GROB RETROFITTING OPTIONS

FOR UNIVERSAL MACHINING CENTERS

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REMOTE MACHINE DIAGNOSTICS (MFD)

Up to 80 % fewer technician assignments

Machine failure is never planned. That is why it is all the more important that you receive quick and uncomplicated help in an emergency. With remote machine diagnostics, our highly qualified GROB service hotline staff can immediately begin analyzing and solving problems.

CHARACTERISTICS

- Hardware retrofit:
  - VPN LAN router is installed in the electrical cabinet
  - Optional: Key-operated switch for activation/ Disabling remote machine diagnostics
- The GROB service hotline staff can trace all movements on the control system

THE BENEFITS TO YOU

QUALITY

- Extensive possibilities for intervention in almost all control areas and for analysis
- Installation possibility for software updates, programs, etc.

ECONOMIC VIABILITY

- Increase in productivity through rapid troubleshooting
- Saving of time-consuming dispatches of fitters

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine, HEIDENHAIN
- **Customer:** Network capability must be ensured

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Retrofit option 4203344

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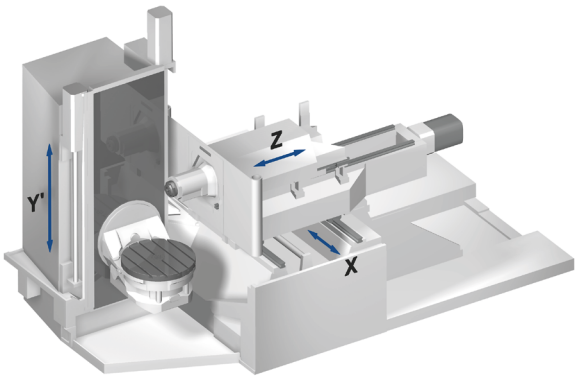
CONDITION MONITORING GROB[4]TRACK

Condition monitoring for your ball screws

GROB[4]Track allows you to precisely plan preventive maintenance activities and trigger spare part orders at exactly the right time: for maximum output and productivity of your GROB machine.

CHARACTERISTICS

- Monitoring the wear condition of the ball screws of the X-, Y-, and Z-axis
- Software solution, no retrofit of hardware required
- Optimal adaptation to your production conditions: Fully automatic or manual data acquisition and transmission
- Automatic notification as soon as a ball screw reaches a critical state



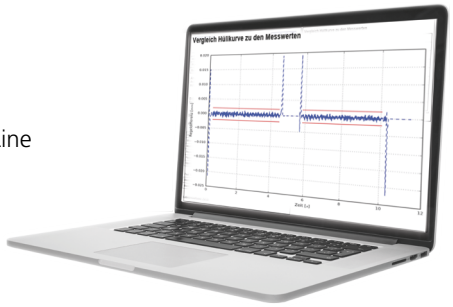
THE BENEFITS TO YOU

QUALITY
- Consistent part quality since quality-relevant wear is detected at an early stage

ECONOMIC VIABILITY
- Increased technical availability
- Avoidance of unplanned machine downtimes

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine



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Your applications for global transparency throughout the entire production process

GROB⁴Line

The machine in view via smartphone

- Proactive messages from the machine and notification in the event of machine standstill
- Mobile access to the machines

GROB⁴Analyze

Feedback from the machine for the CIP

- Visualization of stored machine states
- User-friendly data preparation for the improvement process

GROB⁴Coach

Programming, simulation, training

- Programming of part programs
- Effective, PC-supported training software for CNC novices and experts

GROB⁴Simulate

Simulate complex processes and parts in a simple manner

- Avoidance of collisions
- Simulation of the actual NC code and the cutting parameters

GROB⁴Interface

Easy route to machine communication

- Data transfer straight from the machine control system
- Information retrieval without having to install additional hardware

GROB⁴Connect

Connection from the real world to the ERP system

- Coupling the machine to the ERP system
- Transmission of all production-relevant data to machine operators via web technology

GROB⁴Pilot

Multi-functional, interactive machine operation

- All production processes amalgamated in one place
- Powerful hardware that is easy to handle

GROB⁴Automation

Intuitive production control software for unmanned operation

- Support of unmanned shifts via simple operation
- Autonomous part management

GROB⁴Track

Machine axes in view at all times

- Machine state monitoring
- Reduction of unscheduled machine downtimes

GROB⁴Care

Service and maintenance portal

- Convenient procurement of spare parts via an online portal without great effort
- Clarification of part availability and display of customer-specific prices

