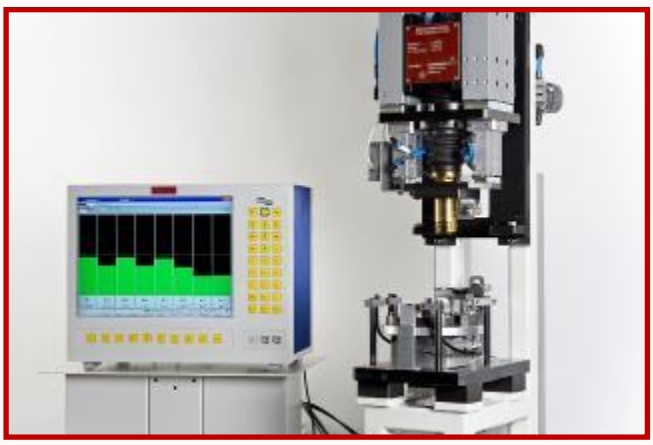
NIEBERDING

Overview

Products & Services



ICG International Certification Group

ISO 9001 Certified

Manufacturing—Gemany

Sales & Office—Germany

Jürgen Güsgen
Managing Director
Since 2007

About Nieberding

Gauging Systems for your Success

Our Vision is to support the global activities of our Customers with highlevel Gauging Solutions and qualified Customer services.

The Nieberding Company was formed in 1977 in Kaarst, near Düsseldorf.
Nieberding is very proud to have a long gauging history.
Since 1977 the company has designed and provided more than 28.000 Gauging solutions for our customers and partners.

We are one of the world leader in high precision gauging technology.

Since 2007 Nieberding grow up to a Systemsupplier. Now we offer our customers a combination of advanced qualified products, market knowledge, projectmanagement and commitment to long term global partnership.

Since 2010 Nieberding move intensive into the growing Market of Inline Machine Gauging and Automatic Measuring Machines.

With strong Partners we can offer our Customer a full package in industrial Gauging solutions.

Our Philisophy is easy to understand and our highest Requirement:

Nieberding is Quality.

For add. Information

Nieberding Worldmap to support qualified Sales & Service Solutions

Perfectly positioned in the Asian market

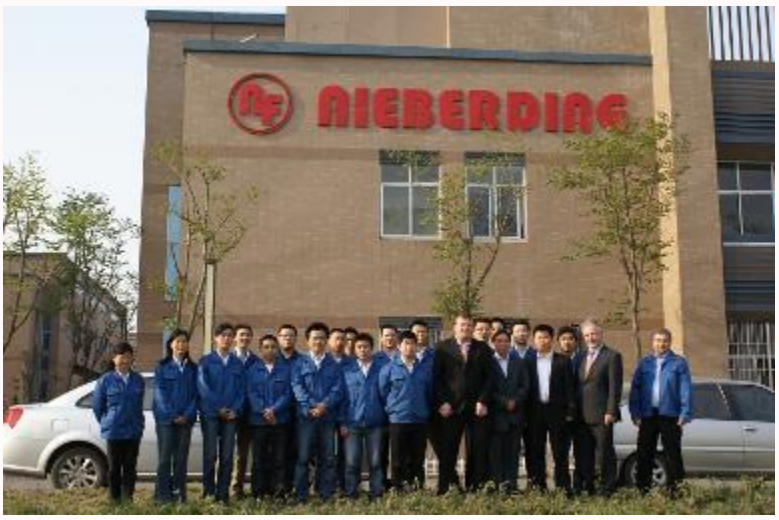
Nieberding-China celebrates fifth birthday

China is one of the biggest markets in automobile industry with a continuous growth. Nieberding Wuxi was established in 2010 to manage the incoming orders from China.

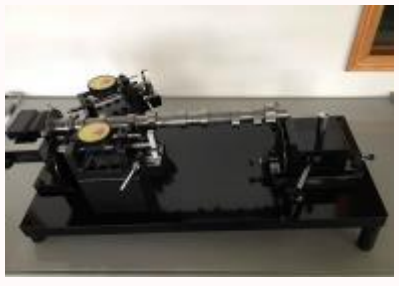
Picture of Establishment in September 2009

Nieberding Wuxi is a 100% subsidiary company without any Chinese partners. The aim of the company is to support the import projects from Germany by doing customer service, repair service and supporting with a local amount of supplies. In addition to that, Nieberding Wuxi is responsible for the local sales in China.
Wuxi is located 130 km north-east of Shanghai. It is considered to be the centre of meterology.
The products provided by Nieberding Wuxi are only sold in China and other Asian areas.
The company has its own design department, a manufacturing line, a final assembly and a quality management. It also has a fully equipped measuring room with a Zeiss coordinating measuring machine. Nieberding Wuxi works together with certified local suppliers for extern processes.

Through their local presence in China it became easier to react to customer‘s requirements fast and efficiently.
More and more customers decide, because of cost concerns, that a local amount of supplies like work benches, shelfs or gauges can also be supplied in a good quality in China. With Nieberding Wuxi, these standards can be met.
In 2016, Nieberding Wuxi plans to supply more independent local projects for Chinese automobile customers, besides supporting Nieberding Kaarst with their import projects.
However, an expansion of the product line is planned. As in all other countries, China also shows a tendency towards automatization.



Manufacturing Building NF-Wuxi



Measuring Instruments Made in Wuxi

Standard Handgauges

Proven manual measuring instruments

Pneumatic ball- contact gauge

Pneumatic spring- contact gauge

Longer service life thanks to TICN coating

Taper measurement ring

Taper measurement on gears

Pneumatic barrel gauges

Suitable for bore measurements for blind holes and through bores

Diameter range:

approximately 1 – 300 mm.

Depending on the requirement (roughness) open nozzles, ball elements, or spring- contact elements can be used.

Measuring range:

< 100µm

Accuracy:

< 2% of the measuring range

Special features:

Pneumatic gauges clean the parts that are being measured via their measurement air.

With open nozzles the measurement is virtually contactless.

Measuring jaw/measuring bracket

Suitable for measuring the outer diameter on shafts.

Diameter range:

from 6 mm

Depending on the requirement (roughness) slotted nozzles, round nozzles, or spring contact elements are used.

Measuring range:

< 100µm

Accuracy:

< 2% of the measuring range

Special features:

Pneumatic measuring jaws clean the parts that are being measured via their measurement air. Optionally width can also be measured.

Taper measurement

Nieberding supplies measuring devices for measuring female taper and male taper. Models from 2-5 measuring planes.

Diameter range:

From 5 mm.

Nozzles or spring contact elements are used depending on the requirement (roughness)

Measuring range:

< 100µm

Accuracy:

< 2% of the measuring range

Special features:

Pneumatic taper measuring devices clean the parts being measured via their measurement air.

Taper measurement execution:

- ISO / Morse / HSK
- Customer-specific

AT3100 / AT3200

Universal Diameter Device

Production of high-precision workpieces requires measuring devices that are robust and accurate.
The AT3100 / AT3200 universal measuring devices are suitable for inspection of small production runs or for changing measurement applications.

Measurement task:
Measurement of inner and outer diameters; with accessories distances can also be measured.
The outstanding features of this measuring device are its high level of measurement sensitivity, accuracy, and its universal range of implementation.

Function:
The movable oscillating element is suspended on two leaf springs. Together with the retaining element these form an articulated rectangle where one side is rigidly connected with the measuring element, and the oscillating element can swing freely as measuring disk carrier.
Thus every change in measured value is directly transferred to the gauge.
The size of the stroke movement of the oscillating element can be adjusted via the upper set screw. The zero position is reached when the screw is screwed all the way in. The lower set screw changes the direction of oscillating element movement for inner or outer diameter measurement by adjusting the leaf springs, and it also changes the measurement pressure.

The UD measuring device can be quickly refitted for new tasks via two adjusting screws and an extensive assortment of measuring disks and spacer disks.

"The UD measuring device has proven itself in production for decades"

AT3300

Pneumatic diameter control device

The pneumatic control device is particularly well-suited for production use.

Fast, precise, and cost-effective. The inner diameter of ground wheels can be determined directly next to the machine:

For the measurement, the wheel is pushed over the barrel gauge and the measured value is read out via the AT500 pneumatic display device.

