

#DigitalIntoTheFuture



GROB-NET⁴INDUSTRY



GROB-NET

4 INDUSTRY

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.

Excellence in sustainable technology



OUR PRODUCT RANGE

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



RESEARCH &
DEVELOPMENT



ASSEMBLY



ENGINEERING



COMMISSIONING



PRODUCTION



TECHNICAL
APPLICATION CENTERS

The collage consists of 18 individual images arranged in a 3x6 grid, highlighting various aspects of GROB's industrial manufacturing:

- Top Row:**
 - Close-up of a large industrial machine with a complex metal part being processed.
 - A male worker in a blue shirt and gloves holding a precision-machined metal component.
 - A wide shot of a modern factory interior with a large white structure labeled "TAZ TECHNOLOGIE- UND ANWENDUNGSZENTRUM".
 - A worker operating a large blue and white industrial machine labeled "G550".
- Second Row:**
 - A long perspective view of a factory floor with multiple industrial machines and robotic arms.
 - A close-up of a precision-machined metal part with a blue-tinted background.
 - Three people (two men and one woman) standing in front of a machine labeled "GROB G550 access".
 - A worker operating a machine with a yellow robotic arm.
 - A worker inspecting a large, complex metal part.
 - A scene from a trade fair or exhibition with people and a sign for "GMZ GEBRAUCHT-MASCHINENZENTRUM" and "GROB".
- Third Row:**
 - A close-up of a complex metal part being machined.
 - A worker in a blue shirt handling a large, dark, circular component.
 - A close-up of a machine's internal components, showing a series of red-tipped tools.
 - A perspective view of a factory floor with several industrial machines.
 - A close-up of a precision-machined metal part.
 - A hand holding a smartphone displaying a digital interface with the text "GROB Line" and various technical data.
- Bottom Row:**
 - A worker in a blue shirt wearing a headset, talking on a phone while working at a computer.
 - A worker in a blue shirt holding a large, circular, red-tinted component.
 - A worker operating a machine with a yellow robotic arm.
 - A perspective view of a factory floor with several industrial machines.

Experience technologies of the future today

SOFTWARE OPTIONS

Our modular GROB-NET⁴Industry web applications allow you to network and digitalize your production processes across all plants to make your manufacturing facility more efficient.

GROB⁴INTERFACE – easy route to machine communication

GROB⁴CONNECT – connection from the real world to the ERP system

GROB⁴LINE – watch the machine on your smartphone

GROB⁴ANALYZE – machine feedback for the CIP

GROB⁴ANALYZE OFFICE CLIENT – flexible data analysis with hall layout function

GROB⁴BROWNFIELD – digital interconnection of various machines

GROB⁴TDX – transfer tool data automatically

GROB⁴PARTFLOW – process transparency for parts

GROB⁴TRACK – machine axes in view at all times

GROB⁴OPTIMIZATION – motorized spindle process evaluation





Moving into a digital future GROB-NET⁴INDUSTRY

Transparency and connectivity in your production process – our modularly developed GROB-NET⁴Industry web applications let you network and digitalize your production processes across all plants. From planning to engineering to maintenance, GROB-NET⁴Industry combines all relevant modules for increasing productivity and offers you an all-round package for modern production in the Industry 4.0 era.

- ✚ Manufacturer-independent
- ✚ Control-independent software
- ✚ Integrated support concept
- ✚ Low system requirements



OUR SOFTWARE PORTFOLIO

#GrobNet4Industry #InteractiveApplication
#Cloud4Machine

Easy route to machine communication

GROB⁴INTERFACE

GROB⁴Interface is the crucial link for networking your machines with other systems independent of the manufacturer. It provides you all information relevant to digitalizing processes and elevating production towards Industry 4.0. The data obtained can be applied for numerous purposes, allowing you to control production and increase efficiency. A prerequisite for GROB⁴Interface is the general network capability of the specific machine.

