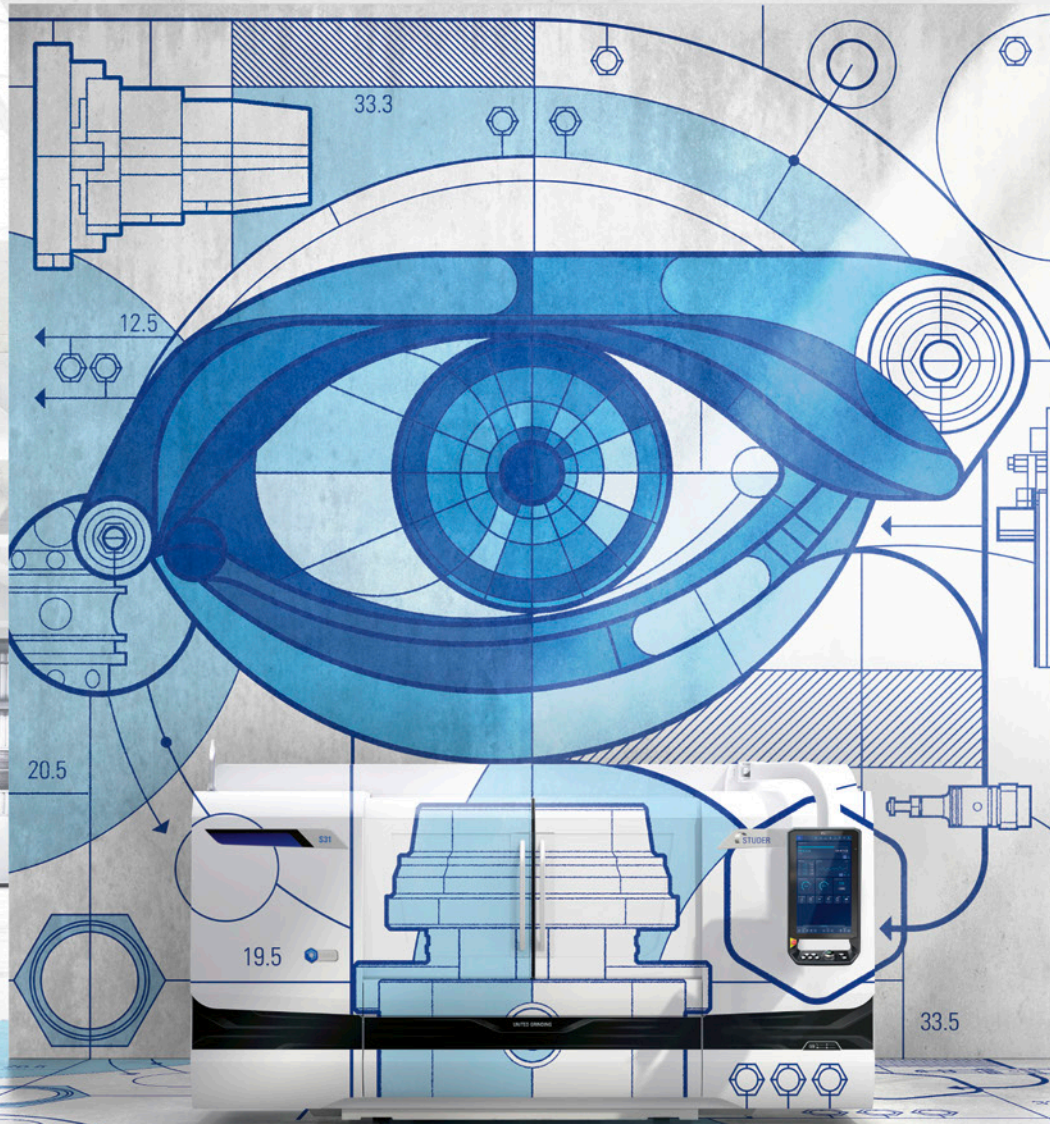


# THE ART OF GRINDING.

OUR OFFERING





# WE WANT TO MAKE OUR CUSTOMERS EVEN MORE SUCCESSFUL

Every day, you come into contact with products manufactured on machines from STUDER. Whether you enjoy a coffee brewed in a coffee-maker in the morning or admire the solar cells on the roof of your house, ride your e-bike to work, or discover the precision parts in your wrist-watch or your smartphone – our products and technologies are used everywhere. STUDER is proud to be one of the leading suppliers in the market for universal, external, internal, and non-circular grinding. Our customers come from a wide variety of industries worldwide and value

our machines above all for their precision and excellent surface finish. Our goal is to make our customers even more successful, whether it be the entry-level segment, the high-end sector, or system machines with automation. To achieve this, we rely on our comprehensive product and application knowledge, global presence, decades of experience, and unwavering passion for excellence. At STUDER, we are convinced that we can meet the requirements of our customers around the world.

“Every day you come into contact with products that were made on STUDER machines.”