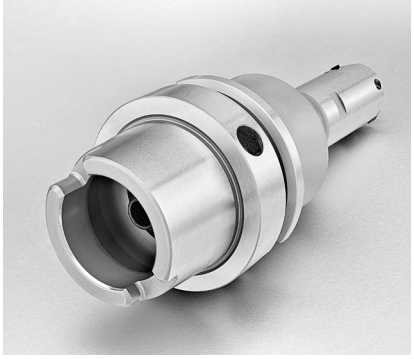
TOOL CODING SYSTEM

Producing instead of entering tool data

An increasing number of tools and their data require a sophisticated tool management system, which can be retrofitted to Balluff's coding system 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 loaded.

CHARACTERISTICS

- Hardware:
  - Electronic evaluation unit BIS-V
  - Read/write head BIS-C
- Can be deselected in the HMI screen
- Installation and cycle adaptation by GROB
- Can be combined with a tool laser measurement system installed on the rotary table



THE BENEFITS TO YOU

ECONOMIC VIABILITY

- Increased efficiency through automated tool management
- Simple data evaluation for process statistics and for the optimization of tool life
- Shorter tooling times
- Elimination of manual entry of tool data

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine, HEIDENHAIN
- Suitable tool holders

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Retrofit option 4203321

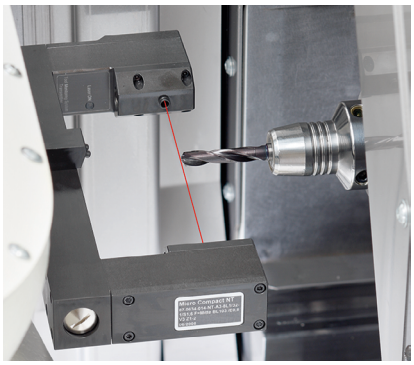
LASER MEASUREMENT FOR MILLING CUTTERS

Check your tools (e.g. milling cutters, drills) directly at the location of use

The BLUM laser measuring system installed on the rotary table controls the tool used in each case by means of a highly precise optical and automated measurement of the tool geometry under operating conditions.
In this way, incorrectly exchanged or inaccurately preset tools and damages/wear of the tool are detected in good time and damage to the part or the follow-on tool is prevented.

CHARACTERISTICS

- **Hardware**: BLUM LaserControl NT-H 3D
- Measurement of tool length, radius, number of cutting edges and concentricity
- Checking for breakage and wear



THE BENEFITS TO YOU

QUALITY
- Highest production quality through detection of tool wear
- Transmission of the measured values also possible to other machines

ECONOMIC VIABILITY
- Avoidance of follow-up damages due to undetected tool breakage

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine, HEIDENHAIN iTNC530, TNC640
- Suitable clamping

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Retrofit option 4203326

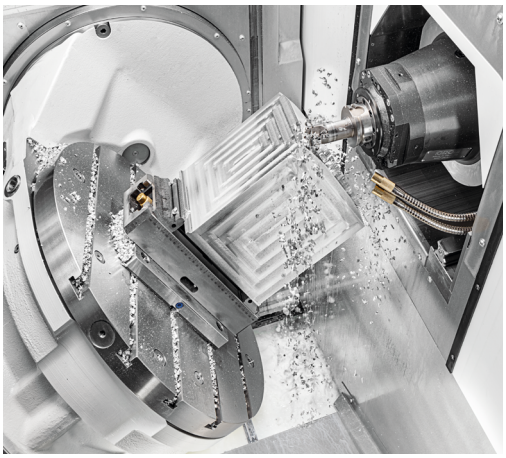
LOAD-DEPENDANT DRIVE ADAPTATION LST/LAC

Axis movement at ideal speed

For each part, the software determines the optimum drive and pilot control parameters for the A-, B-, and Y-axes of your universal machining system depending on the weight to be moved. These are stored part-related and called in the part-related machining process.

