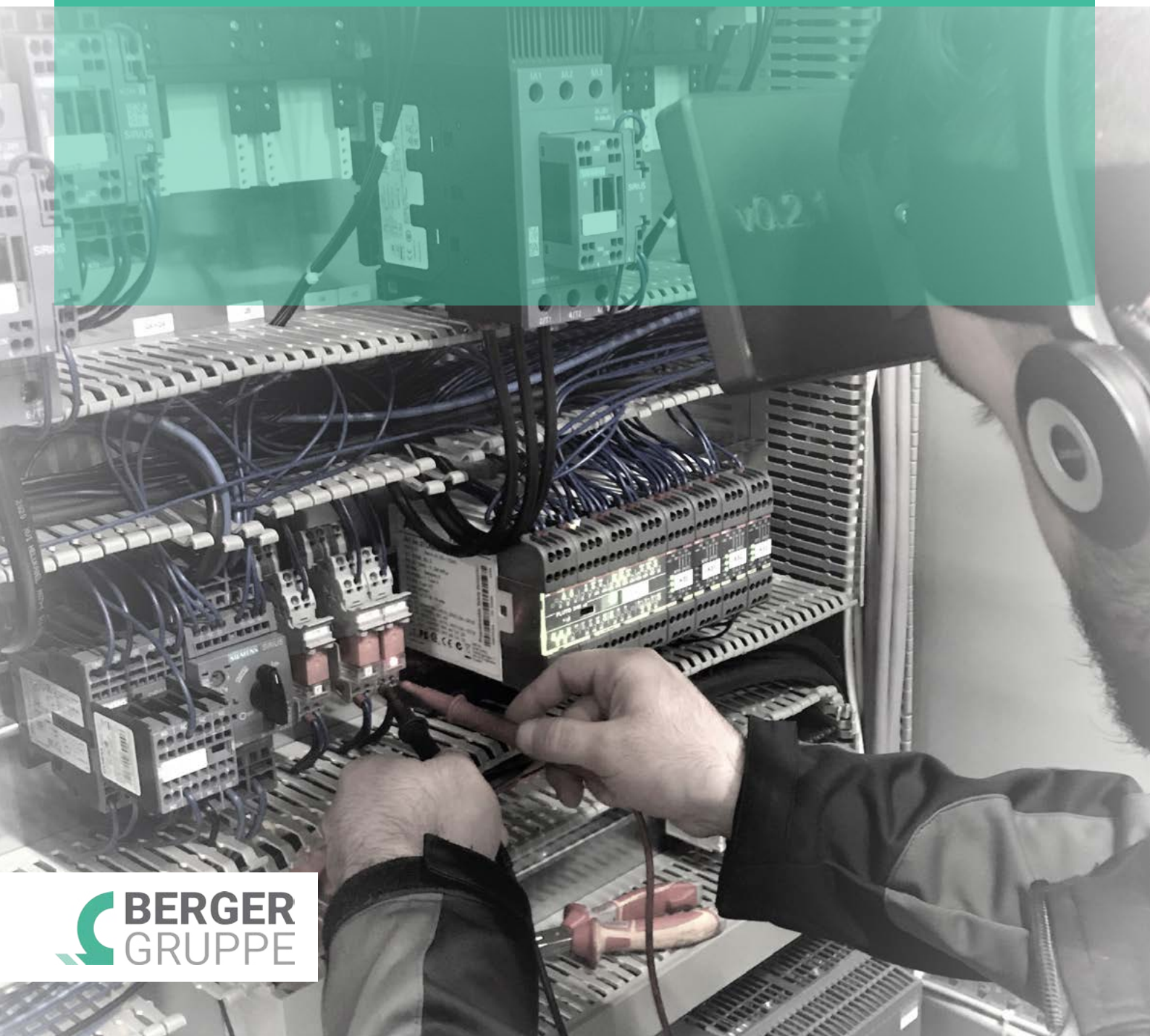
SERVICE

FEATURES FOR

check-up | service | optimization | training



BERGER GRUPPE

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SERVICE DEPARTMENT

SERVICE FEATURES

The Berger Gruppe can look back on more than 200 years of experience in mechanical and plant engineering as well as more than 5 000 delivered units.

As quality has always been a leading maxim for us, plants that were installed more than 30 years ago are still productive worldwide today.

In order to secure this productivity advantage for our customers, we have developed a large number of service offers that can provide you with decisive competitive advantages.

In order to further maintain or increase productivity, the Berger Gruppe offers a wide range of services, which are described below as examples.

The attendances are divided into:

- machines check-up- and service
- upgrades and optimizations
- workshops and training

In consultation with the service department it is possible to make an individually tailored quotation.

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MACHINE CHECK-UP AND SERVICE

AS A PACKAGE OR INDIVIDUAL SERVICE

MACHINE CHECK-UP

Machine check-up agreement

Machine check-up contract for machines and lines

Duration from conclusion of contract: 36 months
Billing is carried out separately for each installation.

Scope of services:

- visit by a technician during the term for 1½ working days on site
- detailed elaboration of the actual condition and recommendation for maintenance by technicians after visit

Flat rate for machine check-up (one time)

Scope of services:

- visit of a technician within the running time for 1½ working days on site
- detailed elaboration of the actual condition and recommendation for maintenance by technicians after visit

EXTENSION WITH ADDITIONAL SERVICES

Service agreement

Extension of the machine check-up contract to include additional services

Additional service of the service agreement:

