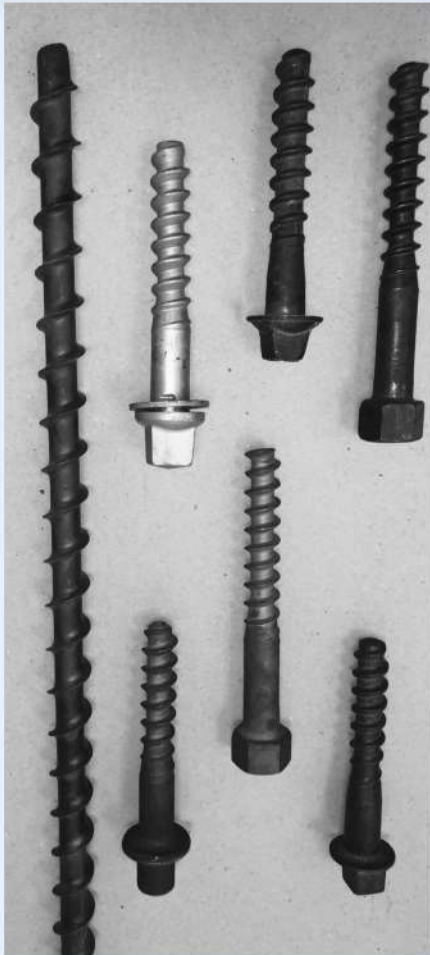


# SPECIAL SCREWS FOR RAILROAD AND MINING OPERATIONS



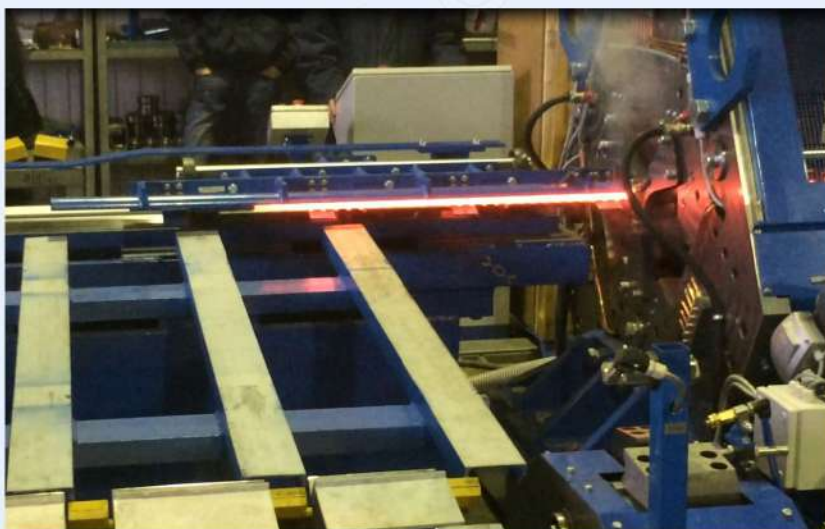
SCREWS - RAILROADS & MINES



CROSS WEDGE ROLLING LINE WRL3010



HELICAL ROLLING LINE HRL3020



HELICAL ROLLING LINE HRL3020

## **THREAD ROLLING OPERATIONS:**

### **Machines:**

WRL3009TS and HRL3020 series

### **Capacities:**

500-720 parts per hour

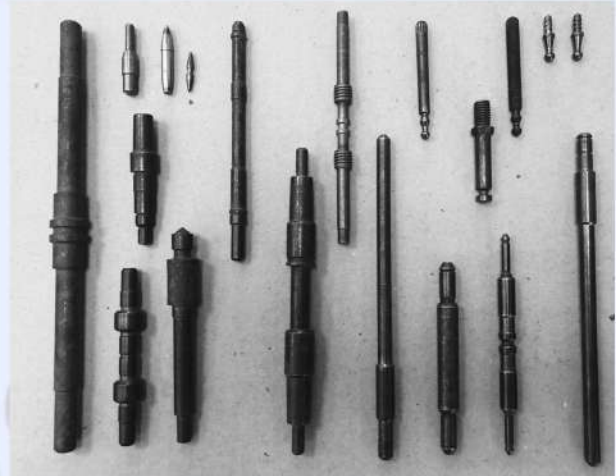
### **Advantages:**

Combining forging and rolling operations reduces the cost of manufacturing by up to 50 - 60%

# CYLINDRICAL PARTS AND ELECTRICAL MOTOR SHAFTS



SHAFTS - ELECTRIC MOTORS & AXLES PREFORMS



PREFORMS BODIES OF REVOLUTION  
PRODUCED BY WARM ROLLING



CROSS WEDGE ROLLING LINE WRL10032



CROSS WEDGE ROLLING LINE WRL3010

## CYLINDRICAL PARTS CROSS WEDGE ROLLING:

**Machines:**  
WRL3010 and WRL10032TS  
series

**Capacities:**  
500-1,000 parts per hour

**Advantages:**  
Warm Cross Wedge Rolling  
operations (up to 850 °C)  
allow to produce net-shape  
parts with very close final  
tolerances, in some cases  
eliminating further machining  
completely.