CHARACTERISTICS

- Determination and storage of the optimum controller settings based on inertia
- Particularly suitable for customers with a wide variety of parts (dimensions/weight)
- Pure software upgrade
- Load-dependent parameter set switchover of the swivel axes (A- and B-axis) and the Y-axis
- Each parameter set can be assigned to a part



THE BENEFITS TO YOU

QUALITY
- Optimal drive parameters ensure the best quality when machining
- Machine movements adapted to the part weight in the A-, B-, and Y-axis

ECONOMIC VIABILITY
- No swinging of the axes
- Use of the optimal drive parameters in the A-, B-, and Y-axis

REQUIREMENTS

- **Control system**: SIEMENS SolutionLine (LST), HEIDENHAIN (LAC)

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Retrofit option 4203342

OPTIMIZATION OF MACHINE KINEMATICS

Optimal quality due to GSC

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

CHARACTERISTICS

- Hardware:
  - Touch probe (if not yet available)
  - Kinematics measuring case
- Simple software upgrade
- Depending on the design of the A-axis, the roller bearing condition can also be determined
- Determination of the current kinematics via a 3D touch probe and a high-precision gauge ball
- Optimization of swivel accuracy based on the measurement results

THE BENEFITS TO YOU

- Simple acquisition of the machine geometry
- Rapid improvement of the current machine accuracy in the entire work area
- Compensation for machine and temperature-related geometry deviations
- Ensuring consistent manufacturing accuracy even with changes in ambient conditions

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine, as of rev. level 4.5.2, HEIDENHAIN
- Compatible touch probe

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Retrofit option 4203329

REMOTE TOUCH PROBE

Fast and high-precision setup and testing

The remote touch probe with HSK holder enables simple part setup and part measurement during the machining process. Thanks to the secure frequency hopping transmission protocol, even rough work environments are no problem.

CHARACTERISTICS

- Hardware:
  - Battery-operated Renishaw touch probe with tool holder
  - Renishaw RMI receiver
  - Different probe needle variants available
- Easy replacement from the tool magazine

THE BENEFITS TO YOU

- Highly precise thanks to a repetition accuracy of 1 µm
- Increase in part accuracy
- Avoidance of collisions due to part measurement before machining
- Reduced downtimes when aligning and measuring parts and clamping fixtures
- Requirement for the machine kinematics (GSC) option

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine, HEIDENHAIN

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Retrofit option 4203343

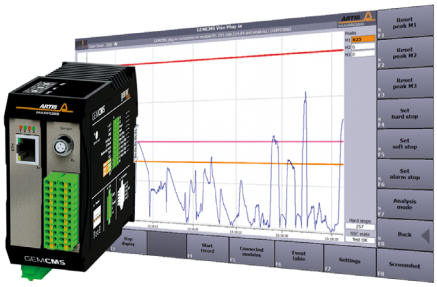
MARPOSS COLLISION MONITORING

Avoiding total damage with a response time of <1 ms

In the event of a collision, the machine protection system CMS stops the axis movements of the machining center in the millisecond range in order to minimize damage to the machine, tools, and clamping fixtures.

CHARACTERISTICS

- Additional force sensors on the axes to be monitored
- Electronic evaluation unit in the electrical cabinet
- Additional monitor for HEIDENHAIN/FANUC control
- Targeted shutdown of the axis drives when limit values are exceeded
- Freely definable limit values
- Control independence



THE BENEFITS TO YOU

ECONOMIC VIABILITY

- Avoidance of downtimes due to damage to machines, tools, and clamping fixtures
- Avoidance or reduction of repair costs in the event of a collision
- Save 25 % of the insurance premium in connection with the machine insurance from Helvetia

HEALTH

- Increased operator safety in the event of a possible collision by trying out a new part program

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Retrofit option 4203350

DMC COLLISION MONITORING

Avoidance of machine damage up to € 50,000

The dynamic collision monitoring DCM (Dynamic Collision Monitoring) monitors the machine parts (motorized spindle and swivel/rotary table) and stops the axis movements before an impending collision.

CHARACTERISTICS

- No hardware change necessary
- The license can be purchased with the SIK number of the control system and the option can be activated via remote machine diagnostics
- The interference contours must be stored by the programmer in the parameters for the DCM software
- Effective when a CNC program is processed or the axes are moved manually
- An impending collision is recognized and leads to an immediate stop of the axis movements
- Colored representation of the collision object on the screen

THE BENEFITS TO YOU

ECONOMIC VIABILITY

- Avoidance of downtimes due to damage to machines, tools, and clamping fixtures
- Avoidance or reduction of repair costs in the event of a collision

HEALTH

- Increased operator safety in the event of a possible collision by trying out a new part program

REQUIREMENTS

- **Control system:** HEIDENHAIN

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Retrofit option 4203350

SMS ALARMING

Machine malfunctions always in view

Machines are increasingly only occasionally supervised or operated unmanned. By means of SMS alarms, faults that lead to a standstill are reported directly to your cell phone, so that measures can be taken to avoid or remedy errors without wasting time.