## ABOUT US



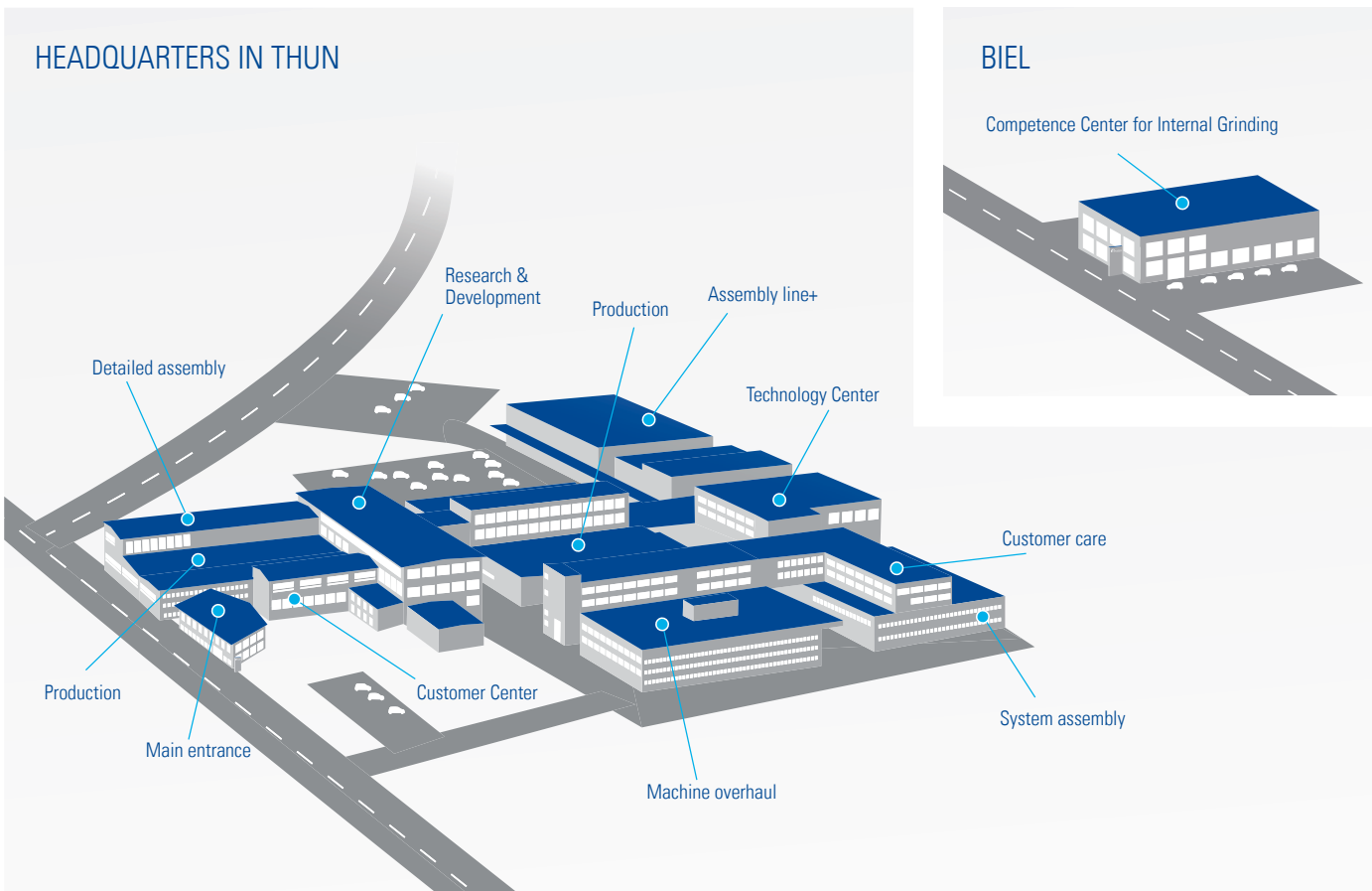
UNITED GRINDING Group is one of the world's leading manufacturers of grinding, eroding, laser, measuring machines, as well as machine tools for additive manufacturing. With roughly 2500 employees at more than 20 manufacturing, service, and sales locations, the Group has an effective and customer-centric organization.

Through its MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER, EWAG, and IRPD brands, as well as competence centers in America and Asia, UNITED GRINDING offers broad application expertise, a large product portfolio, and a full range of services for the production of high-precision components.



Fritz Studer AG, founded in 1912, produces standard machines and custom system solutions in the field of high-precision cylindrical grinding for the machining of small to medium-sized workpieces. Customers include the sectors of machine tools, tool and die, semiconductor industry, automotive, aerospace, pneumatics/hydraulics, electronics/electrical engineering, medical technology, the watch industry, and job shops. As one of the market and technology leaders in universal, external, internal, and contour grinding, with 24,000 systems delivered, STUDER has stood for precision, quality, and durability for decades. STUDER's products and services include hardware, software, and a wide range of services in the pre-sales and after-sales sectors.

## FRITZ STUDER AG IN THUN AND BIEL, SWITZERLAND



## OUR CYLINDRICAL GRINDING MACHINES

OUR PORTFOLIO CONTAINS THE RIGHT MACHINE FOR ANY GRINDING TASK

**Conventional cylindrical grinding machines:** the electrically and hydraulically controlled universal cylindrical grinding machines remain highly popular for a wide range of grinding tasks.

**Universal external cylindrical grinding machines:** universal cylindrical grinding machines for medium-sized workpieces. The modular system offers everything from a simple machine to a complex grinding system.

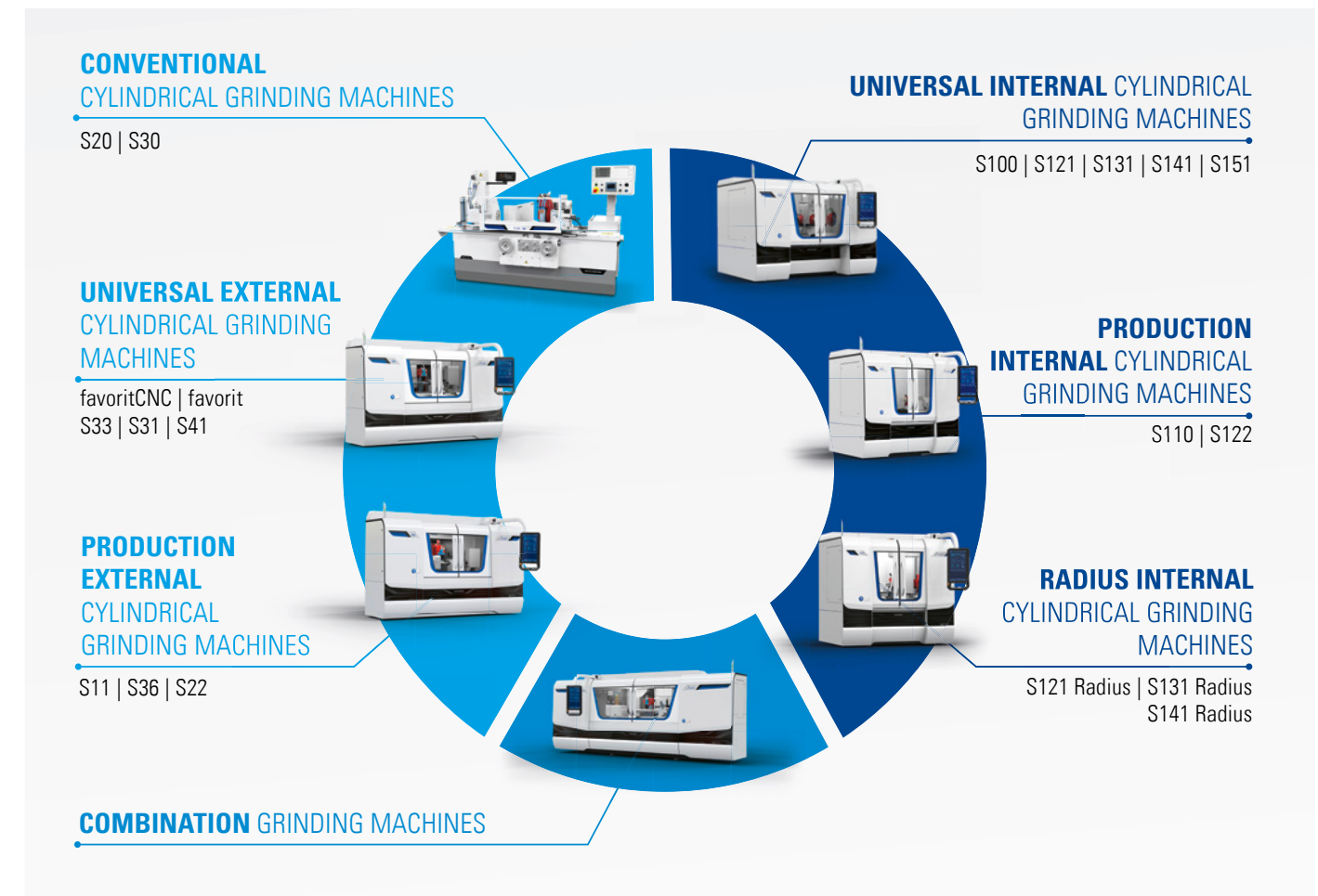
**Production external cylindrical grinding machines:** for large-scale production, we supply single-purpose machines with optimized grinding cycles and maximum availability.

