



quality improving systems

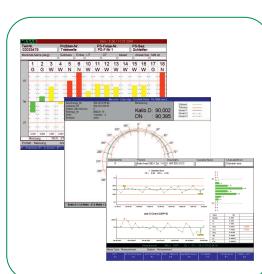
measuring computer



interfaces



software



vision checksystems



complete solutions



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Computer added Quality Control and Gauging at its best

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MESAS quality improving systems GmbH was founded in 2009 to distribute and produce the well known systems of the former MESAS Gesellschaft für Mess-Erfassungs- und Auswertecomputersysteme mbH.

The company with his highly experienced and motivated staff, as well as the General Managers Rudi Brück and Klaus Spreuer, is handling a wide range of hardware- and software products for quality control and industrial gauging, which are approved and reliable since more than two decades.

Mesas q.i.s. GmbH solutions secure high standards and quality targets in all kind of manufacturing branches.

Many customers are leading suppliers in the automotive industry, or car-manufacturers themselves.

The company focuses on the design and development of technical innovations in measuring and gauging applications and quality data management.

The mission of MESAS q.i.s. GmbH is to improve its customers' quality demands by supplying flexible service and products which are optimised for their needs.

Description

- "MESAS femto" is a mini measuring and evaluation system with a 8,5" touchscreen display.
- It is the high performance - small size solution for connecting to manual, half- and fully automatic multi gauging systems.
- Up to 8 measuring inputs
- Individual programming of measurement cycle control for static and dynamic measuring tasks
- Parallel measurement and evaluation
- Statistical evaluation ref. QS9000



Standard Hardware Configuration

- Embedded CPU with 256 MByte RAM
- Minimum 4 GB permanent storage incl. controller
- Built in high resolution 8,5" colour display with touch screen incl. interface
- 1 external measuring interface MESAS tetra USB with 4 transducer inputs, 16 Bit-resolution
- 2 USB connectors
- Networking interface RJ45

Standard Software Configuration

- MESAS - Measuring software with short term statistics
- Operating system:
 - Microsoft Windows Professional 7 32bit or 64bit
 - Microsoft Windows Professional 10 32bit or 64bit
- Option:
 - Microsoft Windows Ultimate 7 32bit or 64bit
 - Microsoft Windows Ultimate 10 32bit or 64bit

Options

- Adaption to other voltages (e.g. 110V / 60Hz)
- Check list programming assistance, creating of part sketches, machine control programming etc.
- Tool compensation via digital I/O
- External spray proof operator panel, protection IP54
- Data export to Microsoft Excel format (.csv)
- Data export to Q-DAS qs-STAT Me.XX
- Installation and commissioning, training
- Extended warranty

Technical Data (Standard Configuration)

Power supply	external AC adapter 12 Volt
W x H x D	approx. 300 x 240 x 90 mm
Protection type	IP54
Weight	3,5 kg
Environmental temperature	0-45 °C cooling by internal air circulation, no filters or fans to the outside
Warranty	24 months from delivery, at MESAS

MESAS Measuring Computer

- MESAS femto
- MESAS pico-15-light
- MESAS pico-17
- MESAS IPC
- MESAS IPC 54
- MESAS SPC-Kit
- Overview MESAS Measuring computer
- MESAS Options / Accessories

MESAS Interfaces

- MESAS tetra USB for transducers and analogue voltages
- MESAS tetra universe for transducers, incremental probes and analogue voltages
- MESAS tetra bluetooth for transducers and analogue voltages
- MESAS tetra mobile - Adaption to existing transducers gages
- MESAS pneu for pneumatic probes
- MESAS digi pneu the modular system for air gauges
- MESAS tetra Ethernet for transducers and analogue voltages

MESAS Software

- MESAS MQMD-Software for Microsoft Windows
- MESAS QUANA- Manufacturing Execution System
- MESAS Gauge Management software

MESAS Quality Management Systems

- MESAS PG 1000 – PG 1000 Cutting tool inspection system
- MESAS Car body measurement

References

- References of MESAS Quality Management Systems
- References of MESAS systems with tool correction

Description

- The measuring and evaluation system "MESAS pico15-light" is an industrial computer based system with 15-inch display.
- It is the high performance solution for measurement on manually operated, semi-automatic and fully automatic gauges.
- Up to 64 input channels by external interface MESAS tetra USB
- Individual programming of measurement cycle control for static and dynamic measuring tasks
- Parallel measurement and evaluation
- Statistical evaluation ref. IATF 16949