Alternatively an electronic signal column or measuring computer can be connected via a measuring transducer.

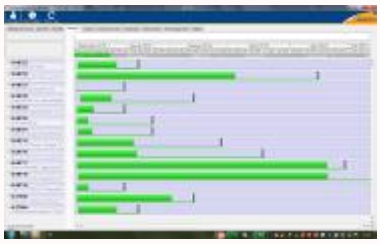
In addition to diameter, the ovality of the bore can also be measured.

Special features:

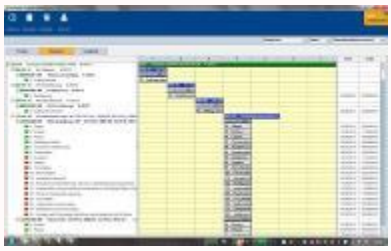
- Set up on diagonal stands
- Integrated pneumatic switch off
- Side holders for MIN/MAX adjusting rings
- Multiple measuring planes and/or stepped gauges
- Retooling via interchangeable barrel gauges.
- Robust construction

Workload ERP System

Analysis of project status



Detailed planning of orders



Detailed planning of stages

Everything under control

Real-time Capable ERP System gives punctuality to manufacturing delivery dates

If a company wants to be successful in their market, they have to fulfill certain conditions: The price should be market-conform, the quality should be high and the delivery date has to be adhered.

When Nieberding entered the Asian market in 2013, it invested into a real-time capable ERP System to ensure a on schedule job processing. When there is a higher quantity of orders. Since the end of 2014, the system is successfully running and is continuously improved. The ERP System makes it possible to display and control the production at anytime if necessary.

Description:

Every department has its own terminals, where workers can log in and log off from their operations. These terminals offer the workers the next operations through a software. Workers can summarize various orders of the same type, so set-up time and other costs can be saved. The ERP System gathers the position of the orders daily and reports deviations to the schedules.

A big advantage is the early detection of upcoming order shifts, which can now be controlled and counteracted. The ERP System was perfectly adapted to Nieberding's requirements. Through data analyses, our project managers can always inform their customers about the current status of the order. By using integrated post calculation, the project costs are always transparent for all parties.

Important suppliers and internal stocks are selected through the software of the ERP System.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Einzelteilarbeitsplan

1 Stück

29.10.2014

The task schedule gives detailed information over all planned processes

Further Expansion:

In 2016, sales shall be included into the ERP System, next to the materials logistics and purchasing. This is hoped to increase the efficiency of the workers, because all relevant data can be handled in one system.

It is **our aspiration** to have an efficient tool when dealing with increasing sizes and a complexity of the projects, so our customers can have an update about their projects every time they want to be sure that their orders are on time and still in their budget.

We can already notice that the cycle times of the projects are shorter. The adherence to schedules frequently improves.

Nieberding took a great step into a modern integrated manufacturing by introducing a real-time capable ERP System.

NIEBERDING

Efficient and inexpensive way to measure bores

B-100 : Bluetooth Gauge connected to Standard Gauge Heads M10 x 1 and M6 x 0,75

The Bluetooth Handholder B-100 has been specially developed for production in industrial areas.

All major bore plug gauges can now be connected without "cable clutter" with minimal effort to a PC.
Contrary to a digital gauge the relevant data such as nominal size, tolerance or setting values can be managed in the SPC software and transmitted to the B-100 Unit.

The Operator can see the actual measurement value on a coloured screen on the Handholder. It will be transmitted to the SPC computer via a Button.
If the measurement is carried out beyond the reach of Bluetooth connection, the measured value is temporarily stored by pressing a button and retrieved later.

Wireless Bore Gauge

Description:

- Resolution 1µm
- Repeatability +/- 0,3µm
- IP-65

- Lithium Battery, rechargable
- Wireless charging
- Workingtime up to 10h

Adapter to :
- M10 x 1
- M6 x 0,75

- Temporary storing of Measurement values
- Max 256 Gauges are connectable to 1 SPC Station..

Wireless charging Pad

Highresolution Screen

Characteristics:

- Automation of measuring tasks
- Direct man-machine interaction
- Short pay-back period
- Flexible Programming. Easy convertibility
- Saves space, no saftey fences necessary

Collaborating and Safe

Robots can take over dangerous, monotonous or physically strenuous tasks.
80% percent of all UR-Robots worldwide interact without any protective fences next to the operating staff.

The safety system of UR is approved and certified according to the EN ISO 13849:2008 PL d and EN ISO 10218-1:2011 by TÜV Nord Germany.
The average amortization period is 194 days.

No More Safety Fences

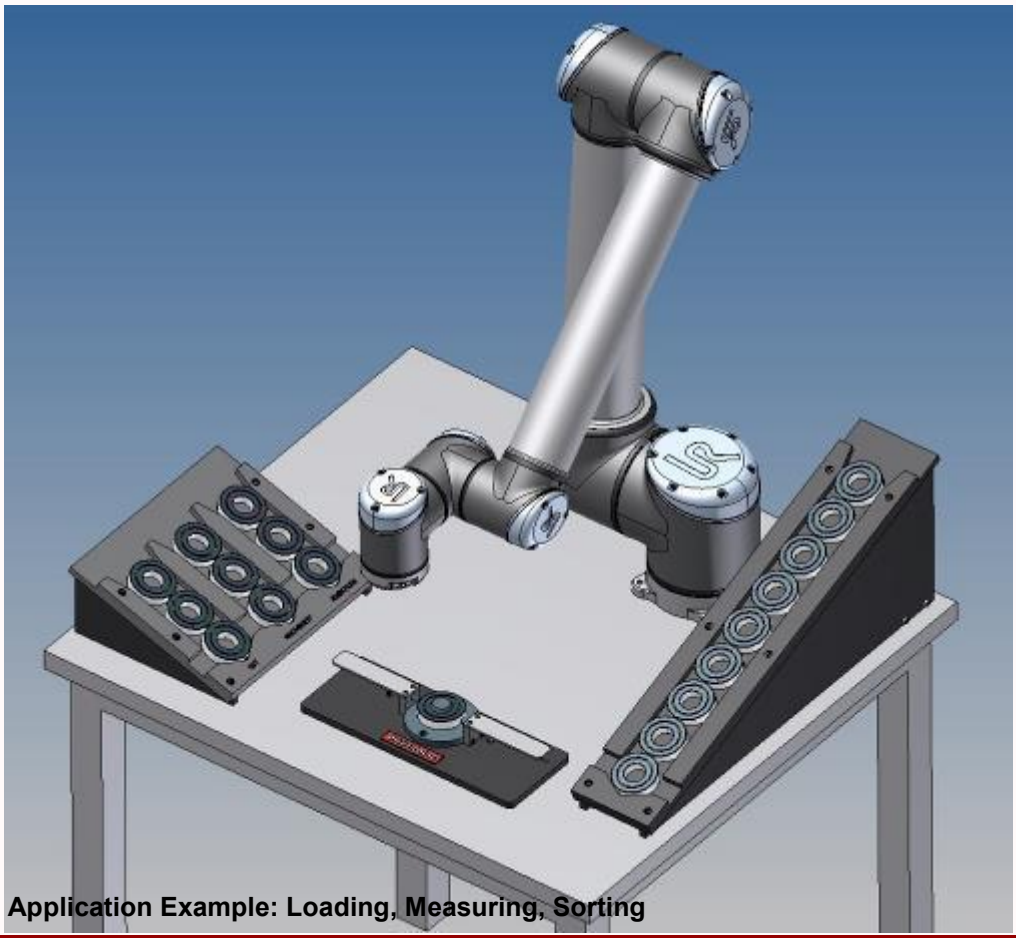
Collaborating Robots Introduce New Possibilities in Portable Measurement Technology

Collaborating robots are going to change the every day routines in manufacturing. Man and machine can work together in the future– without any risk.

At this year‘s Control show Nieberding presented an application example of a robot cooperating with a Nieberding measuring system. It loaded the gauge, started the measuring process and sorted the measured parts with respect to their results. This is just one example of how to work with a robot, a lot of other features are also possible. The robot can also take over tasks workers currently are concerned with.

There are many obvious advantages in using a robotic system. The effort of realization is minor compared to conventional robots. Collaborating robots can be trained more effectively for new tasks. Employees can assign simple tasks to the robotic system and turn their own focus to more high-quality work.

