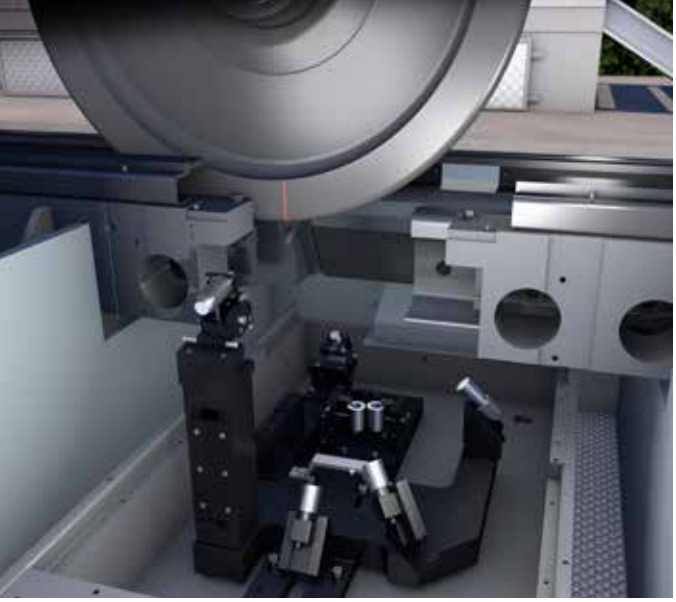
THE NSH GROUP

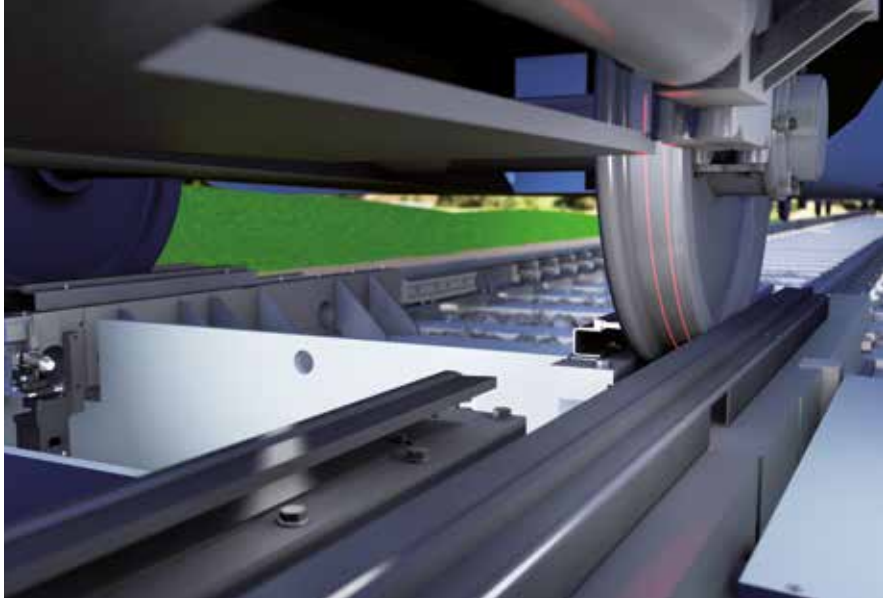
Vertical Machining Centers

RQMC // RQQ // RMC // RQ

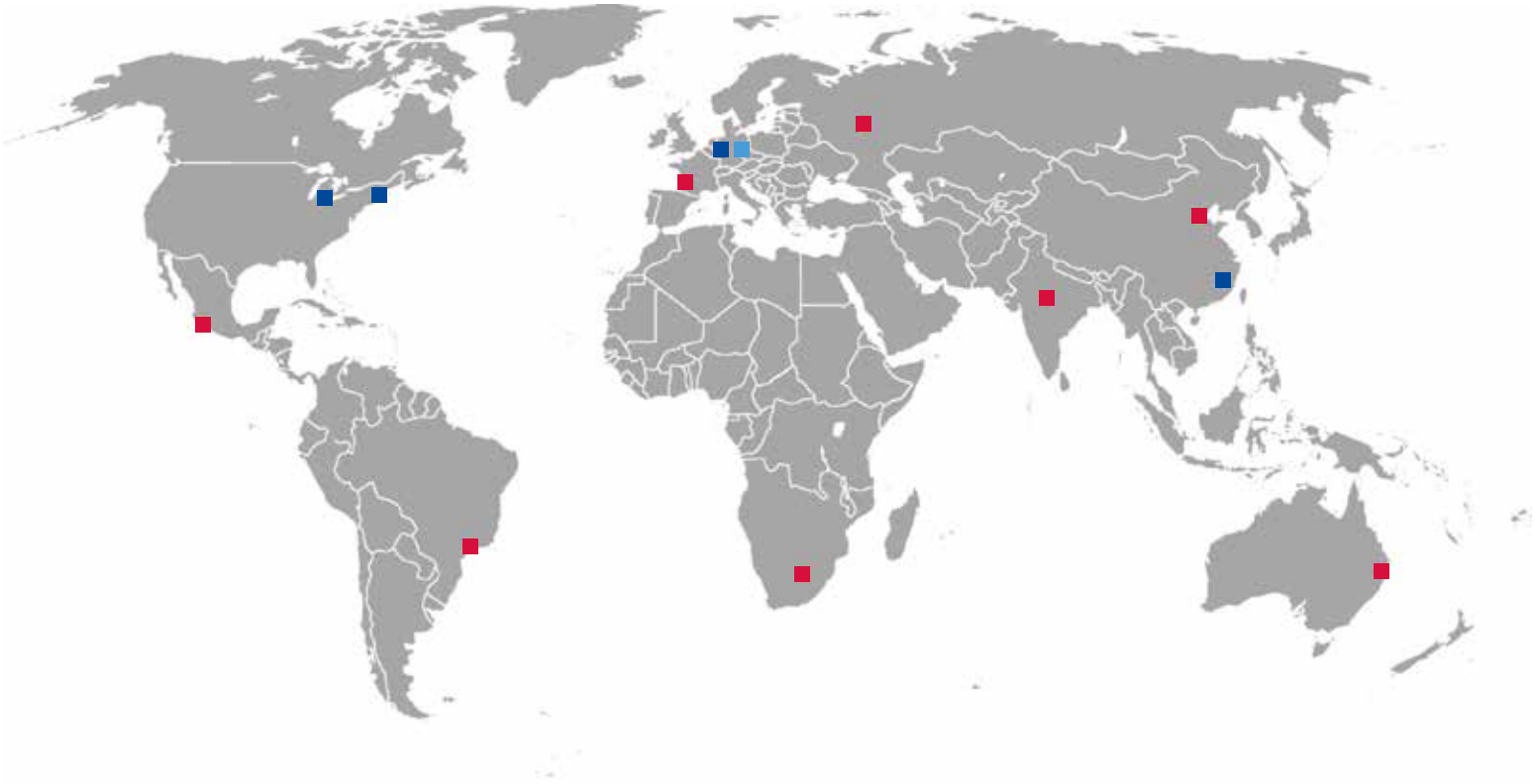
NILES-SIMMONS

NILES CHEMNITZ





NSH Group worldwide



Headquarter

NSH Group, Chemnitz, Germany
a member of VDMA/VDW

Production Facilities

HEGENSCHEIDT-MFD • Erkelenz, Germany
NILES-SIMMONS • Chemnitz, Germany
SIMMONS MACHINE TOOL Corp. • Albany, USA
HEGENSCHEIDT-Corp. • Detroit, USA
NSH-CTI • Nanchang, China
WEMA GLAUCHAU • Glauchau, Germany
RASOMA • Döbeln, Germany

Sales & Service Offices

NSH RUSS Moscow • Russia
NSH RUSS Nizhny Novgorod • Russia
Beijing • China
New Delhi • India
Maubeuge • France
Sao Paulo • Brazil
Brisbane • Australia
Guadalajara • Mexico
Johannesburg • South Africa

For greater speed

High-speed train wheels have to meet special precision requirements to ensure a smooth operation at high speeds. These requirements already formed the basis for the development of the second generation of RQQ Wheelturn machines. The RQQ vertical machines, equipped with one or two ram heads, have automatic tool changing capabilities and are primarily used to machine forged railway wheel blanks. The machines are normally integrated into automatic production lines and are loaded by using heavy gantry robots.

With the new developement of the RQMC on basis of the RQQ vertical machine, we set on new paths in driving technology. The newly developed radial segment motor Simotics T-1FW68 from Siemens has been used for the first time in machine toolindustry, providing a gearless main drive with torques of up to 33 kNm.