**Combination grinding machines:** STUDER grinding machines, can be configured as flexible hard fine machining centers. As a result, multiple tasks (such as hard turning, milling, measuring, grinding, and several others) can be completed in a single clamping.

**Universal internal cylindrical grinding machines:** the correct machine for any application. For single-part or series production and small or large workpieces. Up to four spindles on the turret are a match for any task.

**Production internal cylindrical grinding machines:** We set standards in internal, face, and external grinding of chucked parts. The modular, flexible spindle arrangement enables an optimum machine configuration for everything from custom to large-scale production.

**Radius internal cylindrical grinding machines:** Machines with automatic B axis for internal, face, external, taper, and radius grinding, for extremely flexible machining of chucked parts.







## CONVENTIONAL CYLINDRICAL GRINDING MACHINES

With conventional cylindrical grinding machines, controlled electrically or hydraulically, you can grind small to medium-sized workpieces simply and easily. Rapid infeed, grinding feed, spark-out, rapid retraction of the handwheel to the set grinding allowance, and the cycles for plunge and longitudinal grinding are standard features.

### S20

The S20 is designed for efficient grinding of small parts in single-part and low-volume production using preinstalled automated grinding cycles.

### S30

The S30 hydraulically controls all axes and efficient automatic grinding cycles with automatic cut-out, for the manufacture of medium-sized workpieces.

	S20	S30
Distance between centers	400/650 mm (15.7"/25.6")	650/1000 mm (25.6"/39.4")
Grinding length	400/650 mm (15.7"/25.6")	650/1000 mm (25.6"/39.4")
Center height	100 mm (3.94")	125/175/225 mm (4.9"/6.9"/8.85")
Workpiece weight max.	20 kg (44 lbs)	130 kg (286 lbs)



## UNIVERSAL EXTERNAL CYLINDRICAL GRINDING MACHINES

From entry-level machines for key applications through to the all-rounder for complex grinding tasks: for medium-sized workpieces, and single-part and low-and high-volume production. Choose from a range of five universal cylindrical grinding machines, with distances between centers of 400, 650, 1000, and 1600 mm (15.7"/25.6"/39.4" and 63") and a center height of 175 mm (6.9").

### favoritCNC

The favoritCNC is the ideal entry-level machine. Options such as a measuring system, contact detection, a balancing system, and longitudinal positioning, allows it to be adapted easily to other grinding tasks.

### S31

The S31 stands out both for the versatile range of applications made possible by its high-resolution B-Axis, and its efficient, high-precision form grinding (HSM).

### favorit

The favorit efficiently grinds short to long workpieces in single-part and series production, thanks to its measuring control, balancing system, and contact detection.

### S41

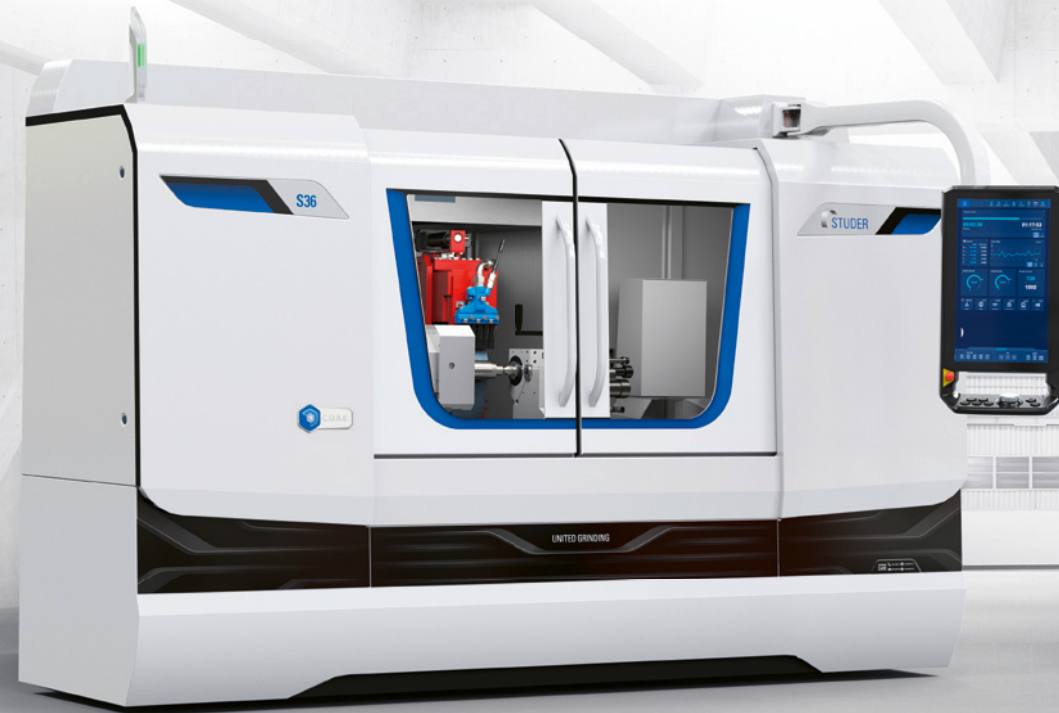
The S41 is the solution for complex grinding tasks, with its high-precision axis drives, extremely fast direct drive on the B-Axis, and its large range of wheelhead variants.

### S33

The S33 can be customized to meet specific customer requirements and grinds even complex workpieces without difficulty in only one clamping.

	favoritCNC	favorit/S33/S31	S41
Distance between centers	650/1000 mm (25.6"/39.4")	400/650/1000/1600 mm (15.7"/25.6"/39.4"/63")	1000/1600 mm (39.4"/63")
Grinding length	650/1000 mm (25.6"/39.4")	400/650/1000/1600 mm (15.7"/25.6"/39.4"/63")	1000/1600 mm (39.4"/63")
Center height	175 mm (6.9")	175 mm (6.9")	225/275 mm (8.85"/10.8")
Workpiece weight max.	80/120 kg (176/264 lbs)	150 kg (330 lbs)	250 kg (550 lbs)





## PRODUCTION EXTERNAL CYLINDRICAL GRINDING MACHINES

The features of these external cylindrical grinding machines make them ideal for production: a minimal footprint (1.8 m<sup>2</sup>/19.4 sqft), for the high productive manufacturing of small parts with a grinding wheel diameter of 500 mm (20"), a production platform that also enables high speed grinding (HSG) up to 140 m/s (27,560 sfpm), and a powerful production machine with a grinding wheel diameter of 610 mm (24").