SMART SOLUTION FOR INFORMATION TRANSFER

- ✚ Easy data transfer straight from the machine control system
- ✚ Enables connection to various systems (ERP, MES, tool management, and many more)
- ✚ Watchdog function

OPC UA FOR OLD AND NEW MACHINES

- ✚ Output of various data formats (XML, JSON, CSV, REST)
- ✚ API for the transfer of machine data to MES and ERP systems
- ✚ Various extensions, such as OPC UA converters for old machines
- ✚ Custom parameter function for all types of NC, PLC, and HMI data
- ✚ MTConnect adapter

YOUR BENEFITS

- ✚ Simple installation
- ✚ No additional sensors required
- ✚ Control system-dependent and manufacturer-neutral
- ✚ Enables new insights into production
- ✚ Efficiency increase through transparency



Communication protocols for INDUSTRY 4.0 AND IIOT

GROB⁴INTERFACE ▶ LICENSING MODELS

	BASIC	ADVANCED	PROFESSIONAL
Standardized machine data	•	•	•
Tool data	—	•	•
Individual NC/PLC PARAMETERS	—	•	•
Trace data*	—	—	•
High-frequency data*	—	—	•
Conversion to OPC UA data format**	•	•	•
Conversion to MTConnect data format**	•	•	•
FANUC control systems	•	—	—
HEIDENHAIN control systems	•	•	•
SIEMENS control systems	•	•	•

* SIEMENS control systems ** Add-on

• Standard — not available

OPC UA – WITHOUT A CONTROL LICENSE

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.

YOUR BENEFITS

- ✚ Best quality and efficiency
- ✚ OPC UA license with simple PLC data model (immediately accessible simple PLC data model)
- ✚ GROB-NET⁴Industry OPC UA adapter (immediately accessible data model without additional programming; no control system licenses required; no PLC modifications required; simple installation; excellent scalability)
- ✚ Also available for older control systems that have no OPC UA licensing



Connection from the real world to the ERP system

GROB⁴CONNECT

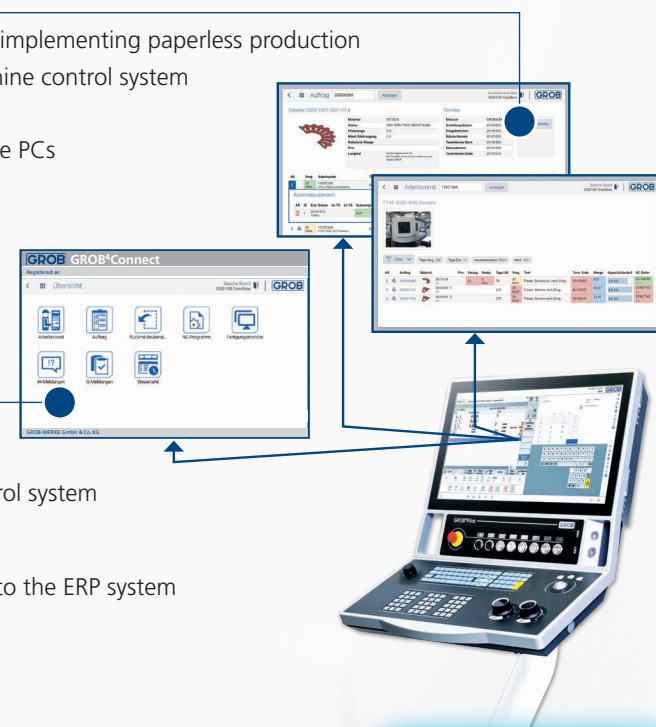
GROB⁴Connect links your machine to the ERP, MES, PLM, and TDM system. Via web technology, your production-related data can be transferred directly to the machine operator. The machine operator can enter job feedback, such as tool requirement, into the ERP system directly via the machine control system.