A multifunctional vertical machining center has been created by integrating a 36 kW / 5000 rpm turn-milling spindle with an HSK100 tool holder which is equipped with a continuously variable swivelling and clampable B-axis with direct absolute measuring systems.

The modular design of the RQ series combines a high cutting force with high precision machining that can be used for all types of railway wheels as well as ring-shaped, difficult-to-cut work pieces from aerospace and bearing industries. The automatic measurement of tools and work pieces, combined with various process monitoring systems, ensures successful unattended production. The control system Sinumerik 840 Dsl OPERATE and Integrate for Production provides software tools that network several units within the production system.

International References



RQ



RQQ



RMC



RQMC

The RQ Series

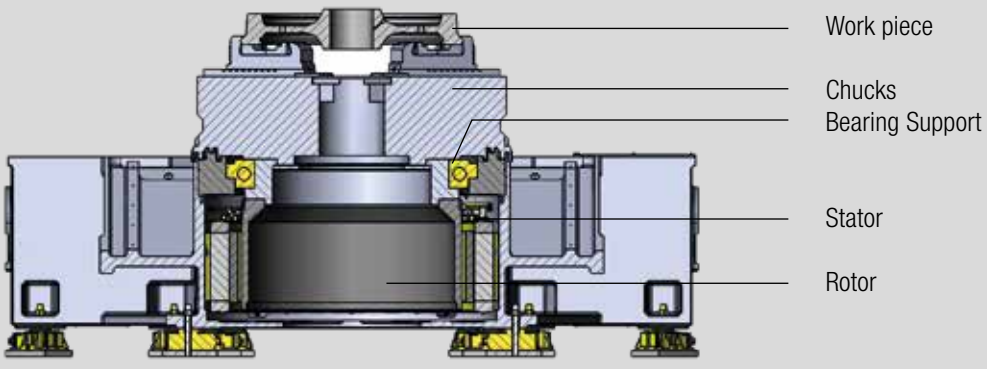
Type RQ
Fitted with one Turning Ram
for machining railway wheels

Type RQQ
Fitted with Twin Turning Rams
for machining railway wheels

Type RMC
Fitted with a Turn-Milling Unit
for machining rotationally symmetric work pieces

Type RQMC
Fitted with a Turn-Milling Unit and one Turning Ram
for machining rotationally symmetric work pieces

An Innovative Drive



The Highlights of the RQ Series

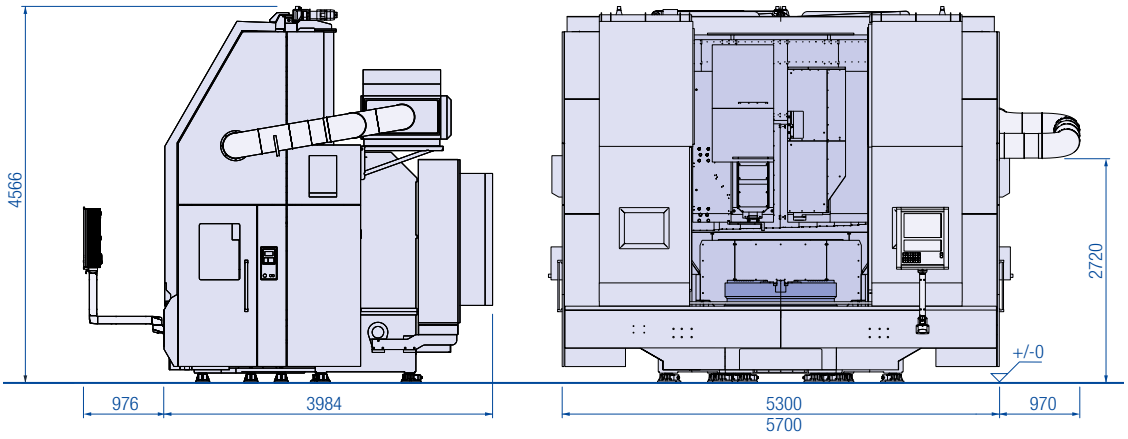
- From a vertical lathe to a vertical machining centre
- From heavy duty cutting to precision machining
- Maintenance-free, highly dynamic gearless direct drive
- C10 / HSK100 tool interface with maximum pull-in force and robustness for a long service life
- Large ram cross sections for short flow of force
- Configuration of faceplate drive depending on technical requirements
- Designed for comfortable operation using SINUMERIK Operate and a 15″ TFT touch panel
- NILES-HMI with customised software tools and integrated DNC function

