#ReadyForTheFuture

RETROFITTING OPTIONS

This is who we are

GROB-WERKE

Technology at its best

STEP INTO A GREEN FUTURE WITH US

At GROB, we strive for continuous progress and improvement. Not only do we strive to develop outstanding solutions and products for our customers, but we also seek to make a contribution to our environment and future generations. This is firmly anchored in our corporate philosophy and lived every day.

We therefore utilize photovoltaics and geothermal energy in our locations and support a wide variety of social projects. But we also place great emphasis on SUSTAINABILITY in our internal departments. Our products are based on the highest energy efficiency and regenerative drive systems. We integrate our supplier network in reducing the carbon footprint.

OUR PRODUCT RANGE

#MachiningTechnology #UniversalMachiningCenters #AssemblyPlants #Electromobility #Automation #AdditiveManufacturing #Digitalization #NewAndQualityCheckedUsedMachines #Service

Concentrated competence worldwide

INTELLIGENT TECHNOLOGY IS HUMAN

For generations, we at GROB have lived and experienced this principle by making customer requirements the focus of our work. The result is sophisticated technology creating more efficient production processes worldwide and delivering highest quality.

RESEARCH & DEVELOPMENT

With a high degree of creativity and technical intuition, as well as the best engineering expertise, our developers have worked hard to earn the reputation of being a technology leader.

ASSEMBLY

From pre-assembly to machine assembly to process commissioning – our employees demonstrate their expertise with optimally coordinated workflows.

ENGINEERING

With method development and structured problem solving, our employees in Engineering develop innovative concepts representing milestones for precision, dynamics, and reliability.

COMMISSIONING

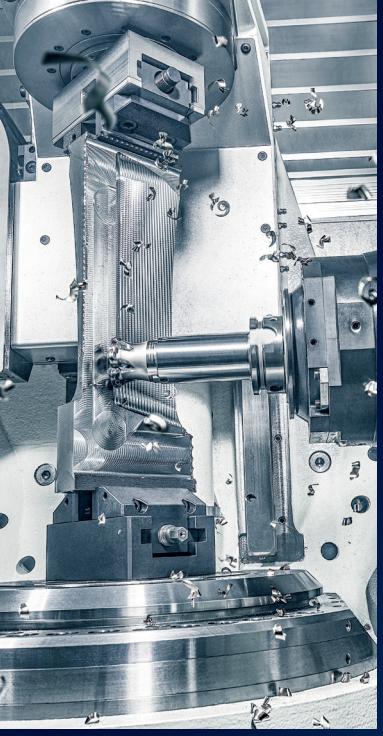
With simulation techniques and virtual commissioning, we achieve the highest adherence to delivery dates and product quality.

PRODUCTION

The high degree of vertical integration along the entire value creation chain, numerous machining technologies and our employees' distinctive specialist knowledge create the best conditions for state-of-the-art production.

TECHNICAL APPLICATION CENTERS

Our production plants in Germany, Brazil, the USA, China, Italy and India have technical application centers for the machining and electromobility sectors, where our customers can experience GROB technologies up close.

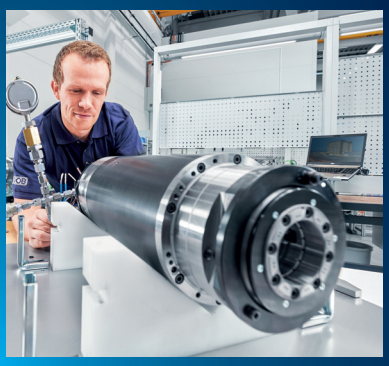



TAZ
TECHNOLOGIE- UND
ANWENDUNGSZENTRUM

GROB
G550



GROB G550 access



GMZ
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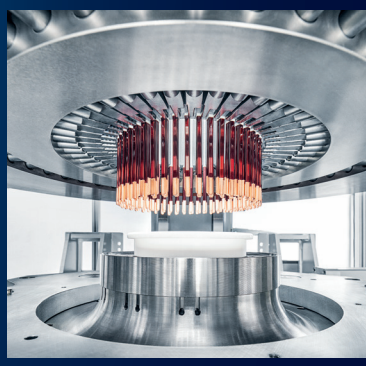
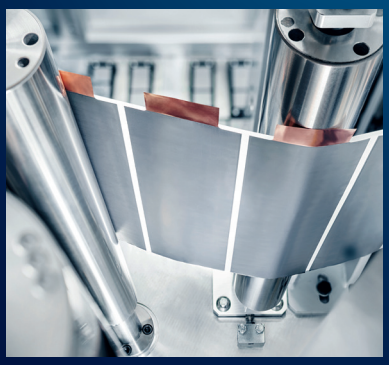
GROB