### S11

With its compact design the S11 manufactures small parts on a tiny footprint and offers optional high speed grinding (HSG) to boost productivity.

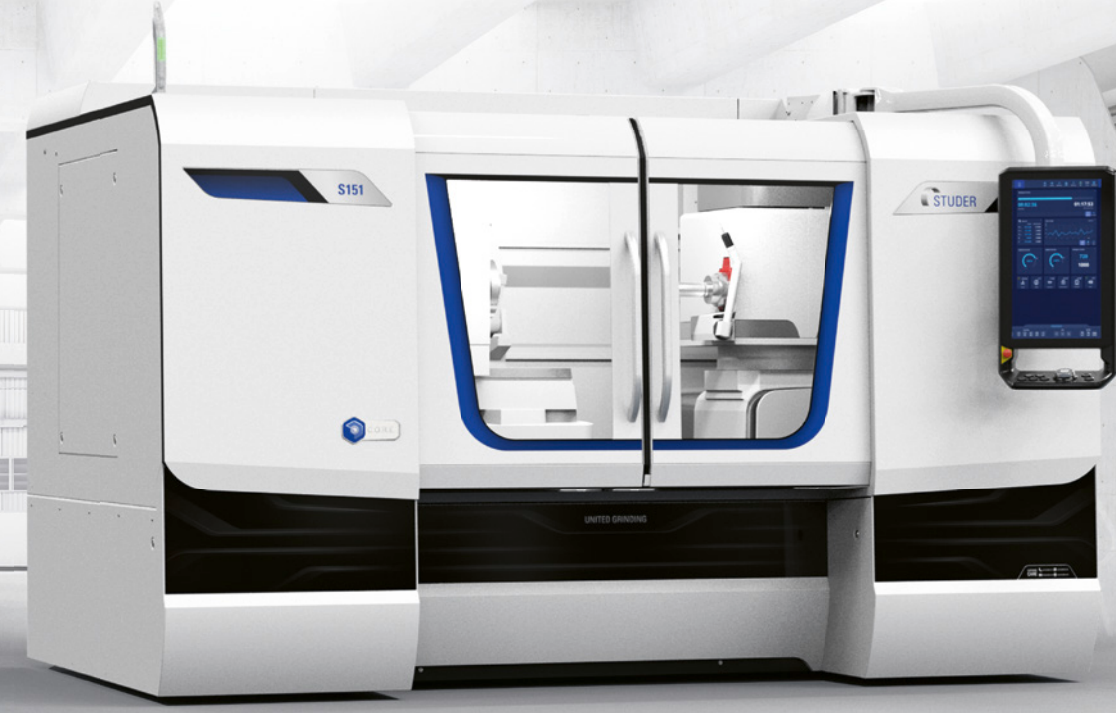
### S36

The S36 impresses with its high-power grinding spindle and its large grinding wheel diameter that enables efficient and economical production.

### S22

With its diverse expansion options (such as high-speed grinding), the S22 adapts perfectly to production processes for medium-sized workpieces.

	<b>S11</b>	<b>S36</b>	<b>S22</b>
Distance between centers	200 mm (7.9")	650 mm (25.6")	650 mm/25.6" (max. 1100 mm/43.3")
Grinding length	80–150 mm (3.15"–5.9")	650 mm (25.6")	max. 800 mm (31.5")
Center height	125 mm (4.9")	225 mm (8.85")	175/225 mm (6.9"/8.85")
Workpiece weight max.	3 kg (6.6 lbs)	150kg (330 lbs)	150kg (330 lbs)



## UNIVERSAL INTERNAL CYLINDRICAL GRINDING MACHINES

The appropriate machine for any requirement. The series offers a wide variety of tools, and can machine workpieces both big and small. It is designed for every conceivable application in internal cylindrical grinding where very high precision and efficiency are required.

### S100

The S100 is the ideal universal machine for internal cylindrical grinding for the entry-level segment. It is suitable for single-part and volume production.

### S121

The S121 has linear axis drives, and provides a firm basis for universal internal grinding applications.

### S131

The S131 has many technical refinements, and proves its capabilities in the manufacture of flanges and small workpieces.

### S141

With its three sizes, the S141 is ideal for the grinding of lead screws, spindle housings, rotor shafts, and flanges.

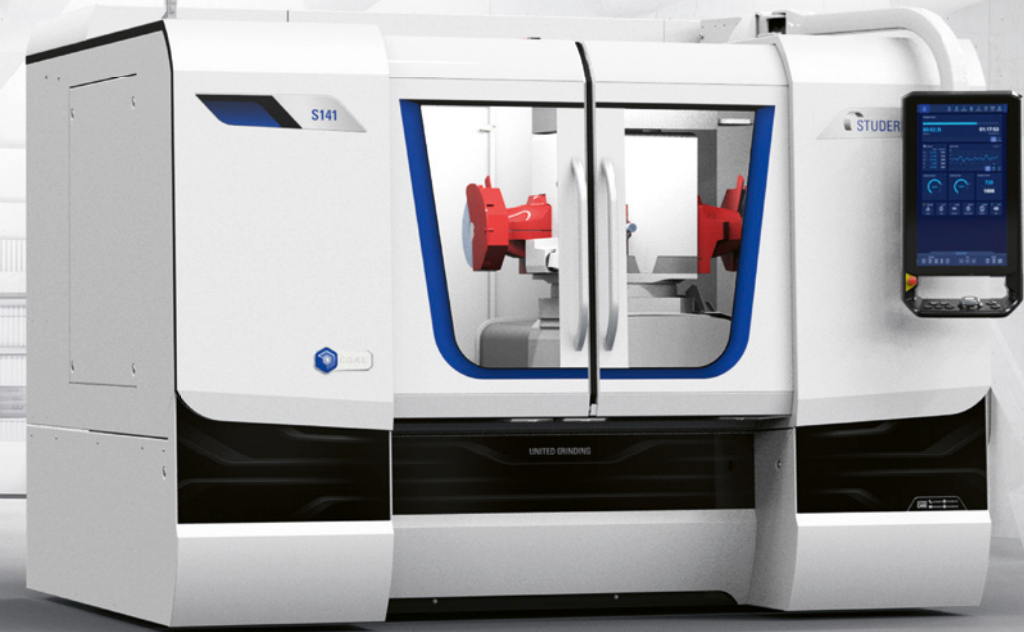
### S151

With its two sizes, the S151 is ideal for large lead screws, spindle housings, rotor shafts, and large flanges.