Standard Hardware Configuration

- Intel Core I3 with 2 GB RAM
- SSD - Hard disk with minimum 64 GB capacity
- Built in, high resolving 15"- Color-Display incl. graphics adapter
- Connector or keyboard and mouse on front side protective cover
- 4-off USB connectors
- Network adapter RJ45
- External spray proof softkey pad , protection type IP54

Standard Software Configuration

- MESAS MQMD single user measuring software with reporter for Microsoft Windows®
- Operating system:
 - Microsoft Windows Professional 7 32bit or 64bit
 - Microsoft Windows Professional 10 32bit or 64bit
- Option:
 - Microsoft Windows Ultimate 7 32bit or 64bit
 - Microsoft Windows Ultimate 10 32bit or 64bit

Options

- Wireless networking interface
- Profibus / Interbus option
- Upgrade 16 opto inputs / 16 opto outputs by external interface MESAS tetra USB
- Touchscreen
- Cordless ASCII keyboard and mouse
- Non-interruptible power supply
- External monitor and softkey pad for parallel terminal
- Adaption to other voltages (e.g. 110V / 60Hz)
- Check list programming, creating of part sketches, programming of machine control etc.
- Special programming e.g. FFT(Fast Fourier Transformation), Ovality and camber measurement, classification etc.
- On-screen visualisation for operator guidance
- Data export to Microsoft Excel® format (.csv)
- Data export to Q-DAS qs-STAT Me XX
- Automatic creation of checklists from external machine protocol
- Installation and commissioning, training
- Extended warranty

Technical Data (Standard Configuration)

Power supply:	110-240 V AC, 40 - 60 Hz
W x H x D:	approx. 450 x 417 x 280 mm
Protection type:	IP54
Weight:	15,5 kg
Environmental temperature:	0-45 °C cooling by internal air circulation, no filters or fans to the outside
Cable length:	power cord 1,5m
Warranty:	24 months from delivery, at MESAS

Description

- The **measuring and evaluation system "MESAS pico17"** is the new industrial computer based system with 17"- display.
- It is the high performance solution for measurement on manually operated, semi-automatic and fully automatic gauges.
- Built in heat exchangers
- Built in RFID reader
- Up to 128 input channels
- Individual programming of measurement cycle control for static and dynamic measuring tasks
- Parallel measurement and evaluation
- Statistical evaluation ref. IATF 16949



Standard Hardware Configuration

- Intel Core I5 with 4 GB RAM
- SSD - Hard disk with minimum 64 GB capacity
- Built in, high resolving 17" - Colour-Display with touchscreen
- Connector for keyboard and mouse on front side protective cover via USB
- Interface for connecting 2 off external measuring interfaces MESA tetra
- I/O-Interface with 16 opto inputs and 16 opto outputs,
- USB interfaces
- Network adapter RJ45
- External sprayproof softkey pad , protection type IP54

Standard Software Configuration

- MESAS MQMD single user measurement software with reporter for Microsoft Windows®
- Operating system:
 - Microsoft Windows Professional 7 32bit or 64bit
 - Microsoft Windows Professional 10 32bit or 64bit
- Option:
 - Microsoft Windows Ultimate 7 32bit or 64bit
 - Microsoft Windows Ultimate 10 32bit or 64bit

Options

- Measuring inputs:
 - with 16-bit resolution
 - up to 8 internal inputs plus max. 16 external inputs
 - max. 128 external inputs without internal inputs
 - 4 internal inputs for incremental probes replacing the internal standard inputs
- Microprocessor controlled serial interface for MESAS tetra universe/pneu
- Networking interface
- Wireless networking interface
- Profibus / Profinet option
- Additional 16 opto inputs and 16 opto outputs
- Cordless ASCII keyboard and mouse
- Non-interruptible power supply
- Built in CD/DVD burner
- External monitor and softkey pad for parallel terminal
- Check list programming, creating of part sketches, programming of machine control etc.
- Special programming e.g. FFT(Fast Fourrier Transformation), Ovality and camber measurement, classification etc.
- On-screen visualisation for operator guidance
- Data export to Microsoft Excel format (.csv)
- Data export to Q-DAS qs-STAT ME.XX
- Automatic creation of checklists from external machine protocol
- Installation and commissioning, training
- Extended warranty