GROB
G4P2050


Location
Operating ...
GROB-Line



Make your machine state-of-the-art

RETROFITTING OPTIONS

UNIVERSAL MACHINING CENTER OPTIONS

Remote machine diagnostics

Tool coding system (RFID)

Laser measurement for turning and milling tools

Optimizing machine kinematics

Touch probe

Marposs collision monitoring (CMS)

Collision monitoring (DCM)

Integration of external NC program memory (EES)

Automatic cutting fluid circulation

Automatic machine start and warm-up

Communication protocols for Industry 4.0 and IIoT (OPC UA)

Oil skimmer

Additional flushing for volume cutting

Close-to-spindle tool sorting

SYSTEM MACHINE OPTIONS

Camera retrofit

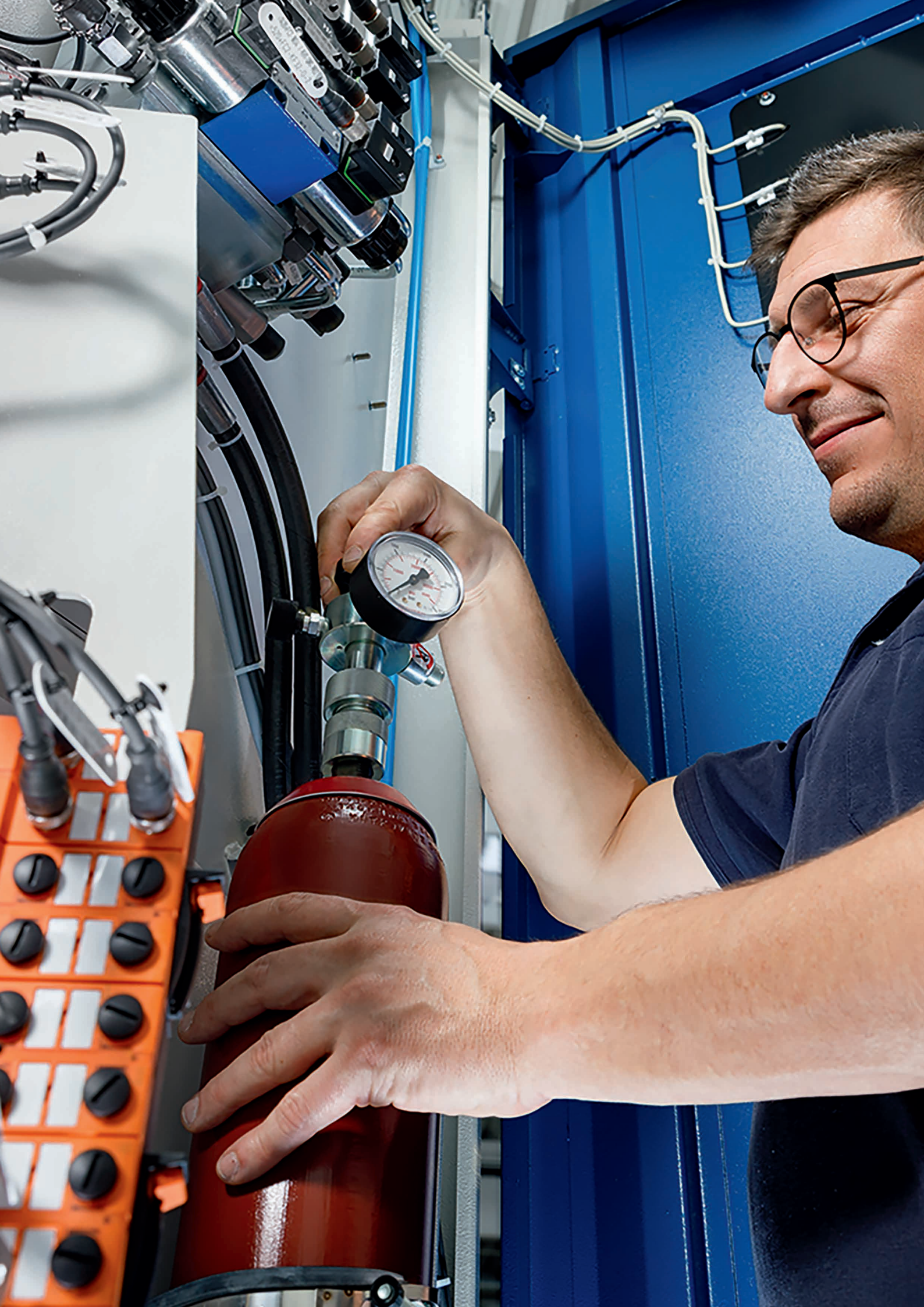
PRODUCTIVITY

HEALTH

SUSTAINABILITY

ECONOMIC VIABILITY

QUALITY



Universal machining centers / system machines

COMPLEMENTARY ACCESSORIES

Our extensive range of accessories increases the flexibility of our 5-axis universal machining centers while at the same time boosting productivity and cost efficiency.

- Prevent machine shutdowns
- Preclude inaccuracies in your production
- Better quality, economy, sustainability, and health

OUR SERVICE PORTFOLIO

#24/7Support #MaterialSupply #MachineInspection

UM option 4203344

REMOTE MACHINE DIAGNOSTICS

Features

- Hardware:
  - VPN LAN router installed in the electrical cabinet
  - Option: Key-operated switch for activation/deactivation of remote machine diagnostics
- All movement on the control system can be tracked by the GROB Service hotline employee

Your benefits

- Quality
  - Extensive options for intervention in almost all control areas as well as for analysis
  - Options for installing software updates, programs, etc.
- Economic efficiency
  - Increased productivity thanks to rapid troubleshooting
  - Less time-consuming technician services

Requirements

(must be checked individually)