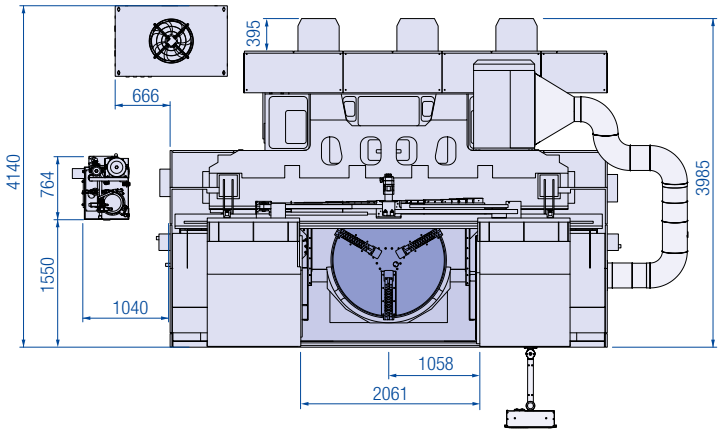
- NILES-SIMMONS integrates and complements the radial segment motor, delivered in components, by adding a special bearing support and high-resolution measuring system to create a complete faceplate drive with a torque of up to 33 kNm and maximum speeds of 400 rpm.

An internal cooling circuit ensures temperature stability and high accuracy. Temperature and vibration sensors monitor the operating status of the entire faceplate drive.

Your Benefits at a Glance

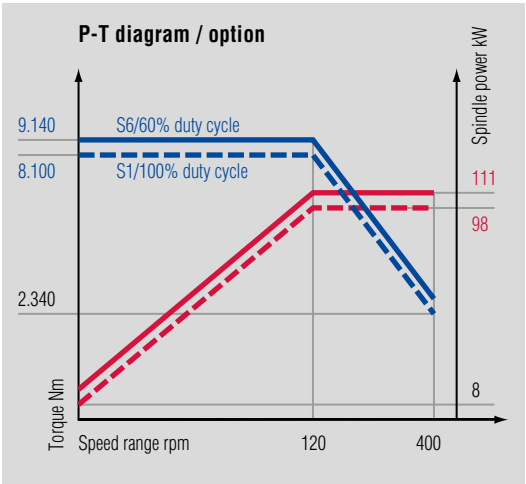
- Machine with one turning ram for small-batch and single-item production
- Roughing and finishing combined in one machine
- Clamping chuck with quick jaw-change system
- Integrated tool and work piece probing
- Ready for automatic loading
- Low maintenance requirements