AN ULTRA-MODERN MES SYSTEM WITH SIMPLE USE OF ERP PROCESSES

- + Advice and realization for implementing paperless production
- + Web interface in the machine control system
- + Integrative SAP interface
- + Web applications for Office PCs

GROB⁴CONNECT FUNCTIONALITIES

- + All process-relevant data of the ERP system available on the machine itself
- + Clearly arranged input screens on the machine control system for job management, reporting, personnel planning, CAM management, and maintenance and repair
- + Control-independent transmission of machine data to the ERP system



YOUR BENEFITS

- + Fast and flexible planning and control potentials
- + Digital and networked production processes – "paperless production"
- + Real-time feedback to the ERP system from production
- + Cost transparency over each component
- + More machining time on the machine through shorter pathways
- + Automated workflows for improved process quality while reducing costs
- + Adjustable individually for each customer
- + Autonomous addition and adaption of applications (programming skills required)



The machine in view via smartphone

GROB⁴LINE

GROB⁴Line enables live monitoring of your production machinery using a smartphone or PC. Combined with the messaging function, which sends messages (e.g., machine standstill, alarm messages, or job finished) to defined smartphones, the machine operator in charge can respond immediately and minimize unnecessary idle times.

SIMPLE AND INTUITIVE REMOTE ACCESS TO YOUR MACHINES

- + Smartphone app for iOS (from version 8) and Android (from version 5)
- + Easy access via the GROB "cloud4machine" portal
- + Rule configurator for customizations
- + Access via smartphone or computer

GROB⁴LINE FUNCTIONALITIES

- + Mobile, dynamic display of machine data
- + Information about status, alarm messages, tool, and NC program at a glance
- + E-mail and push notification of machine standstills
- + Definition of alarm messages for proactive e-mail notification
- + Deletion of error messages and NC start directly via smartphone*
- + Historical timeline diagram



YOUR BENEFITS

- + Improved manpower utilization
- + On-call service/shift support
- + Less downtime
- + Access to all information from any location
- + Mobile monitoring of lightly-manned/unmanned machine operation



* Explicit activation required

*Feedback from the machine for the CIP***GROB⁴ANALYZE**

GROB⁴Analyze analyzes the machine data in your production area accurately in real time and visually prepares these data to optimal effect. The module identifies non-productive phases, allowing the reasons behind weaknesses to be swiftly determined and rectified. This makes GROB⁴Analyze a helpful tool for your Continuous Improvement Process (CIP).

A SIMPLE AND FLEXIBLE SOLUTION FOR MACHINE DATA ACQUISITION (MDA)

- + Easy access via the GROB "cloud4machine" portal
- + Direct connection to the machine control system
- + Data and report export module
- + Long-term storage of data for analysis (option)
- + Collection of the machine data in your production area (independent of the machine manufacturer)

GROB⁴ANALYZE FUNCTIONALITIES

- + Top-to-bottom view for different users
- + Machine status display and analysis
- + NC, tool, alarm, and override data
- + Display of individually configurable parameters
- + Data export to CSV and PDF

**YOUR BENEFITS**

- + Data provisioning for an effective CIP
- + Determination of savings and optimization potentials
- + Optimal use of available capacities
- + Support for cause identification
- + Identification of non-productive phases
- + Creation of reports for different roles in the company*

*Flexible data analysis***GROB⁴ANALYZE OFFICE CLIENT**

The GROB⁴Analyze Office Client is the perfect complement to GROB⁴Analyze. You will receive a detailed export of important machine data for detailed and flexible analysis. This is simplified further by using MS Office solutions. Creating the analyses is quick and easy.

EVALUATIONS AND ANALYSES BASED ON MACHINE DATA

- + Ready-made evaluations for a quick start
- + Detect dependencies easily
- + Simple desktop installation

GROB⁴ANALYZE OFFICE CLIENT FUNCTIONALITIES

- + Direct export of data from the cloud: NC, program, alarm, and status information with timestamp

**YOUR BENEFITS**

- + Detect dependencies between NC programs, alarms, and tools
- + Draw conclusions for the CIP process
- + Data can be updated at any time and is usable long-term
- + Low cost



Hall layout function

ALL SYSTEMS AT A GLANCE

Increasingly complex and time-critical production tasks require an overview of the entirety of all plants and machines. We meet these requirements with our newly developed feature – an individually configurable hall layout.

