

# REISHAUER

Gear Grinding Technology

## Reishauer RZ 160 4.0



MACHINE

AUTOMATION

TOOLING

TECHNOLOGY

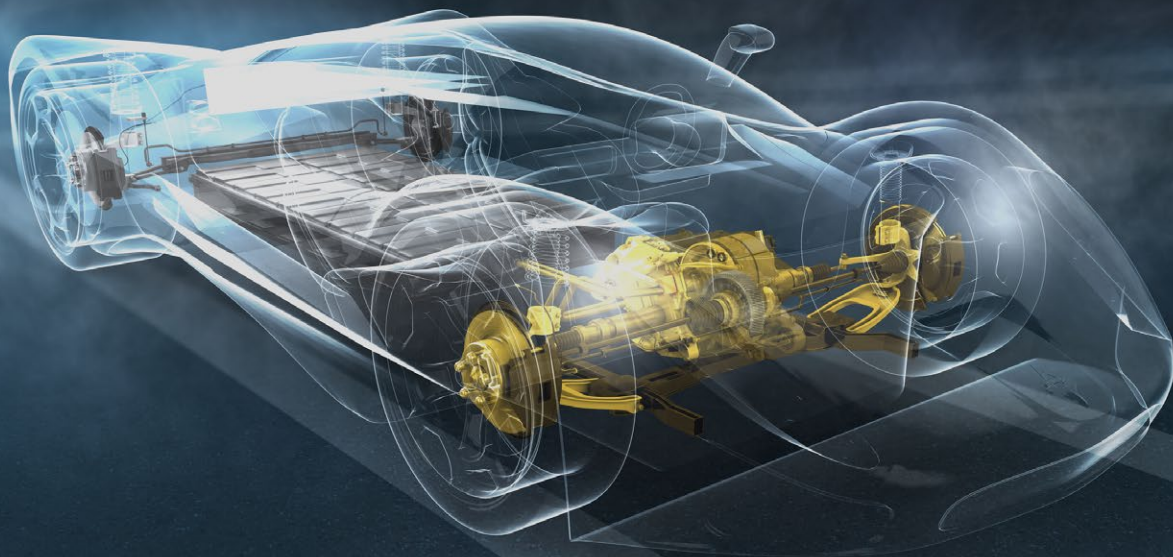
DIGITAL

SERVICES

## Generating Gear Grinding Machines



# Swiss Precision. Made by Reishauer.



Established Reishauer quality, smart technology, simplified operation – the new RZ x60 4.0 generation gear grinding machines.

For more than 70 years, Reishauer generating gear grinding machines have enjoyed an outstanding worldwide reputation. They are known for the highest precision as well as for the most reliable and efficient production processes.

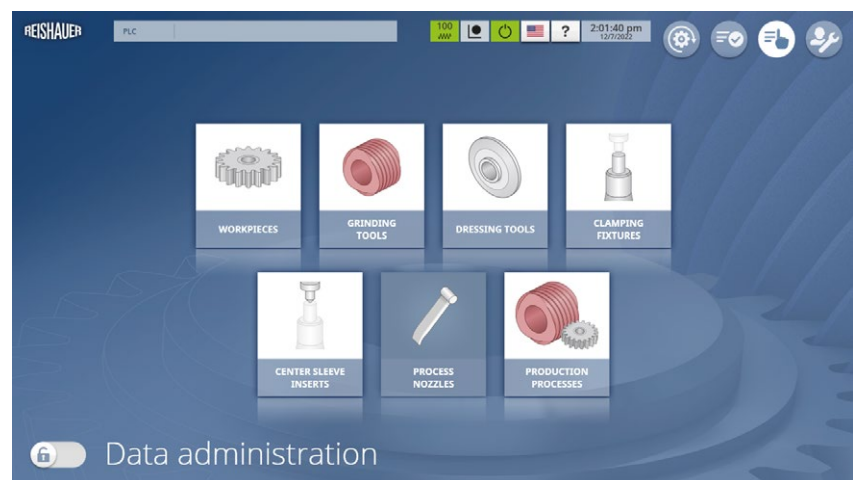
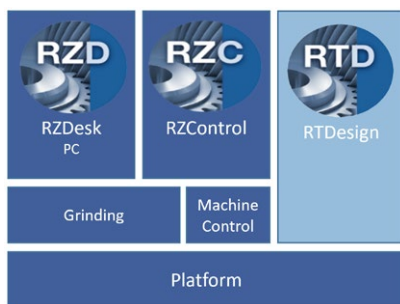
Building on the 1000-fold proven and highly successful RZ x60 series, we have put our machine concepts to the test, completely revised them and adapted them to the requirements of Industry 4.0 applications.

