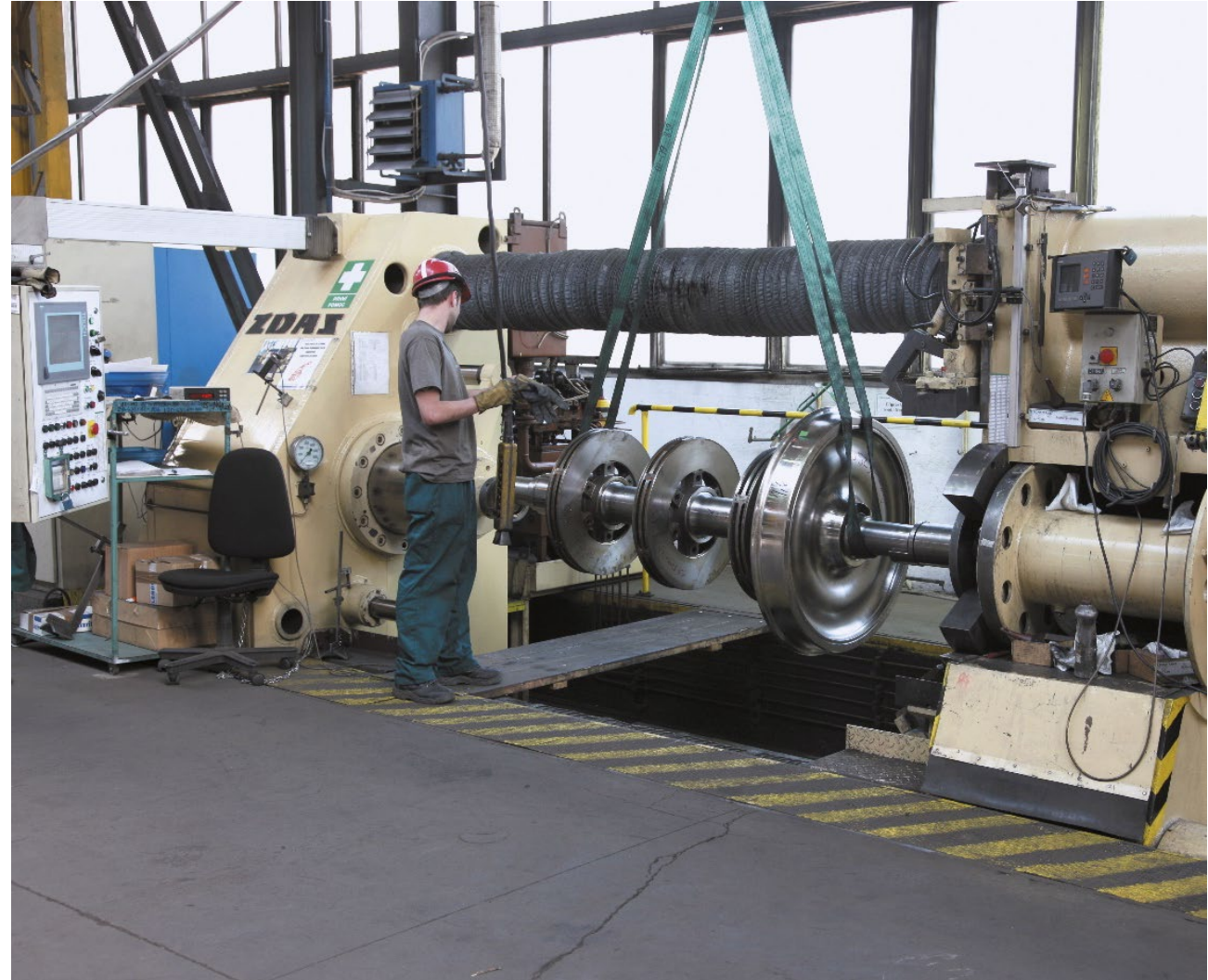
The CDRA Hydraulic Press has been designed for assembly of railway wheel sets by cold pressing-on without use of guide bushings. The process necessitates turning round of axle.

The press even allows pressing-on of parts to be located between the wheels and pressing-off and inspection of pressed-on joints.

A number of hydraulic presses for cold assembly and disassembly of wheel sets of railway locomotives and carriages have been delivered to various railway repair shops.

Precise control of the pressing force, simple operation and high performance are the main advantages of these machines.

Hydraulic Presses for Assembly and Disassembly of Railway Wheel Sets





CDRM Press for Assembly and Disassembly of Railway Wheel Sets

The CDRM Press has been designed for the cold pressing-on and pressing-off process of railway wheel sets using guide bushings.

This machine allows assembly and disassembly of locomotive and carriage wheel sets with parallel recording of the course of pressing force depending on the duration of pressing-on process.

Upon completion of pressing-on, a protocol of this process is printed for archiving purposes.

The press is of a horizontal type and columned construction. The press cylinder acts against the supporting girder, which travels on wheels along two beams. The pressing force is, depending on the type of wheel set, captured by the supporting girder locked in the pre-set positions.

Precise control of the pressing force, simple operation and high performance are the main advantages of these machines.

Hydraulic Presses for Assembly and Disassembly of Railway Wheel Sets



Mass Production of Railway Buffers

One example of our successful solutions is the workstation which presses buffers for railway carriages.

Custom buffers are comprised of two opposing pieces with internal suspension.

At the CTHN 3000 workstation, the individual parts of the buffer are pressed from preheated blanks in a one-position tool.

The blank, which weights about 70 kg, is inserted in to the machine using a manipulator and during a three-stage program-controlled pressing the final shape is formed.

Production of Railway Wagon Buffers



ZDAS



**OUR HEARTS
FORM THE FUTURE**

Thank you for your attention.