CHARACTERISTICS

- Hardware:
  Profibus module for intercepting relevant signals, wireless modem
- Free choice of telephone provider
- Activation, recipient selection and error text can be flexibly implemented using your own HMI screen
- Broadcasting statistics available

THE BENEFITS TO YOU

ECONOMIC VIABILITY

- Increased production reliability with automation solutions
- Reduction of machine downtimes during unmanned operation
- No loss of time when the machine is at a standstill thanks to immediate SMS notification

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine
  (we offer the option of e-mail alarming for the HEIDENHAIN control)
- **Software:** For software versions 4.5 and higher, we recommend machine monitoring using GROB[4]Line

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Retrofit option 4203347

PROCESS OPTIMIZATION BY GROB APPLICATION TECHNICIANS

Let the specialist do it

Well-founded knowledge and years of experience in CNC programming characterize an application engineer at GROB. You can bring this know-how in-house to make your processing as efficient and economical as possible. A process is considered, optimized, and run in. If you wish, you can also have your part programs optimized and tested at our company.

CHARACTERISTICS

- Complete elaboration, project planning, and execution of the NC program for the requested part
- Running in the part at the customer's site or at our company
- Follow-up meeting with and further support from our technicians

THE BENEFITS TO YOU

QUALITY
- You benefit from the machine manufacturer's in-depth GROB know-how

ECONOMIC VIABILITY
- Optimal application of all machine functions and cycles
- No downtime at the customer site when optimizing at GROB TAZ Mindelheim

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Retrofit option 4203437

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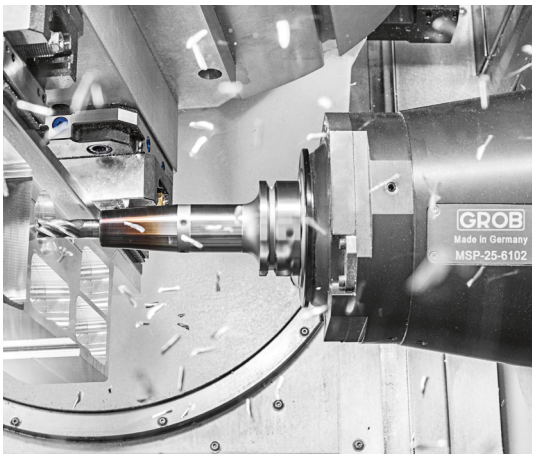
NC PROCESSING/PROTOTYPE PRODUCTION

Take advantage of our competence

Complex parts and capacity bottlenecks are two reasons for having new parts brought in by us.
Our experienced technicians set up your process optimally and thus ensure the highest level of machine efficiency.

CHARACTERISTICS

- Feasibility check of your parts
- Run in your part in the GROB Technology and Application Center (TAZ) Mindelheim
- Optimization of your machining process with a focus on machine efficiency and machining quality
- Adaptation of post processors on our machine
- Possibility of trial machining at the GROB TAZ Mindelheim
- Production of prototypes or small series at the GROB TAZ Mindelheim



THE BENEFITS TO YOU

- Founded know-how for efficient processing and best quality
- Optimized use of all machine functions and cycles
- Feasibility check of your parts
- Relieving your production
- Learning effect for your programmers

TALK TO US – WE WILL HAPPILY PREPARE A QUOTATION FOR YOU WITH NO OBLIGATION!

Retrofit option 4203436

NC PROGRAM MEMORY OPTIMIZATION

Simplified program execution via external memory

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

CHARACTERISTICS

- Pure software upgrade
- The following are available as external data media/storage:
  - Local drive (any type)
  - USB global on TCU
  - Windows drives (both from PCU and from a server)
- Uniform syntax for subroutine calls - no more EXTCALL calls required

THE BENEFITS TO YOU

ECONOMIC VIABILITY

- 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 by being able to stop and correct externally stored programs
- Program correction possible with NC stop

REQUIREMENTS

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

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Retrofit option 4323284

HAND-HELD CONTROLLER – SIEMENS HT8

More flexibility and freedom of movement

Do not let the work area out of your sight when setting up and configuring. The SIEMENS HT8 hand-held controller enables machine operation from any location. This enables faster and safer machine setup and running-in of the machining programs.