The image below shows an example of a Nieberding‘s application with a robot from the danish company Universal Robots, which is one of the leaders in the area of collaborating robotic systems.
But there are other company‘s also offering new collaborating models.
In 2015 we have already achieved some projects.
Watch our product video here:
http://www.nieberding.de/?Nieberding:Youtube_-_Videos



Application Example: Loading, Measuring, Sorting

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Progression in Leak Testing of Valve Seats

Measuring the Seal (leakage) over the entire Valve Seat Width

A high quality manufactured valve seat is one of the most important requirements for a low-emission motor. When it comes to combustion, it is necessary that the valve seats seal correctly. With our new plug gauge AT130DX we can measure the leakage of the entire sealing surface. Previous to that, it was only possible to measure the leakage on a given diameter.

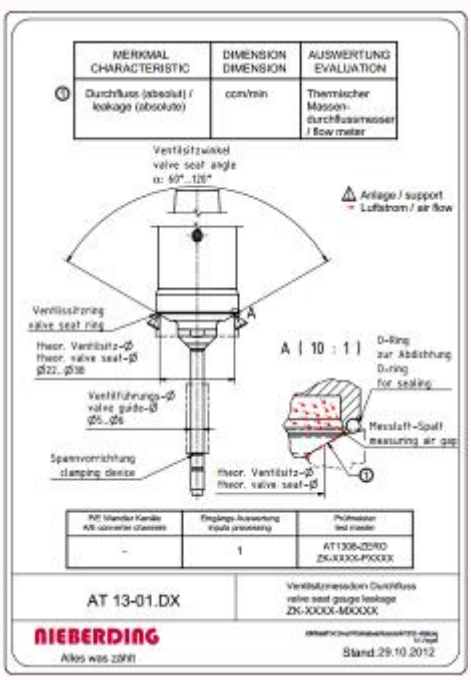
The plug gauge is used as a hand-held device. To analyze the data, a monitoring system can be employed.

Measuring Task:
The entire sealing surface of a valve seat is measured.

Process:
The hand-held gauge is placed into a valve seat. Via a clamping ring on a bore guide, the gauge is pushed into the valve seat and therefore seals onto the valve seat through a ring.
A sealing O-Ring is pushed onto the valve seat sealing it at the same time.
For measuring purposes, air is forced into the confined space, which can only be reached over the valve seat.
An air readout unit can ascertain if it has any leakage and can transfer the measuring signal for further analysis.
After the measuring, the hand-held gauge has a short resting period before it can be removed and transferred to the next application,

Characteristics:
One of the most important advantages of this method is that the entire sealing surface can be investigated for leakage, which gives us a more realistic image of the leakage on the valve seat.
Before that, it was only possible to find a leakage with a circular airjet ring on the valve seat's theoretical diameter; no deforming above and below could be dectected..

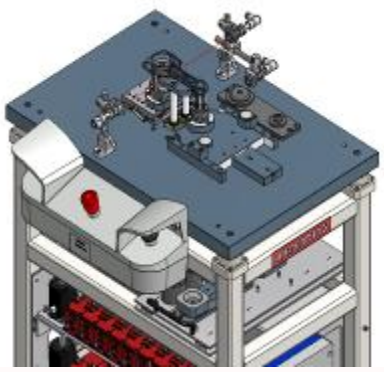
This method iof measuring is currently being launched at the first automobile manufacturers.



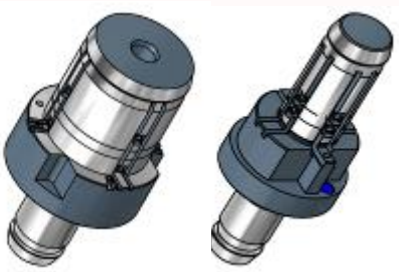

Gauge placed in workpiece


Gauge Head Detail

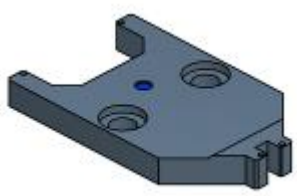

Clamping Ring



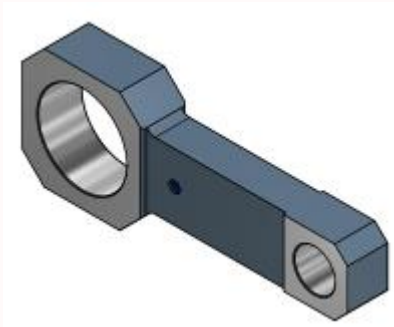
Automatical Measurement of Connecting Rod with Quick-Change System



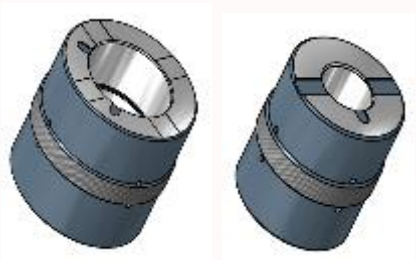
Changeable Plug Gauge



Loading Station for Parts



Calibration Setting Master



Alignment Setting Master MIN-MAX

Reference Project 27345

Robot Loades Measuring Automation for Measuring Connecting Rods

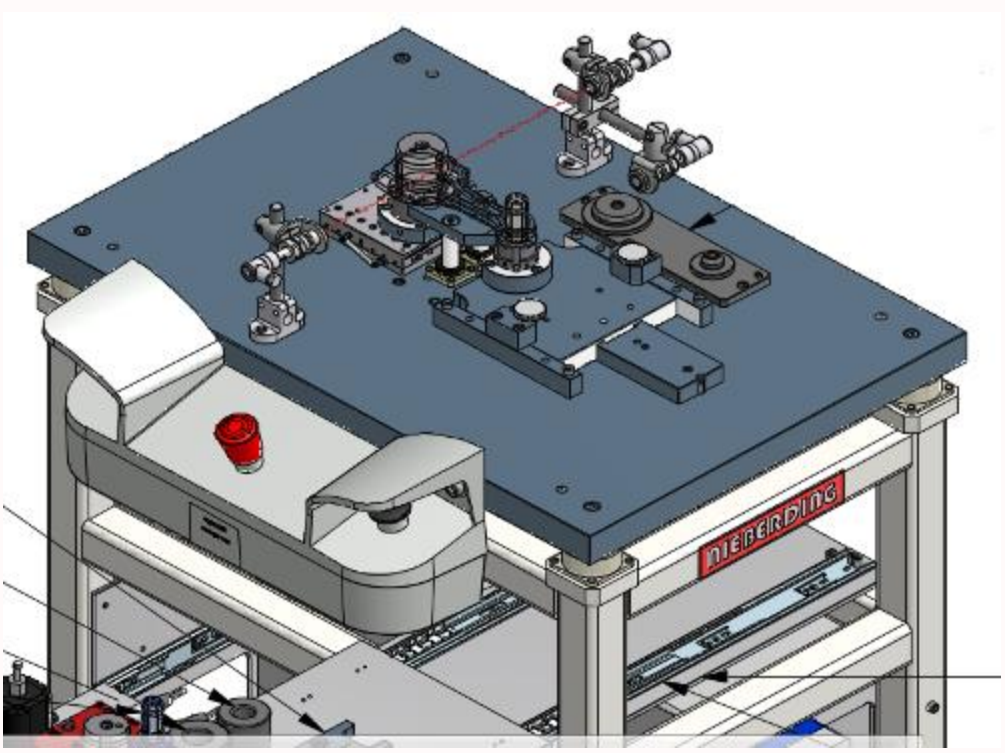
Nieberding pneumatic measuring system for connecting rods has a lot of advantages for its customers. The pneumatic measuring techniques are not only of high– precision and very robust against any damage or dirt, but also easy to modify for other types of applications.

This measuring system is used for the final inspection in an automatic assembly. The loading takes place through a loading system provided by the customer. The connecting rod is sorted into the correct category after measuring.

Measuring Task:
Diameter in X and Y on two levels
Ovality of the bores
Perpendicularity - big eye
Straightness—big eye
Bend and Twist, central axial distance

Process:
The robot loads the part onto the loading plate. The connecting rod is positioned here. It is then lowered into the measuring position via a loading device. After a short resting period of 500ms, the connecting rod is measured.
After measuring, the loading plate returns the measured part back into hand-over position.