	<b>S100</b>	<b>S121</b>	<b>S131</b>	<b>S141</b>	<b>S151</b>
Swing diameter	425 mm (16.7")	400 mm (15.7")	250 mm (9.84")	400 mm (15.7")	550 mm (21.65")
Part length including clamping device, max.	550 mm (21.65")	300 mm (11.81")	300 mm (11.81")	300/700/1300 mm (11.8"/27.5"/51.2")	700/1300 mm (27.5"/51.2")
Grinding length/diameter, internal, max.	200/300 mm (7.85"/11.8")	175/360 mm (6.9"/14.17")	160/250* mm (6.3"/9.84")*	250/400* mm (9.84"/15.7")*	390/550* mm (15.35"/21.65")*
Grinding length/diameter, external, max.	550/420 mm (21.65"/16.5")	100/360 mm (3.93"/14.17")	125/250 mm (4.9"/9.84")	150/400 mm (5.9"/15.7")	150/400 mm (5.9"/21.65")
Spindles on turret up to max.	2	2	4	4	4

\* Possible in the front of the workpiece table





## PRODUCTION INTERNAL CYLINDRICAL GRINDING MACHINES

The internal cylindrical grinding production machines enable the highly productive manufacture of medium-sized workpieces. Depending on the application, up to three grinding spindles can be used, arranged in parallel, which enables external and internal grinding in a single clamping.

### S110

The S110 can be equipped with up to three grinding spindles in a linear arrangement, and finds a place on any shopfloor thanks to its small footprint.

### S122

The S122 can machine workpieces for low- and high-volume production. The StuderGuide® guide system and also the arbor deflection compensation allow the highest precision to be achieved.

	<b>S110</b>	<b>S122</b>
Swing diameter	205 mm (8")	220 mm (8.6")
Part length including clamping device, max.	450 mm (15.9")	240 mm (9.4")
Grinding length/diameter, internal, max.	100/100 mm (3.94"/3.94")	110/60 mm (4.3"/2.36")
Grinding length/diameter, external, max.	50/120 mm (1.97"/4.72")	40/70 mm (1.57"/2.75")
Spindles linear up to max.	3	3

## RADIUS INTERNAL CYLINDRICAL GRINDING MACHINES

The internal cylindrical radius grinding machines are the experts for high precision internal cylindrical grinding of radii, spheres, balls, cones, and diameters. Their main fields of application are the manufacture of dies made from carbide and ceramics, and the production of hydraulic components. They are also used to manufacture complex workpieces made from industrial ceramics, sapphire, and carbide for other areas of application.

### S121 RADIUS

The S121 is especially suited for grinding complex workpieces made from very hard materials, and for general grinding tasks. It features high precision axis drives with linear motors.

### S131 RADIUS

The S131 is used for the manufacture of dies, among other things. The fully automatic B axis with direct drive and the wheelhead with up to four spindle positions provide optimum flexibility.

### S141 RADIUS

With its large swing diameter, the S141 internal cylindrical radius grinding machine completes our high precision, complex range for internal cylindrical grinding of radii, spheres, balls, cones, and diameters.

	<b>S121 Radius</b>	<b>S131 Radius</b>	<b>S141 Radius</b>
Swing diameter	300 mm (11.81")	300 mm (11.81")	400 mm (15.7")
B5 axis swiveling range	-20° to +91°	-60° to +91°	-60° to +91°
Grinding length/diameter, internal, max.	165/250 mm (6.5"/9.84")	165/300 mm (6.5"/11.81")	205/400 mm (8"/15.7")
Grinding length/diameter, external, max.	120/150 mm (4.72"/5.9")	120/160 mm (4.72"/6.3")	120/160 mm (4.72"/6.3")
Spindles on turret up to max.	2	4	4

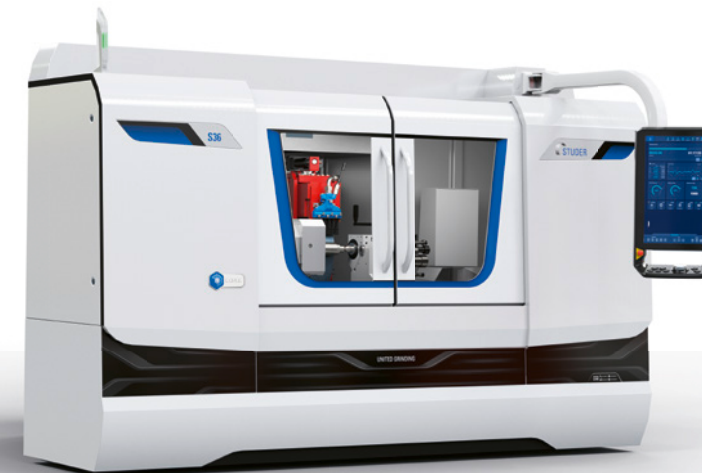
## OUR PRODUCT CONCEPT MEETS EVERY POSSIBLE REQUIREMENT

We offer everything to enable grinding with the highest precision in any area of application – from A to Z. In other words, any machine desired for any conceivable task. Either as a modular standard product, or as a customized version as requested by the customer. Qualified technical personnel are on hand to help, both during and after purchase. And

if your requirements grow, your machines grow with them: because our modular production concept ensures that even older machines can be retrofitted, converted, and upgraded. A concept that not only sets standards and makes history, but also protects your investment.

PRECISION  
 CUSTOMER CARE  
**The Art of Grinding.**  
 SOFTWARE EXPERTISE  
**EFFICIENCY**  
 APPLICATIONS  
**QUALITY**  
**SWISS**  
**PRODUCTION**  
 SYSTEM SOLUTIONS  
 FOUNDED IN 1912  
**SOPHISTICATED PROCESSES**  
 STANDARD SOLUTIONS  
**GLOBAL**  
 PROXIMITY TO THE CUSTOMER  
**BLUEPLUS**  
 GRINDING TESTS  
**TRAINING**  
**95% MADE FOR EXPORT**  
**PASSION**

## OVERVIEW OF OUR SERVICES



### AUTOMATION

Faster, more accurate, and more cost-efficient machining is only one of the advantages of automating grinding processes. We develop standard loading systems such as *easyLoad*, *ecoLoad*, *smartLoad*, *roboLoad*, *uniLoad*, and *insertLoad*.

### SOFTWARE

Produce more economically thanks to STUDER software. Our software reduces your production costs through shorter set-up, programming, and grinding times and ensures maximum machine availability.

### APPLICATIONS

We conduct more than 400 customer-specific grinding tests each year to establish all kinds of grinding applications that make our customers even more successful.

### DOCUMENTATION

Precise and systematic documentation is important to us. That is why we maintain more than 3000 documents in 21 languages, including programming instructions, user manuals, technical documentation, etc.