The result, the RZ x60 4.0 series, combines the proven machine base with the highly efficient double spindle technology and the latest control technology, modern interfaces and is ready for future Industry 4.0 requirements.

With the Reishauer machine generation RZ x60 4.0, you are ready for the future!

# New Control Generation: Reishauer RSP

The heart of the new RZ x60 4.0 generation grinding machines is the new control and software platform Reishauer RSP. It consists of the control software RZControl and the offline programming software RZDesk, which allow programming directly on the machine and a desktop computer.



The core, the newly developed Reishauer Software Platform RSP, simplifies operation and process design considerably, reduces potential errors, and increases efficiency with modern database technologies encompassing tooling, workpieces, and processes.

## RSP Highlights:

- Optimized user support: graphical support during setup, process validation, online help
- Active error prevention through process validation
- Integrated data management area: machine equipment and workpieces
- Optimized operator ergonomics: modern touch panel, continuously height adjustable, with 270° swivel
- Clear diagnostic area
- Optimized mathematics enable new expansions of existing Reishauer technologies



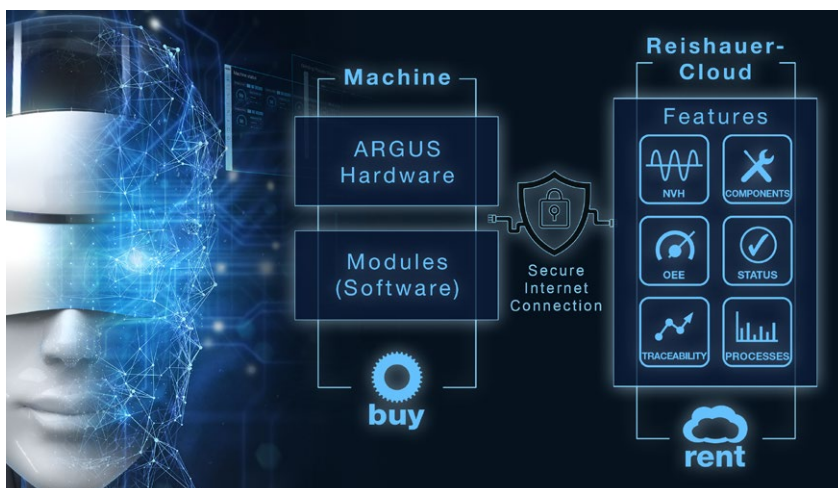
# ARGUS Monitoring System

ARGUS is an innovative system for monitoring, analyzing and optimizing the grinding process on Reishauer Generation 4.0 machines. ARGUS evaluates data taken from both the dressing and the grinding processes using various measuring techniques, including highly sensitive vibration sensors, in order to identify workpieces that deviate.

## Continuous evaluation instead of occasional spot checks

ARGUS enables the quality of all machined parts to be checked during the grinding process itself, instead of evaluating it afterwards by using a few spot checks or random samples. In addition to measuring whether the part does not attain or exceeds certain limits, ARGUS also checks on NVH-related behaviour

(Noise, Vibration, Harshness), and detects potentially noise-critical gears before gearbox assembly is carried out. Furthermore, ARGUS can analyse the entire grinding process, as well as the condition of machine components.



The ARGUS monitoring system consists of hardware components, machine-side software (modules) as well as digital products (features), available to users connected to the Reishauer Cloud. The functionalities of the modules focus on analysing and evaluating all machining processes taking place on the grinding machine. Here, the aim is to enhance process stability and productivity through

consistent dressing and grinding quality. The features available on the Cloud, however, produce a precise picture of all grinding machines connected to it, including their complete history, in real time. Especially the innovative NVH-related feature brings the production of gears and transmissions closer together.

## ARGUS...

- is the monitoring system that helps prevent costly disassembly and unplanned downtime
- is able to detect faulty dressing during the process itself
- is essential to optimize the workpiece-specific grinding process
- enables data-driven workpiece evaluation by using complex algorithms to eject faulty gears at an early stage
- is self-diagnostic, thus simplifying the coordination of service and maintenance planning
- is a database-supported tool that maps OEE as well as tracing other key data
- can be retrofitted on existing RZ x60 machines to a certain extent!