CREATE AN OVERVIEW OF ALL MACHINES AND GENERATE ADDED VALUE

- + Easy configuration
- + Flexible display of machine statuses, part counters, and material flows
- + Easy access via the GROB "cloud⁴machine" portal



YOUR BENEFITS

- + Configuration possible by your own personnel
- + Quick overview of all plants, halls, lines, and machines
- + Immediate visualization of faults for the operator

Digital connectivity

GROB⁴BROWNFIELD

GROB⁴Brownfield enables the digitalization of machines that are not network-capable. Digitalization requires the collection of data of all existing machines and is necessary regardless of their age or control system. However, the degree of integration must first be clarified. In many cases, it is sufficient to determine the runtime and downtimes, to ensure transparency, and to enable a corresponding notification system for maintenance or on-call service.

CREATE A CONNECTION TO ALL MACHINES AND GENERATE ADDED VALUE

- + Easy commissioning
- + Minimum alignment work
- + Flexible adaptation to a wide range of functions
- + Integration into the GROB "cloud⁴machine" portal



BROWNFIELD CONNECTIVITY

- + Connection of any machines of any age
- + Independent of manufacturer, control system, and function
- + Flexible adaptation to any status
- + Versatile combinations

YOUR BENEFITS

- + Integration possible by your own personnel
- + Cost-effective and solid hardware
- + Data can be used directly for other applications
- + Flexibly expandable



Automatic transfer of tool data

GROB⁴TDX

GROB⁴TDX enables your tool data to be automatically transferred to your machine. During tracking in the tool storage room, the tool is automatically identified in order to link the tool data with it and submit to a database digitally. Identification can take place in different ways (barcode/Data Matrix Code/RFID). In addition, the tools are easy to find as they are also clearly identified during storage or use on the machine.

POWERFUL TOOL MANAGEMENT SYSTEM
BASED ON STATE-OF-THE-ART TECHNOLOGY

- Tool data in real time
- Live view of your tool magazines
- Exact inventory overview of your tools and parameters
- Work queue monitor for the tool storage room