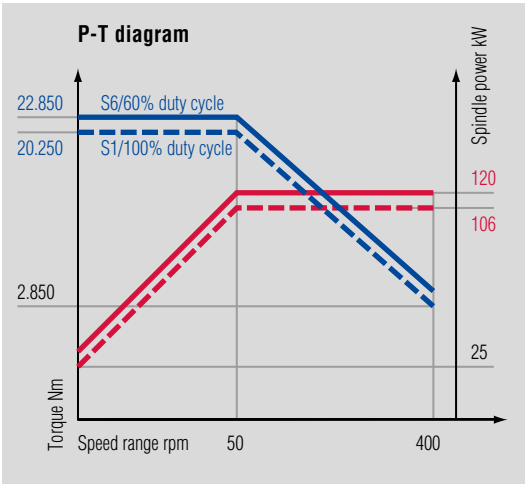




Total weight depending on options approx. 37 t

Connected load 120 KVA





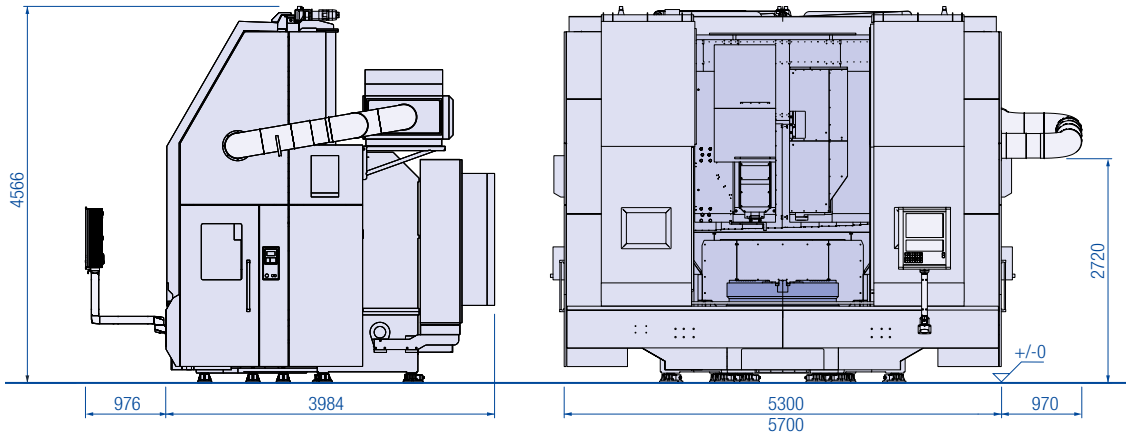
RQ
WHEELTURN

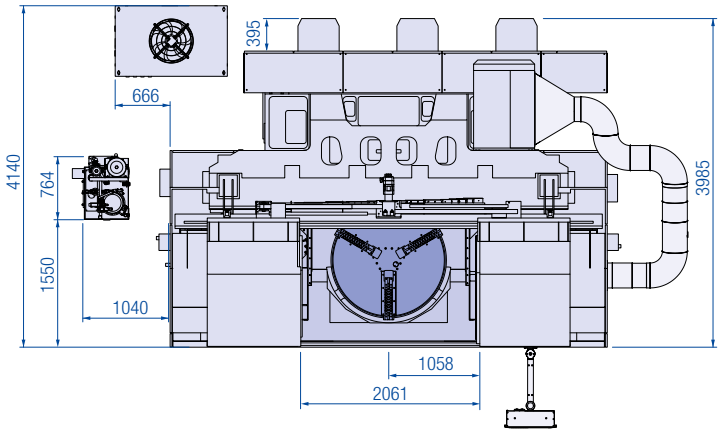
	Technical specifications		RQ	
Working range	Swing	mm	1900	
	Chuck diameter	mm	1350 / 1500 / 1600	
	Clamping diameter min./max.	mm	520 … 1250 / 1400 / 1500	
	Clamping stroke	mm	82	
	Max. clamping force of chuck	kN	475	
	Max. work piece weight	kg	2000	
Table drive	Drive power (60/100 % duty cycle)	kW	120 / 106	111 / 98
	Total speed range	rpm	1 … 400	1 … 400
	Max.torque (60/100 % duty cycle)	kNm	22,9 / 20,3	9, 1 / 8,1
RH tool support	Travel range, vertical Z1 (Standard/Option)	mm	630 / 1000	
	Travel range, horizontal X1 (Standard/Option)	mm	-170 … 1125 / 1325	
	Rapid traverse	m/min	24	
	Max. cutting force - RH	kN	30	
	Measuring system		metric	
	Linear encoder system		•	
	Tool probing		+	
	Work piece measuring		+	
	Internal coolant supply	bar; l/min	15; 30	
	HP coolant up to 120 bar without/with NC pressure control		+	
Automatic Tool Changer ATC	Number of tool pockets right (Option)		12 / (20)	
	Tool system right		C 10	
	Tool changing time	sec	12	
	Operating unit		SIMATIC KP 400	
Control unit	SIEMENS		840 Dsl Operate	
	Operating panel		15" TFT Touchscreen / MCP 483	
	HT2 hand held unit (incl. hand wheel)		+	
	SINUMERIK Integrate for Production		+	
	ARTIS Tool Monitoring		+	
	Energy saving mode		+	
Accessories / Options	2000l coolant tank with paper band filter		+	
	Coolant mist extractor		+	
	Intgrated chip conveyor		+	
	Chip breaker		+	

• Standard // + Option

Your Benefits at a Glance

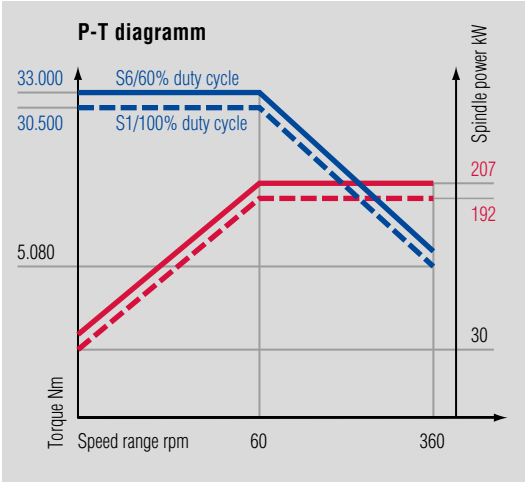
- Production machine for automatic loading
- Roughing and finishing combined in one machine
- Integrated tool and work piece probing
- Process monitoring
- Feed control based on cutting force (AC control)
- Optimized chip breaking through speed modulation (ACS)
- Low space requirements
- Cooling lubricant optional up to 120 bar for long service life of the cutting plates



