



# SPECIAL MACHINES

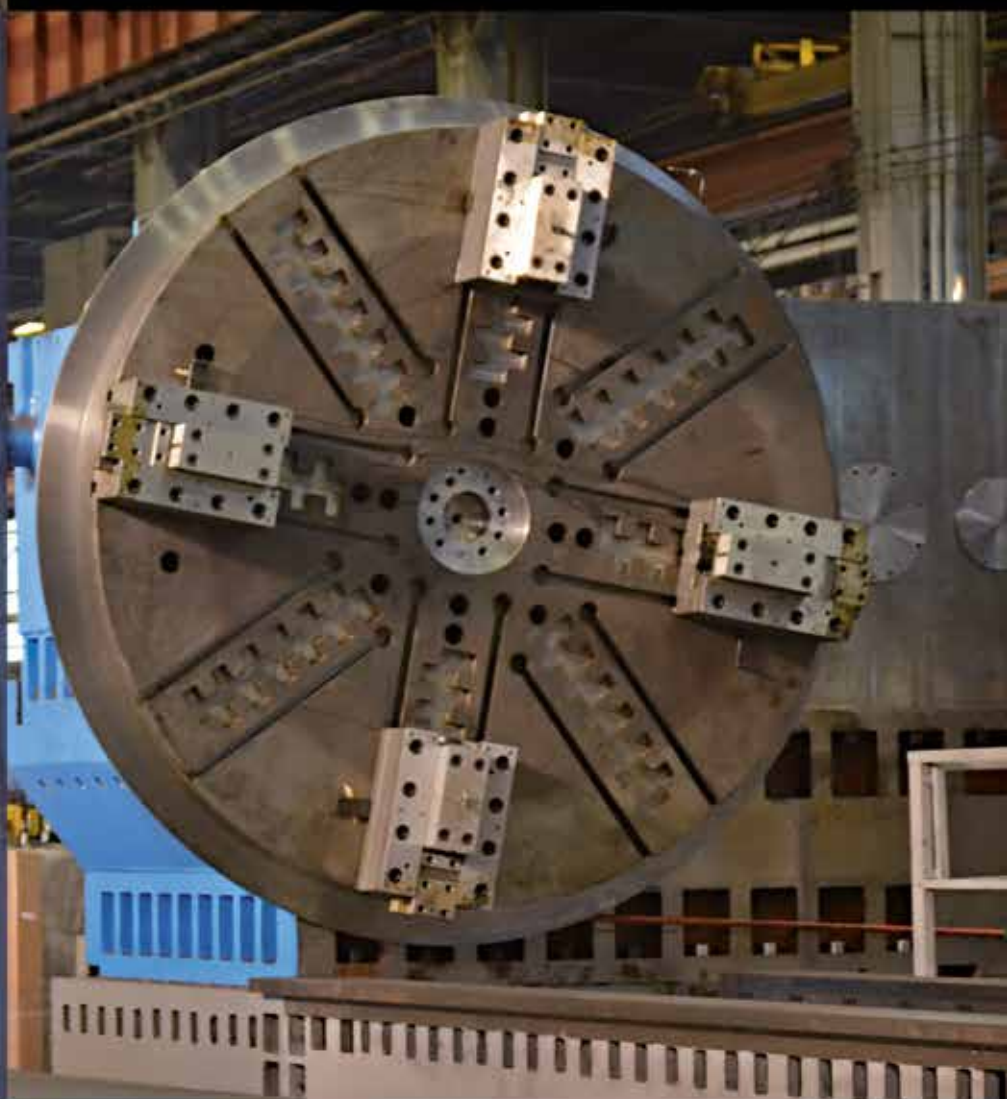
POWER...PRECISION...PERFORMANCE!



**HACO**

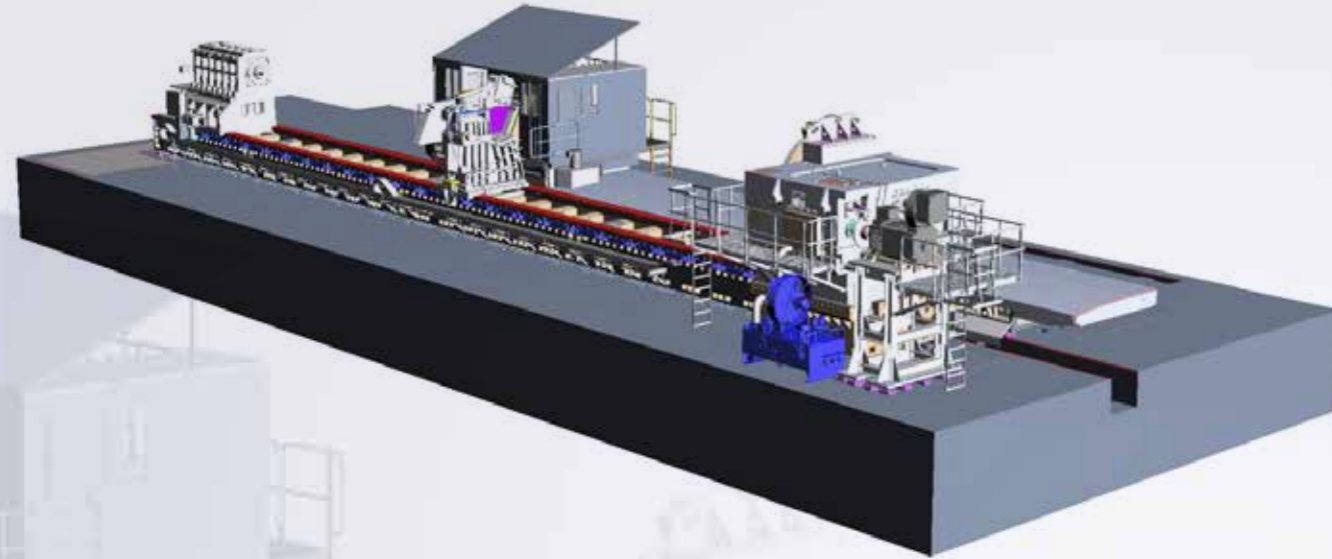
**FAT**

for impressive  
performances



## TUR 4MN 3000 x 22 000

This lathe, produced for American client, has a unique bed configuration. It consists of two independent beds mounted on a special foundation. This solution enables machining of shafts up to 3000 mm in diameter and 22000 mm in length without collision with rest and tailstock. Very high spindle torque, a special tools unit and high rigidity ensure machining reliability and efficiency.