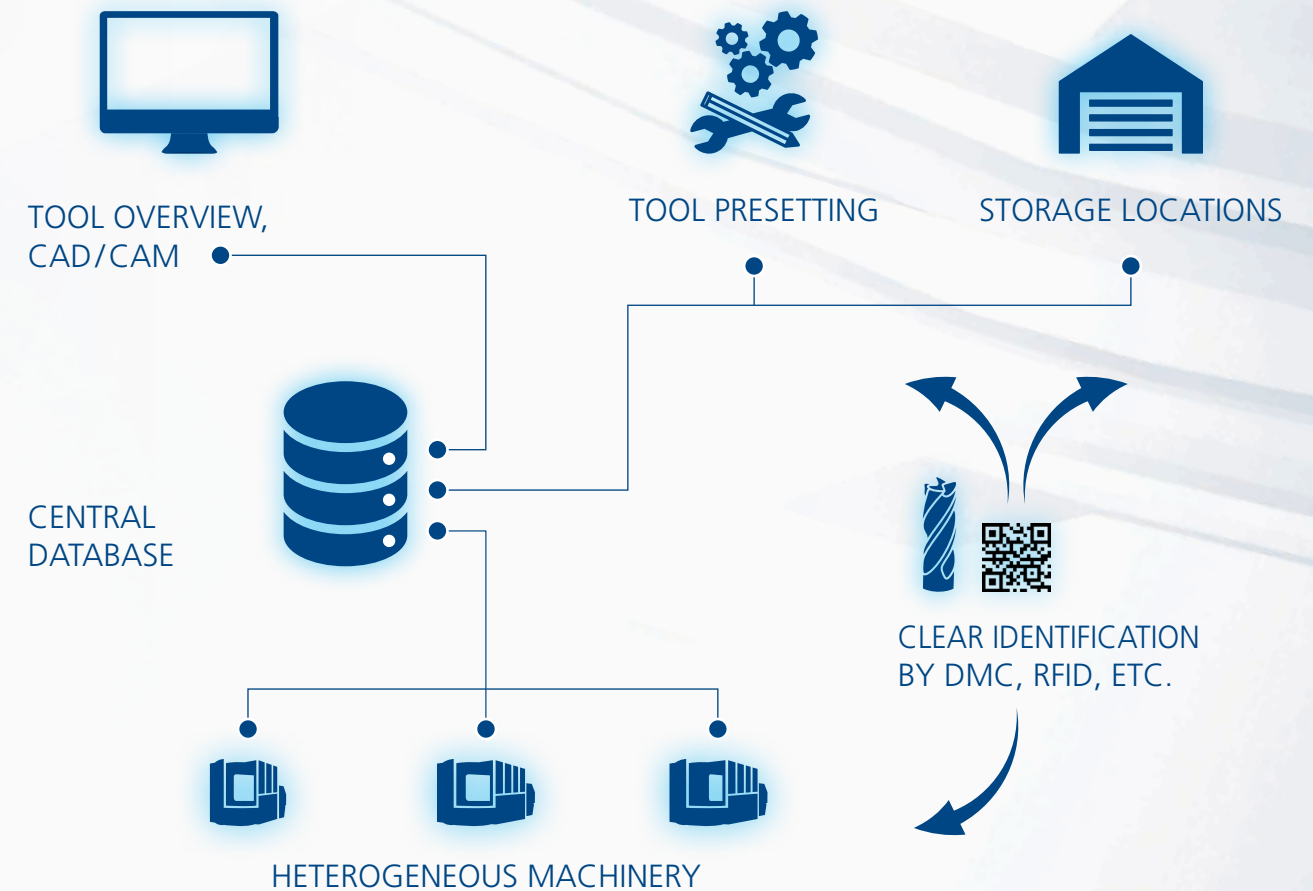
GROB⁴TDX FUNCTIONALITIES

- Automatic transfer of tool data
- Central tool loading lists and difference lists
- Web-based overview of all tools, purchase orders, etc.
- Available for SIEMENS and HEIDENHAIN control systems (incl. third-party products)
- Paperless loading process



YOUR BENEFITS

- Reduction in tool change time
- Improved tool deployment planning and utilization
- Reduction in search and wait times
- Inventory optimization