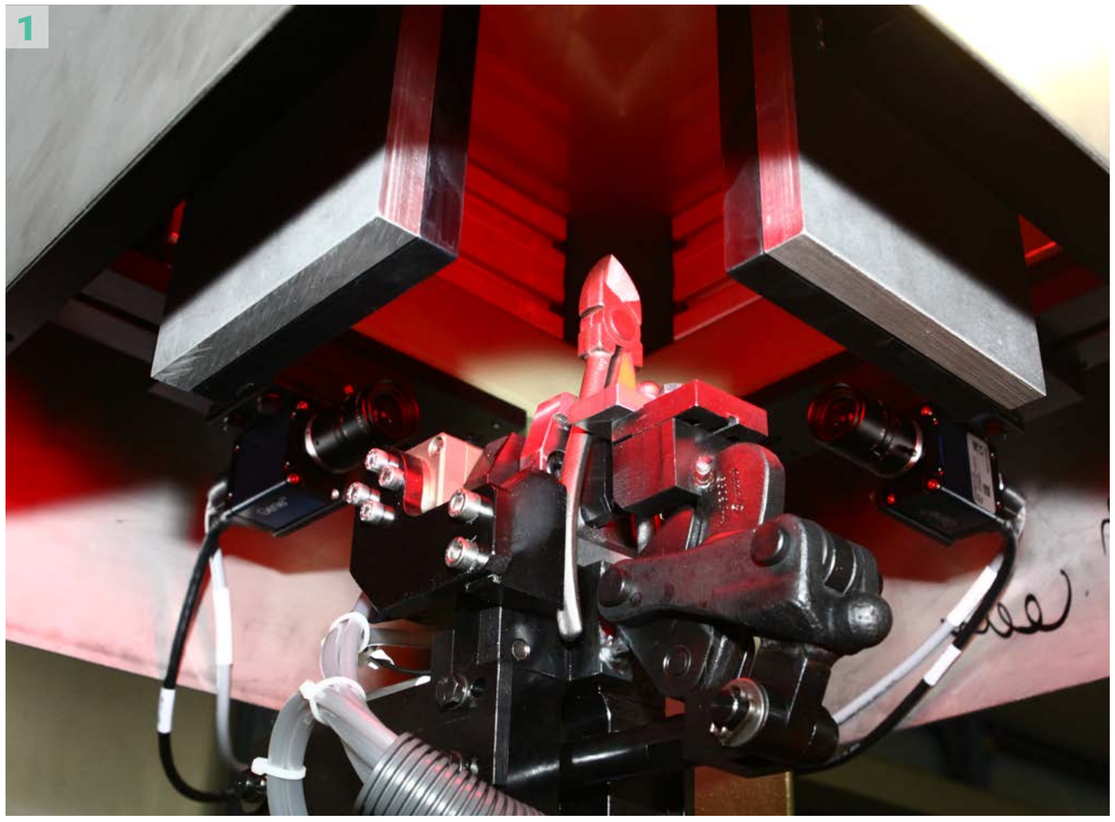
- 60 minutes TeamViewer service/month[1]
- 60 minutes telephone service/month[1]
- express shipping for parts without surcharges
- priority treatment for service/assembly
- services of the check-up contract

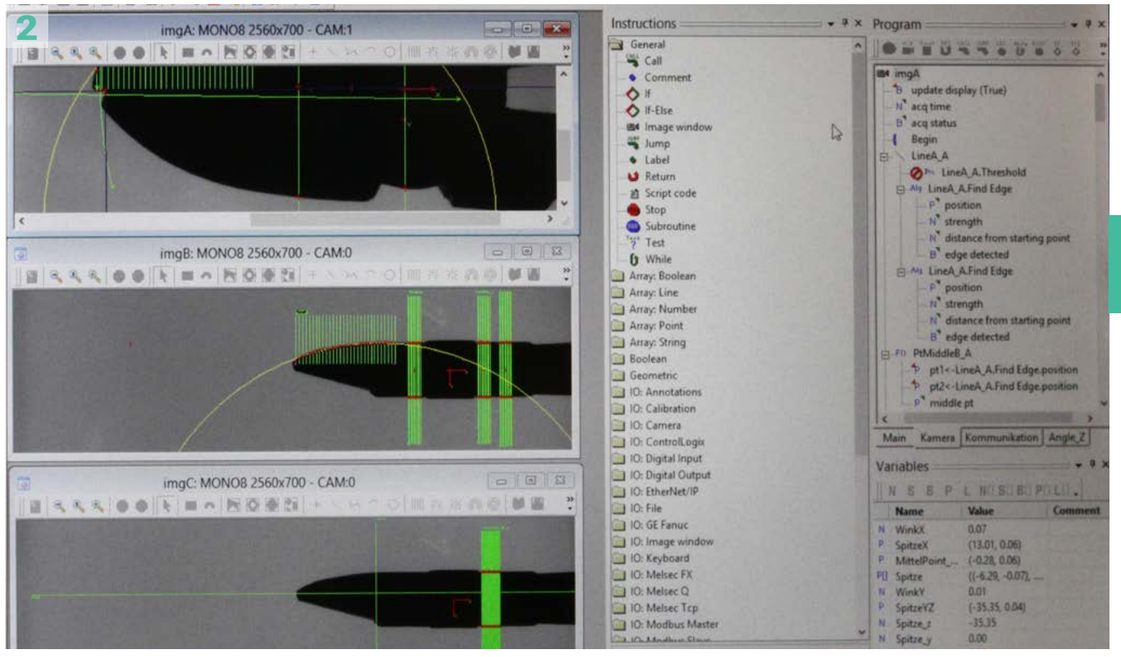
1 The credit of unused minutes expires at the end of the month.

UPGRADE AND OPTIMIZATION

UPGRADE MEASURING TECHNIQUE FOR ROBOTICS

In the field of measuring technology, the Berger Gruppe offers mechanical probes, 3D camera measurement technology and laser measurement technology.





Cycle times – optimization

Review of cycle, measurement and machining times of CNC grinding machines or robotic systems based on a customer-generated video by one of our process specialists

Result: Recording of optimization potentials and coordination of further steps through a detailed report.

Upgrade of our knife geometry measurement for sharpening machines

Upgrading your existing measurement technology "sharpening" with mechanical probe and laser to the latest double laser technology

Result: Increased productivity by reducing the measuring time and increasing quality

Scope of services:

- double laser measuring station including mechanical attachments
- integration into robot program
- creation of circuit diagram/documentation
- assembly on site and instruction by technicians in the field of measuring program

Upgrade of our knife handle and pliers geometry measurement with Duplex camera system

Upgrading of your existing measuring technology "handle processing / contour processing" to current Duplex camera technology

Result: Increased productivity by reducing measurement times and increasing quality

Scope of services:

- double camera station including lens and illumination as well as mechanical attachments
- industrial PC including TFT display, keyboard and evaluation software
- measuring program for task (e.g. measuring of riveted handles or grinding of telephone pliers)
- integration into robot program
- creation of circuit diagram/documentation
- assembly on site and instruction by technicians in the field of measuring program

Examples of use (pictures)

1. Camera measuring system integrated in a robot grinding cell for clamps (picture 1)
2. Measurement of workpiece contours with camera measuring system (picture 2)

UPGRADE
CNC CONTROL AND DRIVE TECHNOLOGY

The upgrades are offered for KEBA/Andronic control systems in connection with grinding machines of the Berger Gruppe.