# POLE LINE HARDWARE INSULATOR PINS



ROD PREFORMS - HIGH VOLTAGE POWER LINES



COMPONENTS-  
HIGH VOLTAGE POWER LINES



ISOLATOR ASM -  
HIGH VOLTAGE POWER LINES



ISOLATOR ASM-  
HIGH VOLTAGE POWER LINES



CROSS WEDGE ROLLING LINE WRL6010



CROSS WEDGE ROLLING LINE WRL6010TS

## INSULATOR PIN CROSS WEDGE ROLLING:

Machines:  
WRL4012TS and WRL4514TS series

Capacities:  
up to 700 parts per hour

Advantages:  
Cross Wedge Rolling machines reduce the product cost by 30% in comparison with forging operation.

# HIGH-PRECISION PREFORMS FOR NO-FLASH AND LOW-FLASH FORGING



ROLLING PREFORMS FOR SUBSEQUENT FORGING



U-JOINT PRODUCTION STAGES



CROSS WEDGE ROLLING LINE WRL10030TS

## **PREFORM CROSS WEDGE ROLLING:**

Machines:  
WRL6012, WRL10020TS, and  
WRL12030TS series

Capacities:  
200 - 900 parts per hour

Advantages:

- Minimum parts weight deviation (less than 2%, no-flash process)
- Reduced number of forging stages
- Single heating for rolling and forging
- Significant metal savings (up to 40%)
- Increase in forging tooling life



CROSS WEDGE ROLLING LINE WRL4012 WITH HOT FORGING PRESS

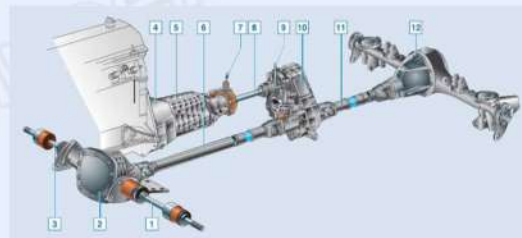
# GEARBOX AND TRANSMISSION COMPONENTS



SHAFT & GEAR PREFORMS - TRANSMISSION & FRONT DIFFERENTIAL



SHAFT & GEAR PREFORMS - TRANSMISSION & FRONT DIFFERENTIAL



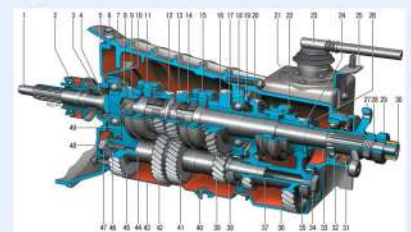
TRANSMISSION & FRONT DIFFERENTIAL



CROSS WEDGE ROLLING LINE WRL10030TS



SHAFT-FRONT DIFFERENTIAL



TRANSMISSION

## GEARBOX AND TRANSMISSION COMPONENTS CROSS WEDGE ROLLING:

### Machines:

WRL6312, WRL8020TS and WRL10030TS series

### Capacities:

280 - 600 parts per hour

### Advantages:

- Metal utilization rate increase by 15-20 %
- Net-shape production minimize further machining
- Rolling process improves mechanical properties of the final product



CROSS WEDGE ROLLING LINE WRL8010

# CUTTING BITS AND BIT HOLDERS FOR MINING AND ROAD CONSTRUCTION



CUTTER BODIES PREFORMS FOR MINES

## BITS AND BIT HOLDERS CROSS WEDGE ROLLING

Machines:  
WRL6012 and WRL4014TS series

Capacities:  
400 to 600 parts per hour



CROSS WEDGE ROLLING LINE WRL4014TS



CROSS WEDGE ROLLING LINE WRL6012

## BITS AND BIT HOLDERS CROSS WEDGE ROLLING

### Advantages:

- Net-shaped parts eliminating machining operations
- Single heat process for rolling and final heat treatment significantly reduces the cost of finish parts

# AUTOMOTIVE SUSPENSION PARTS



BALL JOINT PREFORMS

**CROSS WEDGE ROLLING  
OF BALL-TYPE PRODUCTS  
IN COMPARISON WITH COLD HEADING**

Machines:

WRL 1006TS to WRL8012 series

Capacities:

380 to 1 200 parts per hour

Advantages:

- Cross Wedge Rolling allows production of more complexly shaped parts
- Utilization of less expensive hot rolled, material
- Reduces cost of operation by 20-30%



BALL JOINT & LINKS  
FOR SUSPENSION COMPONENTS



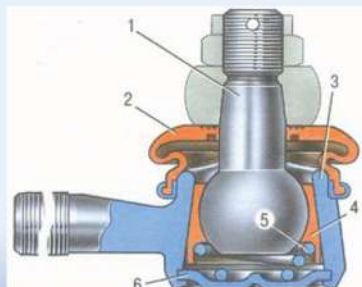
CROSS WEDGE ROLLING LINE WRL8012



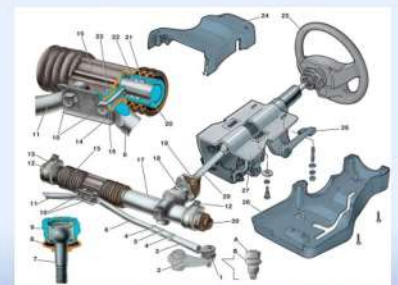
CROSS WEDGE ROLLING LINE WRL6014



BALL JOINT ASSEMBLY - CONTROL ARM



BALL JOINT ASSEMBLY- STEERING SYSTEM



STEERING SYSTEM