APPLICATIONS

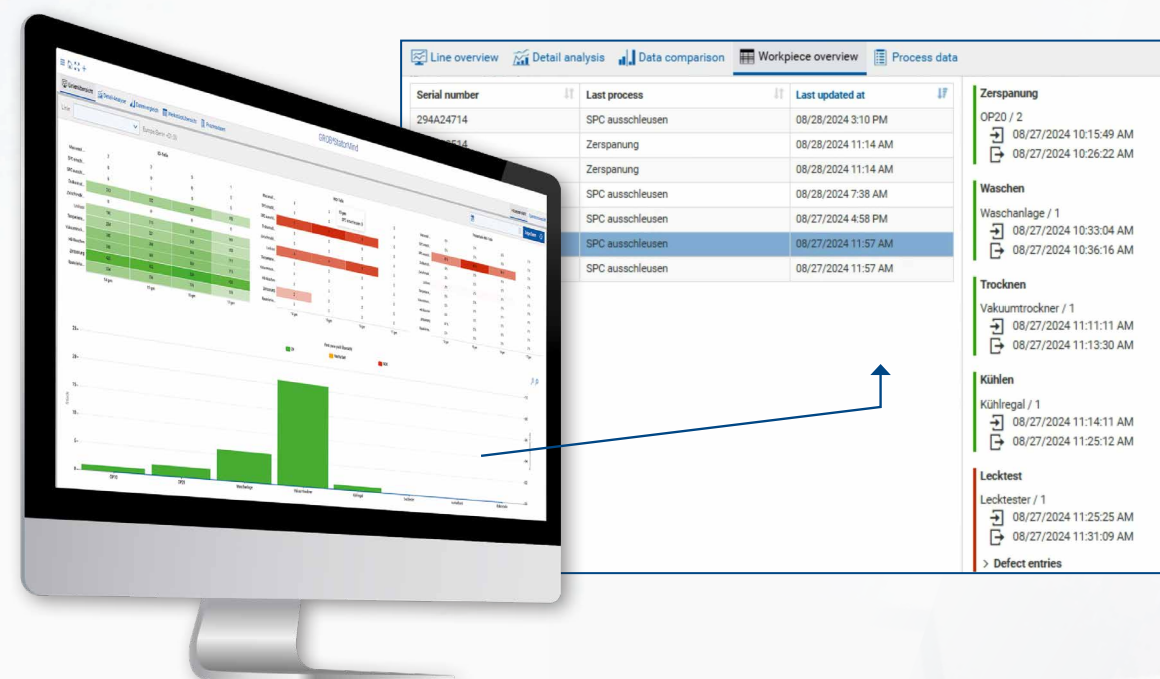


Process transparency for parts

GROB⁴PARTFLOW

Increasing requirements due to new regulations and customer demands make the traceability of components essential in more and more industries. Modern, fully automated systems not only perform direct value-adding process steps, but also additional tasks such as quality control, which leads to a wide variety of systems being used in the automation system. One of the biggest challenges in the digitalization of the automation system is defining uniform interfaces to the various system manufacturers, ensuring the required data quality and visualizing the data clearly.

GROB⁴PartFlow offers a solution that stores and displays production parameters for each serialized component – across manufacturers and processes.



YOUR BENEFITS

- + Complete, quick and historical overview of the parts produced by the system
- + Digitalization of the automated system from a single source*
- + Process parameters always in view
- + Fast and flexible option for digitalization of the final part inspection