MS-DOS on KEBA/Andronic 3060+ with Windows 10

a) **Dual or single control with manual loading and unloading**

Scope of services:

- CNC control
- machine control panel
- TFT monitor
- patch cable
- USB ranger
- Profibus
- 12 digital inputs, 12 digital outputs
- creation of CNC/PLC programs
- creation of circuit diagram/documentation
- on-site assembly[1]

b) **Dual or single control with loading and unloading in connection with robot**

Scope of services:

- as a) with additional signals for robot communication and extended programming

1 Assembly does not include training.

KEBA/Andronic 2060 XP on KEBA/ Andronic 3060+ with Windows 10

Dual or single control with manual loading and unloading

Scope of services:

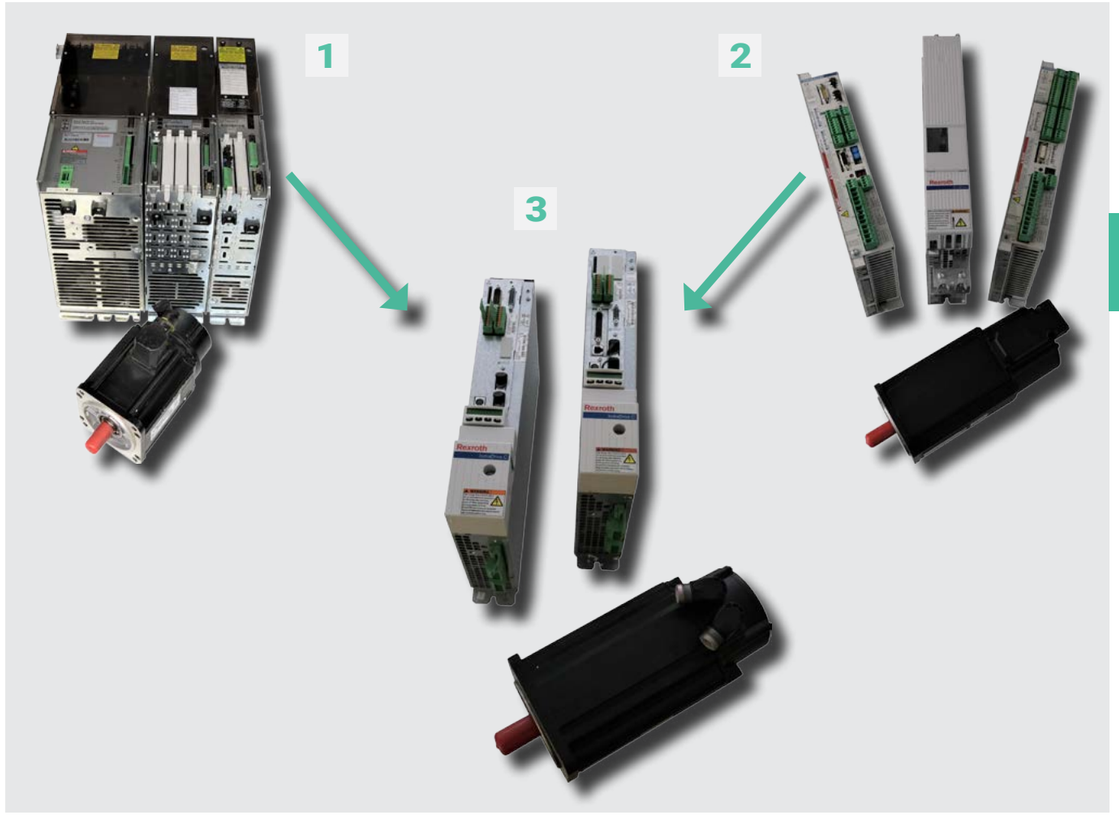
- CNC control
- patch cable
- USB ranger
- creation of CNC/PLC programs
- creation of circuit diagram/documentation
- on-site assembly[1]

KEBA/Andronic 3060 XP on KEBA/ Andronic 3060+ with Windows 10

Dual or single control with manual loading and unloading

Scope of services:

- CNC Upgrade kit on Windows 10
- creation of CNC/PLC programs
- creation of circuit diagram/documentation
- instructions for installation by the customer



Service concept of the Berger Gruppe

Measures to ensure production reliability

BoschRexroth/Indramat – Retrofit to IndraDrive (picture 1)

- ensuring service over the entire life cycle of the machine
- DIAX02 drives (DDS02.1/03.1 modular)
- DIAX02 motors (MDD/MKD)

or

BoschRexroth/Indramat – Retrofit to IndraDrive (picture 2)

- ensuring service over the entire life cycle of the machine
- Eco-Drive drives (DDS02.1/03.1 modular)
- Eco-Drive motors (MDD/MKD)

Replaced by IndraDrive drive technology (picture 3)

- save up to 100 % on control cabinet
- up to 90 % reduction in cabling requirements
- up to 100 % less energy consumption for control cabinet cooling

We will be happy to make you an individual offer!

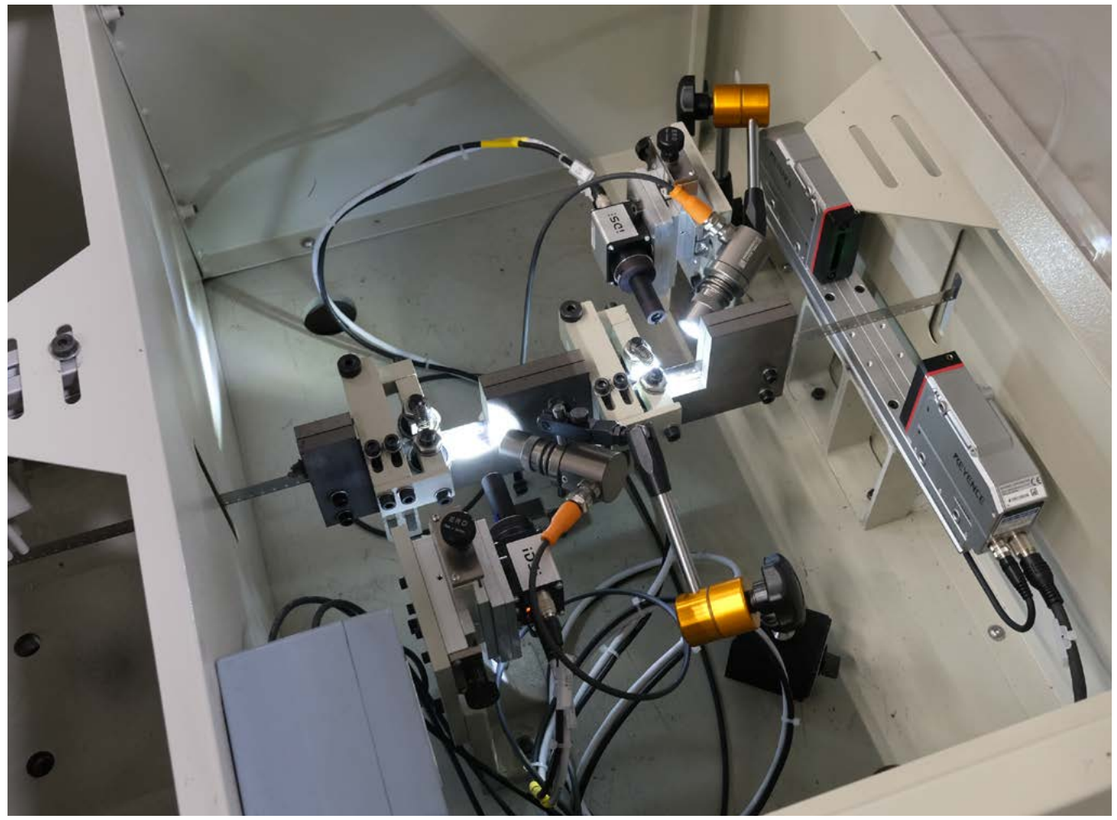
UPGRADE
LASER AND CAMERA MEASURING SYSTEM