Characteristics:
The gauge for the large connecting rod eye is variable mounted on a slide also used to calculate the axial distance.
The gauges and the loading plates can be changed easily.
The adjustable slide for the small connecting rod‘s eye can also change the axial distance when the part is exchanged.
The calibration master is automatically transferred by the robot for calibration purposes.
The cycle time of the measuring unit without any handling is approx. 4 seconds.
If needed, the measuring station can be equipped with a temperature compensator.
The SPC measuring computer system **PRONIXMAX V5** by PROMESS can readjust the manufacturing machine.



NIEBERDING

Display– and Analyzing Systems

Our best Solutions to visual your Measurement Data

Nieberding has customized solutions for Customer requirements to collect, visualize and analyze measurement data.

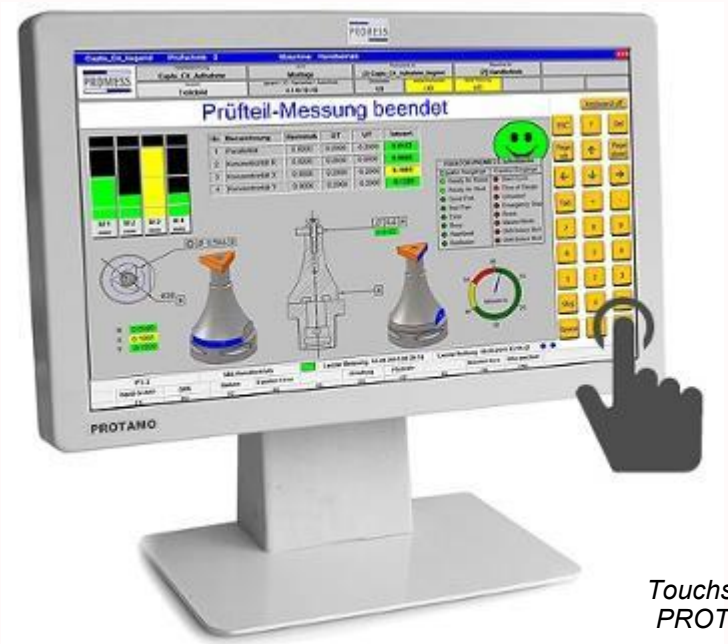
PRONITRON T5 is a very compact measuring system from PROMESS. The unit runs Windows, it comes with 4 or 8 measuring channels, 8,4” color screen and it has a fully protected enclosure. The software is fully family compatible and offers all capabilities of the large version PRONIMAX V5.

PRONIMAX V5
That SPC computer is high end. Equipped with i5 CPU and Windows 10, it is also completely sealed against water and dust. Software offers all SPC features, all interface capabilities to your machine tool, all transducer types supported, AQDEF 4.0 interface (Q-das certified) for data base connectivity.

Planning & Measuring Software
PRONITRON and PRONIMAX use network capable Software for planning your application and for running the data acquisition either with the operator or with the machine interface. Multiple options are available to display the results, collect information, guide the operator and send data into a network. Additional packages provide free programmable graphic, central network monitoring displays, connect different machine tools into closed loop control.

NETBOX 3
If you like to split computer and measuring interface, the NETBOX 3 is the solution: Easy connection to PCs, high accuracy, protected enclosure and fast measuring speed even with many channels.

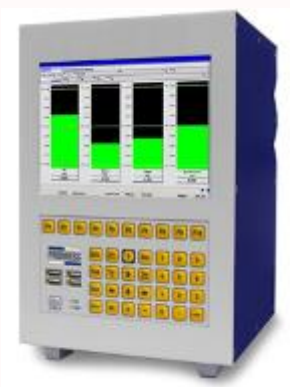
PROTAMO is a 22” touch screen with a solid glass plate with touch functionality. The Aluminum housing provides IP54/NEMA 5 protection against dust and splash water. PROTAMO can be wall mounted or with VESA 100 standard get a base.



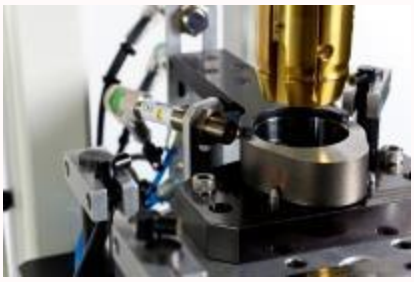
Touchscreen PROTAMO

PRONIMAX V5

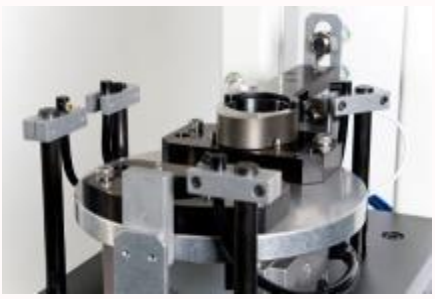
NETBOX 3



PRONITRON T5



Detailled measuring



Component loading via turntable

Compact design

Referenz Projekt 27894

Inprocess diameter measurement system for truck cams

The market for independent measurement technology is constantly growing. Nieberding shows with project 27894 a reference project that can be adapted for a wide range of components.

The measuring system has a compact design and can thus be easily integrated in the production line.

A central terminal supplies the necessary media.

Measuring task:
Inner diameter in two planes offset at 90 °.

Description:
Via a band the component is placed on a turntable in the transfer position. The turntable rotates the component into the measuring position.
In this case, the component must not move, since in the following process, the component is etched.
The plug gauge is held in a floating holder and will be lowered into the measuring position. The measurement is carried out automatically.
The measured result is forwarded to the machine for automatic correction. After the measurement, the plug gauge is retreated, and the component returned to the transfer position.

Special features:

- The measuring system is calibrated via integrated setting master.
- The pneumatic plug gauge is made extremely resistant to wear by coating with TICN
- Via a quick change adapter the system can be converted for other parts within a few minutes.

The cycle time is about 5 seconds.

Machine connection:
The Promess measuring computer is connected via Profinet with the machine. About a customer defined

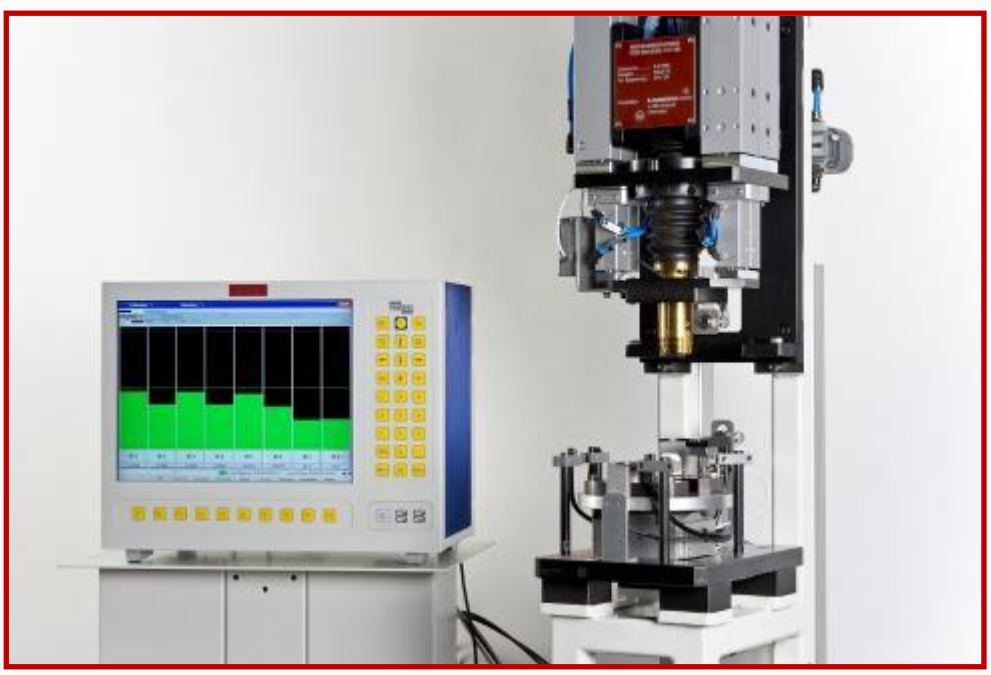


Photo: Automated measuring system for cams

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SPC Workstation 27773

SPC Station for measurement of valve plates for automatic transmissions

When measuring valve plates a high flexible option to cover numerous variants and high precision measurement as to be guaranteed and also ensuring that the slots that are mounted in the later installed hydraulic pistons cannot be damaged.