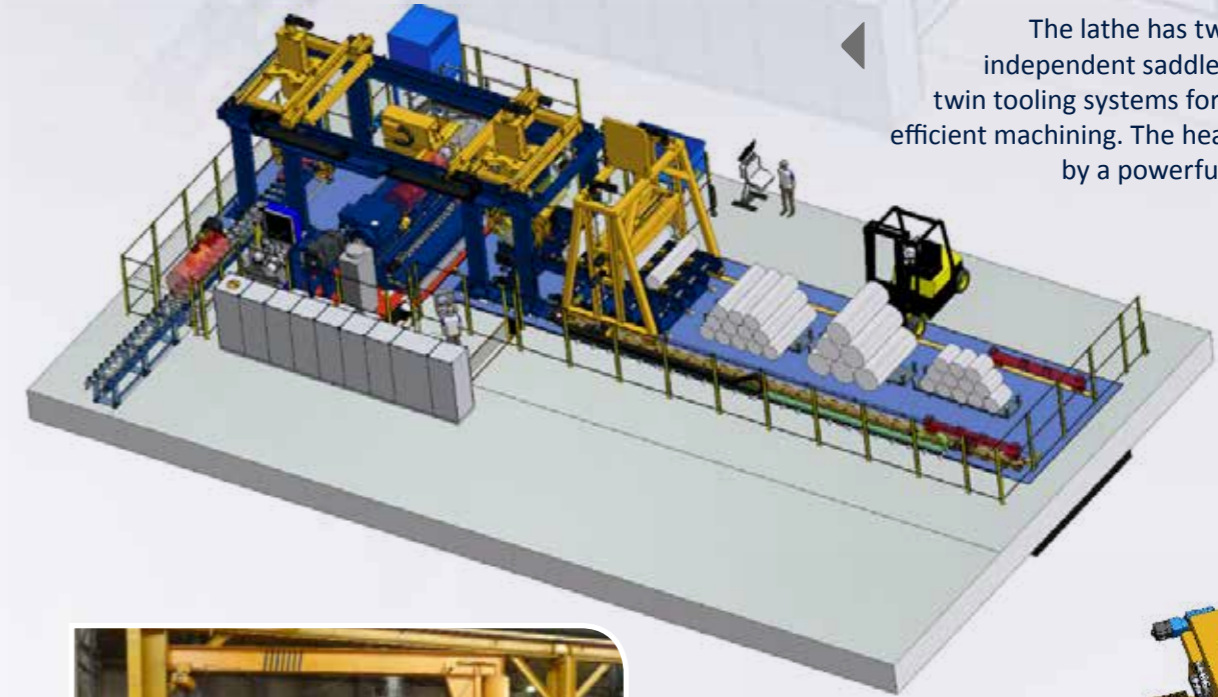


TECHNICAL PARAMETERS		
Machining length	mm	22.000
Swing over bed	mm	3.000
Max. workpiece weight	kg	100.000
Top spindle speed	rpm	7-100
Main motor power (S1)	kW	220
Maximum torque	Nm	300.000
Bed width (no.1)	mm	2.040
Bed width (no.2)	mm	2.700

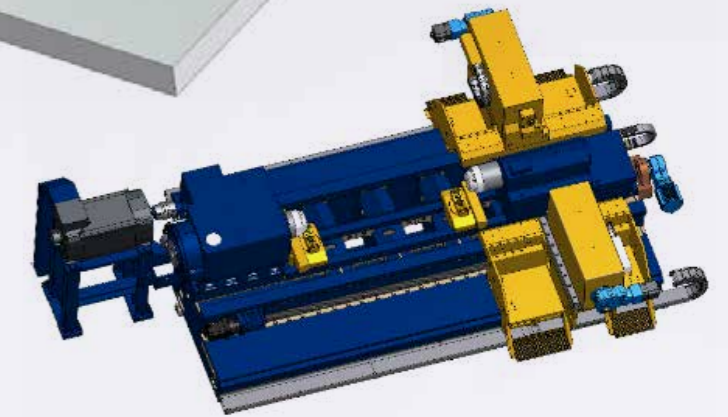


## TUR 6MN WITH LOADING CRANES

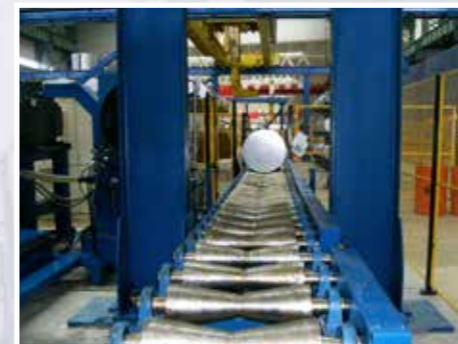
Fully automated machine, complete with a loading and unloading system, was manufactured for a Chinese customer. The machine was designed for mass machining of aluminum billets. The system consists of a lathe, two loading cranes and an unloading crane.



The lathe has two very rigid and independent saddles equipped with twin tooling systems for heavy duty and efficient machining. The headstock is driven by a powerful 400 kW motor.

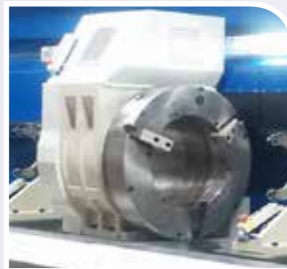


TECHNICAL PARAMETERS		
Machining length	mm	2.000
Max. turning diameter	mm	800
Max. workpiece weight	kg	5.000
Top spindle speed	rpm	700
Main motor power (S1)	kW	403
Max. torque	Nm	8.800
Bed width	mm	2.975

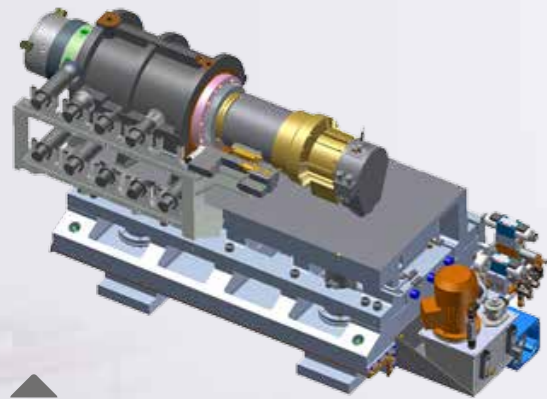


## TUR 4MN X 11 000

Lathe designed for machining of long, bendy parts. Due to very special machining requirements, this lathe is equipped with a movable headstock having a separate drive. Thanks to this solution, the headstock can be positioned in every position along the bed. Additionally, the machine is equipped with a special ventilated extraction hood unit which prevents the accumulation of chips and dust.



Headstock with separate, independent drive (working as programmable axis) for automatic positioning in any position along the bed

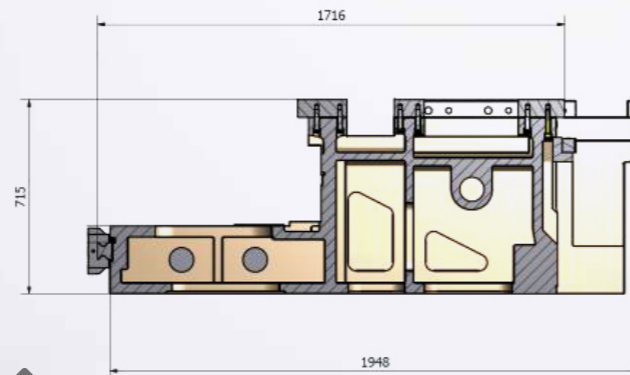


Tailstock with Capto C6 tool magazine and a touch probe for measuring



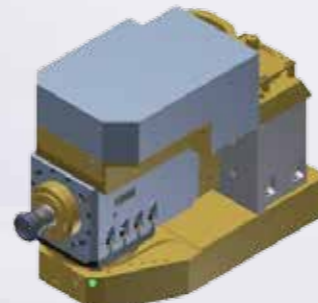
Self-centering, hydraulic steady rest with separate NC drive (working as programmable axis) for positioning

TECHNICAL PARAMETERS		
Machining length	mm	11.000
Swing over bed	mm	700
Swing over saddle	mm	600
Max. workpiece weight	kg	4.000
Top spindle speed	rpm	2-300
Main motor power (S1)	kW	22
Max. torque	Nm	1.050
Bed width	mm	1.950



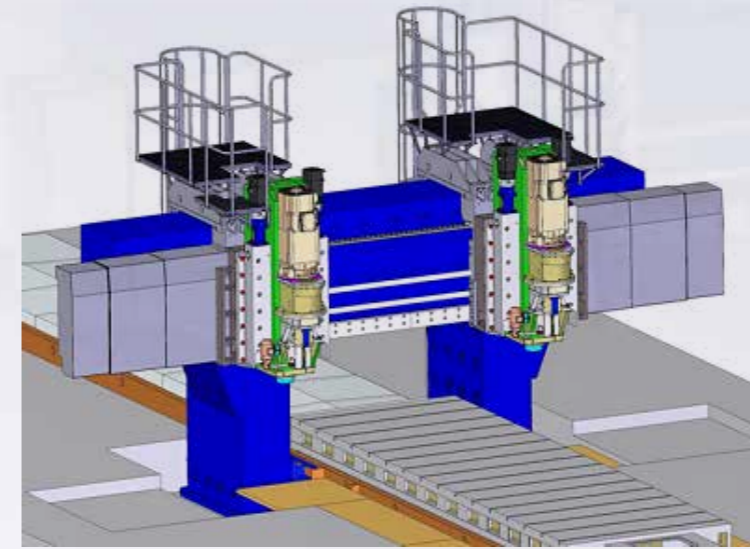
The enormous wide step bed is made from high-grade cast iron. The upper guide ways are made of hardened and ground high quality steel inserts assembled using "Guide Easy FIX" technology.