### SWISS PRODUCTION

Core expertise in cylindrical grinding, fine milling, surface grinding, and fine machining. All production on one assembly line with the unique assembly line+.

### DIGITIZATION

With the C.O.R.E. OS, you are ready for the digital future. This uniform software architecture enables the smooth exchange of data between UNITED GRINDING machines, and with the built-in umati interface that is possible with third-party systems as well.

### CUSTOMER CARE

Support throughout the entire service life of the machine. Helplines and over 130 service engineers are available for you around the world.

### BLUEPLUS

Development and application of technologies and processes to save energy and costs. Energy-efficient manufacturing and production concepts.

### RESEARCH AND DEVELOPMENT

A multitude of qualified technical personnel work every day on research and development in existing and upcoming technologies. That is also how STUDER developed the proven mineral-cast Granitan® machine base.

### QUALITY

Extensive knowledge of technology and processes acquired over many decades. Certification to ISO 9001, ISO 14001, and VDA 6.4.





# GRINDING REQUIRES SMART AUTOMATION

STUDER is among the technology leaders in this field. Automation not only enables faster, and more cost-efficient and precise grinding processes, it also protects the health of the operators and makes the workplace safer and more comfortable. Automation reduces the workload on employees in small grinding shops, and enables faster machining of high volumes in mass production.

When developing automation solutions, STUDER attaches great importance to promoting the expertise of the operator and ensuring that the solutions satisfy the particular requirements of grinding. With a variety of automation solutions such as *easyLoad*, *ecoLoad*, *smartLoad*, *uniLoad*, *roboLoad*, and *insertLoad*, STUDER provides ideal solutions for a multitude of applications.

“Faster, and more cost-efficient and precise processing through automation.”

AUTOMATION — FAST, ACCURATE, COST-EFFICIENT





# C.O.R.E. – CUSTOMER ORIENTED REVOLUTION

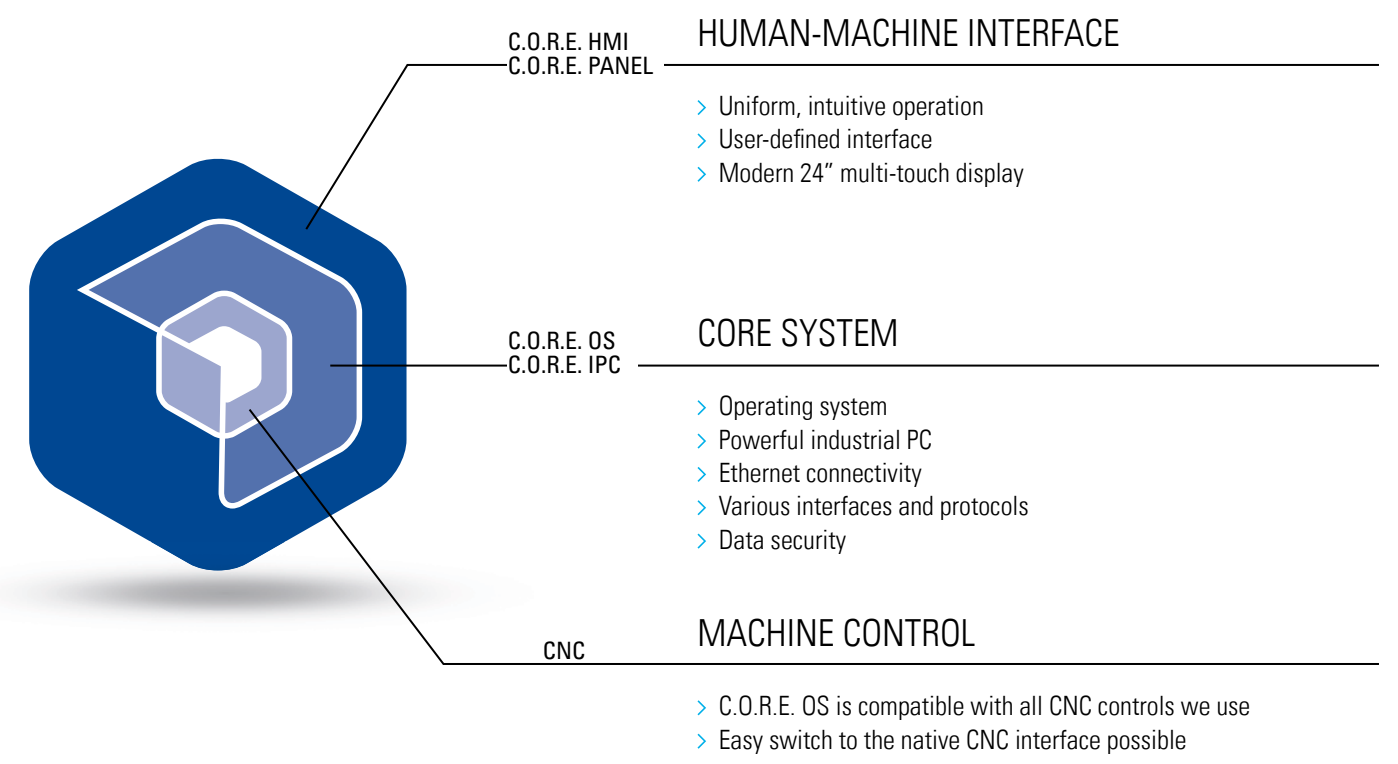
## C.O.R.E. makes your production ready for the digital future

The basis for this is the new operating system, C.O.R.E. OS – the intelligence with which this machine is equipped. The uniform C.O.R.E. software architecture means that UNITED GRINDING machines can easily exchange data with each other. This is also possible with third-party systems via the built-in umati interface. It also provides access to UNITED GRINDING Digital Solutions™ products directly on the machine. C.O.R.E., however, not only creates the technical basis for these and other IoT and data applications, but also for revolutionary and uniform operation.



- What does this mean for you?
- User-friendly, intuitive, and uniform operation makes work easier for setters, machine operators, and maintenance staff
  - Standardized data acquisition and intelligent processing of data ensure transparency and support process optimization
  - The uncomplicated and consistent use of modern digital software solutions is guaranteed – directly on the machine
  - The technical foundation for the use of modern IoT and data applications has been laid

DIGITIZATION – SUCCESSFUL INTO THE FUTURE







SOFTWARE — SIMPLE,  
RELIABLE, PRODUCTIVE

## STUDER SOFTWARE

Are you looking for simple and intelligent software that is intuitive to use? STUDER has it. Thanks to our software, the machine can be set up quickly and operated easily.

You simply enter the workpiece dimensions and the material, and the StuderTechnology Integrated technology calculator generates the grinding cycle automatically. It uses data from more than 110 years of grinding experience and more than 300 machine parameters. You can expand and customize the software by adding data from your own experience. Programming and operation are made easy by the Studer-Pictogramming visual language.