The SPC measuring station 27773 was designed and built for a leading manufacturer of automatic transmissions.

Measuring requirement

Inner diameter in several measuring planes using hand-guided measuring spindles. Measurement tolerances> = 10 microns.

Description:

The component-related measurement process is controlled by the measuring computer.
The worker inserts the plug gauges as specified into the bore to be measured. A dynamic display indicates the current measured value. Using the footswitch the measurement result is recorded. A fixture, for checking the flatness of the sealing surface is also included.

Speciality:

- The plug gauges are stored protected in parkings
- The cable guide prevents a tangle of cables.
- For future components, the measuring station can be expanded.

Machine connection:

The Promess measuring computer is connected via Profinet with the machine. About a customer defined

SPC Station for Valveplates

Parkings

Measuring

Fixture

Referenz Projekt 27870

Robot-assisted measuring system for final inspection of trucks con-rods

Nieberding has long been a competent supplier of measuring systems for the measurement of connecting rods. After classical SPC measuring systems now comes In-process measuring gauges and automatic measuring systems for final test in the production program.

The measuring system 27870 is designed for the measurement of truck con-rods. It is characterized by precision and high flexibility

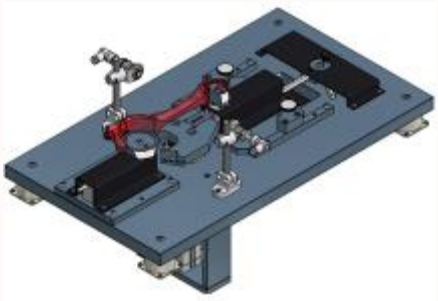
Measuring task:
Measurement of diameter in several levels, ovality, squareness, bend & twist, center-distance, straightness. Calculating the weight and weight distribution

Description:
The components to be measured are transferred to a transfer point and via a robot placed in the measuring system. The robot is equipped with a double grip jaw and then transports the already measured part to the weighing station. After weighing and classifying the component is laser marked. After marking, the screws are loosened and tightened with a defined torque. Finally, the components are stored in a sorting rack.

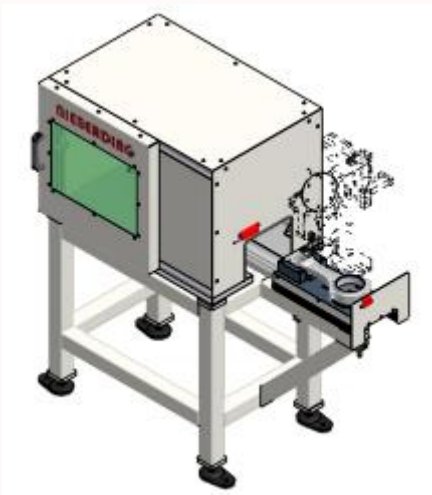
Special features:
- The measuring system is calibrated automatically via integrated setting master.
- Via a quick change adapter the system can be converted for other components, within a few minutes..

Cycle times approx 25 Sec

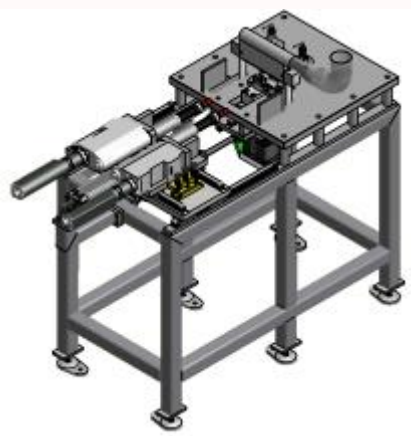
More info :