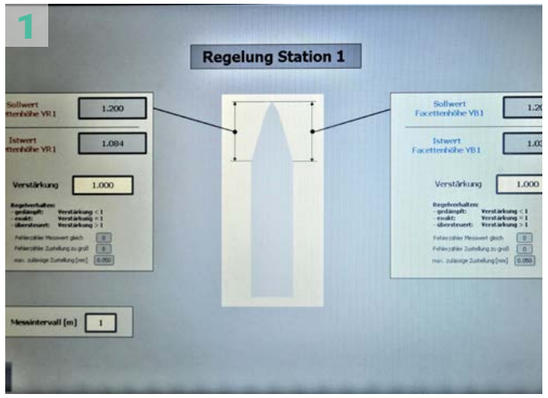
Measuring technology for steel strip grinding machines of the Berger Gruppe

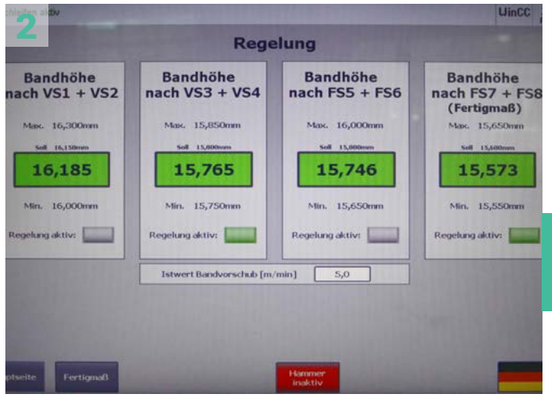
Upgrading of your existing plant to camera and/or laser measuring technology

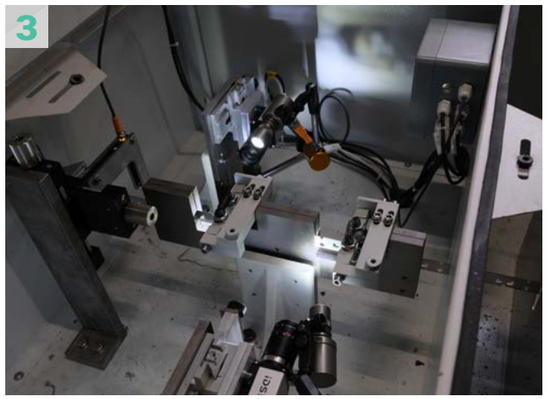
Result:

- Manual machine without CNC control: precise display of strip height and/or bevel width for quick and easy adjustment.
- CNC-controlled systems: automatic operation can be set up to automatically compensate for wear on the grindstone.









1 Camera Measuring System (pictures 1, 3)

a) Integration into an existing line

Scope of services:

- 2 cameras with lens, 2 illuminators
- industrial PC
- screen display for visualization of facet width (without feedback)
- license for image processing software
- housing of the measuring system
- wiring
- creation of circuit diagram/documentation

b) Integration into a CNC control with feedback, including programming

c) On-site assembly

2 Laser Measuring System (pictures 2, 4)

a) Integration into an existing line

Scope of services:

- laser measuring system for strip height up to 30 mm
- housing of the measuring system
- Screen display for visualisation of strip height (without feedback)
- wiring
- creation of circuit diagram/documentation

b) Integration into a CNC control with feedback, including programming

c) On-site assembly

UPGRADE
LASER- AND CAMERA MEASURING TECHNIQUE

Quality control during processing of strip steel

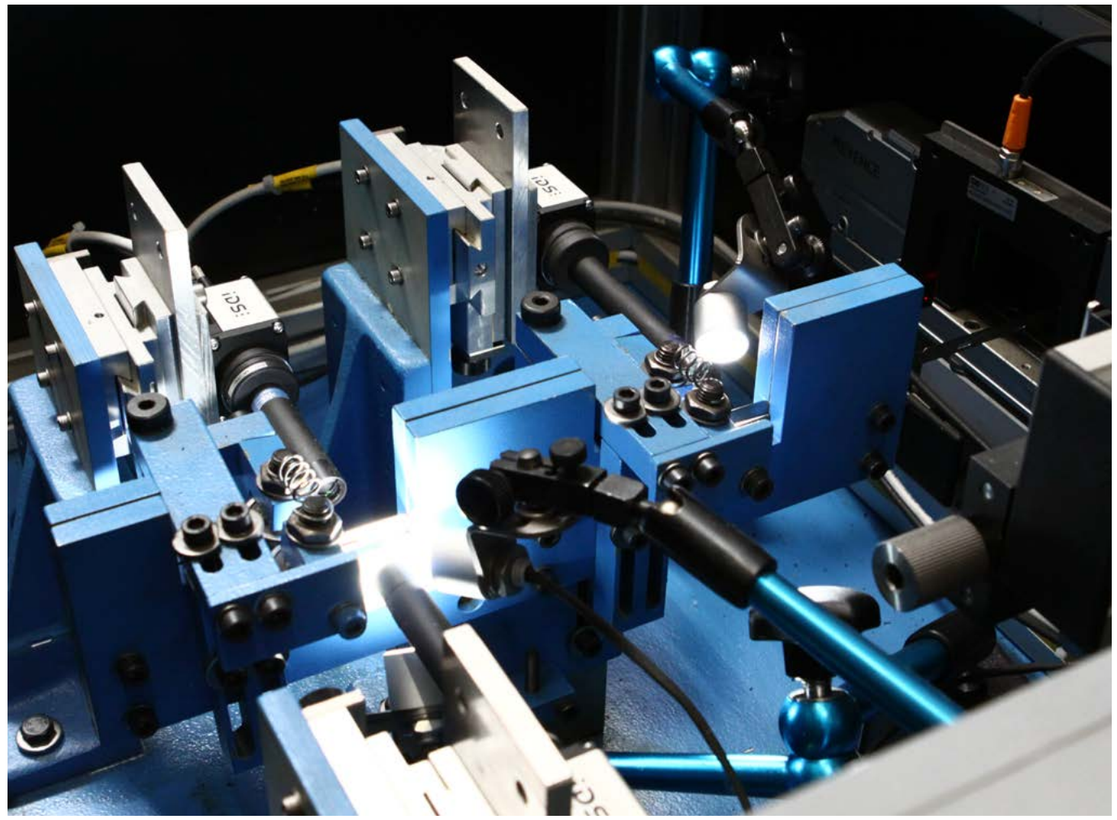
Inline inspection system for checking the part to be produced during the grinding process of strip steel

- monitoring of the blade contour during the running process
- information to operators for safe control of the plant
- quick setup of the system for optimum grinding results
- readjustment of the machine in good time before reaching the tolerance limits
- minimization of rejects at machine start-up and due to errors in the grinding process

Quality control for processing of individual workpieces

Inline inspection system for checking the production part of individual workpieces in robot sharpening cells