- Control system: SIEMENS, HEIDENHAIN
- Customer: Network capability must be ensured,
  Remote Support Service agreement for use of remote machine diagnostics

UP TO 80 % FEWER TECHNICIAN SERVICES

Machine failure is never planned. This makes quick and uncomplicated assistance in an emergency all the more important. With remote machine diagnostics, our highly qualified GROB Service hotline staff can begin fault analysis and troubleshooting immediately.

UM option 4203321

TOOL CODING SYSTEM (RFID)

Features

- Hardware:
  - BIS-V evaluation unit
  - BIS-C or BIS-M read/write head
- Can be deselected in the HMI
- Installation and cycle adjustment by GROB

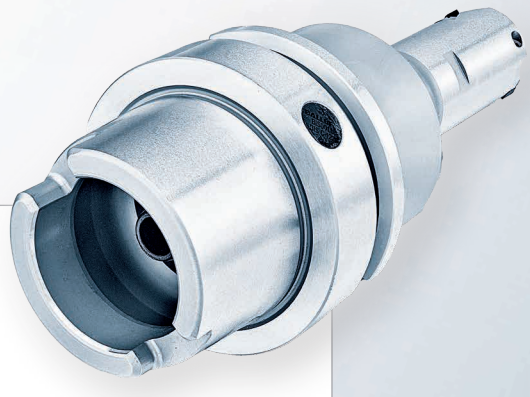
Your benefits

- Economic efficiency
  - Efficiency increase via automated tool management
  - Simple data evaluation for process statistics and service life optimization
  - Setup time reduction
  - Manual tool data entry no longer required

Requirements

(must be checked individually)

- Control system: SIEMENS, HEIDENHAIN
- Suitable tool holders



PRODUCTION INSTEAD OF ENTERING TOOL DATA

An increasing number of tools and their data requires a sophisticated tool management system. BALUFF's encoding system can be retrofitted to facilitate management. The current data (name, dimension, wear, service life, etc.) are stored directly on the tool by means of a chip and are automatically read and processed when the machine is equipped.

UM option 4203326

LASER MEASUREMENT FOR TURNING AND MILLING TOOLS

CHECK YOUR TOOLS DIRECTLY WHERE USED

The BLUM laser measurement system installed on the rotary table monitors each tool used by means of high-precision optical and automated tool geometry measurement under operating conditions. Incorrectly equipped or inaccurately set tools and tool damage/wear are detected promptly, preventing damage to the part or subsequent tool.