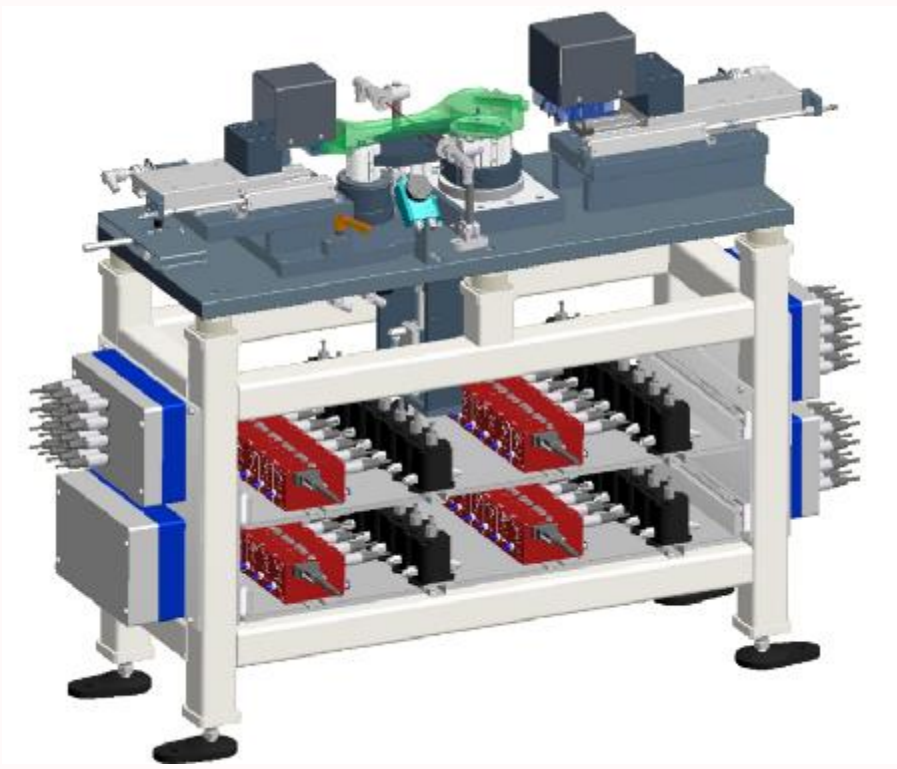
Detail :Weighing station



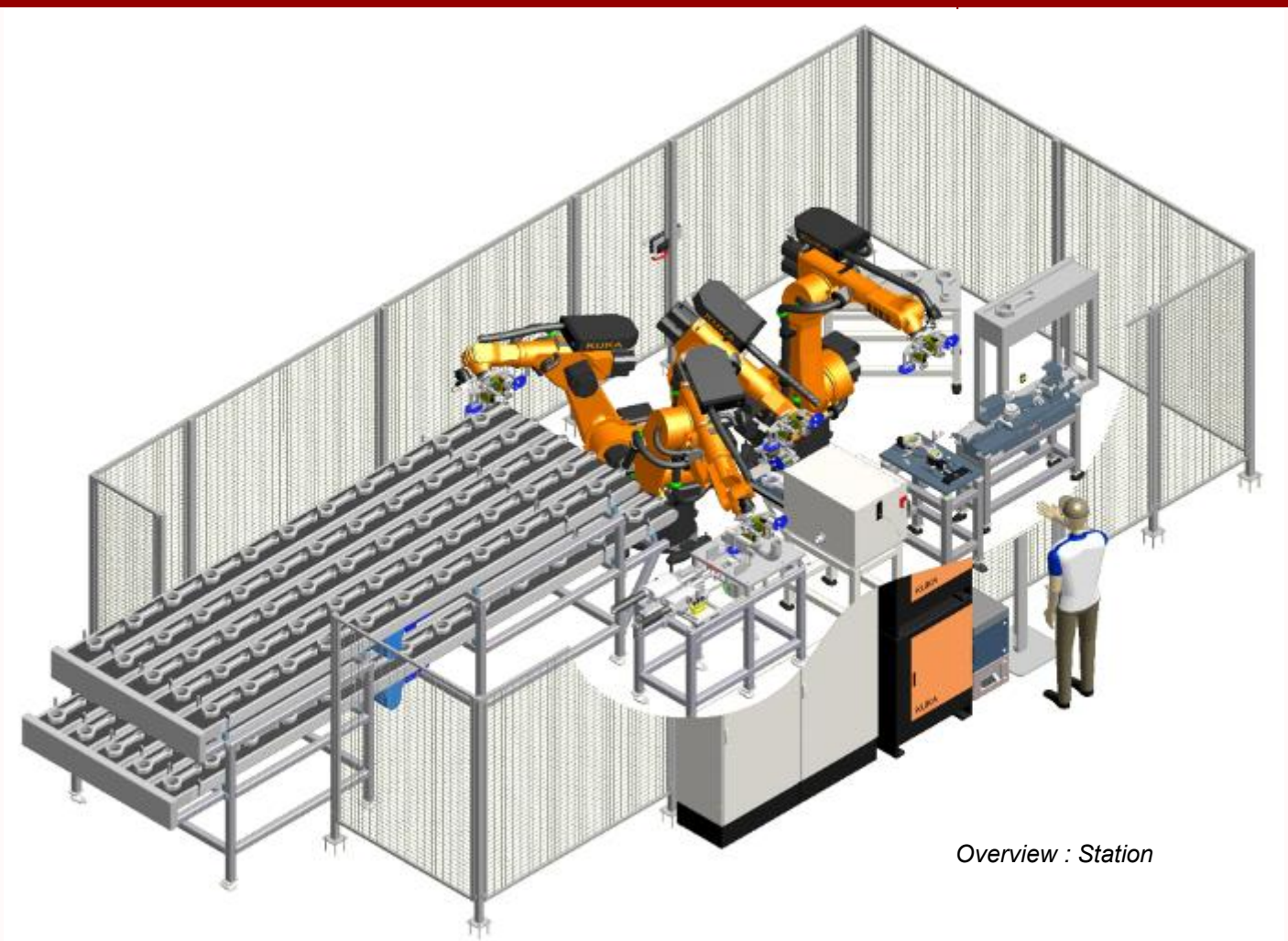
Detail : Laser marking station



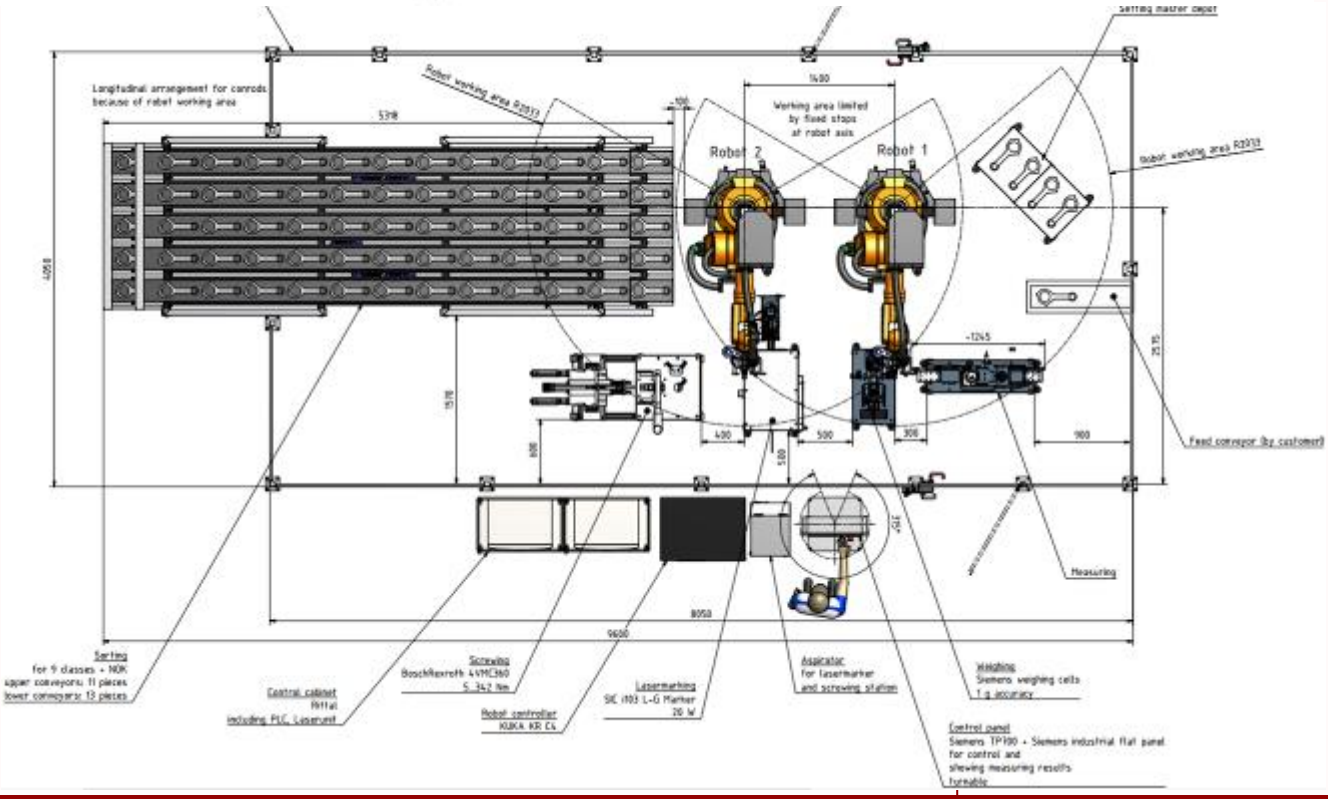
Detail : Screw



Übersicht :Gauge station



Overview : Station



Reference Project 27507— shown at Control 2016

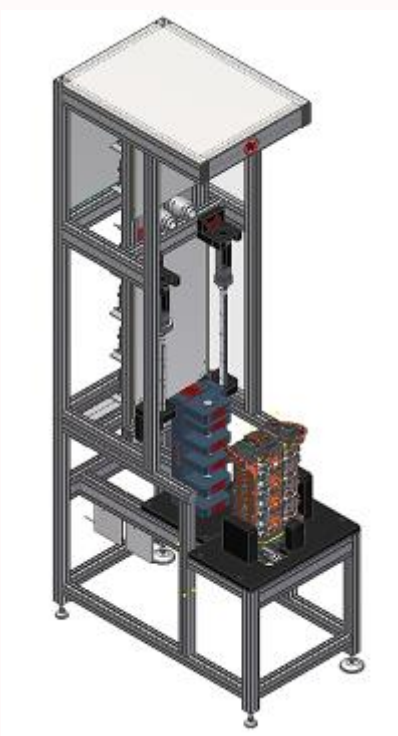
Shop Floor Oriented SPC Measuring Station for Cylinder Heads

Features:

- Valve seat:
  - Seal leakage
  - Angle
  - Roundness
  - Concentricity
  - Depth of combustion chamber surface
  - Guide bore diameters
- Camshaft Bores
  - Diameter of bore
  - Concentricity of bores
  - Cylindricity

Characteristics:

- Vertical measurement of camshaft bore to prevent influences of gravity
- Integrated operator guidance with measuring computer



Detailed View:
Measurement of a Camshaft Bearing Axis

The consumption and the emissions of an engine are strongly influenced by the quality of valve seats. Nieberding provides an extensive range of gauges to ensure the quality of manufacturing in this important market.

The SPC measuring station 27507 was developed for an international car manufacturer. It contains hand-held gauges for all the important quality attributes. The station can be deployed directly next to your production machine.

A big advantage is the pneumatic measurement, which is highly-precisioned and not influcenced by the environment.
Also the air used helps cleans most of the measuring surfaces.

Another good feature is the robustness of the pneumatic measuring technique.