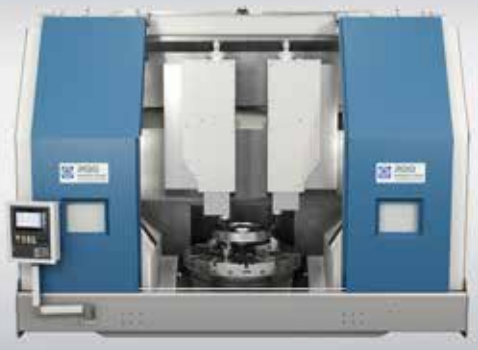


Total weight depending on options approx. 43 t

Connected load 240 KVA



RQQ
WHEELTURN

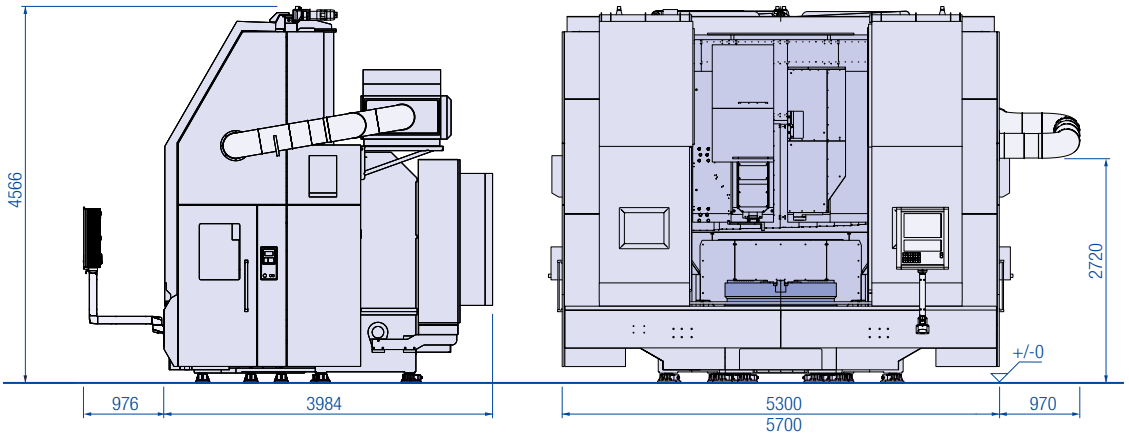


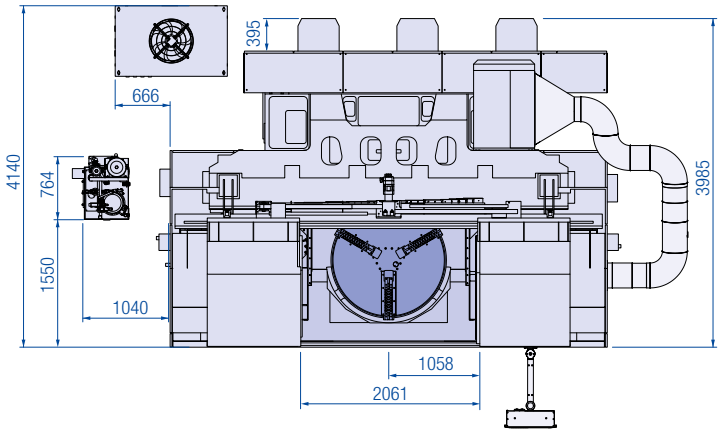
	Technical specifications		RQQ
Working range	Swing	mm	1900
	Chuck diameter	mm	1350 / 1500 / 1600
	Clamping diameter min./max.	mm	520 … 1250 / 1400 / 1500
	Clamping stroke	mm	82
	Max. clamping force of chuck	kN	475
	Max. work piece weight	kg	2000
Table drive	Drive power (60/100 % duty cycle)	kW	207 / 192
	Total speed range	rpm	1 … 360
	Max. torque (60/100 % duty cycle)	kNm	33 / 30,5
LH and RH tool support	Travel range, vertical Z1, Z2 (Standard/Option)	mm	630 / 1000
	Travel range, horizontal X1 (Standard/Option)	mm	-170 … 1125 / 1325
	Travel range, horizontal X2 (Standard/Option)	mm	-585 … 1125 / 1325
	Rapid traverse	m/min	24
	Max. cutting force - LH	kN	30
	Max. cutting force - RH	kN	30
	Measuring system		metric
	Linear encoder system		+
	Rotary encoder system		•
	Tool probing right/left		+/+
	Work piece measuring		+
	Internal coolant supply	bar; l/min	15; 30
	HP coolant up to 120 bar without/with NC pressure control		+
Automatic Tool Changer ATC	Number of tool pockets right/left II right/left (Option)		12 / 12 II 20 / 20
	Tool system left/right (HSK holding groove)		C10 / C10
	Tool changing time	sec	12
	Operating unit		SIMATIC KP 400
Control unit	SIEMENS		840 Dsl Operate
	Operating panel		15" TFT Touchscreen / MCP 483
	HT2 hand held unit (incl. hand wheel)		+
	SINUMERIK Integrate for Production		+
	ARTIS Tool Monitoring		+
	Energy saving mode		+
Accessories / Options	2000 l coolant tank with paper band filter		+
	Coolant mist extractor		+
	Intgrated chip conveyor		+
	Chip breaker		+

• Standard // + Option

Your Benefits at a Glance

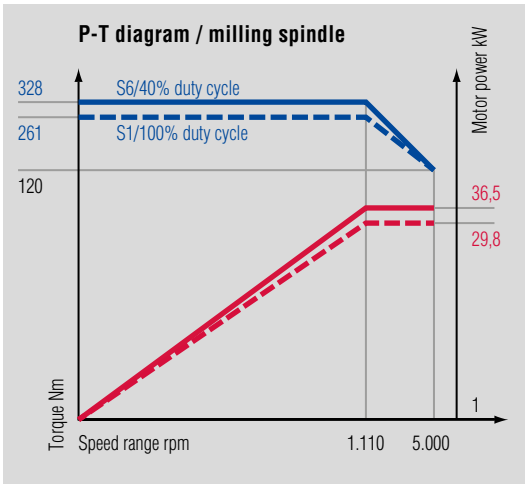
- Machine for finishing and complete machining
- Ultimate accuracy thanks to direct measuring systems in all linear and rotary axes
- Integrated tool and work piece measurement
- Use of Multi-Task Tools
- Extendable tool magazine