Technical Data (Standard Configuration)

Power supply:

240 V AC, 50 - 60 Hz (Optional 110 V)

power cord 1,5m

device: approx. 440 x 430 x 400 mm

IP54

19,5 kg

0-45 °C

W x H x D:

Protection type:

Weight:

Environmental temperature:

Warranty:

Description

- „MESAS ipc“ is a PC-compatible computer without special industrial protection
- It is the high performance solution for measurement on manually operated, semi-automatic and fully automatic gauges.
- Up to 128 input channels
- Individual programming of measurement cycle control for static and dynamic measuring tasks
- Parallel measurement and evaluation
- Statistical evaluation ref. IATF 16949



Standard Hardware Configuration

- Intel Atom Board with minimum 8 GB RAM
- SSD - Hard disk with minimum 64 GB capacity
- built in DVD burner
- IBM-PC-printer port
- Interface for connecting 2 external MESAS tetra
- I/O-Interface with 16 opto inputs and 16 opto outputs,
- serial interface for measuring equipment with RS232C out
- PS/2 interface for connecting the softkey pad
- USB interfaces
- Network adapter RJ45
- 1 external **sprayproof operator keypad**, protection type IP54
- 1 external high resolving **15“ color display**

Standard Software Configuration

- MESAS MQMD single user measurement software with reporter for Microsoft Windows®
- Operating system:
 - Microsoft Windows Professional 7 32bit or 64bit
 - Microsoft Windows Professional 10 32bit or 64bit
- Option:
 - Microsoft Windows Ultimate 7 32bit or 64bit
 - Microsoft Windows Ultimate 10 32bit or 64bit

Options

- Additional interface for connecting MESAS tetra universe / pneu
- Networking interface
- Wireless networking interface
- Profibus / Interbus option
- Additional 16 opto inputs and 16 relay outputs
- Cordless ASCII keyboard and mouse
- Non-interruptible power supply
- External 15" display for mounting into cabinet or built in IP54 protective case
- Adoption to other voltages (e.g. 110V / 60Hz)
- Check list programming, creating of part sketches, programming of machine control etc.
- Special programming e.g. FFT(Fast Fourrier Transformation), Ovality and camber measurement, classification etc.
- On-screen visualisation for operator guidance
- Data export Microsoft Excel®
- Data export to Q-DAS qs-STAT Me.xx
- Automatic creation of checklists from external machine protocol
- Installation and commissioning, training
- Extended warranty

Technical Data (Standard Configuration)

Power supply:

220 V AC, 40 - 60 Hz / 90 VA
power cord 1,5m

W x H x D:

19", 4HE

Environmental temperature:

0-45 °C

Warranty:

24 months from delivery, at MESAS

Description

- „MESAS ipc54“ is a PC-compatible computer without special industrial protection
- It is the high performance solution for measurement on manually operated, semi-automatic and fully automatic gauges.
- Up to 128 input channels
- Individual programming of measurement cycle control for static and dynamic measuring tasks
- Parallel measurement and evaluation
- Statistical evaluation ref. IATF 16949



Standard Hardware Configuration

- Intel Core I3 with minimum 2 GB RAM
- SSD - Hard disk with minimum 64 GB capacity
- built in floppy disk drive, 3 1/2", 1.44 MB
- built in DVD burner
- IBM-PC-printer port
- Interface for connecting 2 external MESAS tetra
- I/O-Interface with 16 opto inputs and 16 opto outputs,
- serial interface for measuring equipment with RS232C out
- PS/2 interface for connecting the softkey pad
- USB interfaces
- Network adapter RJ45
- 1 external **sprayproof operator keypad**, protection type IP54
- 1 external high resolving **15“ color display**

Standard Software Configuration

- MESAS MQMD single user measurement software with reporter for Microsoft Windows®
- Operating system:
 - Microsoft Windows Professional 7 32bit or 64bit
 - Microsoft Windows Professional 10 32bit or 64bit
- Option:
 - Microsoft Windows Ultimate 7 32bit or 64bit
 - Microsoft Windows Ultimate 10 32bit or 64bit