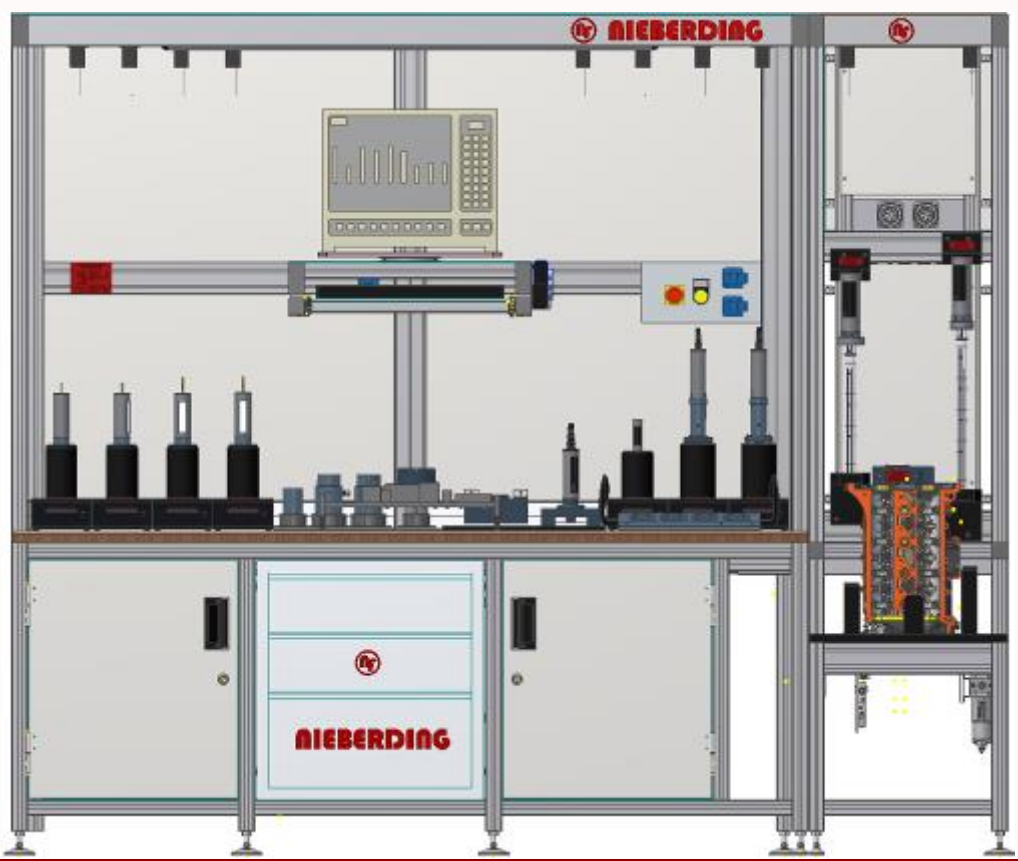
However, the vertical positioning of the camshaft bore measurement is new.

The gauges are inserted into the part from above to prevent the influence of gravity. In a horizontal position, the plug gauge would sag in a µm– tolerance range, so incorrect measurements in the concentricity would be the consequence.

Another important aspect is the operator guiding sequence on the measuring computer. The user can get fast and flawless results now.

In addition to that, the measuring station offers great ergonomic features. The measuring instruments have a good grip and are ideal to handle. Every gauge has its own parking position, all cables and tubes are hung on

tubinf tubes are ushered by a balancer. The measuring computer can be aligned by a rotatable layer.



Machine Measurement

Gauges to Measure Connecting Rods for Trucks

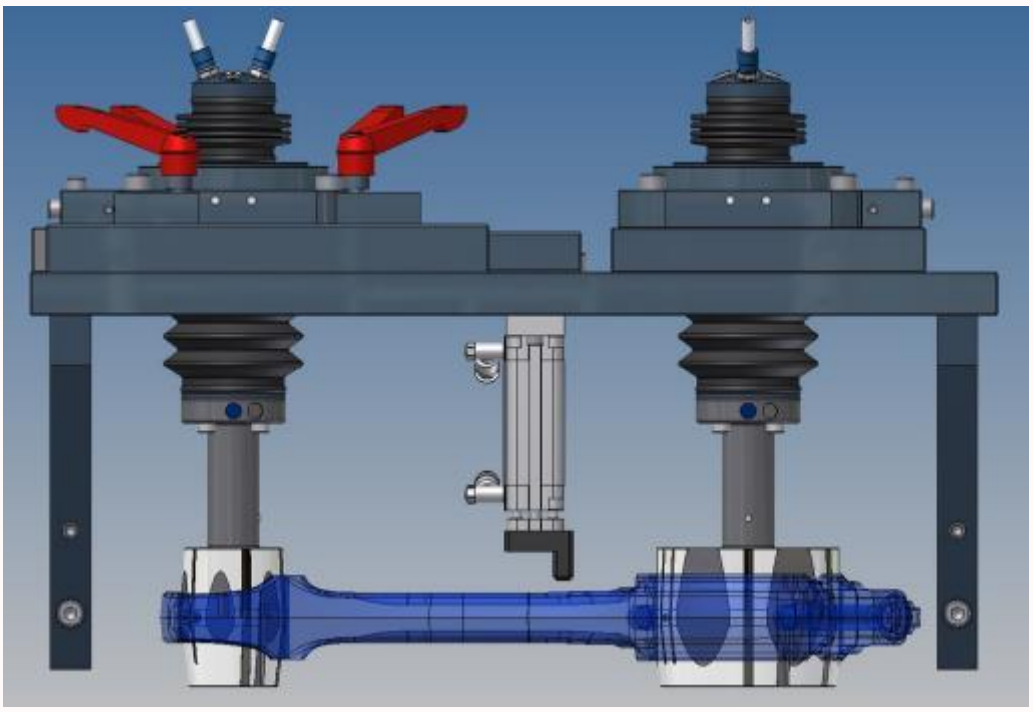
This pneumatic measuring technique excels especially in dirty areas through its self-cleaning effect.

The measuring system shown is for automated manufacturing, which is directly implemented into the machine directly after finishing the machining process. The analyzed measured data control results, control the tools to keep the process stable over a long period of time.

Measuring task:
Diameter of bores on the small and big connecting rod's eye
Optional: Axial distance

Process:
The internal handling of the machine takes the parts to be measured into the correct measuring position. Cleaning jets free the measuring surfaces from dirt, liquids or swarfs. The part is measured after a resting period of 500ms.
After the measurement, the measuring computer a **V5** PROMESS computer transfers the results to the machine. The internal handling carries the measured part away and sorts it into the different measured category.

Characteristics:
The gauge for the small connecting rod's eye is adjustable and mounted on a slide to compensate the axial distance between different parts. The gauges can be switched quickly, which makes the gauging of various types of parts possible.
A swimming bearing with a override protection system prevents a possible damage when a defective part (e.g. tool breakage) is added to the process.
The used analyzing software can pass on corrections directly over samples or trends to the machine.
The calibration is carried out automatically via the calibration masters which are combined in the machine handling.
The system control is manually control
The measuring station can be equipped with a temperature compensator if required.
The cycle time without any handling is less than 4 seconds.



Features:

- Diameter of bores

Characteristics:

- Swimming / floating bearing to compensate position of parts
- Cleaning system with compressed air
- Interface for correction of tools

Detailed View:
Machine gauge with cleaning nozzles

Reference System NF-27696

Automatic Measurement of Universal Joints after Grinding

Features:

- Joint‘s diameter after grinding
- Measurement principle, pneumatic snap gauge

Characteristics:

- Loaded from two different magazines
- Can be modified for different types of parts
- Sort into GO/ NoGo
- Integrated operator control thru measuring computer
- Compact solution as Inline machine
- Integrated remote maintenance
- Touchscreen Panel

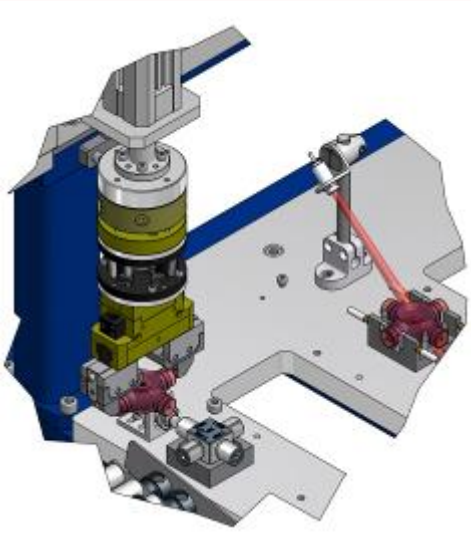
The automatic measuring station NF – 27696 was developed as a reference system for a large international company. The aim was to offer a qualified and standardized solution for this specific range of parts.

The measuring station replaces a SPC manual station due to higher requirements. It is necessary to have 100% quality control of the manufacturing. The automatic station is placed behind the grinding machine.