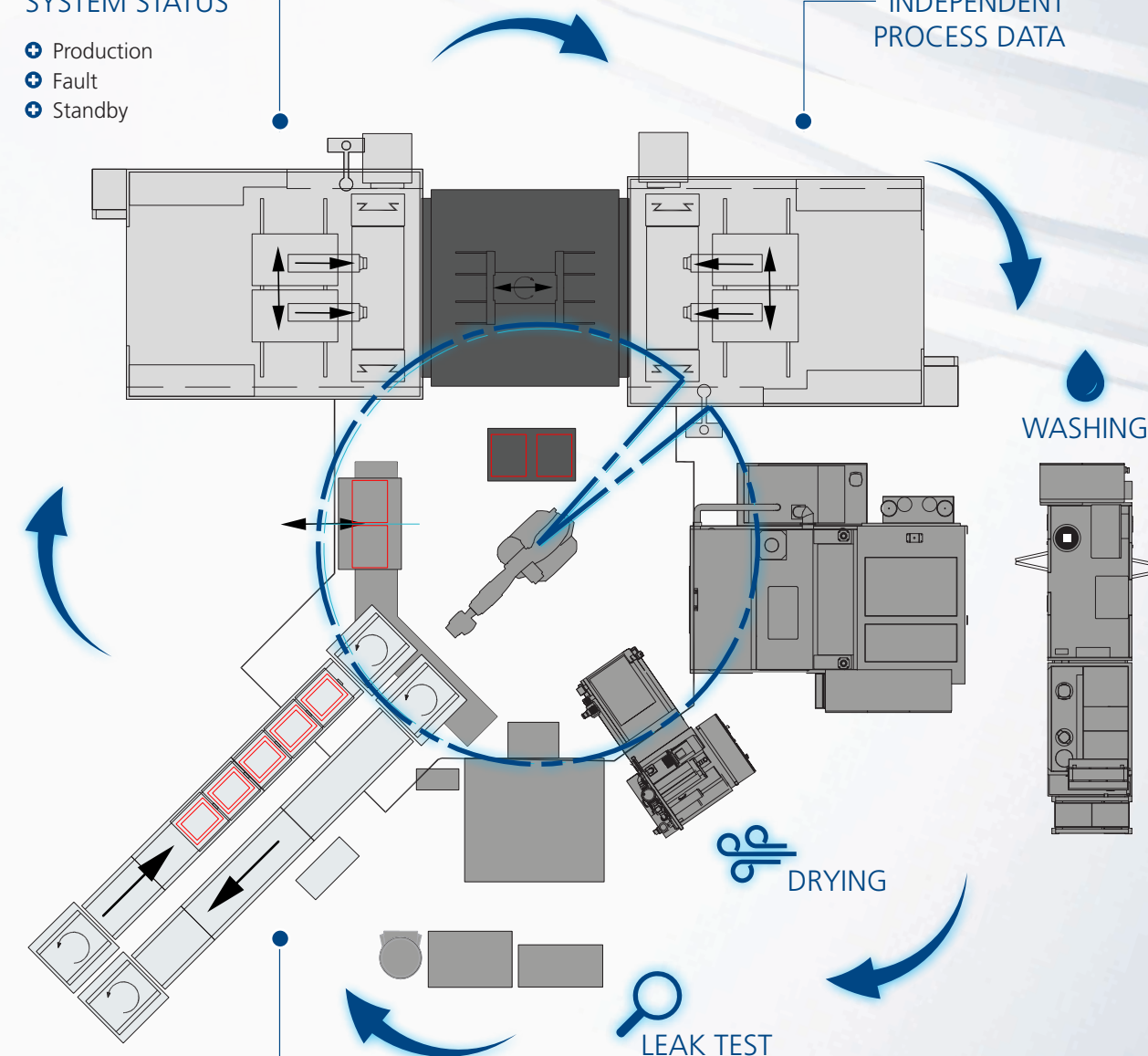


* Input from other manufacturers may be required

LIVE SYSTEM STATUS

- + Production
- + Fault
- + Standby

MANUFACTURER-INDEPENDENT PROCESS DATA



TRACKING OF THE PRODUCED COMPONENTS

- + Production
- + Web-based overview
- + Filter function by serial number, time stamp or status
- + Export function of the data

- + Fault detection and visualization
- + Automated data acquisition through appropriate systems

Machine axes in view at all times

GROB⁴TRACK

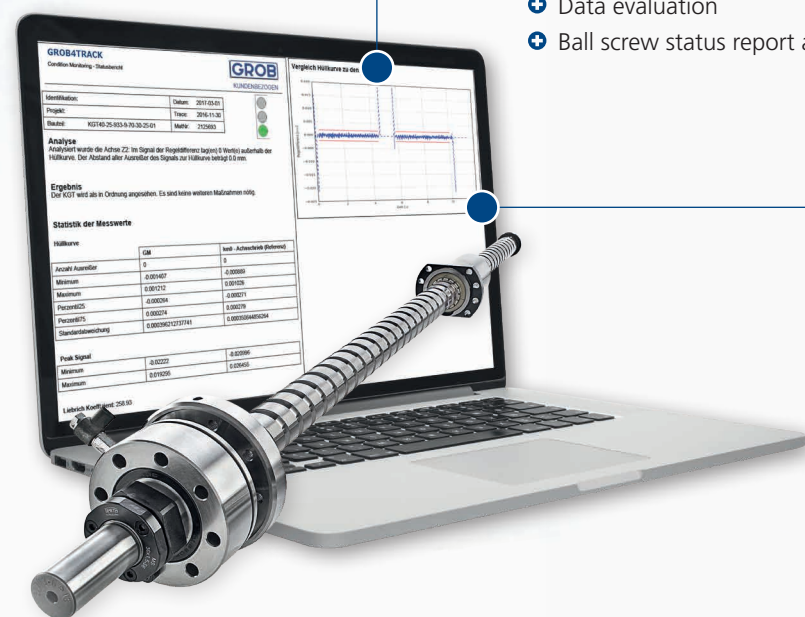
GROB⁴Track monitors the health status of your machine. Thanks to an automated analysis function, the machine state is known at all times and unscheduled downtimes can be avoided. This allows you to precisely plan preventive maintenance work and initiate spare part orders at the right time.