Features

- Hardware: BLUM LC50-DIGILOG/LC52-DIGILOG
  - 50: Installed combined laser measurement system enables tool monitoring and measurement
  - 52: Laser measurement system enables contactless optical tool monitoring and measurement, even for turning tools
  - Is individually checked, particularly for older machines
- Tool length, radius and form measurement
- Check for wear and changes to geometry
- Check for concentricity and dirt in the tool holder

Your benefits

- Quality
  - Highest production quality with tool wear detection
  - Measured values can be transferred to other machines
  - High-end laser optics with a focused laser beam for exceptionally rapid and precise monitoring
- Economic efficiency
  - Automated tool measurement and monitoring
  - Prevention of subsequent damage due to undetected tool breakage

Requirements

(must be checked individually)

- Control system: SIEMENS, HEIDENHAIN
- Suitable clamping

UM option 4203329

OPTIMIZATION OF MACHINE KINEMATICS BY MEANS OF GSC CLASSIC

OPTIMUM QUALITY WITH GROB SWIVEL AXIS CALIBRATION (GSC)

Every machine tool has slight systemic geometric deviations in the rotary axes.
These individual, minimal deviations add up to a volumetric geometric deviation within the work area.
With GROB swivel axis calibration, these geometric deviations are compensated for by the machine control system.

Features

- Simple software upgrade
- Determination of current kinematics via the 3D touch probe and a high-precision gauge ball
- Optimization of swivel accuracy based on the measurement results

Your benefits

- Quality
  - Compensation for machine and temperature-dependent geometric deviations
  - Ensures consistent production accuracy even with changing ambient conditions
- Productivity
  - Simple machine geometry measurement
  - Rapid improvement of current machine accuracy for the entire work area

Requirements

(must be checked individually)

- Hardware
  - From GROB Generation 1 series onward
  - Geometry and laser required in advance (additional repair if necessary)
  - If required: Measurement and correction from GROB Generation 2 and higher
- Control system: SIEMENS, HEIDENHAIN
- Components: Compatible touch probe, Kinematics measuring case

UM option 4203329

OPTIMIZATION OF MACHINE KINEMATICS BY MEANS OF GSC ADVANCED

OPTIMUM QUALITY WITH GROB SWIVEL AXIS CALIBRATION (GSC)

Every machine tool has slight systemic geometric deviations in the rotary axes.
These individual, minimal deviations add up to a volumetric geometric deviation within the work area.
With GROB swivel axis calibration, these geometric deviations are compensated for by the machine control system.

Features

- Simple software upgrade
- Determination of current kinematics via the 3D touch probe and a high-precision gauge ball
- Optimization of swivel accuracy based on the measurement results
- Expansion of GSC Classic to make machine calibration even more intuitive and take it to the next level
- The machine fully-automatically detects the need for a calibration and uses the non-removable calibration sphere for it (without operator interaction e.g., for pallet change)

Your benefits

- Quality
  - Compensation for machine and temperature-dependent geometric deviations
  - Ensures consistent production accuracy even with changing ambient conditions
- Productivity
  - Simple machine geometry measurement
  - Rapid improvement of current machine accuracy for the entire work area

Requirements

(must be checked individually)

- Hardware
  - From GROB Generation 1 series onward
  - Geometry and laser required in advance (additional repair if necessary)
  - If required: Measurement and correction from GROB Generation 2 and higher
- Control system: SIEMENS, HEIDENHAIN
- Components: Compatible touch probe, Kinematics measuring case

UM option 4203343

TOUCH PROBE

SETUP AND MONITORING: FAST AND RELIABLE

The touch probe with HSK holder enables simple part setup and measurement during the machining process. Thanks to the secure Frequency Hopping Spread Spectrum transmission protocol, even difficult work environments are no problem.

Features

- Hardware:
  - Battery-operated touch probe with tool holder
  - Receiver
  - Various touch probe versions available
  - Must be checked individually
- Easy loading from the tool magazine
- In addition to RMP600: RMP400 now also possible (example RENISHAW touch probe)*
- Required for the machine kinematics (GSC) option

*Only RMP400 possible for G150 (for use of GSC Light/Advanced).