STUDER developed this visual language for programming, named "Pictogramming." The wide range of operator-supported setup sequences, grinding cycles, and process-supporting functions it offers is unprecedented. Even complex grinding processes are easy to program and apply. It has the special benefit that it allows you to master STUDER software in no time.

STUDER software helps you to reduce production costs. Our versatile and simple software concept supports you in this. What this means for you: efficient setup, programming, and grinding times, and also optimum machine availability.

STUDER machines can always be upgraded with the latest functions to remain state of the art and retain their value. They can also be upgraded with many expansion modules to optimize your specific grinding process directly in the control.



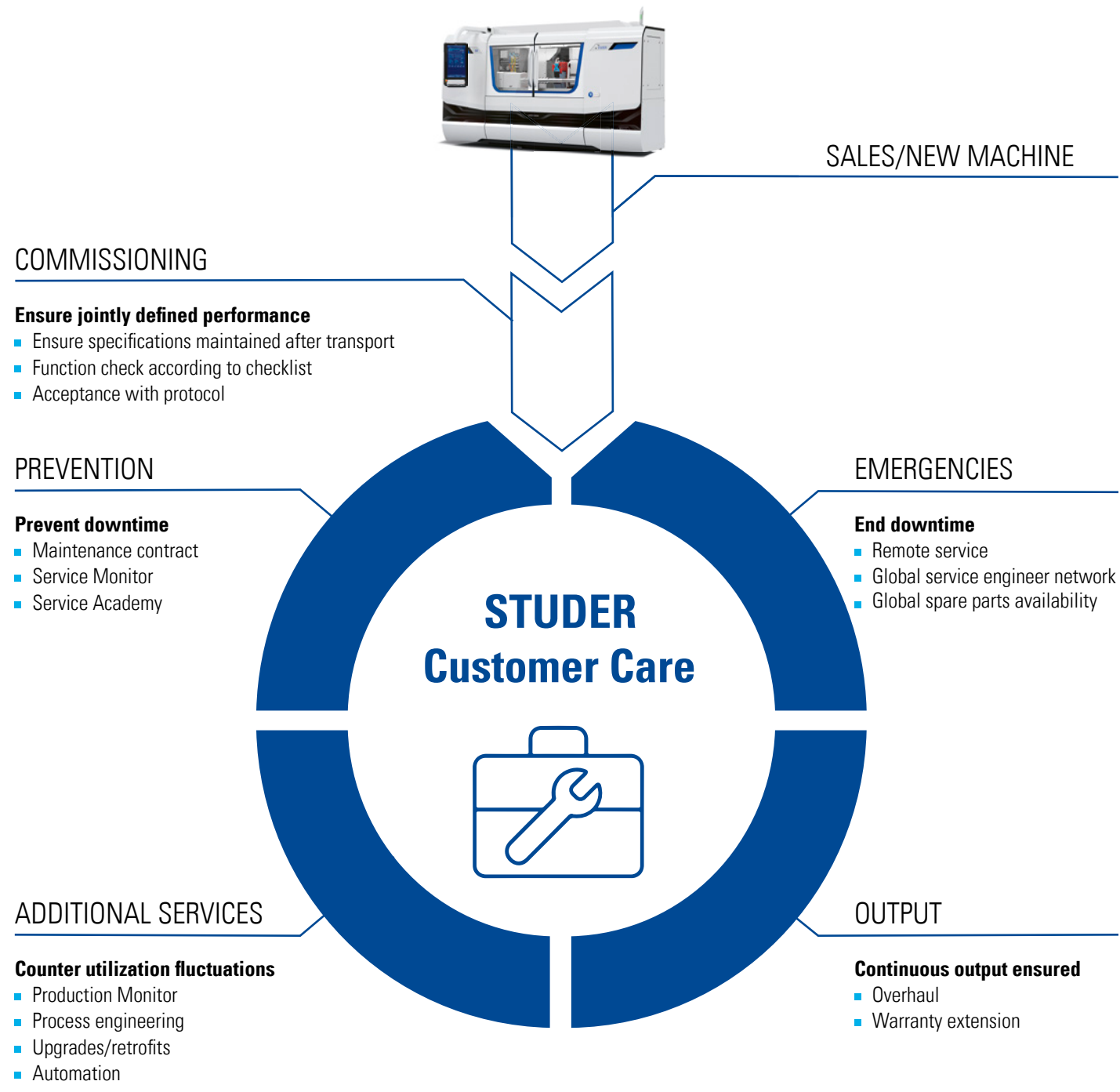




**CUSTOMER CARE – WE ARE THERE FOR YOU**

## OUR CUSTOMER CARE PORTFOLIO

With a STUDER machine, you have a product of the highest quality. In order to ensure that your STUDER machine operates flawlessly for a long time and delivers highly accurate grinding results, we have developed our Customer Care concept. Following the commissioning of the machine, a wide range of products and services are available to fulfill any and all of your needs.