PRECISE PLANNING OF PREVENTIVE MAINTENANCE WORK

- Automatically triggered axis recordings without any additional sensors
- Data transmission to the cloud
- Data evaluation
- Ball screw status report as PDF

GROB⁴TRACK FUNCTIONALITIES

- Standardized axis recording
- Envelope curve analysis
- Ball screw condition monitoring
- Comparison with reference axis recordings



YOUR BENEFITS

- Unscheduled machine shutdowns avoided
- No additional sensor technology required
- Software-based analysis without additional machine hardware
- Change of state automatically notified via e-mail
- Quality-relevant wear detected at an early stage



Motorized spindle process evaluation

GROB⁴OPTIMIZATION

Extend the service life of your motorized spindles and tools and reduce costs. GROB⁴Optimization helps you develop your full potential and supports the optimization of your process.

OPTIMIZED MILLING PROCESS

- Improve your machining operation with little effort
- Quick setup in less than one hour
- Installation of the industrial PC and setup of the HMI display or web browser (incl. a virtual machine in the customer network)

GROB⁴OPTIMIZATION FUNCTIONALITIES

- Recording of vibration and temperature values by sensors using GROB spindle diagnostics (GSD)
- Combined data recording when tolerances are exceeded at the time the fault occurs (including NC program step, tool, rotational speed, vibrational acceleration, and feed)
- Display of results including evaluation options (directly on the HMI or web-based)
- Provision of proposals for optimization you can implement yourself



YOUR BENEFITS

- Individual optimization of process parameters
- Cost savings thanks to the extended service life of the tool and motorized spindle
- Detection and possible elimination of surface quality issues (identification of problematic tools or processes by vibrations)



GROB-NET⁴Industry

PRODUCT OVERVIEW

GROB-NET ⁴ INDUSTRY ▶ PRODUCT OVERVIEW									
	GROB ⁴ INTERFACE	GROB ⁴ CONNECT		GROB ⁴ LINE	GROB ⁴ ANALYZE	GROB ⁴ TDX	GROB ⁴ PARTFLOW	GROB ⁴ TRACK	GROB ⁴ OPTIMIZATION
									
6-month test with new machines	—	—		•	•	—	—	•	—
Cloud product	—	—		•	•	—	—	•	—
Installation in the plant network	•	•		—	—	•	•	—	•
Installation on the machine (IPC)	◦	—		—	—	—	—	•	•
Data collection software	•	—		—	—	—	—	—	—
Smartphone app with live data	—	—		•	—	—	—	—	—
Standstill notification	—	—		•	—	—	—	—	—
Historical data visualization	—	—		•	•	—	•	—	—
Reporting	—	—		—	•	—	•	—	—
Digital tool management	—	—		—	—	•	—	—	—
Axis status analysis	—	—		—	—	—	—	•	—
Process parameter optimization	—	—		—	—	—	—	—	•
Increased spindle and tool life	—	—	—	—	—	—	—	•	
MES software	—	•	—	—	—	—	—	—	

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 16 worldwide service centers and sales branches, we are represented around the globe, ensuring the highest quality.

EUROPE

Mindelheim, Germany
Pianezza, Italy
Stratford-upon-Avon, Great Britain
Hengelo, Netherlands
Lyon, France
Baar, Switzerland
Poznań, Poland
Győr, Hungary
Istanbul, Türkiye
Steyr, Austria

24/7 SUPPORT

FOUNDED IN 1926

NORTH AMERICA

Bluffton, Ohio, USA
Detroit, Michigan, USA
Querétaro, Mexico

6 PLANTS

16 SALES AND
SERVICE BRANCHES WORLDWIDE

SOUTH AMERICA

São Paulo, Brazil

ASIA

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

Our global production sites



Mindelheim, Germany



São Paulo, Brazil



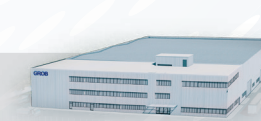
Bluffton, USA



Dalian, China



Pianezza, Italy



Bangalore, India



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GROB-WERKE GmbH & Co. KG

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

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#AssemblyPlants #Electromobility #Automation
#AdditiveManufacturing #Digitalization
#NewAndQualityCheckedUsedMachines #Service*



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