CHARACTERISTICS

- Hardware:
  - SIEMENS HT8 control panel including cable with a length of 5 m
  - HT8 connection box
  - Retaining plate
- Safety through two-hand operation and an enabling button

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THE BENEFITS TO YOU

ECONOMIC VIABILITY
- Time-savings through more freedom of movement when setting up

HEALTH
- More safety through a better view of the work area

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine

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Retrofit option 4203341

AUTOMATIC CUTTING FLUID CIRCULATION

Environmental and employee safety that pays off

If the cutting fluid remains immobile for a longer period of time, germs and fungi arise which damage both your employees and the quality of the cutting fluid. The automatic cutting fluid circulation allows the machine to be switched off if the cutting fluid is circulated regularly. This counteracts resinification and fungus growth.

CHARACTERISTICS

- Hardware retrofit so that circulation takes place when the main switch is switched off:
  - Additional logic module LOGO (SIEMENS)
  - Key-operated switch for activation/deactivation
- Individually selectable switch-on times

THE BENEFITS TO YOU

QUALITY
- Maintaining the lubricating and cooling properties leads to a consistent part quality

ECONOMIC VIABILITY
- Reduced acquisition and disposal costs due to increased service life of the cutting fluid

SUSTAINABILITY
- Energy saving because the machine can be switched off without hesitation

HEALTH
- Avoidance of health problems by permanently reducing germs and fungi

REQUIREMENTS

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

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OIL SKIMMER

Up to 40 % longer cutting fluid life due to continuous cleaning

The oil skimmer reliably removes floating foreign oils and contaminants from the cutting fluid (KSS). In 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.

CHARACTERISTICS

- Oil skimmer with collecting vessel and level switch
- Electrical connection including motor protection

THE BENEFITS TO YOU

QUALITY
- Improvement of the processing quality by maintaining the cooling and lubricating properties

ECONOMIC VIABILITY
- Reduction of machine malfunctions due to blockages and deposits
- Cost savings by extending the cutting fluid service life

SUSTAINABILITY
- Environmental relief through longer cutting fluid change intervals

HEALTH
- Health protection through fewer germs in the KSS

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine, HEIDENHAIN
- **Hardware:** Internal machine cutting fluid tank

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Retrofit option 4203345

THERMAL INSULATION

Consistent quality, no matter where your machine is

Fluctuations in temperature due to open hall gates can have a negative impact on the accuracy of your machining. To counteract these fluctuations, you can protect your machine against drafts with our thermal insulation.

CHARACTERISTICS

- Hardware:
  Oil-resistant thermal insulation around the machine including screws
- Thermal insulation
- Preventing drafts under the machine

THE BENEFITS TO YOU

QUALITY
- Reducing the impact of drafts on accuracy
- Consistent quality with temperature fluctuations in the work environment

TALK TO US – WE WILL HAPPILY PREPARE A QUOTATION FOR YOU WITH NO OBLIGATION!

Retrofit option 4203348

ADDITIONAL ELECTRICAL CABINET COOLING

So that even extreme heat leaves your GROB machine cold

Extremely high ambient temperatures lead to high temperatures in the electrical cabinet. These can damage the parts installed there and lead to the machine being switched off. To increase the performance of the electrical cabinet cooling, an additional cooling unit is installed in the electrical cabinet door. The mode of operation is similar to a decentralized air conditioning system.

CHARACTERISTICS

- Hardware retrofit:
  - Cooling unit mounted on the electrical cabinet door
  - Thermometer in electrical cabinet
- Setting options directly at the cooling unit

THE BENEFITS TO YOU

ECONOMIC VIABILITY

- Air-conditioned electrical cabinet for an optimal operating temperature
- Avoidance of malfunctions or failures of overheated electrical parts
- Avoidance of machine malfunctions at extremely high ambient temperatures

REQUIREMENTS

- **Customer**: Sufficient space at the electrical cabinet door

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Retrofit option 4203302

FREQUENCY-CONTROLLED HIGH-PRESSURE CUTTING FLUID PUMP (HPC)

Up to 68 % energy savings

In conventional high-pressure coolant circuits, the same amount of coolant is continuously pumped and thus unnecessarily consumes energy. By retrofitting a frequency-controlled pump, the pump speed is adapted to the required amount of cutting fluid and the pressure. As a result, you save energy and protect the environment.