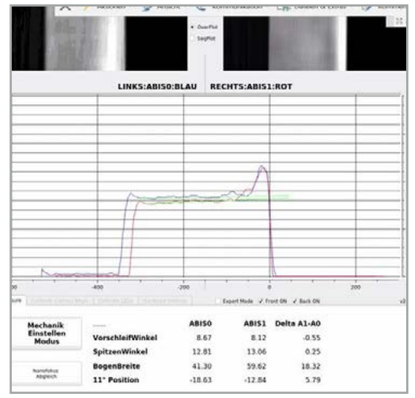
- inspection of the individual workpiece after machining



Angular Blade Inspection System (ABISY)

Inline inspection system for quality assurance in the grinding process of strip steel and in robot cells after the grinding process consisting of:

- two camera measuring systems
- LED system



Examples of use (pictures)

- Angular Blade Inspection System (ABISY) integrated in a BSM3000/TTGB-CNC series steel strip grinding machine to inspect the gothic arch grinding of razor blades (picture here above)
- Graphical display of ABISY measurement data via monitor (graphic on the right)

ACQUISITION AND EVALUATION OF MACHINE DATA

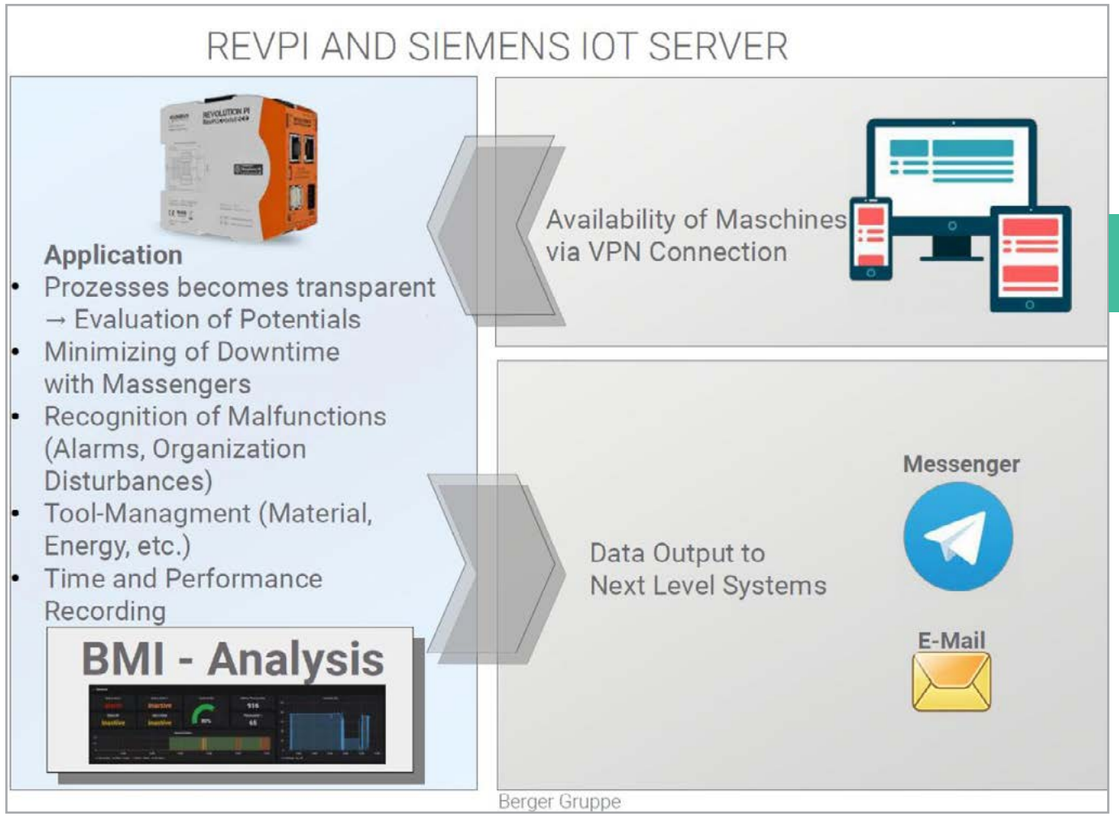
Berger Machine Interface 4.0

Berger Machine Interface 4.0 (BMI4.0), in conjunction with KEBA/Andronic and Windows 10, enables bus-based acquisition of sensor signals on a machine and evaluation of the machine data.

Definition of universal protocol

(1. Definition of a universal protocol on 20/02/2019, use with KEBA/Andronic/Siemens control)
Example of a universal protocol. The parameters can be compiled as required.

Variable	Type	Unit	Comment
General information			
Alarm active	BOOL		0=no alarm, 1=alarm activated
Machine ready/autorun	BOOL		NC activated, green button
Rob1 Automatic/Autorun Rob1	BOOL		
Rob2 Automatic/Autorun Rob2	BOOL		
Rob1 Alarm	BOOL		
Rob2 Alarm	BOOL		
Feed rate (feed potentiometer position)	INT	(%)	0...100% of potentiometer position
Total piece counter	INT32		Total piece counter (not resettable)
Piece counter1 resettable	INT		Piece counter 1 (resettable)
Piece counter2 resettable	INT		Piece counter 2 (resettable)
Target batch counter	INT		
Actual batch counter	INT		
Machine-specific/channel-specific			
Current program	STRING (24)		
Grinding activated	BOOL		0=inactive, 1=grinding activated
Measuring activated	BOOL		0= inactive, 1=grinding activated
Dressing activated	BOOL		0= inactive, 1=grinding activated
Grinding time	REAL	sec	
Loading time	REAL	sec	
Cycle time	REAL	sec	Grinding time + loading time

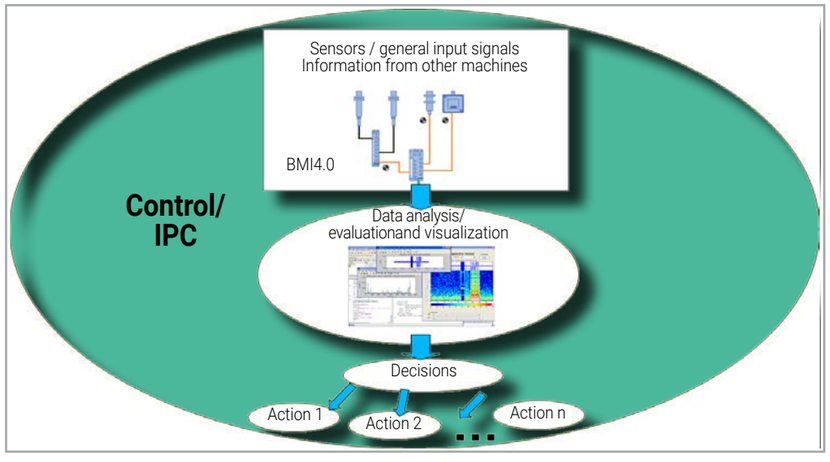


Functions of BMI4.0

- universal bus-based acquisition of sensor signals on a machine such as coolant temperatures, motor load, AE signals for spindle monitoring, air pressure and quantity
- data reduction and visualization with evaluation software
- networking with IOT or company network
- programming of interfaces for individual connection to existing PDA or ERP systems with OPC server