Options

- Additional interface for connecting MESAS tetra universe / pneu
- Networking interface
- Wireless networking interface
- Profibus / Interbus option
- Additional 16 opto inputs and 16 relay outputs
- Cordless ASCII keyboard and mouse
- Non-interruptible power supply
- External 15" display for mounting into cabinet or built in IP54 protective case
- Adoption to other voltages (e.g. 110V / 60Hz)
- Check list programming, creating of part sketches, programming of machine control etc.
- Special programming e.g. FFT(Fast Fourier Transformation), Ovality and camber measurement, classification etc.
- On-screen visualisation for operator guidance
- Data export Microsoft Excel®
- Data export to Q-DAS qs-STAT Me XX
- Automatic creation of checklists from external machine protocol
- Installation and commissioning, training
- Extended warranty

Technical Data (Standard Configuration)

Power supply:

220 V AC, 40 - 60 Hz / 90 VA
power cord 1,5m

W x H x D:

19", 4HE

Environmental temperature:

0-45 °C

Warranty:

24 months from delivery, at MESAS

Description

- **MESAS MQMD SPC-Kit** turns your office PC into a measuring and evaluation system. It is suitable for working areas with no industrial environment, where no special protection is required.
- The external interface box for connecting **digital measuring device** (like digital callipers or digital dial indicators) is connected to the RS232 port of the office PC.
- The external interface box for connecting **inductive probes / transducers, analogue voltage or incremental encoders** is connected through a special RS422 interface card.
- Additional opto-in and relay-out interface cards can be used for **machine control and tool compensation**.

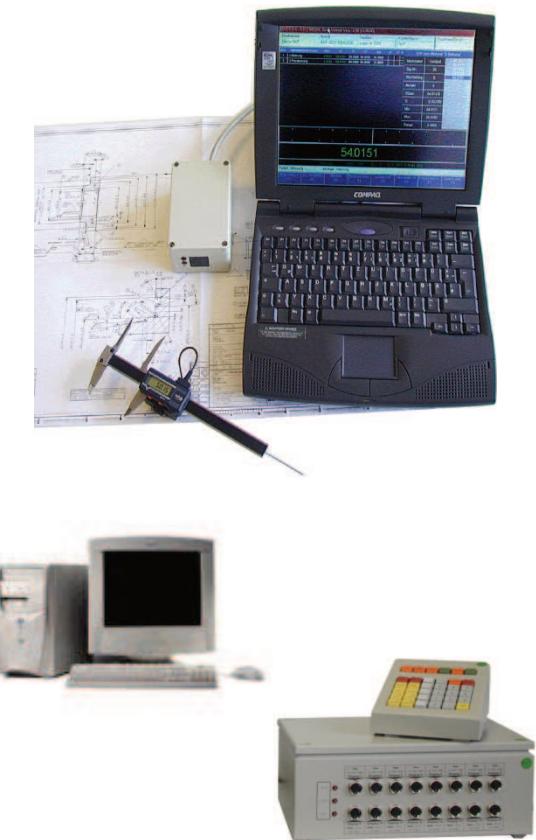
MESAS SPC-Kit for digital Measuring equipment

- MESAS SPC-Software License
Measuring and evaluation software for SPC / QM
- MESAS IRdigit receiver and transmitter unit for wireless data transfer
or
- Wired interface box for connecting digital measuring equipment like TESA, Mauser, Mitutoyo, Sylvac (others on request)

MESAS SPC-Kit for multiple gauging measurement systems with inductive measuring equipment:

- MESAS SPC-Software License
Measuring and evaluation software for SPC / QM
- RS422 interface card
- 16-channel input/output interface card
- External operator panel, protection type IP54
- External **MESAS tetra T/P** for connecting up to 16 inductive probes / transducers type TESA, (others on request)

Other configurations of MESAS SPC-Kit are available on request



Minimum hardware requirements

- | | |
|--|---|
| <ul style="list-style-type: none">■ Pentium■ Hard disk drive with 500MB free space■ 2 serial RS 232 ports■ 1 parallel Centronics port | <ul style="list-style-type: none">■ min. 512 MB RAM■ VGA-graphics, resolution 800 * 600■ 2 free card slots■ WIN 95 / 98 / NT |
|--|---|

Options

- Networking
- Driver for additional types of external measuring device
- Tool compensation