Your benefits

- Quality
  - High-precision via repeat accuracy of +/-1 µm
  - Increase to part accuracy
  - RMP400: High accuracy possible with technical enhancement
- Productivity
  - Collision prevention via part measurement before machining
  - Reduction of non-machining times for alignment and measurement of parts and clamping fixtures

Requirements

(must be checked individually)

- Control system: SIEMENS, HEIDENHAIN

UM option 4203275

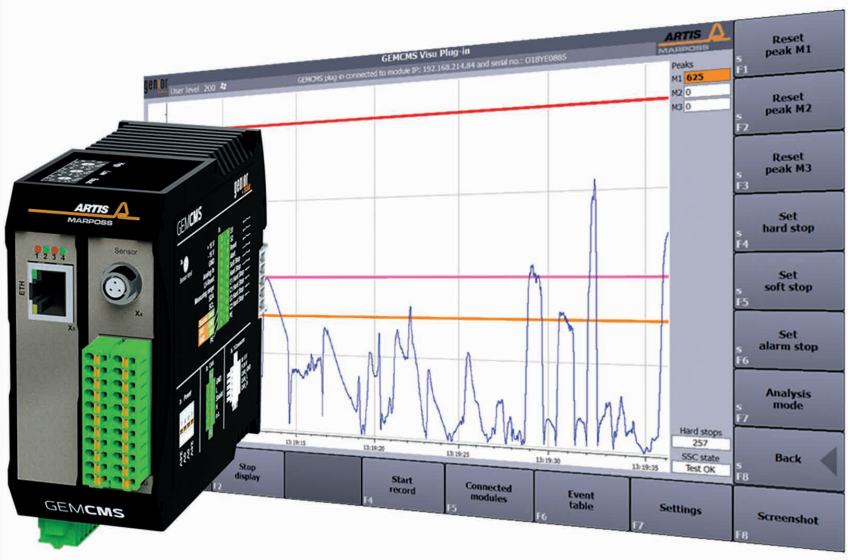
MARPOSS COLLISION MONITORING (CMS)

PREVENT TOTAL LOSS WITH A REACTION TIME OF < 1 MS

In the event of a collision, the CMS machine protection system stops all axis movements of the machining center within milliseconds to minimize damage to the machine, tools, and clamping fixtures.

Features

- Additional force sensors at the monitored axes
- Evaluation unit in the electrical cabinet
- Additional monitor with HEIDENHAIN/FANUC control systems
- Targeted shutdown of axis drives when limit values are exceeded
- Freely definable limit values
- Control system independence



Your benefits

- Economic efficiency
  - Prevention of downtimes due to machine, tool or clamping fixture damage
  - Prevention or reduction of repair costs for collisions
  - Save 25 % of the insurance premium in connection with machine insurance from HELVETIA
- Health: Increased operator safety for possible collisions when testing new part programs

UM option 4203274

COLLISION MONITORING (DCM)

COLLISION PREVENTION

Dynamic collision monitoring (DCM) monitors machine components (motorized spindle and tilting rotary table) and stops axis movements before impending collisions.

Features

- No hardware adjustment necessary
- The license can be purchased with the SIK ID of the control system and the option can be activated via remote machine diagnostics
- Interference contours must be stored in the parameters for the DCM software by the programmer
- Active when a CNC program is processed or the axes are moved manually
- Detection of impending collisions leading to immediate stop of axis movements
- Color-coded on-screen display of the collision object
- In a new control system, the part can be independently programmed as a collision object by the customer themselves

Your benefits

- Economic efficiency
  - Prevention of downtimes due to machine, tool or clamping fixture damage
  - Prevention or reduction of repair costs for collisions
- Health: Increased operator safety for possible collisions when testing new part programs

Requirements

(must be checked individually)

- Control system: HEIDENHAIN

UM option 4323284

INTEGRATION OF EXTERNAL NC PROGRAM MEMORY (EES)

SIMPLIFIED PROGRAM EXECUTION VIA EXTERNAL MEMORY

With this function, you can process part programs directly from any external data storage. In addition, you can now use other functions such as "jumps" and "loops" and carry out program correction during an NC stop.

Features

- Pure software upgrade: SIEMENS EES (Execution from External Storage)
- The following are available as external data storage:
  - Local drive (any type)
  - Global USB to TCU
  - Windows drives (both from PCU and from a server)
- Uniform syntax for subroutine calls – no EXTCALL calls required

Your benefits

- Economic efficiency
  - Processing of externally stored machining programs of any size
  - Problem-free processing of a combination of externally and locally stored programs and cycles without special syntax
  - Save time with the option to stop and correct externally stored programs
  - Program correction possible during NC stop

Requirements

(must be checked individually)

- Control system: SIEMENS
- Hardware: NCU 730.3B PN or higher

UM option 4203350

AUTOMATIC CUTTING FLUID CIRCULATION

ENVIRONMENTAL AND EMPLOYEE SAFETY THAT PAYS OFF

If the cutting fluid is not moved for a longer period of time, germs and fungi harmful to both your employees and the quality of the cutting fluid will develop. The automatic cutting fluid circulation allows the machine to be switched off with the cutting fluid still being circulated regularly. This counteracts resinification and fungus growth.