Advantages of BMI4.0

- prerequisite for intelligent resource management (IRP)
- prerequisite for preventive maintenance and real-time monitoring of the machine park
- acquisition of process data for process optimization and detection of process dependencies
- optimization of downtimes and set-up times, thus optimal capacity planning



DIGITAL PRODUCTION
BERGER MACHINE INTERFACE 4.0

OPC UA in connection with Windows 10 + CODESYS (KEBA) Windows 10 + S7Comm (Siemens)

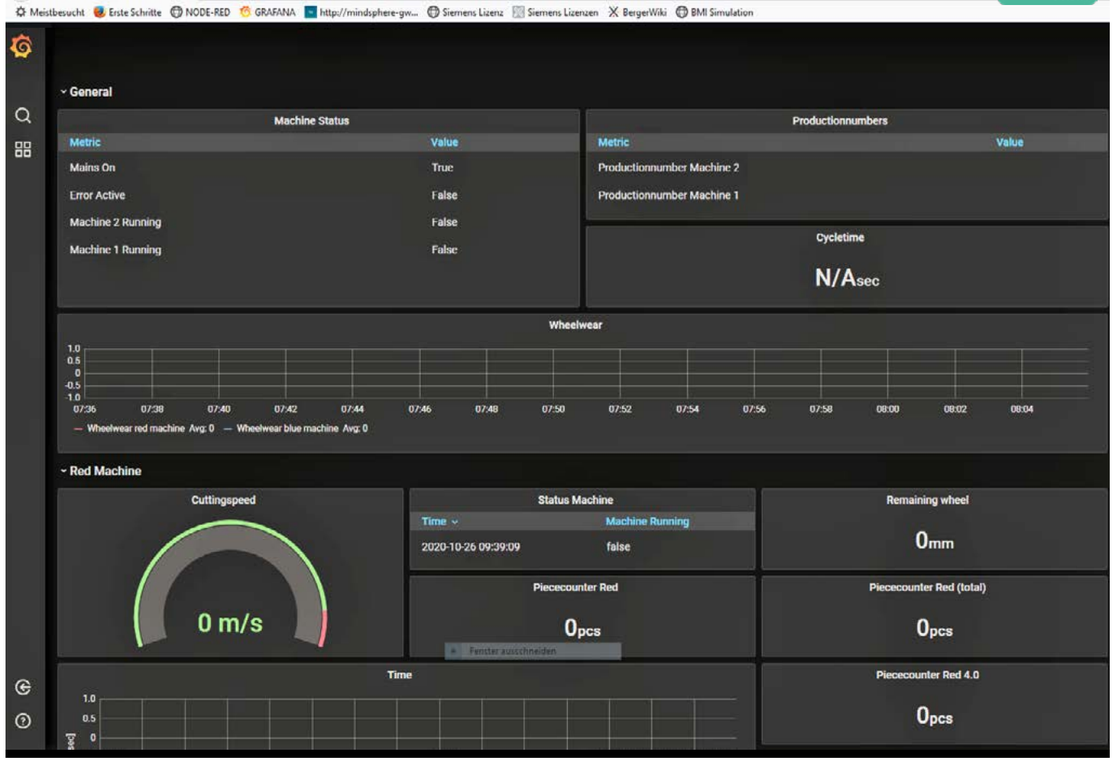
Scope of services:

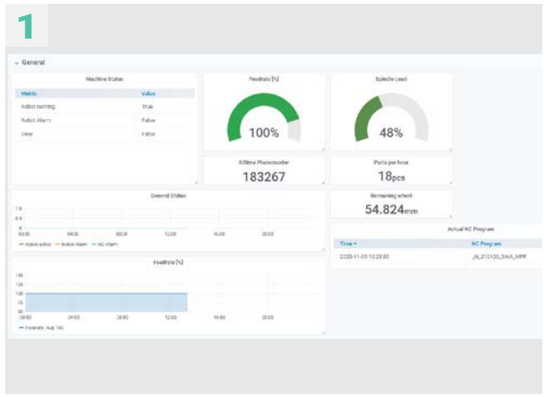
- provision of signals according to attached universal protocol (Table p. 14) in connection with RevPi or CODESYS and database (Influx DB)

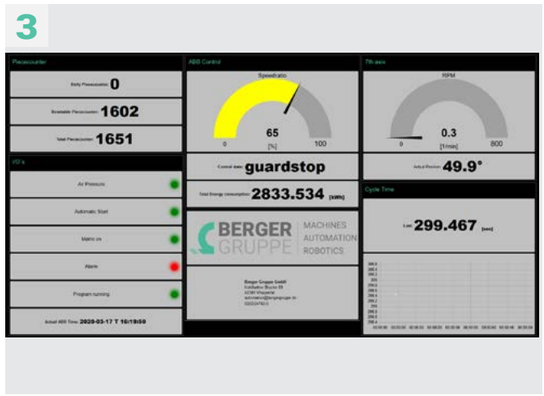
BMI Gateway-Analytics

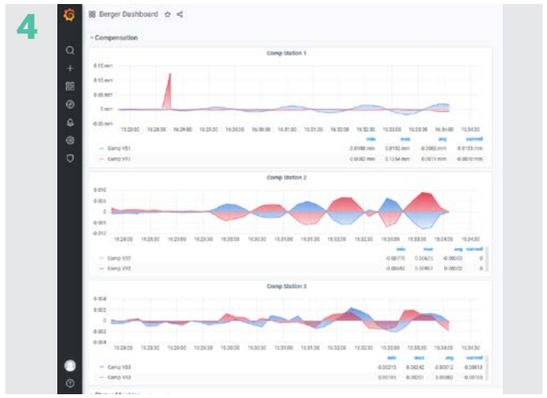
Scope of services:

- app, which accesses database (Influx DB), with standard dashboard for visualization of machine states









Extension package for sensor technology

a) **Basic extension**
- basic extension for the integration of additional sensors

b) **Energy detection**
- total machine power consumption
- compressed air consumption

c) **Spindle**
- spindle current
- spindle temperature
- spindle speed
- spindle vibration
- spindle cooling (volume flow + temperature)

d) **Coolant lubricant**
- volume flow
- temperature
- tube cooling pressure

e) **Hydraulics**
- oil temperature
- pressure, hydraulics

Examples of use (pictures)

1. Graphical display of measured values, here system status, counter, spindle load and feed (picture 1)
2. Graphical display of measured values via Grafana (picture 2)
3. BMV (Berger Machine Visualization) in connection with stand-alone robot (picture 3)
4. Camera laser measurement values (picture 4)