Hardware

	femto	pico-15 light	pico-17	ipc
Max. measurement inputs	8 external USB only	64 external USB only	128 external	128 external
Display TFT	internal	internal	internal	external
Display size	8,5"	15"	17"	free
Touch screen	yes	optional	yes	optional
Keyboard / mouse connector	-	Front side	Front side	Backside
ext. operator panel IP54	optional	yes	yes	yes
Motherboard / CPU	Embedded	VIA	Intel Core I3	Intel Atom
RAM	512 MB	2 MB	4 GB	2 GB
3,5 " floppy disk drive	opt.ext.	opt.ext.	opt.ext.	1
DVD-Burner	-	-	1	1
Storage / SSD - hard drive	4 GB / -	- / min 64 GB	- / min 64 GB	- / min 64 GB
Network RJ45	10/100 Mbit	10/100 Mbit	10/100 Mbit	10/100 Mbit
Digital IO: OptoIn / OptoOut	optional 16/16 external	optional 16/16 external	16/16 internal	16/16 internal
Maximum digital IO's	16/16 external	16/16 external	64/64 internal	64/64 internal
Profibus / Interbus interface	-	optional	optional	optional
Interface MESAS tetra	-	-	2 (max. 8)	2 (max. 8)
USB ports	2	4	8 (2 USB 3.0)	2 (max. 6)
RS232 ports	1	-	1	2
Protection type	IP 54	IP 54	IP 54	-
Sizes (W x H x D mm)	300x240x90	450x417x280	491x437x340	19", 4HE
Weight	3,5 kg	15,5 kg	19,5 kg	8,5 kg
Power supply	External 12V	110-240 V AC	110-240 V AC	110-240 V AC
Funk-LAN	-	optional	optional	optional
UPS	optional	optional	optional	optional
Parallel screen and keyboard	-	optional	optional	optional
Touch screen	yes	optional	yes	optional

Overview - MESAS measurement systems

Software

	femto	pico-15 light	pico-17	ipc
MESAS measurement software including short term statistics	yes	-	-	-
MESAS MQMD single user version incl. reporting tool	yes	yes	yes	yes
MESAS MQMD multi user network version incl. reporting tool	-	optional	optional	optional
Check list programming	programme	programme	programme	programme
Max. characteristics per check list	4	128	128	128
Max. check lists active	3	256	256	256
Data export to Microsoft Excel®	optional	optional	optional	optional
Data export to qs-STAT Me.XX	optional	optional	optional	optional
Automated creating of checklists from external machine protocol	-	optional	optional	optional
Check list import from SAP	optional	optional	optional	optional
Output of results to SAP	optional	optional	optional	optional
Machine control	optional	optional	optional	optional
On-screen visualisation for operator guidance	-	optional	optional	optional
Special programming and customized solutions	optional	optional	optional	optional
Operating system	Windows 7 Windows 10	Windows 7 Windows 10	Windows 7 Windows 10	Windows 7 Windows 10

Interfaces

■ MESAS tetra universe

- individual configuration of input modules for transducers, analogue voltage or current, incremental probes (linear or ROD)
- 1 to 16 inputs



■ MESAS tetra USB

- Modular Interface with inputs for transducers, LVDT, Halfbridge, analogue voltage
- 4, 8, 12, 16 inputs
- Fits to any standard Windows® PC with USB 1.1 or 2.0, connector type A



■ MESAS tetra LAN

- Modular Interface with inputs for transducers, LVDT, Halfbridge, analogue voltage
- 4, 8, 12, 16 inputs
- Ethernet (TCP/IP), Webservice (SOAP)



■ MESAS tetra pneu

- for attachment of pneumatic probes
- 1 to 8 pneumatic input modules
- up to 8 inputs for transducers



Measuring system extensions

- Additional 16 opto-input and 16 relay-output
- Additional 16 opto-input and 16 driver-output
- Profibus or Interbus interface incl. software
- Interface for attachment of additional external interface boxes MESAS tetra T/P
- Interface for attachment of additional external interface boxes MESAS tetra universe/pneu
- 4-channel RS232-interface to connect 4 peripherals like IRdigit, printer etc.
- Multiport RS232-interface for more than 4 RS232 ports
- MESAS IRdigit external interface for digital measuring equipment: Mitutoyo, Mauser, Sylvac, TESA etc.