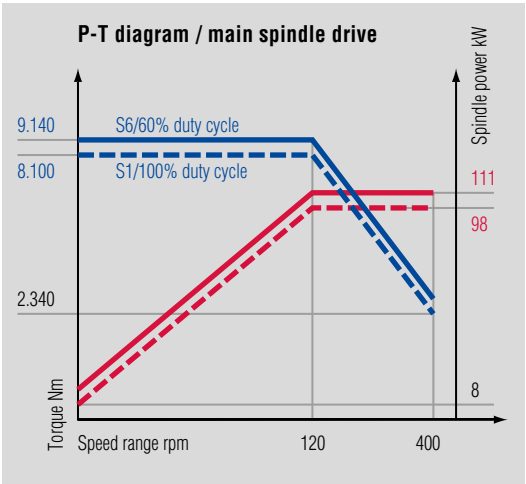




Total weight depending on options approx. 37 t

Connected load 80 KVA





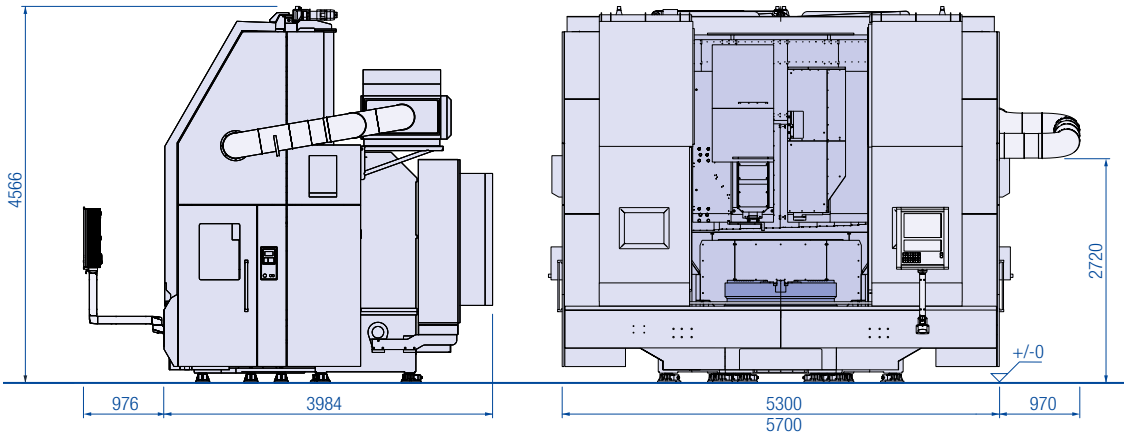
RMC

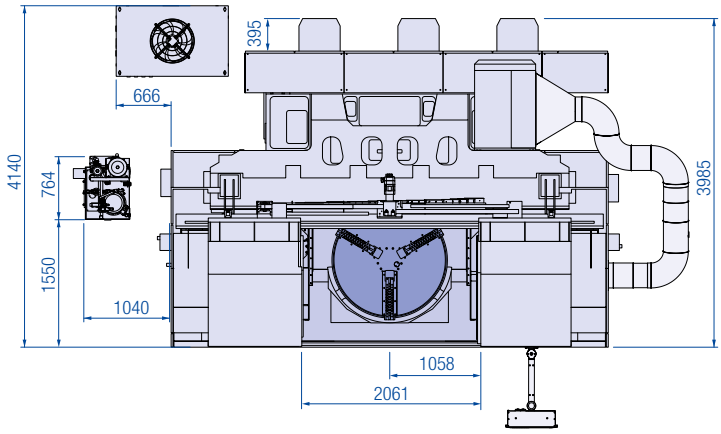
	Technical specifications		RMC
Working range	Swing	mm	1900
	Chuck diameter	mm	1350 / 1500 / 1600
	Clamping diameter min./max.	mm	520 … 1250 / 1400 / 1500
	Clamping stroke	mm	82
	Max. clamping force of chuck	kN	475
	Max. work piece weight	kg	2000
Table drive	Drive power (60/100 % duty cycle)	kW	111 / 98
	Total speed range	rpm	1 … 400
	Max.torque (60/100 % duty cycle)	kNm	9,1 / 8,1
LH tool support	Travel range, vertical Z2 (Standard/Option)	mm	640 / 1000
	Travel range, horizontal X2 (Standard/Option)	mm	-475 … 1235 / 1435
	Rapid traverse	mm	24
	Max. cutting force - LH	kN	10
	Spindle speed milling spindle - LH	rpm	0 … 5000
	Spindle torque (up to 1110 rpm, 40/100 % duty cycle)	Nm	328 / 261
	Drive power	kW	30,5 / 29,8
	Swivel range B-Axis	degrees	+/- 105
	Measuring system		metric
	Linear encoder system		•
	Tool probing		+
	Work piece measuring		+
	Internal/external coolant supply	bar; l/min	80; 18 / 15; 30
Automatic Tool Changer ATC	Number of tool pockets left		20
	Tool system left (HSK holding groove)		HSK 100
	Tool changing time	sec	15
	Operating unit		SIMATIC KP 400
Control unit	SIEMENS		840 Dsl Operate
	Operating panel		15" TFT Touchscreen/MCP 483
	HT2 hand held unit (incl. hand wheel)		+
	SINUMERIK Integrate for Production		+
	Engraving-/work piece marking function		+
	ARTIS Tool Monitoring		+
	Energy saving mode		+
Accessories / Options	2000 l coolant tank with paper band filter		+
	Coolant mist extractor		+
	Intgrated chip conveyor		+
	Chip breaker		+

• Standard // + Option

Your Benefits at a Glance

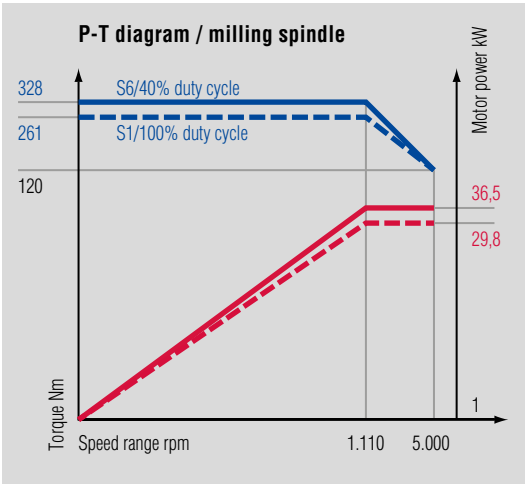
- Machine for complete machining
- Ultimate accuracy thanks to direct measuring systems in all linear and rotary axes
- Separate units for heavy and precision machining
- Universal use for small and medium sized batch production
- Multi-technology system for universal use besides wheelset machining