# Technical Data



	RZ 126 4.0	<b>RZ 160 4.0</b>	RZ 260 4.0
Gear outside diameter	max. 130 mm	max. 162 mm	max. 262 mm
Modules	0.5 – 4 mm	0.5 – 4 mm	0.5 – 5 mm
Swivel angle (grinding head)	$\pm 48^\circ$	$\pm 48^\circ$	$\pm 48^\circ$
Grinding stroke	max. 180 mm	max. 180 mm	max. 180 mm
Shaft length	max. 490 mm	max. 490 mm	max. 490 mm
Workspindle speed	3 000 min <sup>-1</sup>	3 000 min <sup>-1</sup>	1600 min <sup>-1</sup>
Workpiece weight (incl. fixture)	max. 30 kg	max. 30 kg	max. 50 kg
Grinding speed	max. 100 m/s	max. 100 m/s	max. 100 m/s
Grinding wheel outside diameter	max. 275 mm	max. 275 mm	max. 275 mm
Face width of grinding wheel	125 / 160 mm	125 / 160 mm	125 / 160 mm
Diameter of dressing tools	123 / 140 mm	123 / 140 mm	123 / 140 mm
Weight	9 600 kg	9 600 kg	9 600 kg

All technical specifications are subject to change



# Facts and Figures



## Standard Equipment

Two workpiece spindles
Dressing device
Direct-driven tool and workpiece spindles
Linear encoder measuring systems on all linear axes
NC-controlled oil nozzle adjustment
Reishauer LowNoise Shifting
Meshing device
Fully automatic balancing device
Acoustic contact and breakage monitoring
Emergency retraction to protect machine and tooling
Central lubrication of all linear axes
Lifetime lubrication of all rotary axes
IO-link sensorics
Remote maintenance

## Options (extract)

ARGUS Monitoring System
Tailstocks
Tip dressing diamond for the grinding wheel diameter
Integrated oil spinning
Reishauer ECO mode
Interface for automation systems
CO <sub>2</sub> -fire extinguishing system
On-board measuring
RZDesk offline programming station
Gear data exchange (GDE) software module
GDE-based Closed Loop

## Control

Siemens SINUMERIK ONE
Reishauer PrecisionDrive
Reishauer RZControl

# The Reishauer Circle of Competence

The Reishauer Circle of Competence describes the entirety of our offering. Reishauer offers products and services around the grinding process completely from one source and thus guarantees a long service life of the machine system at low life cycle costs.

## Machine

A broad portfolio, future-oriented controls, and interface concepts, and state-of-the-art grinding technologies – for decades, our machines have guaranteed the highest possible output with maximum precision, consistent quality, and unmatched machine availability.

## Automation

Automation "Made by Reishauer". Our automation solutions are perfectly matched to our machines and keep pace with their high output. Modular in design, they can be flexibly tailored to your production needs.

## Tooling

Perfectly matched, consistent in quality, and with guaranteed availability: Together with the machine, Reishauer tooling forms the backbone for your successful grinding processes.

## Technology

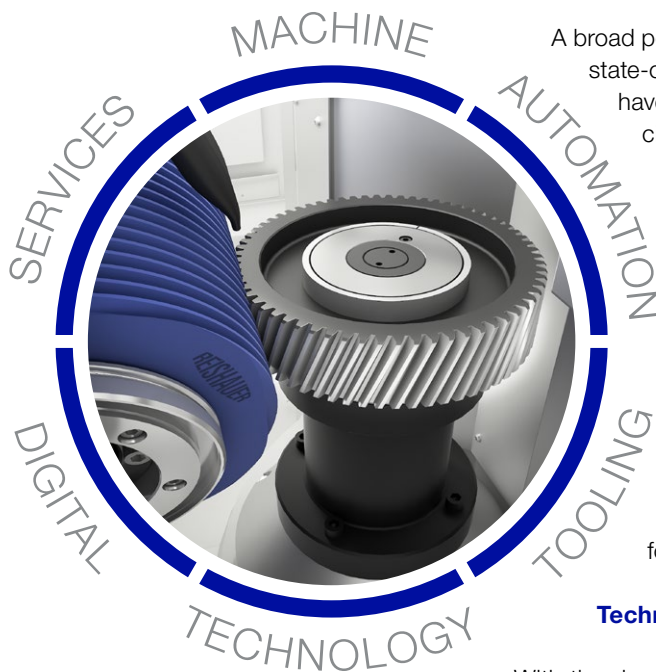
With the development of powerful e-drives, the requirements for quality, surface finishes, and efficient gear geometries have increased significantly. Reishauer grinding technologies enable you to meet your customers' most demanding requirements and help you remain competitive. Our technology experts are at your side with advice and support.

## Digital

System integration, in-depth process analyses, predictive maintenance – the requirements for Industry 4.0 solutions are extremely complex and diverse. Reishauer offers you a constantly growing portfolio of digital services to maximize the potential of your machine.

## Services

The reliability of our machines, and thus machine availability, is of central importance for your competitiveness. Shortest reaction time, a worldwide extended network of service engineers, and decentralized spare parts stores guarantee you maximum availability.



# Reishauer worldwide

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