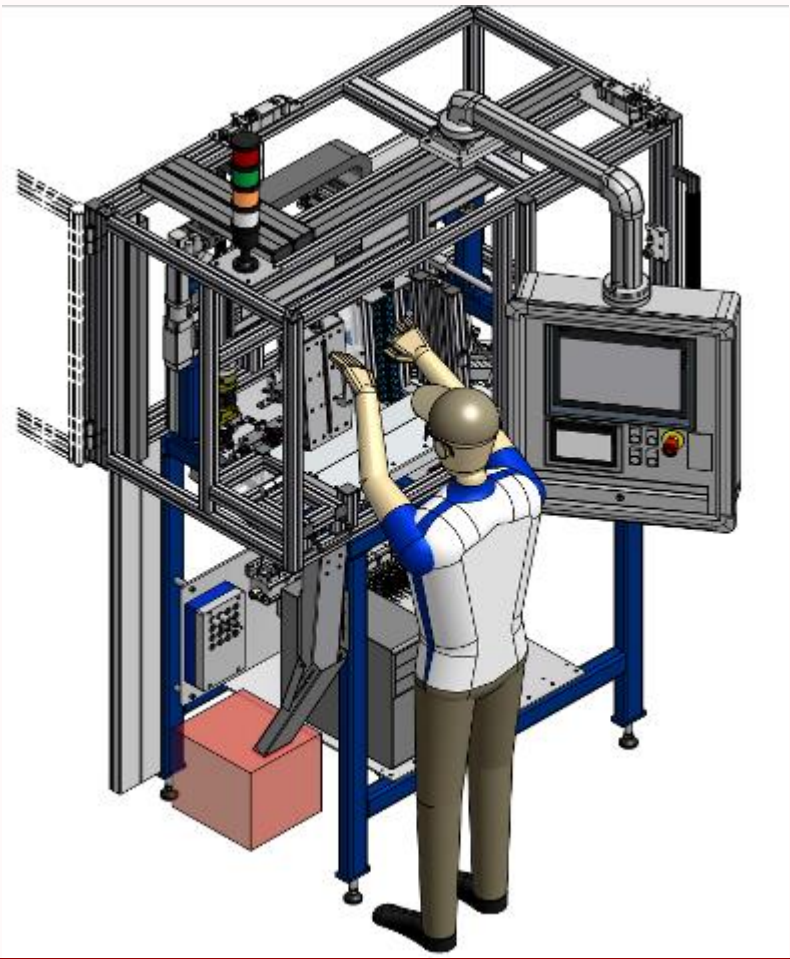
Process:
The station has two different magazines for loading parts. The worker can load a magazine, while the machine takes measurable parts out of another magazine. A handling system takes the parts from the handover position and brings it to the measuring station.

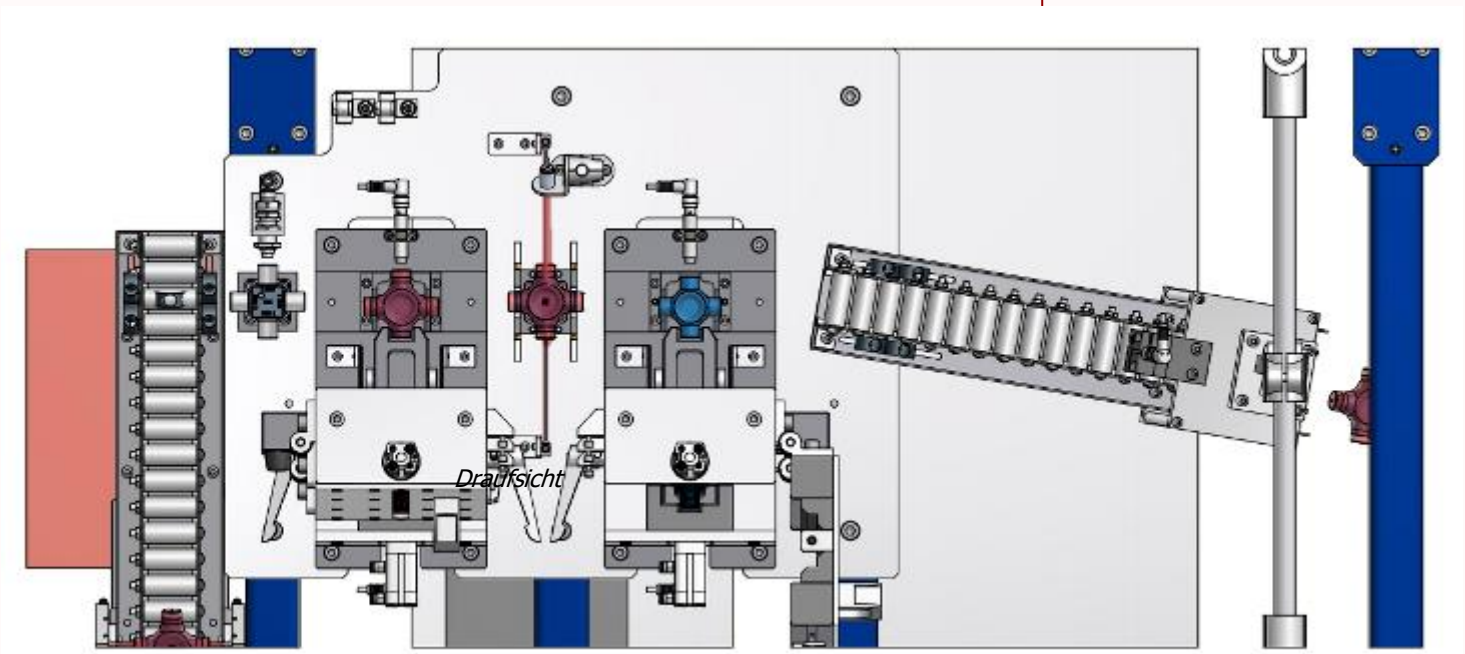
In the next step, the first two journal diameters are measured in a pneumatic snap gauge. After that, the parts are rotated 90 degrees, so the second pair of journals can be measured. The parts are now sorted into GO/NG (Go/ No Go). NG parts are send to a closed container, so that the parts can be analyzed later. GO parts are transferred to a conveyor.

Characteristics:
The workstation can be modified quickly for lots of various parts.
Since two separate magazines are used, it is possible to load and measure at the same time. There is no need for a worker.



Detailed View: Gripper System





Topview from the Left: NG conveyer, setting master, magazine-1, snap gauge, magazine-2, GO-conveyer

The cycle time for GO measurements is 15 seconds. NG measurements are examined for a second time, if it fails again, the part is sorted out.

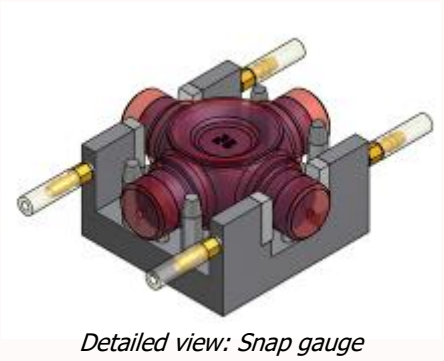
The calibration of the station is automatic through the setting master located in the installation space. The handling system transfers the master, which are already set into the right mode. A system‘s check is carried out manually.

The automation measuring stations from Nieberding can be supervised from a seperate location, there is no need to send a worker. Time and money can be saved, especially when operating in global locations.

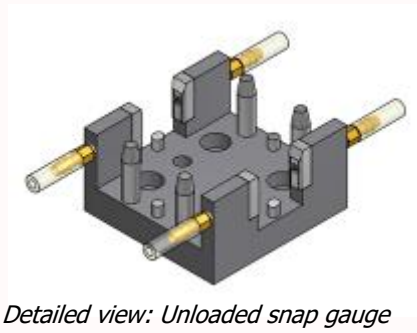
Further references:
In the last couple of years, Nieberding has developed many reference projects for automatic measuring stations, for instance for cylinder bore, crank shaft bore, gear wheels, connecting rods, camshaft bores, crank shafts, gear shafts, pins and case parts.

It is very important for us to implement the customer‘s requirements and find a flexible, future-oriented solutions.

We would be very pleased to send you more information about other systems.



Detailed view: Snap gauge



Detailed view: Unloaded snap gauge

Control panel

NIEBERDING

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ICG
International Certification Group