Capto C6 tool system with B axis



## PLANER MILLS

This milling machine is designed for accurate and efficient machining of railway switches. Depending on its execution, the machine can be equipped with either one or two independent cross slides. Moreover optionally the lathe can work as 5 axis machine.



TUR RM 120 with one tool head

TECHNICAL PARAMETERS			
Machine		RM 120	RM 240
Table size	mm	1.200 x 8.000	2.400 x 8.000
Longitudinal travel of table („X” axis)	mm	8.000	10.000
Distance between columns	mm	2.200	2.800
Vertical stroke of milling head („Z” axis)	rpm	800	750
Feed range	mm/min	10 - 5.000	10 - 5.000
Max. power of milling spindle drive	kW	68	
Max. torque of milling spindle	Nm	5.400	



TUR RM 240 with two independent tool systems



The milling head is integrated with an automated tool changer.



Heavy duty milling head with a powerful 68 kW spindle motor

## VERTICAL TURNING MACHINES

The machine designed for machining train wheels and tires, is equipped with:

- Movable gantry for easy loading and unloading operations;
- Programmable clamping force;
- Automatic tool changer;
- CNC control system and motors (Siemens or Fanuc)



### TECHNICAL PARAMETERS\*

Table diameter	mm	1.500
Max. turning diameter for a wheel or tire	mm	1.250
Min. turning diameter for a wheel or tire	mm	600
Number of jaws on the table		6
Number of workpiece clamping points		12
Table drive motor power	kW	100

\* other parameters on request

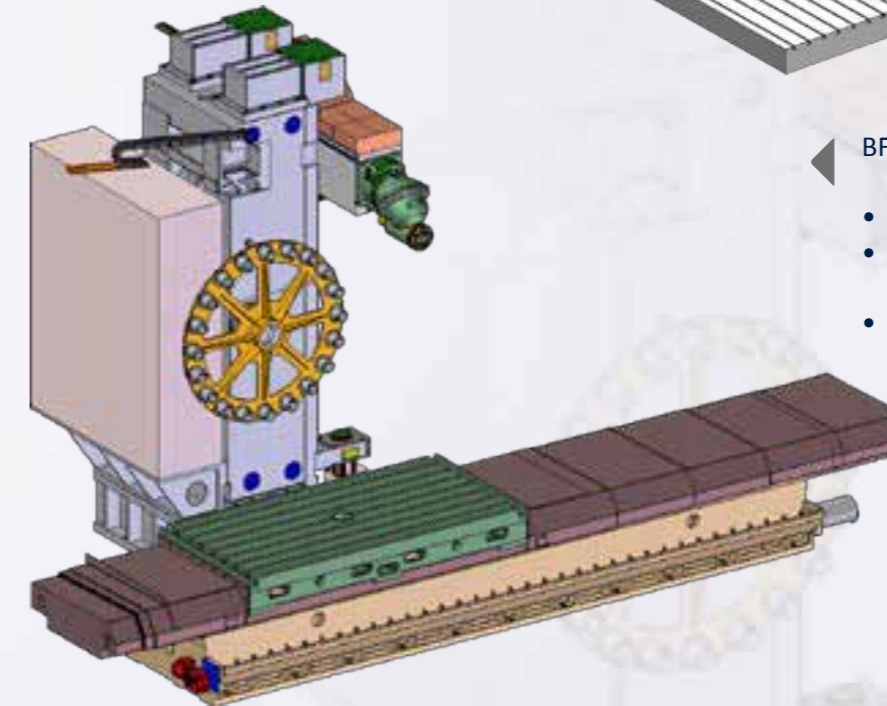
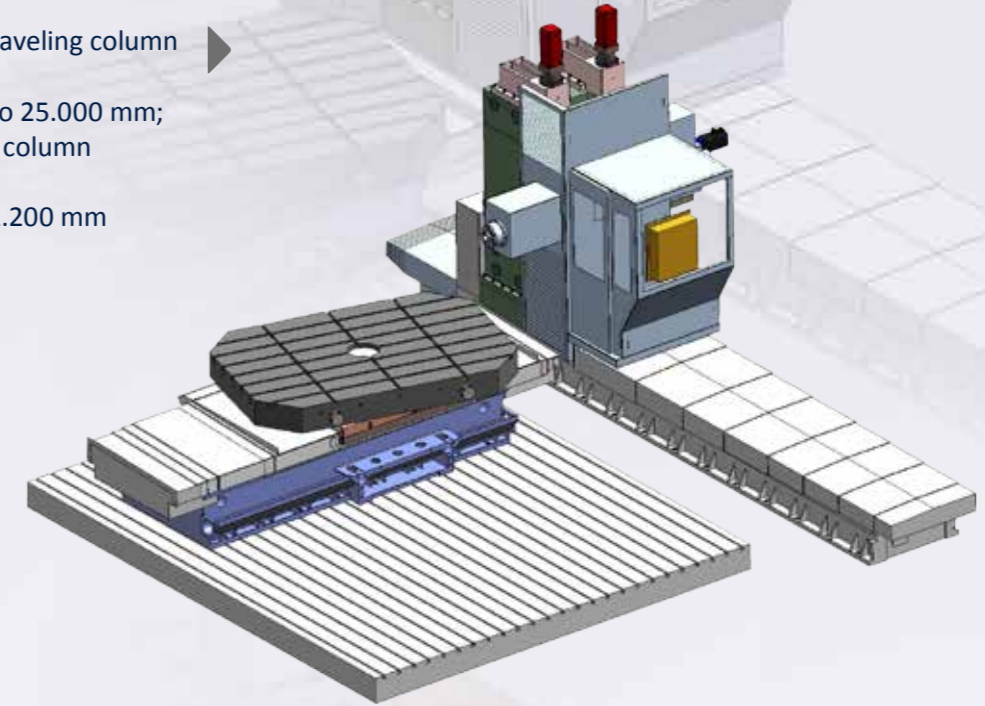


## MILLING-DRILLING MACHINE

Many different execution of milling machine. There are available solution with fixed or movable column and fixed or rotary table.