Features

- Hardware: For recirculation when the main switch has been switched off
  - Additional LOGO logic module from SIEMENS
  - Key-operated switch for activation/deactivation
- Individually selectable activation times

Your benefits

- Quality: Maintaining lubricating and cooling properties leads to consistent part quality
- Economic efficiency
  - Reduced purchase and disposal costs due to increased cutting fluid service life
  - Cumulative potential savings (after five years): €15,284.60 *
- Sustainability: Energy-saving, since the machine can be switched off without worry
- Health: Prevention of health impairment by permanent reduction of germs and fungi

Requirements

(must be checked individually)

- Control system: SIEMENS, HEIDENHAIN
- Hardware: Remote-controlled main switch (GROB standard)

* GROB Mindelheim reference machine. Savings may vary depending on machine type and usage. Calculation based on 2021 electricity prices.

UM option 5121282

AUTOMATIC MACHINE START AND WARM-UP

PROGRAMMABLE VIA HMI – TIME-CONTROLLED WARM-UP PROGRAM START

A longer period of machine standstill leads to a difference from the ideal operating temperature of the machining center (e.g., after a weekend). When the machine is switched off (main switch set to OFF) and the remote operation switch is activated, the automatic time-controlled warm-up program start is activated. The machining center is then started by the warm-up program and brought to operating temperature before actual part production in this case. The activation time of the warm-up program can be set individually by the machine operator.

Features

- Hardware: For recirculation when the main switch has been switched off:
  - Additional LOGO logic module from SIEMENS
  - Key-operated switch for activation/deactivation
- Software: Only required if cutting fluid circulation is already present (see pg. 20)

Your benefits

- Quality: Higher part quality
- Economic efficiency: Immediate production start at start of shift

Requirements

(must be checked individually)

- Control system: SIEMENS
- Hardware: NCU 730.3B PN or higher

UM option 4481088

COMMUNICATION PROTOCOLS FOR INDUSTRY 4.0 AND IIOT (OPC UA)

OPC UA is a data exchange standard for industrial communication (machine-to-machine or PC-to-machine communication). The open-source interface standard is independent from the manufacturer or system supplier of the application, from the programming language the respective software was programmed in, and from the operating system the application is running on.

Features

OPC UA license

- Provision of the OPC UA license*

OPC UA license with simple PLC data model

- Provision of the OPC UA license*
- Drafting and provision of the following data:
  1. Machine status (GROB standard: 3 signals)
  2. Program name (last selected program)
  3. Potentiometer position (in % of feed and spindle speed)
  4. Alarm classification

OPC UA adapter for GROB-NET[4]Industry

- The following data model is included: Machine data, NC channel data, current NC program data, alarms, part counter (SIEMENS only), potentiometer position (in % of feed & spindle speed), stacked light poles, spindle values, operating hours, axis positions, current tool in spindle, pallet information (SIEMENS only), status information, 24 settable customer variables
- Machines that do not yet support the OPC UA standard can also be connected

*The control systems and versions must be taken into account and checked (SIEMENS > 4.07 HE 640 iTNC)

Your benefits

- Quality/efficiency:
  - OPC UA license with simple PLC data model
    - Immediately accessible simple PLC data model
  - GROB-NET[4]Industry OPC UA adapter
    - Immediately accessible data model without additional programming
    - No control system licenses required
    - No PLC modifications required
    - Simple installation
    - Excellent scalability
    - Manufacturer-neutral

UM option 4203345

OIL SKIMMER

The oil skimmer reliably removes floating foreign oils and contaminants from the cutting fluid (KSS). This way, you can maintain high cutting fluid quality even when machining with a lot of metal dust and reduce downtimes due to clogged parts.