DIGITAL PRODUCTION
PRODUCTION SAFETY

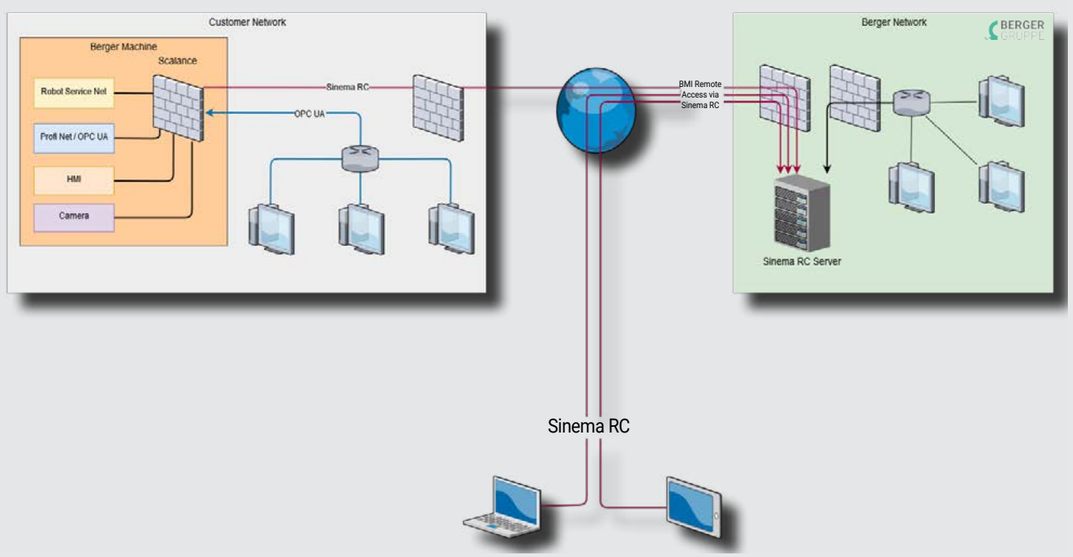
Solution for Remote Desktop Connection

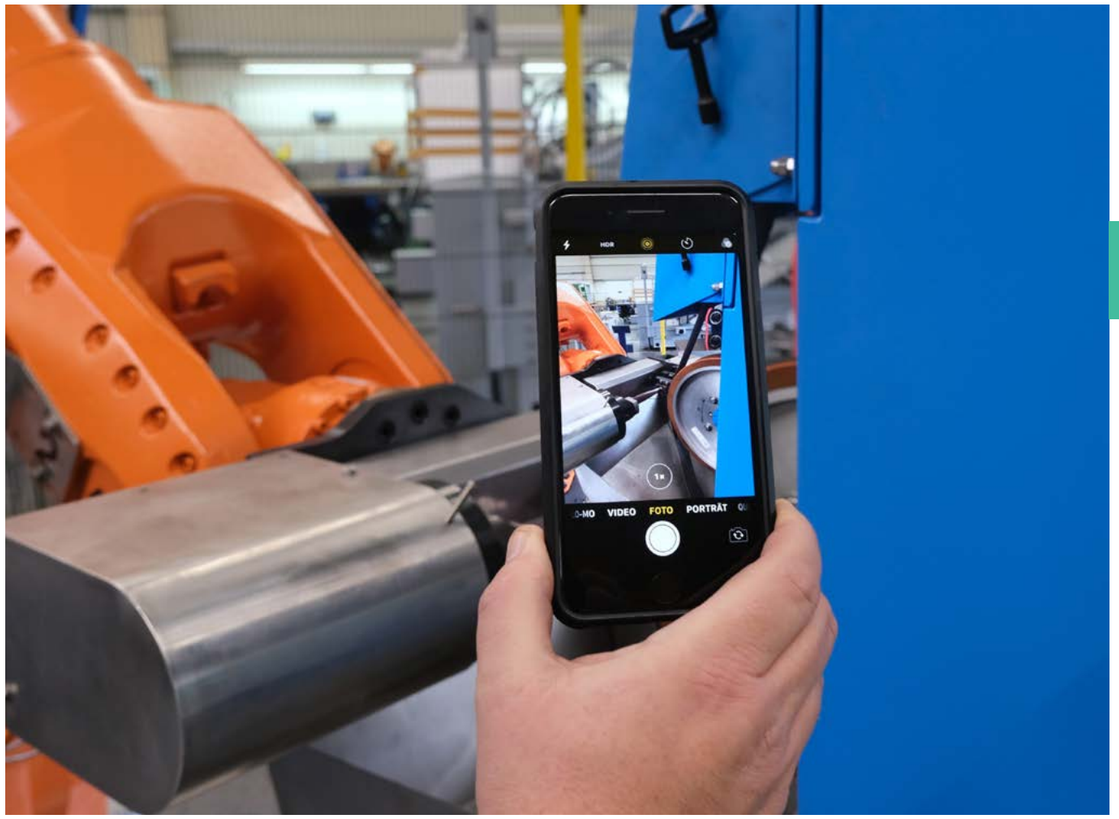
The remote desktop solutions provide data security for connections.

- easy remote access for teleservice and remote maintenance
- management of tunnel connections (VPN) between the head office, the service technicians and the installed machines or systems
- secure data transfer guaranteed by simple establishment of encrypted connections with OpenVPN and IPsec via mouse click, multi-factor authentication with user name/password and PKI smartcard and support of the current encryption method TLS 1.2
- retrofitting of the controller with remote possible, even after delivery

With SINEMA Remote Connect, mass-produced machines can be easily connected via remote access – even if they have identical IP addresses.

Sinema RC Network Architecture





Remote Commissioning

Remote access to plant software e.g. for remote commissioning

Scope of services:

- cell phone with camera with pre-installed software
- headband for fastening
- transmission to the service department of the Berger Gruppe e. g. via Circuit or Pilot
- commissioning support (2 days)
- prerequisite: WLAN