BFM 130 CNC Boring Mill with traveling column

- Column travel ("X" axis) up to 25.000 mm;
- Travel height of head on the column ("Y"axis) up to 2.000 mm;
- Ram stroke ("Z" axis) up to 1.200 mm



BFM 130CNC SK Boring Mill with a fixed column

- Table size 1.270 mm x 4.000 mm
- Travel height of head on the column ("Y"axis) up to 2.000 mm
- Ram stroke ("Z" axis) up to 1.200 mm

### TECHNICAL PARAMETERS\*

Max. table size	mm	500 x 2.000
Max weight of workpiece	kg	5.000
Max. spindle speed (option)	rpm	4.000 (20.000)
Spindle motor power	kW	70
Y axis stroke	mm	2.000

\* other parameters on request

## GANTRY TYPE PLANER MILLS

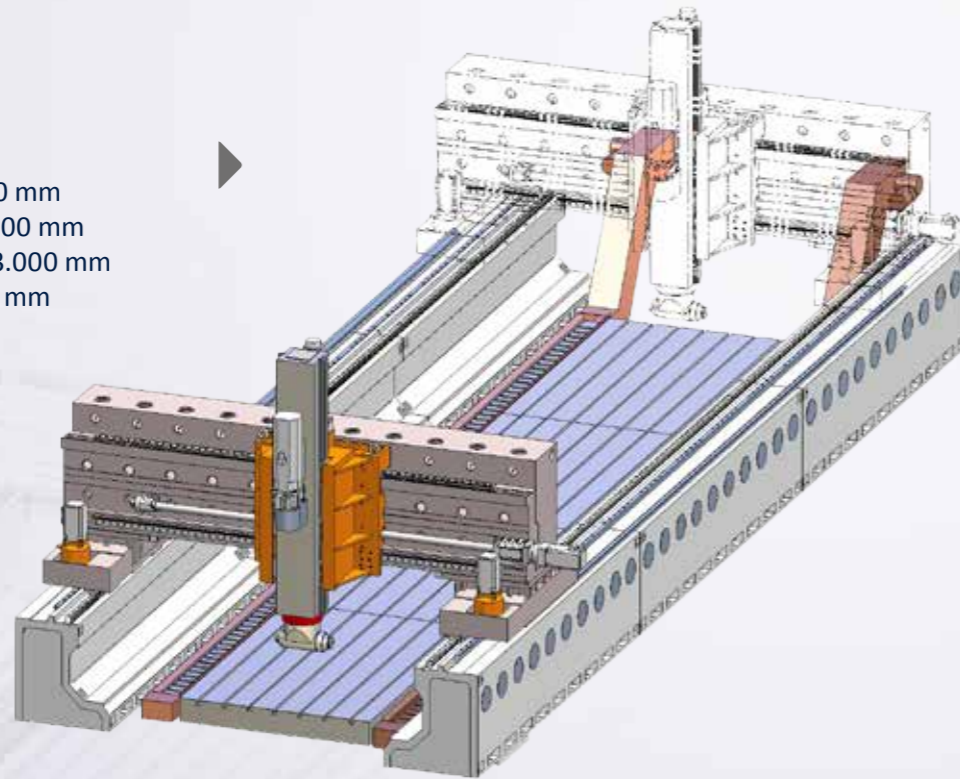
Gantry type planer mills designed for heavy duty machining. There are many different execution available:

- ▼ Hogger \*
  - Table diameter 2.500 mm
  - Turning height up to 1.000 mm
  - Main drive power 200 kW
  - Machine for turning of gas turbine rings made of high-alloy steel



### GMC 200/250 CNC \*

- Floor plate width up to 2.500 mm
- Floor plate length up to 15.000 mm
- Distance between columns 3.000 mm
- Height under crossrail 1.500 mm



#### TECHNICAL PARAMETERS\*

Max. table diameter	mm	2.500
Max. turning height	mm	1.600
Max. spindle motor power	kW	200

\* other parameters on request

## RAIL AXIS FACE MACHINING CENTER

The machine is equipped with two independent columns with milling units and automatic tool changer. It is designed for operation:

- Facing
- Drilling centre hole
- Tapping
- Turn milling of axis



#### TECHNICAL PARAMETERS\*

Max. workpiece diameter	mm	280
Max. turning length	mm	2.700
Milling unit motor power (s1)	kW	22
Max. milling spindle speed	RPM	2.500

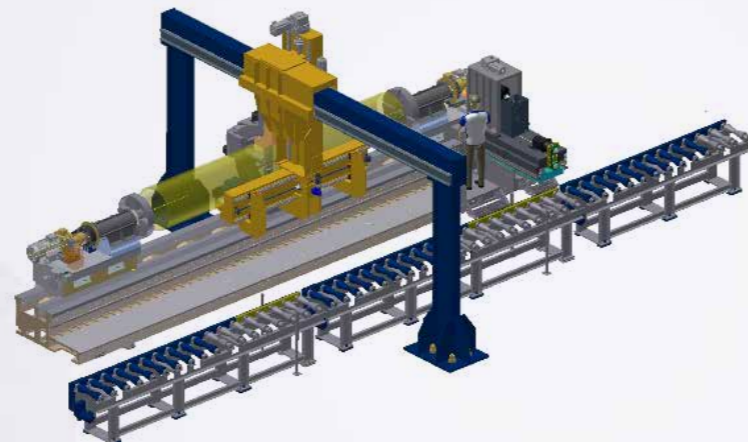
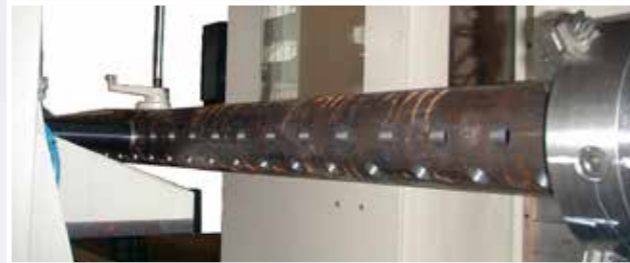
\* other parameters on request



◀ Tooling system for milling and drilling operations

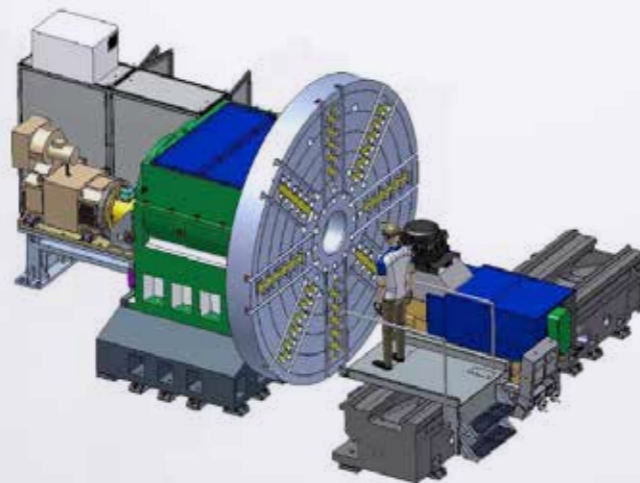
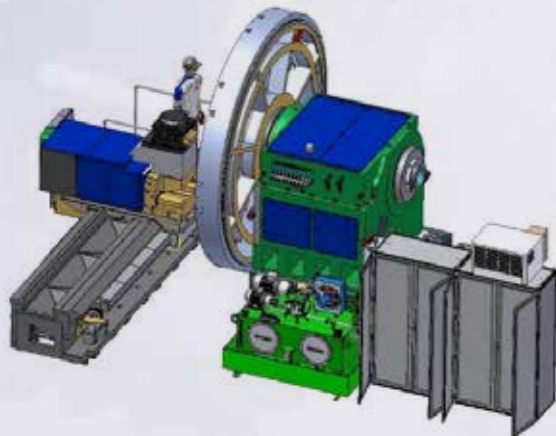
## MACHINE FOR HIGH EFFICIENT PIPE DRILLING

Production line consisting of loading/unloading station and a special machine for highly efficient pipe drilling. The machine is equipped with a 37kW tooling tooling head and an automated tool changer having 30 tools.