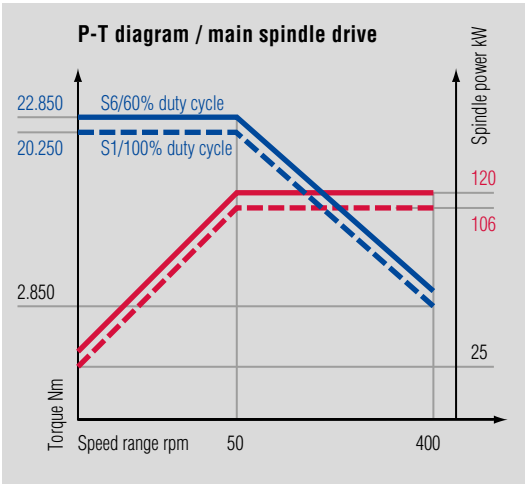




Total weight depending on options approx. 43 t

Connected load 200 KVA





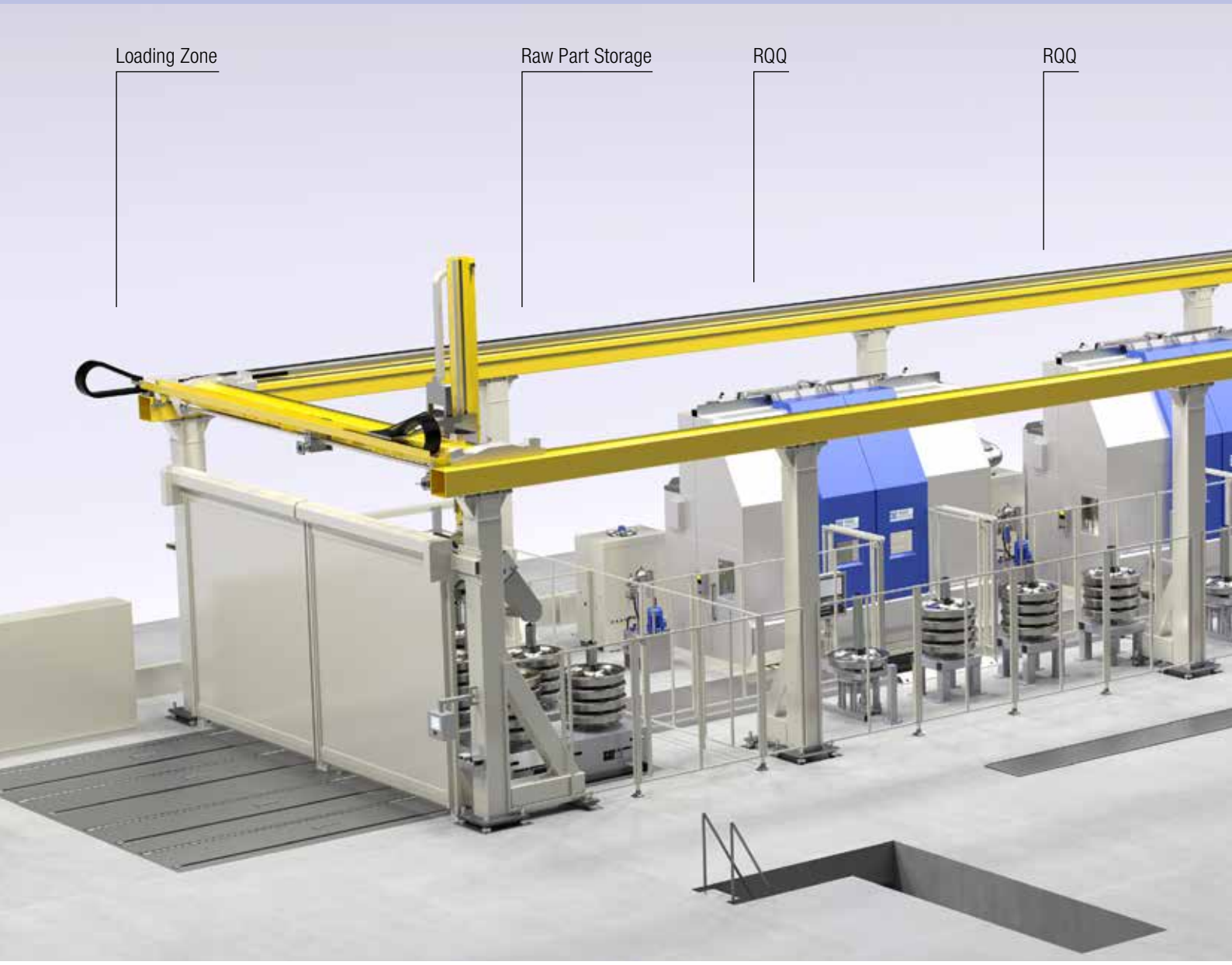
RQMC

	Technical specifications		RQMC
Working range	Swing	mm	1900
	Chuck diameter	mm	1350 / 1500 / 1600
	Clamping diameter min./max.	mm	520 … 1250 / 1400 / 1500
	Clamping stroke	mm	82
	Max. clamping force of chuck	kN	475
	Max. work piece weight	kg	2000
Table drive	Drive power (60/100% duty cycle)	kW	120 / 106
	Total speed range	rpm	1 … 400
	Max.torque (60/100% duty cycle)	kNm	22,9 / 20,9
LH and RH tool support	Travel range, vertical Z1, Z2 (Standard/Option)	mm	630 / 1000
	Travel range, horizontal X1 (Standard/Option)	mm	-170 … 1125 / 1325
	Travel range, horizontal X2 (Standard/Option)	mm	-475 … 1235 / 1435
	Rapid traverse	m/min	24
	Max. cutting force - LH	kN	10
	Max. cutting force - RH	kN	30
	Spindle speed milling spindle - LH	rpm	0 … 5000
	Spindle torque (up to 1110 rpm, 40/100% duty cycle)	Nm	328 / 261
	Drive power	kW	30,5 / 29,8
	Swivel range B-Axis	degrees	+/- 105
	Measuring system		metric
	Linear encoder system		•
	Tool probing right/left		+/+
	Work piece measuring		+
	Internal/external coolant supply	bar; l/min	80; 18 / 15; 30
Automatic Tool Changer ATC	Number of tool pockets right/left II right/left (Option)		12 / 20 II 20 / 20
	Tool system left/right (HSK holding groove)		HSK 100 / C 10
	Tool changing time	sec	15 / 12
	Operating unit		SIMATIC KP 400
Control unit	SIEMENS		840 Dsl Operate
	Operating panel		15" TFT Touchscreen / MCP 483
	HT2 hand held unit (incl. hand wheel)		+
	SINUMERIK Integrate for Production		+
	Engraving-/work piece marking function		+
	ARTIS Tool Monitoring		+
	Energy saving mode		+
Accessories / Options	2000 l coolant tank with paper band filter		+
	Coolant mist extractor		+
	Intgrated chip conveyor		+
	Chip breaker		+

• Standard // + Option

Your Benefits at a Glance

- Project management and financing
- Work piece-related production and test planning
- Partflow and part handling concept
- Process simulation and process-flow control
- Layout and shop design
- Equipment specification and sourcing
- Utility planning and supply
- Shipping logistic planning
- System installation and ramp-up
- Performance test