Operating peripherals

- External sprayproof operator panel, protection type IP54
- Standard ASCII keyboard ref. DIN 2137 for check list programming (editing of nominals, tolerances etc..)
- As above but membrane keyboard, sprayproof, IP65
- Startbox: 4 start buttons and 2 key switches
- Startbox: 6 start buttons, 2 key switches and 5 lights
- Startbox: 12 start buttons, 2 key switches and 5 lights
- Column with 5 light signals
- Pedal switch



Printer

- Monochrome-Matrix-Printer DIN A4 (type on request)
- Inkjet printer (type on request)
- Laser printer (type on request)

Others

- Option Tool correction
- Networking (Ethernet, Token-Ring, WIN, Novell, TCP/IP, PC-NFS) others on request

Description

- **MESAS tetra USB** is an extremely flexible interface with 4, 8, 12 or 16 input ports for various types of transducers and analogue voltage.
- The interface box is connected to the standard USB port of a Microsoft Windows 7 or Windows 10 computer.
- COM Objects allow to read measuring inputs into third-party software like Microsoft Excel VBA applications.



YOUR ADVANTAGE

- Huge variety of connectable measuring equipment
- Flexibility of a modular system.
- High Speed Precision Measurement
- Fits to any Microsoft Windows 7 or Windows 10 computer with USB 1.1 or 2.0 Type A interface

Software

- Drivers, Test program and communication software providing COM objects for in-process and out-of process communication with third-party software, like Microsoft VBA applications, Visual C, Borland Delphi etc.
- Software requirements:
 - Operating system e.g. Microsoft Windows 7 or Windows 10
 - MESAS MQMD software or third-party software programmable for processing of COM objects.
 - This software is not included in the standard delivery.

Technical Data

Measuring inputs:

- Transducer inputs for LVDT, Halfbridge:
Resolution: 0,1 µm, Range +/- 2mm
Brands: Solartron, IET, Marposs, Mahr, Tesa
... others on request

■ **Analogue inputs:**

- Voltage DC +/- 5V, +/- 10V, 0-5V, 0-10V
... others on request

Power supply:

- 4 inputs : powered by USB
- 8/12/16 inputs : External AC adapter
(110-240V IN, 50-60Hz, 1A, 12 V OUT)

Interface:

- Microsoft® Windows® USB 1.1 and 2.0

W x H x D:

- 4 inputs : approx. 125 x 60 x 96 mm

Weight:

- 8/12/16 inputs : approx. 260 x 96 x 180 mm

- 4 inputs : approx. 0,5 kg

- 8/12/16 inputs : approx. 3,5 kg

Protection type:

- IP 54, NMEA

Cables:

- Power cord 2 m, AC adapter cable 1,4 m

- Data cable 2.5 m with USB A connector

- (max. 5m for 4-channel interface)

Options

- 16 opto inputs / 16 driver outputs (not available for small 4-channel box)

Description

MESAS tetra universe is an extremely flexible interface with 16 ports for various types of transducers, analogue signals and incremental probes. The interface box is connected to the MESAS standard io card of a MESAS measuring computer system. Up to 4 MESAS tetra universe (64 measuring inputs) per standard io.



example

Your advantage:

- Flexibility of a modular system
- Parallel multiprocessor technology provides high speed performance for very precise measuring tasks.
- Resolution 16 Bit

The attached module list contains the existing standard modules. If the module you require is not included, please do not hesitate to contact us. We are going to design the suitable module for you.

Technical Data

Power:	110/240 V AC, 50-60Hz, 30 VA Automatic adoption to existing voltage
Interface:	MESAS standard io
W x H x D:	330 x 140 x 205 mm
Weight:	3.5 kg
Protection type:	IP 54
Cables:	Power cord 1.5 m with filter plug 1 data cable 2.5 m with 25 pole connector

Transducer modules

With 16 bit resolution available for:

- Tesa and compatibles
- Mahr
- Hirt
- Metem
- Air-Gage
- Solartron
- Feinprüf
- Mitutoyo
- Marposs
- Knäbel
- Mercer
- Novibra
- others on request

Analogue modules

With 16 bit resolution available for:

- Voltage DC \pm 3 Volt
- Voltage DC \pm 5 Volt
- Voltage DC \pm 10 Volt
- Voltage DC 0-10 Volt
- Current 0 - 20 mA
- Current 4 - 20 mA
- others on request