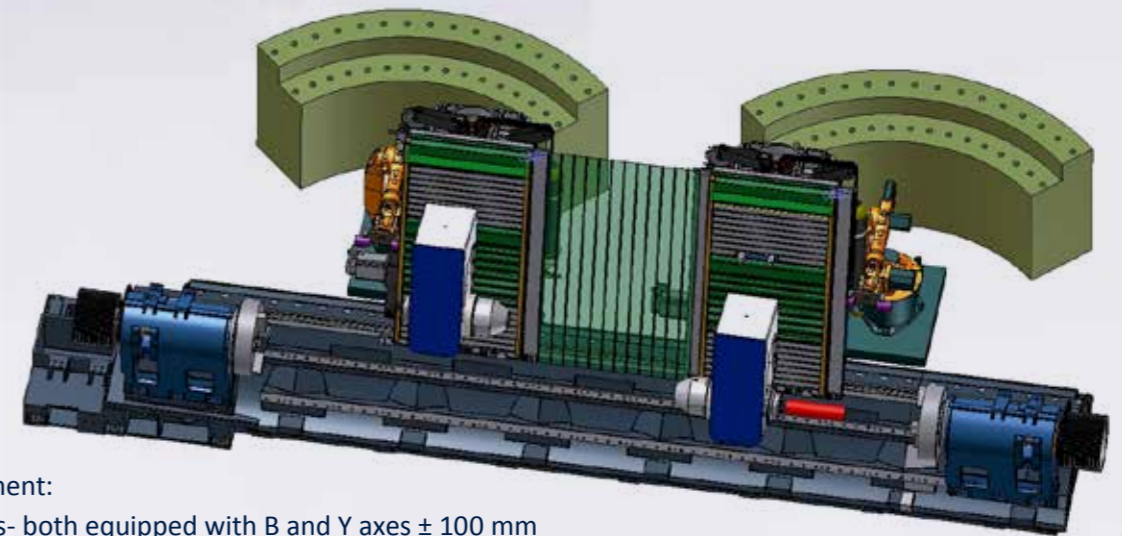
TECHNICAL PARAMETERS		
<b>Capacity</b>		
Distance between centres	mm	8.000
Maximal weight of workpiece	kg	10.000
<b>Saddle</b>		
Stroke Z axis	mm	8.000
Stroke X axis	mm	1.000
Stroke Y axis	mm	600 (± 300)
<b>Milling head ISO 50</b>		
Spindle power	kW	37

## FACING MACHINE



TECHNICAL PARAMETERS		
Main motor power	kW	100
Max. turning torque	Nm	60.000
Max. workpiece diameter	mm	3.500
Max. spindle speed	rpm	80
Max. workpiece weight	kg	30.000

## FTM 700 X 5100 WITH TWO COLUMNS AND AUTOMATED TOOL CHANGING SYSTEMS



Machine equipment:

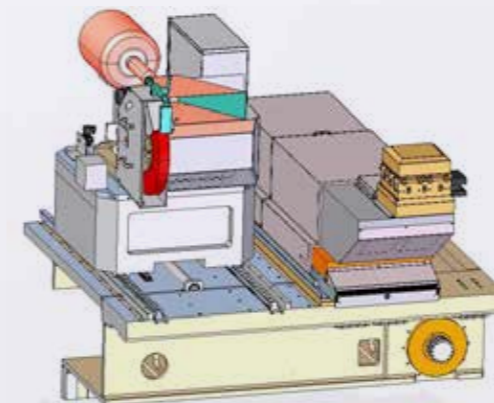
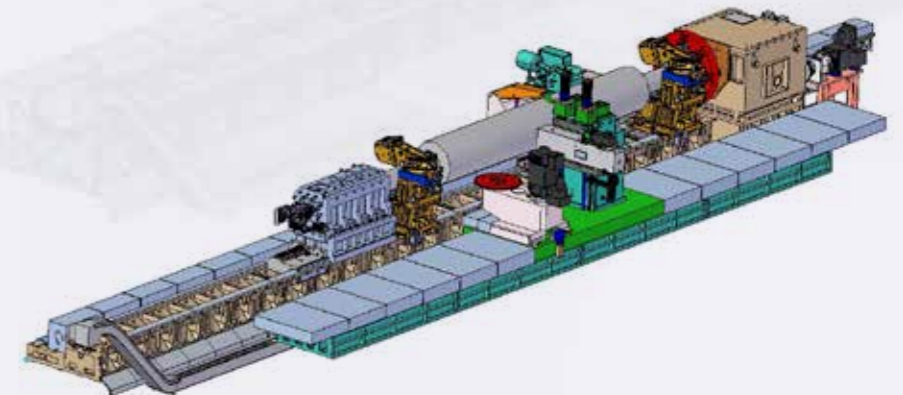
- two columns- both equipped with B and Y axes  $\pm 100$  mm
- two tool exchanging automated systems together with a probe for tool measuring
- direct C axis
- two independent headstocks

## SPECIAL MILLING MACHINE

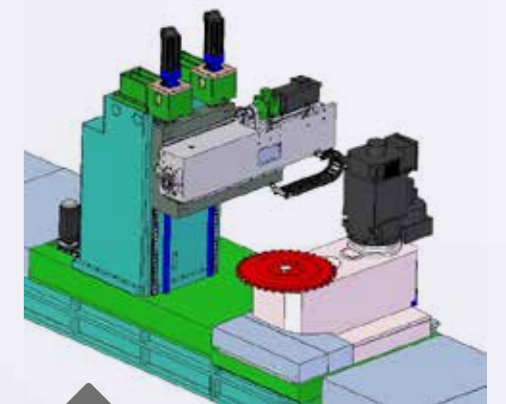
Machine designed for heavy duty slot milling.

Machine features:

- Max workpiece length 13 000 mm
- Max workpiece weight 80 t
- C axis
- Two independently driven saddles
- Hydrostatic steady rest
- Milling head motor power: 100 kW (s1)
- Tool magazine for 20 tools



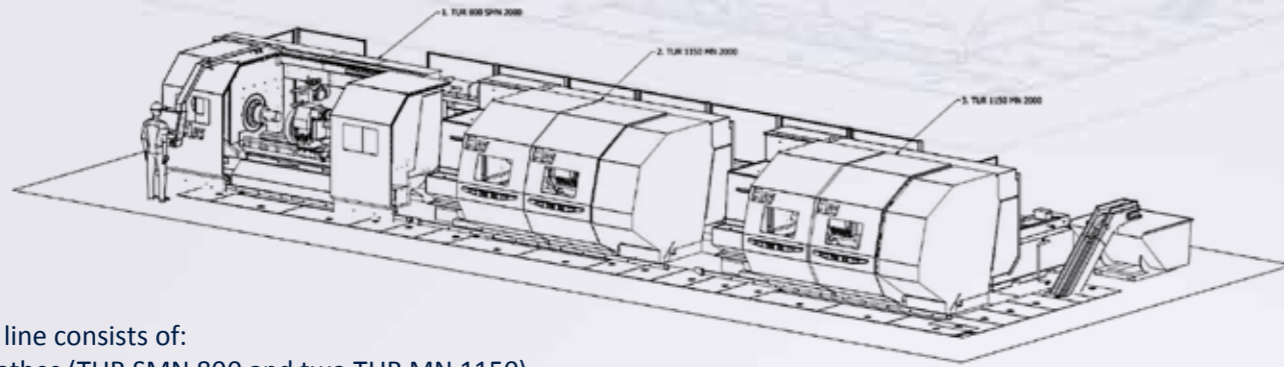
Saddle with a tool head and a grinding unit



Saddle equipped with units:

- Milling with Z axis driven by 30 kW motor
- Special unit for milling slots equipped with motor power of 100 kW

## PRODUCTION LINE FOR TRAIN BUMPER MACHINING



Production line consists of:

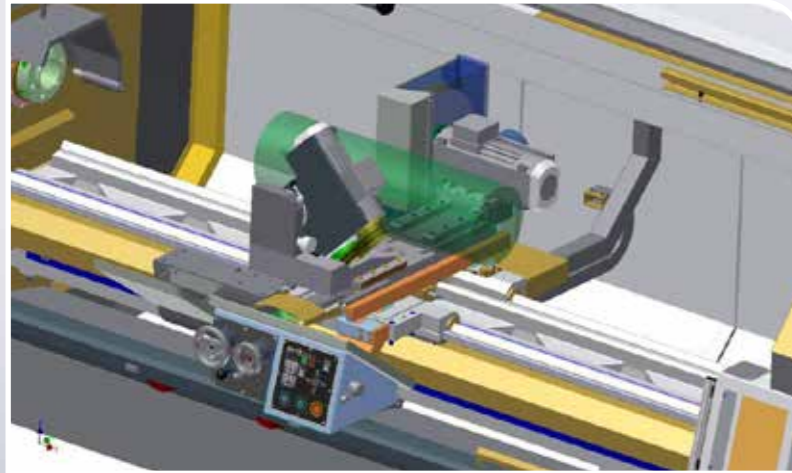
- Three lathes (TUR SMN 800 and two TUR MN 1150)
- Industrial robot for automated loading and unloading of workpieces
- Chip conveyor system

Industrial robot for automated loading workpieces and transportation between machines



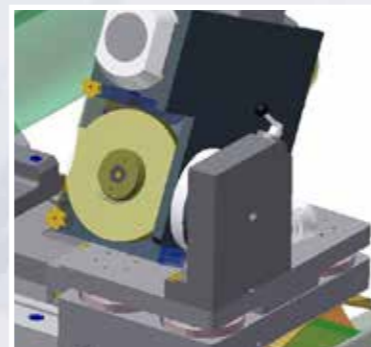
## MACHINE FOR GRINDING RUBBER SHAFTS

Machine with a simplified control system, designed for machining rubber printing shafts. The lathe is equipped with "Power grip" system for quick tool exchanging.

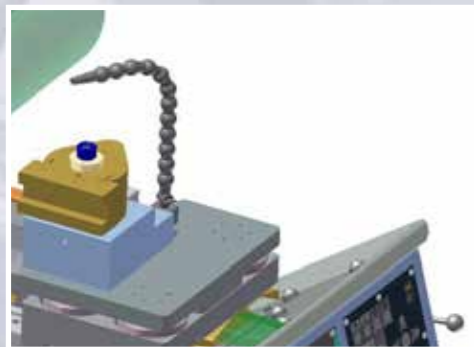


Printing shaft

Grinding unit with adjustable angle

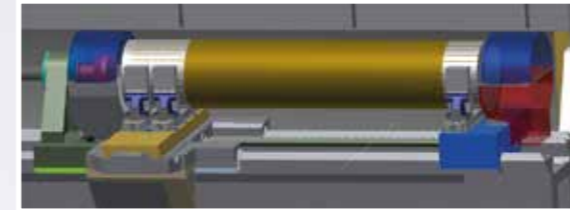


„Power Grip” system with mounted Multifix tool holder



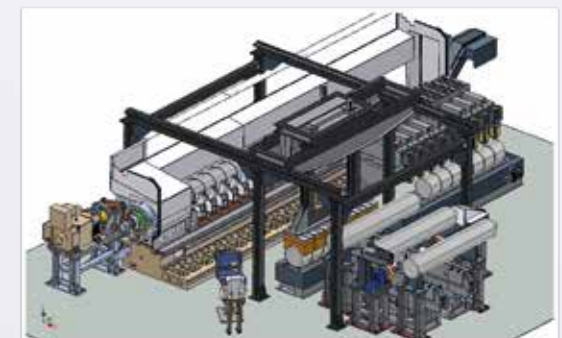
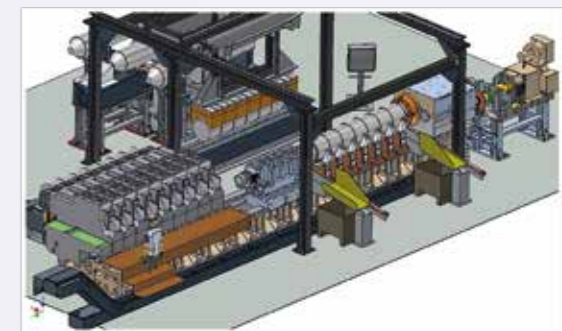
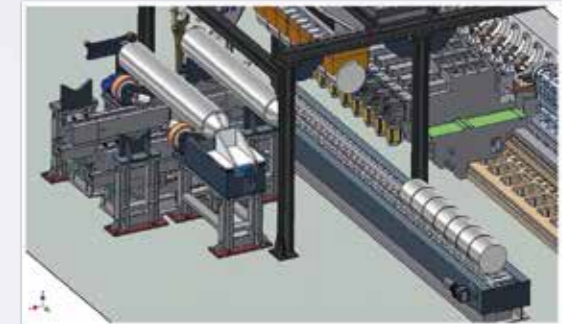
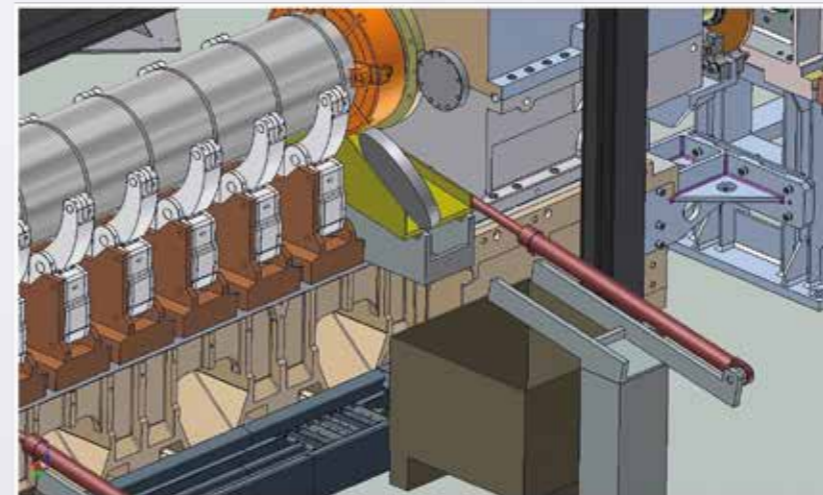
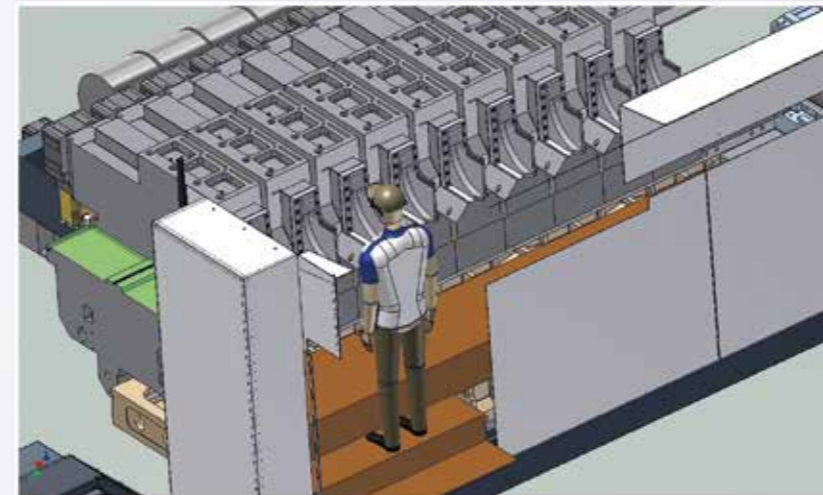
## TURNING-BORING CNC MACHINE

The machine design is based on the TUR 930MN. It is able to work as a normal CNC lathe and as a boring machine. In case of boring, the tool is mounted in the spindle and the workpiece is held in special clamps mounted on movable carriages.