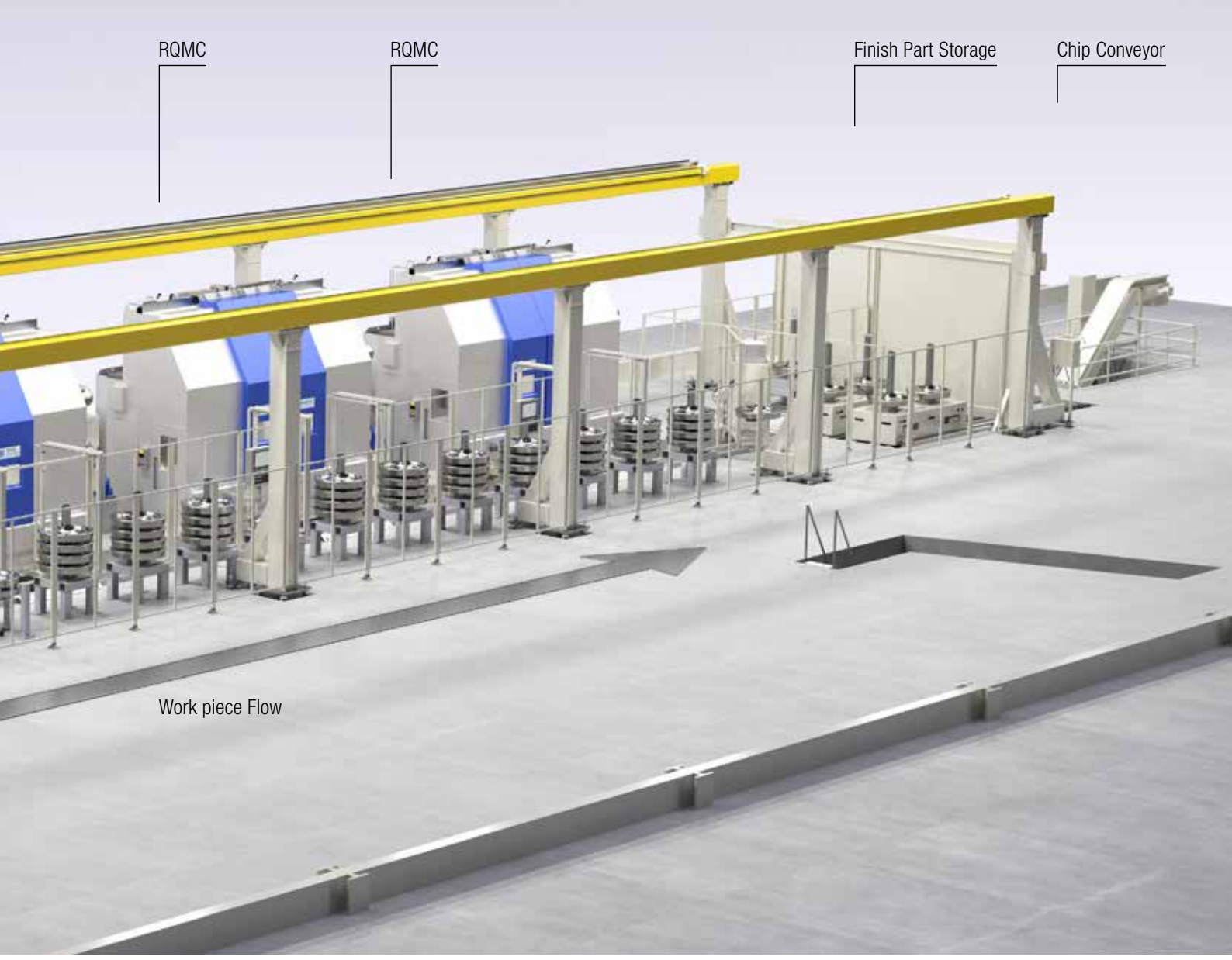


NILES-SIMMONS-HEGENSCHEIDT has been successfully planning and implementing production lines for leading companies in the railway and automotive industries for years.

Overall responsibility is in the hands of the specialists at NSH - from the initial inquiry to the turnkey delivery of systems installed at locations worldwide. NSH engineers work in a project team in conjunction with leading companies in the german and international machine tool industry, and with companies specialized in automation technology, measuring and testing technology, and supply technology.

The RQ models from NSH are the technology carriers for manufacturing and redesigning railway wheels for a variety of workshops and production lines.

Production Lines • Worldwide



Our project portfolio ranges from single machines with manual loading for repair shops up to highly efficient production lines with automatic gantry loading and integrated measuring and testing processes.
Our specialists work in close co-operation with our customers to find the optimal solution for your specific production task based on your requirements.

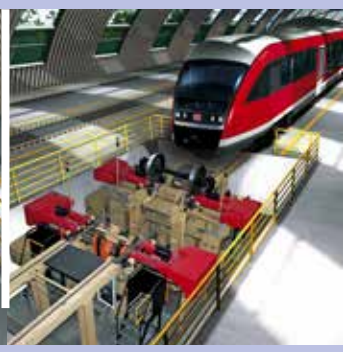
NSH is only one of a handful of companies worldwide to offer a complete product program for wheelset machining and, as a group, manufactures complete axle production, wheel machining and wheelset production lines.

Wheelset machining NSH Group

Wheelset Diagnostic System ARGUS®II


Underfloor Wheel Lathes U2000-400 I U200-150





Mobile Wheelset Machining Lathe Mobiturn® 2


Axle deep rolling machine 7624


Axle Lathe N30 / N40

Axle Grinder SG 803/2


Complete Machining N20MC - N60MC

The NILES-SIMMONS MC-Series offers the highest flexibility in the configuration of high accuracy CNC-Turning-Milling-Drilling Centres. Variable machining components from the modular system enable complex work pieces to be completely machined in one set-up. Our intelligent hard and software tools complete your processes, from manufacturing planning through process optimization to maintenance.

Machine Type		N20 MC	N30 MC	N40 MC	N50 MC	N60 MC
Nominal Length	mm	up to 3.500	up to 4.500	up to 6.000	up to 7.500	up to 7.500
Turning Diameter	mm	up to 650	up to 880	up to 920	up to 1.250	up to 1.500

The Technology Provider

Aerospace Industry

Automotive and Truck Industry

Railway and Metro Industry

Machine Building Industry

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NILES CHEMNITZ