Incremental modules

- Heidenhain Sinus 11 μ A (pp)
- Heidenhain 5 Volt TTL
- others on request

Short description

- The **wireless** measuring interface **MESAS tetra bluetooth** is a modular interface with 4, 8, 12 or 16 input ports for various types of transducers (Halfbridge / LVDT) and analogue voltage.
- The modular conception of MESAS tetra bluetooth provides a lot of flexibility due to the fact that up to 4 different types of measuring devices can be combined in one box.
- The receiver, of the size of a memory stick, is plugged into the USB interface of a Windows® XP PC.



Wireless transmission of measuring data from the interface box to the measuring computer **by Bluetooth® technology**.

YOUR ADVANTAGE

- No wires between measuring interface and computer
- Transmission range 80 m
- up to 16 inputs for connecting to any standard transducers
- Static and dynamic measurement.

RANGE OF APPLICATION

- Any measuring task, where a high degree of mobility is needed.
- Any application, where the measuring gauge needs to be taken to the parts to be measured.

Highlights

- Mobile transmission by "bluetooth network"
- Easy handling
- 16 inputs for connecting to any standard inductive probe
- Powered by rechargeable battery
- Static and dynamic measuring

Software

- Drivers, Test program and communication software providing COM objects for in-process and out-of process communication with third-party software, like Microsoft® VBA® applications, Visual C, Borland Delphi etc.
- Software requirements
 - Operating system e.g. Microsoft® Windows® XP
 - MESAS MQMD software or third-party software programmable for processing of COM objects, e.g. Microsoft® Excel®
(This software is not included in the standard delivery.)

Technical Data

Measuring inputs:

- Transducer inputs for Halfbridge/LVDT:
Resolution: 0,1 µm, Range +/- 2mm
Brands: Solartron, IET, Marposs, Mahr, Tesa
... others on request

Power supply:

- Analogue inputs:
Voltage DC +/- 5V, +/- 10V, 0-5V, 0-10V
... others on request

Schnittstelle zum PC:

- built in AC power supply
- option: Built in battery with AC charging unit

Anschlusskabel:

- Microsoft® Windows® USB 2.0

Sizes (W x H x D):

- Power cord 2 m for charging unit
- 4 Inputs : approx. 125 x 60 x 96 mm
- 8/12/16 Inputs : approx 260 x 96 x 180 mm

Weight:

- 4 Inputs : approx. 500 g
- 8/12/16 Inputs : approx. 3.500 g

Protection type:

- IP 54, NMEA

Transmission range:

- 80 m, 360°

Description

Wireless transmission of measuring data from gage to measuring computer by Bluetooth technology®

The advantages are obvious:

- No wiring effort
- Transmission of measuring data coming from up to 16 inductive transducers (Halfbridge/LVDT) or analogue voltage
- Just plug the transmitter to the probe and go!
- The receiver, of the size of a memory stick, is connected to a computer



Application Example:
Diameter and depth on a transmission housing with 12 transducers

Highlights

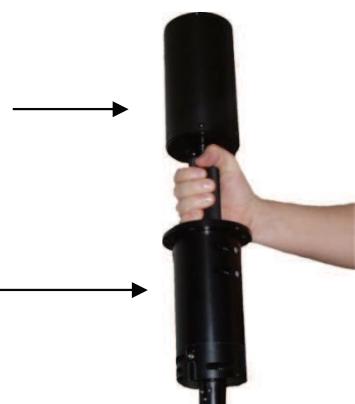
- Mobile transmission by "bluetooth network"
- Easy handling
- 16 inputs for connecting to any standard inductive probe
- Powered by rechargeable battery
- Static and dynamic measuring

Application example

Entire transducer interface with Bluetooth® sender/receiver unit, including rechargeable battery, (**Size approx. 25 h x 9 x 9 cm / 10 x 3,6 x 3,6 in.**)

fixed to

a measuring gauge for diameter / depth measurement with 12 inductive probes
(The rechargeable battery is loaded through a charging unit, which is fitted to the gauge's depository.)