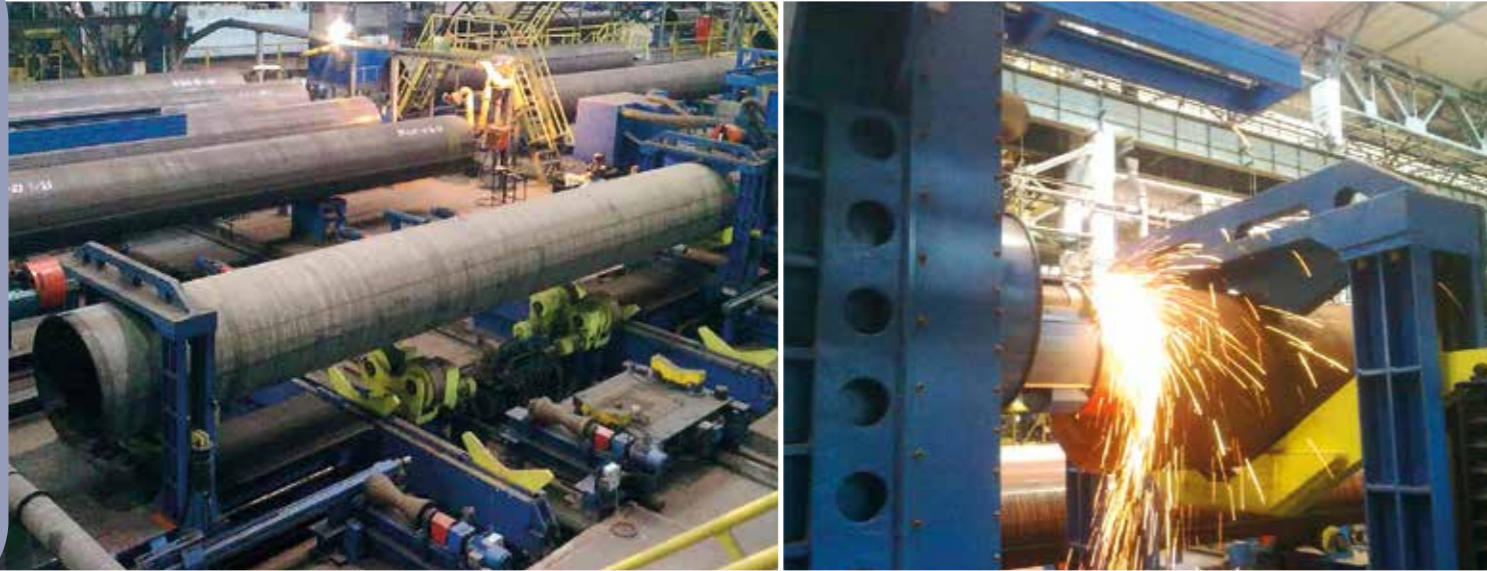
## PRODUCTION LINE FOR QUICK CUTTING OF STEEL SHAFTS

Design of multi-tool machine dedicated to quick cutting of steel shafts into slices. The machine has a shaft feeder and a parts catcher for the cut segments.



## PRODUCTION LINE FOR GRINDING OF THE WELDED PIPES

The project was totally managed by FAT Haco for a Russian client. Machine designed for grinding internal and external welds in the pipe-ends used for gas and petrol industry. The fully automatic process consists of delivering the pipe to machine, positioning, detecting weld inaccuracies using a laser and removing them by means of CNC grinding.



## DEEP HOLE DRILLING MACHINE TUR FDD 100 X 6000

The machine consists of a headstock with a chuck, a set of steady rests for supporting a workpiece, a pressurised head, steady rests for supporting the tool, a movable tailstock with a deep hole drilling system and a highly efficient cooling system.



TECHNICAL PARAMETERS		
Drilling length range	mm	1.200 - 6.000
Drilling diameter range	mm	20-100
Main motor power	kW	37/56
Max. torque	Nm	1.200
Spindle speed range	rpm	50-1.350
Pump max. flow	l/min	1.800
Tooling system motor max. power	kW	12
Tooling system torque	Nm	1.200



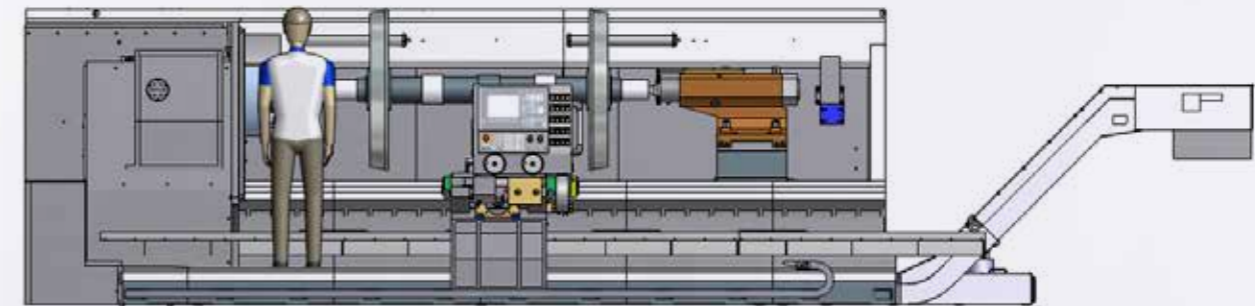
← Pressurised head



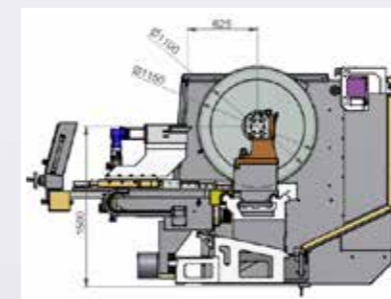
← Set of steady rests that support the workpiece; hydraulic thrust of a pressure head

## TUR 4SMN SPECIAL EXECUTION

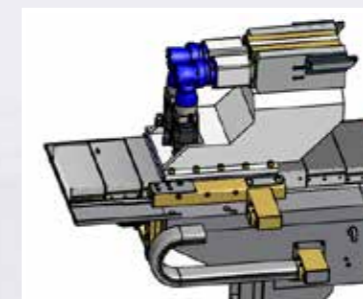
TUR 4SMN is a machine based on the design of the well established and very robust TUR MN 1100. The machine is equipped with a special tooling system for repairing train axes.