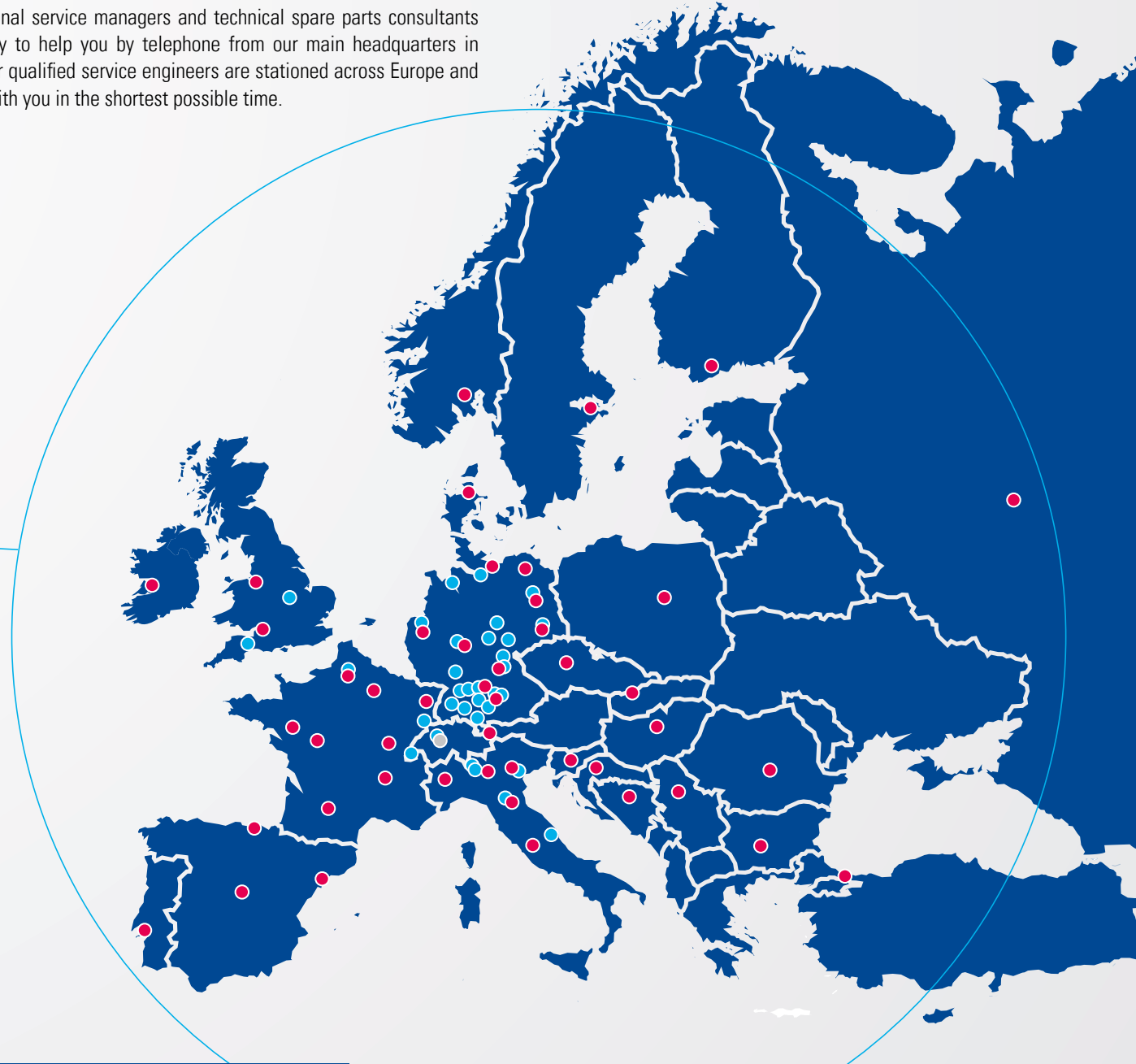
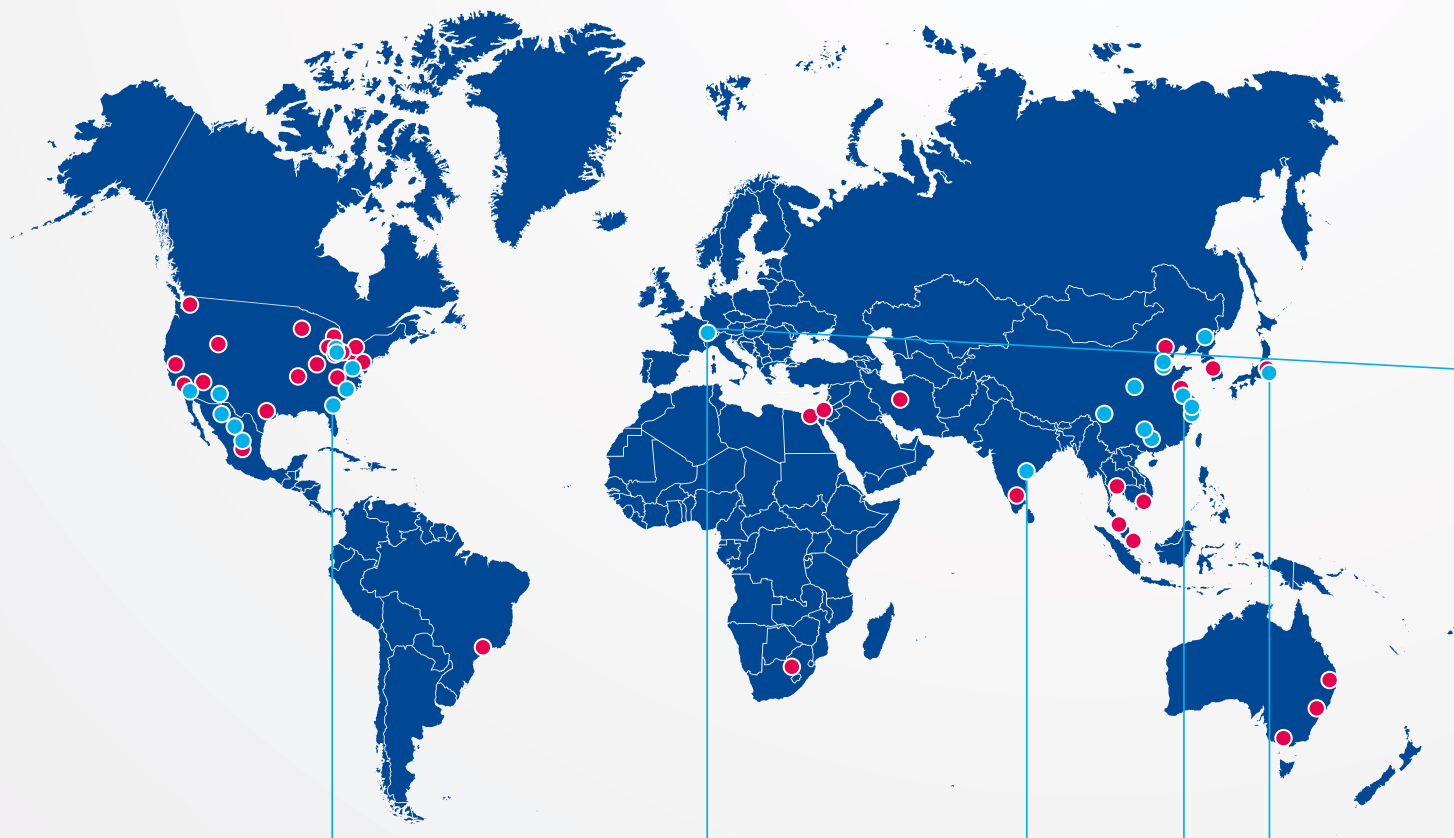




# CUSTOMER CARE – NEAR YOU, WHEREVER YOU ARE

STUDER is a market and technology leader in universal, external, internal and contour grinding. To make sure things stay this way, you have access to over **200 contact partners who are conversant in 10 languages.**

Our regional service managers and technical spare parts consultants are happy to help you by telephone from our main headquarters in Thun. Our qualified service engineers are stationed across Europe and can be with you in the shortest possible time.



UNITED GRINDING  
North America, Inc.

Fritz Studer AG

UNITED GRINDING GmbH  
India

UNITED GRINDING  
Shanghai Ltd.

StuderTec K.K.

**Consulting**

● Multiple customer care consultants

**Service**

● > 20 regional service managers around the world

● > 130 service engineers

**Spare Parts Service**

● > 20 technical spare parts consultants

**Branch Offices**

● > 120 branch offices around the world





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**ISO 9001**  
**VDA6.4**  
certified