Features

- Up to 40 % longer cutting fluid life due to continuous cleaning
- Oil skimmer with collecting vessel and level switch
- Electrical connection including motor protection

Your benefits

- Quality: Improvement of the machining quality by maintaining cooling and lubricating properties
- Economic efficiency
  - Reduction of machine malfunctions due to blockages and deposits
  - Cost savings by extension of the cutting fluid service life
- Sustainability: Less environmental burden due to longer cutting fluid change intervals
- Health: Health protection through fewer germs in the cutting fluid

Requirements

(must be checked individually)

- Control system: SIEMENS, HEIDENHAIN
- Hardware: Machine cutting fluid tank

UM option 4203349

ADDITIONAL FLUSHING FOR VOLUME CUTTING

INCREASED PRODUCTIVITY

With the volume cutting package, unplanned machine downtimes can be prevented by preventing chip build-up via special flushing nozzles at various areas of the machine. This package is available for machines with and without pallet changer.

Features

- Volume cutting package with detection element and flushing functions for machines with or without pallet changing system
- Additional flushing functions in the work area, the cross-slide machine bed slant and the extraction hood
- Available for machines with or without pallet changer system
- Improved pre-separation for less chips and cutting fluid in the extraction system
- Increased flow speed at the detection point and in the pipe

Your benefits

- Productivity:
  - Prevention of chip build-up via special flushing nozzles
  - Resulting avoidance of unplanned downtime

Requirements

(must be checked individually)

- Hardware: Dependent on the machine version (note standard scope of "Pallet changer" option)

UM option 5518578

CLOSE-TO-SPINDLE TOOL SORTING

The goal of close-to-spindle tool sorting is to sort the tools for machining in the tool magazine closest to the spindle in order to shorten equipping times and therefore machining.

Features

The required tools are defined manually by the user via a predefined list or recorded automatically. The sorting cycle puts the tools into the main magazine in the desired order.

- A cycle checks if a complete predefined list exists or if recording is necessary to create a predefined list.
  - Sorting mode 1:
    The tools in the predefined list are placed in the magazine close to the spindle in no specific order. First, the system tries to fill all free magazine pockets with the tools from the predefined list. If there are not enough free magazine pockets, tools are removed from the magazine closest to the spindle until a suitable magazine pocket is found for the tool in the predefined list. A defined prioritization is used.

  - Sorting mode 2:
    The tools of the predefined list are sorted and placed in the magazine close to the spindle in specific order. If a magazine pocket is occupied by a tool, this is removed from the magazine close to the spindle. Master tools are taken into account and remain in the magazine close to the spindle.

- "Tools Ready For Use" option: It is checked if the tools of the predefined list are ready for use in the magazine. There is no reaction in the cycle. The reaction is programmed by the operator based on the return parameters in the machining program.

Your benefits

- Shortens the equipping time of tools and therefore the machining time

Requirements

(must be checked individually)

- Control system: SIEMENS
- Software: NC software version 4.7 and higher

SM option 4481091

CAMERA RETROFIT

The camera fit (in conjunction with a PCU retrofit) ensures that you are ideally prepared for the future. Bundle prices are possible if a PCU retrofit takes place at the same time. Installation takes place after test setup in our retrofit laboratory in Mindelheim.

Features

- Hardware retrofit: Replacement of the existing reading unit (camera) incl. evaluation unit and connecting cables
- Modification of SIEMENS MV440 (spare parts no longer available) to SIEMENS MV550 or Keyence SR-X300 camera

Your benefits

- Shortens the equipping time of tools and therefore the machining time

Requirements

(must be checked individually)

- Individual check by our Camera Retrofit Team to confirm whether a modification is feasible
- Machines: System machines (G-modules, linear gantries, special-purpose machines)

Worldwide throughout the machine service life

GROB – GLOBAL AND INTERNATIONAL

From Bavaria to the world: Since our founding in 1926 in Munich, we as a global, family-managed company have been on a constant growth trajectory developing and manufacturing systems and machine tools. Our customers include the world's leading automotive manufacturers, their suppliers, and renowned companies from the aerospace, mechanical engineering, and other industries. With our production facilities in Germany, Brazil, the USA, China, Italy and India, as well as 15 worldwide service centers and sales branches, we are represented around the globe, ensuring the highest quality.

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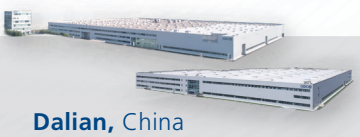
Beijing, China
Shanghai, China
Yokohama, Japan
Suwon, South Korea
Haiphong, Vietnam
Bangkok, Thailand

Bluffton, USA



Dalian, China

Pianezza, Italy

Bangalore, India

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Pioneers in designing and building highly innovative production and automation systems for almost 100 years.

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