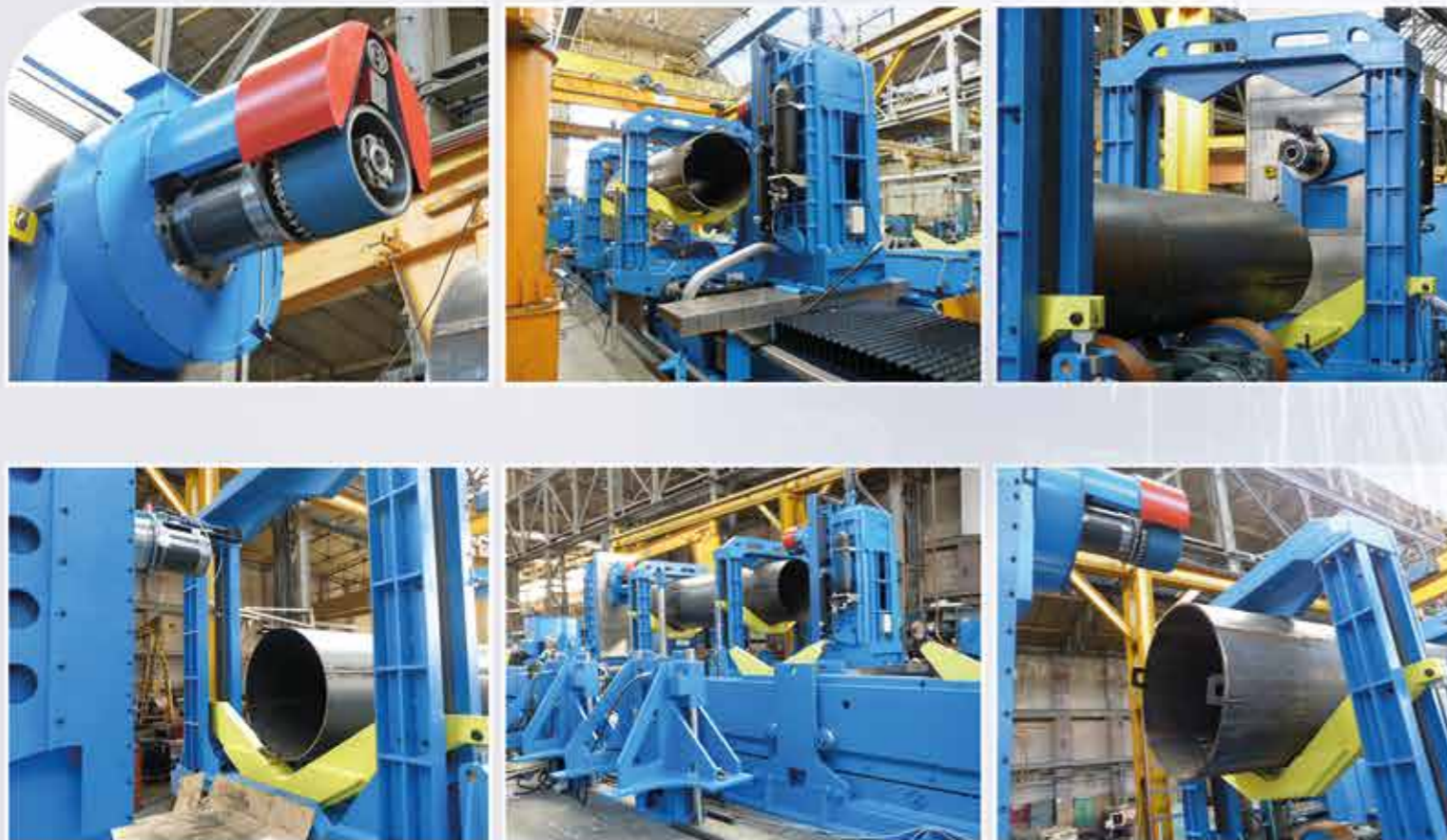
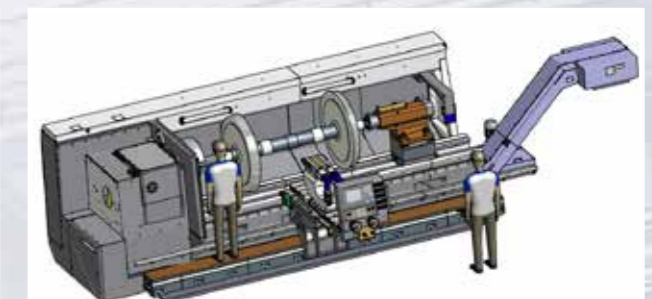
Thanks to the special solution fixtures, shaft and wheels can be machined in one operation.



▲ TUR 4SMN special execution working range



▲ Special saddle equipped with two independent blade tooling system

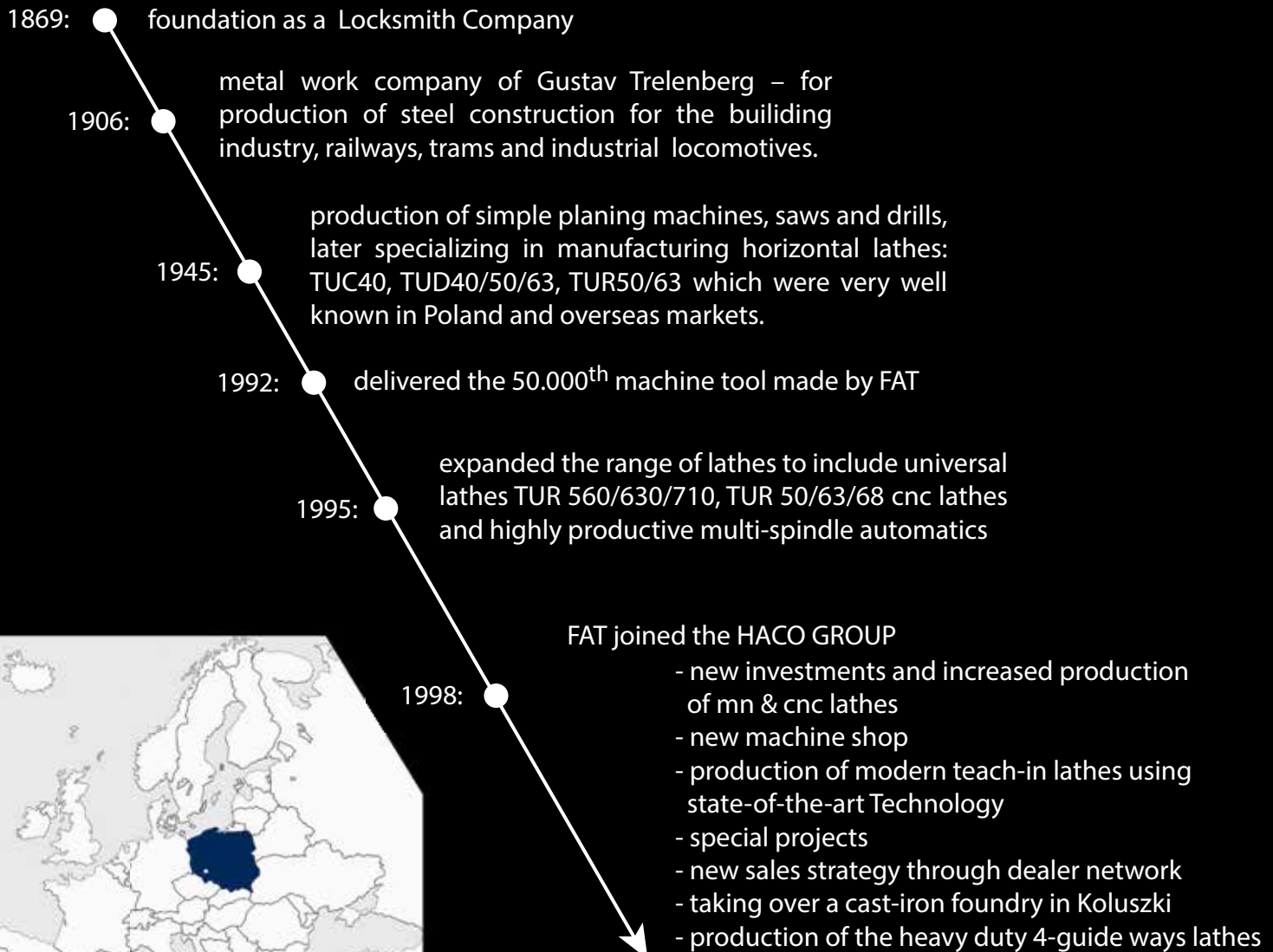




FAT Haco offers you the benefit of our vast experience – since the year 1945 over 50.000 machine tools have been sold in many countries around the world!

Our excellently equipped machine shop, assembly facility, research office and our own foundry allows us to manufacture most components by ourselves - complete from casting to the finished product. FAT works closely with you to develop the absolute best product for your needs. Our experience and quick reaction time will save you both time and money.

Together, let's make creative imagination our only limitation!



for impressive performances

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