CHARACTERISTICS

- Hardware:
  - Frequency converter
  - 80 bar KSS screw spindle pump
- Pressure specification via HMI screen or tool data

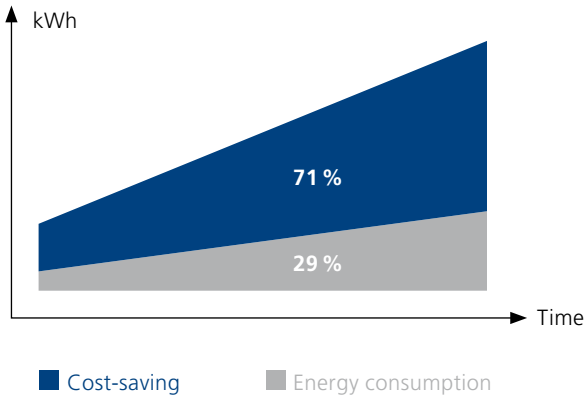
THE BENEFITS TO YOU

ECONOMIC VIABILITY

- Extension of the service life of the high-pressure pump and pump filter
- Automatic re-adjustment of the pump output when there are signs of wear
- Reduced heat input into the coolant system
- Lower interference rate due to the elimination of the control valves

SUSTAINABILITY

- Significant reduction in electricity consumption



REQUIREMENTS

- **Control system:** SIEMENS SolutionLine, HEIDENHAIN

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Retrofit option 4203328

ENERGY SAVING PROFILE (ESP)

Benefit from a reduction in electricity consumption of up to 90 % with non-cutting downtime

The topic of sustainable production is becoming increasingly important in mechanical engineering. You can see from our upgradable energy saving profile (ESP) that sustainability not only serves the environment but also lowers your operating costs.

CHARACTERISTICS

- Software upgrade - no additional hardware required
- Staggered shutdown of electricity consumers (e.g., pumps or drives) during non-cutting downtime
- Step model individually adjustable
- Dedicated HMI interface for easy operation

THE BENEFITS TO YOU

ECONOMIC VIABILITY

- Ensuring that production is resumed as quickly as possible after switching to energy-saving mode
- Easy activation using remote machine diagnostics
- Can be combined with energy consumption measurement for visualization and export of data

SUSTAINABILITY

- Significant reduction of electricity consumption with non-cutting downtime

REQUIREMENTS

- **Control system:** SIEMENS SolutionLine version 4.5 or higher

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Retrofit option 4203327

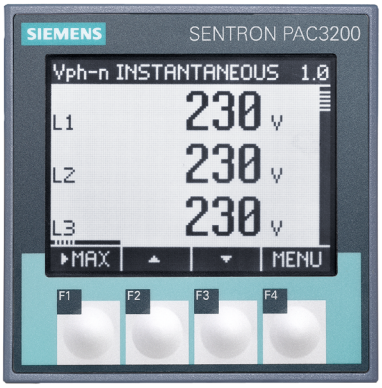
SUNG PAC ENERGY CONSUMPTION LOGGING

Always keep an eye on energy consumption

The measuring instrument records the energy values for the feed-in, electrical outlets or individual consumers precisely, reproducibly, and reliably. Electrical measurements are recorded and shown transparently on a display. In addition to the assessment of the system status and the network quality, the measurement data can be integrated into higher-level automation and energy management systems.

CHARACTERISTICS

- Hardware:
  - PAC measuring instrument type PAC 3200
  - Induction loops in front of the consumer
- Installation possible in the electrical cabinet door
- Intuitive operation using four function keys



THE BENEFITS TO YOU

ECONOMIC VIABILITY
- Control of energy saving measures such as energy saving profiles (ESP)

SUSTAINABILITY
- Visualization of energy consumption
- Simple data export for further analysis

REQUIREMENTS

- **Control system:** Siemens SolutionLine, HEIDENHAIN TNC640

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Retrofit option 4203437

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