MECHANICAL OVERHAUL

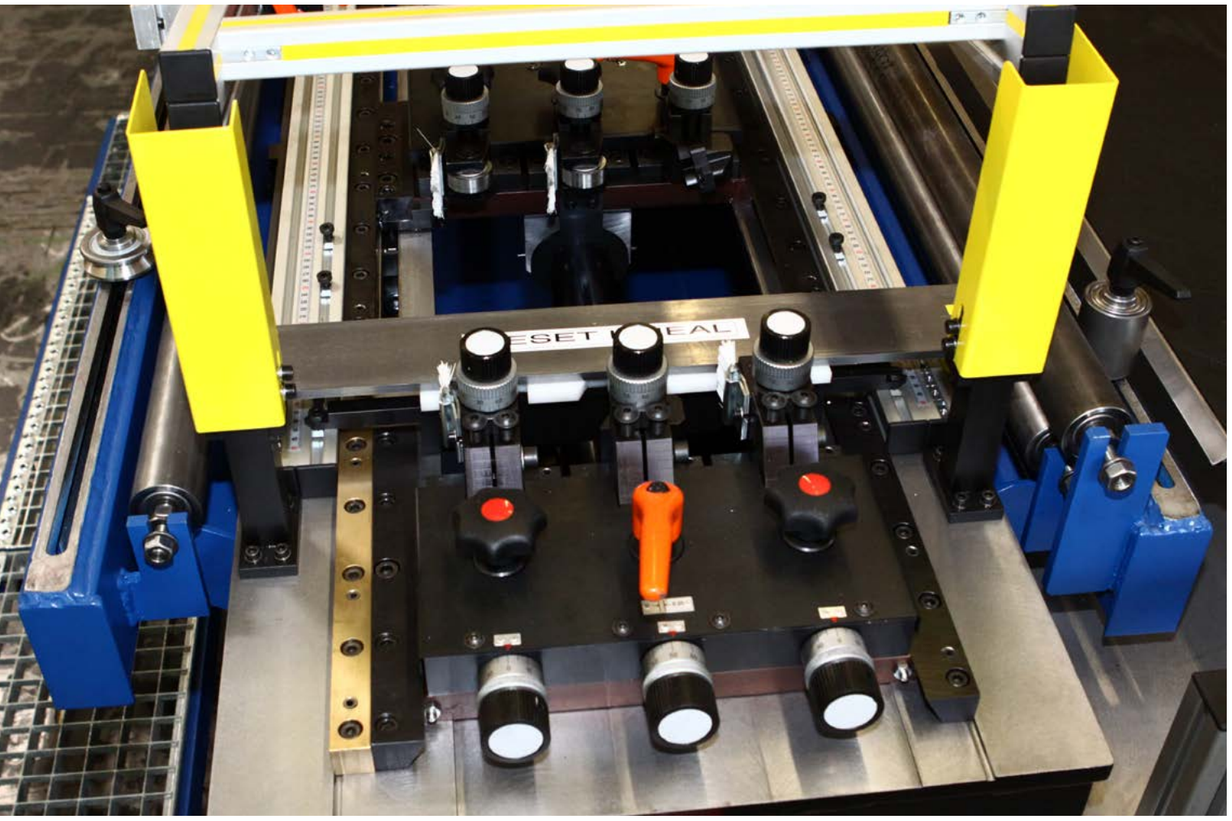
Renewal of single slides

for JULIUS strip edge trimming machines (standard version)

Score of services:

- replacement and assembly of the set of three slides on both sides (without lateral guide) with all horizontal spindles and scale accessories
- adjustment of the triple carriage set on both sides

Individual maintenance possible



Mechanical and electrical overhaul of feeds BG/PLM with ball screw in X-axis / "inclined bed" version

Scope of services:

- instructions for dismantling the feeders by the customer
- dismantling of the feeders in Wuppertal
- cleaning
- replacement of ball screws for X, Y and Z axes
- regrinding/scraping the guides
- inspection of the pivot point of the baffle
- A-axis gear check (without replacement)
- inspection of the counter bearing A-axis (without replacement)
- inspection of central lubrication including repair of lines and distributors, if necessary
- measurement protocol
- provision for installation by the customer
- instructions for the installation of the feeders by the customer

In principle, overhauls and repairs in the area of headstock or rotary table or rotary table gears for different series can be offered in consultation.

COURSES AND TRAINING

ABB BASIC COURSES, TRAINING BERGER GRINDER

ABB basic course Pick & Place

Scope of services:

- 2 training days in Wuppertal/training centre for one to two employees as a maximum

ABB basic course RobotStudio

Scope of services:

- 2 training days in Wuppertal/training centre for one to two employees as a maximum

Training Berger Grinder with KEBA/ Andronic in connection with BG-CNC

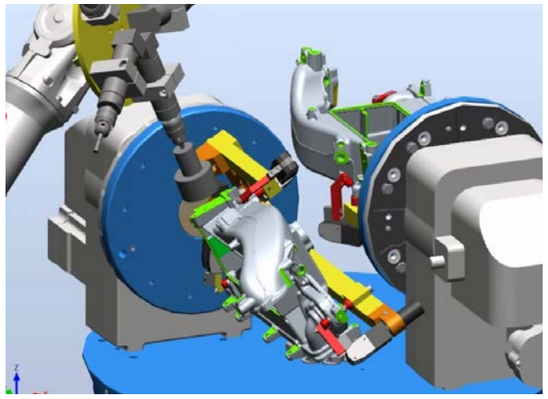
Scope of services:

- 1 day theory in Wuppertal/training centre for two employees
- 2 days practical training in combination with demonstration machine for two employees

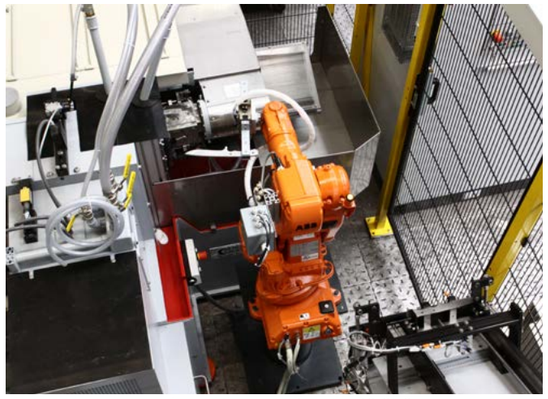
Training for maintenance of Berger machines

Scope of services:

- ½ day theory in Wuppertal/training centre for two employees
- 1 day practictical training in combination with demonstration machine for two em-ployees



Simulation with RobotStudio



Flat bevel grinding machine of the series Baureihe BG-CNC

SERVICE FEATURES

REQUEST

Company	
Contact	
E-Mail	
Tel./Fax	

Please send a quotation about:

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	Remote maintenance/TeamViewer	

Please send the completed questionnaire to service@bergergruppe.de.

STRONG PARTNERS

UNDER ONE ROOF ...

The Berger Gruppe develops and builds CNC-controlled grinding machines for various industries such as the cutlery, tool, surgical and automotive industries.

Every year 10-12 new types of machines or new production processes are completed from a total of 80-110 new plants. As a robot system house from ABB and KUKA, the company mainly uses robots to automate its machines.

The robots are used both for handling and for workpiece or tool guidance. The feeding technology of the components to be machined is decisive for the use of automation

The development of workpiece provision and interfaces for other production steps is an important area of work for the company.

Newest technologies of broadband connectivity and digitalization of production purposes set the stage for Berger developments of interfaces for Industry 4.0 applications with linked sensor technology, signal analysis and integration of Automated Guided Vehicles (AGV) for the machines.

Berger
hauschild
NELL JR.
WERNER PETERS
Julius
LP

OUR PRODUCT CATEGORIES


Grinding machines for single workpieces


Grinding machines for steel strip


Polishing machines for single workpieces


Robotic process technology/automation


Robotic grinding and polishing systems


Strip processing machines by metal-cutting


Metal cutting machines

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