Software

- Drivers, Test program and communication software providing COM objects for in-process and out-of process communication with third-party software, like Microsoft® VBA® applications, Visual C, Borland Delphi etc.
- Software requirements
 - Operating system e.g. Microsoft® Windows® 2000 or XP
 - MESAS MQMD software or third-party software programmable for processing of COM objects, e.g. Microsoft® Excel®
(This software is not included in the standard delivery.)

Technical Data

Measuring inputs:

- Transducer inputs for Halfbridge/LVDT:
Resolution: 0,1 µm, Range +/- 2mm
Brands: Solartron, IET, Marposs, Mahr, Tesa
... others on request

Power supply:

- Analogue inputs:
Voltage DC +/- 5V, +/- 10V, 0-5V, 0-10V
... others on request

Interface:

- powered by rechargeable battery

Cables:

- external charging station 110-240V AC

W x H x D:

- Microsoft® Windows® USB 1.1 and 2.0

Weight:

- Power cord 2 m, Recharger unit connector cable 1,4 m

Protection type:

- approx. 25 h x 9 x 9 cm / 10 x 3,6 x 3,6 in.)

Transmission range

- approx. 770 g, (27 oz.)

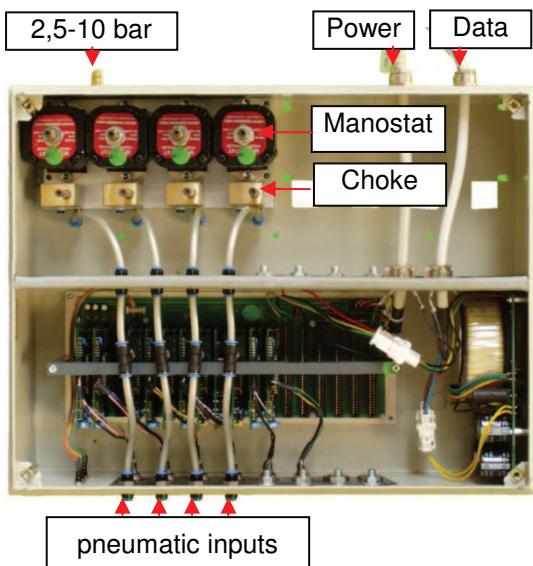
- IP 54, NMEA

- 80 m (240 ft.), 360° angle

Description

MESAS tetra pneu is a modular interface box for attachment of pneumatic gauges:

- Multiprocessor powered for up to 8 input channels.
- Electro-pneumatic and analog-digital conversion per channel.



- The pneumatic gauge is connected directly to the interface.
- Digital filters eliminating air noise
- Up to 8 additional inputs for transducers available

The picture at the left shows the view into a MESAS tetra pneu with 4 pneumatic input channels.

Technical Data

Measuring range
Power

0 – 1 bar	0 – 2,5 bar	0 – 4 bar
-----------	-------------	-----------

110/240 V AC, 50-60Hz, 30 VA
Automatic adoption to existing voltage

MESAS standard io

12 mm coupler, **customer needs to provide filter**

Quick connector for 3,4 or 6 mm

450 x 160 x (350 + 25) mm

IP54

16000 Values / sec.

from -15°C to 70°C through piezo sensor technology

0-45 °C

1 power cord 1,5 m incl. filter plug, 1 data cable 2,5 m

The pressure of compressed air (input) has to be 0,7 bar higher than pressure of measuring air.
Maximum input pressure 10 bar.

Description

MESAS digi pneu the modular system for air gauges

- Piezoelectric converter with A/D and RS 485 interface in every module
- Digital compensation of any main air supply fluctuation
- Reduced hardware components
- Voltage supply via Data interface
- Up to 32 Converters on each RS 485 channel
- Sealed IP 65 with Mounting top or bottom or DIN Rail
- Easy pressure setup
- Electronic min max calibration



Technical Data

Pressure for air gauges:

0 – 2,5 bar

0 – 4 bar

Supply voltage:

4,5 – 40 VDC

Interface:

MESAS-RS-485 opt. Solartron Orbit

Main Air supply:

Quick connectors via manifold.*

Air gauge connect.:

Quick connectors for 3;4 or 6 mm tubing

dim (B x H x T):

25,4 x 90 x 102 mm

Sealed:

IP65

Data transmission rate:

1000 read / sec.

Temperature- and pressure linearity:

From -15 °C to 70 °C

Ambient temperature:

0-45 °C

Interface cable:

1 Main 2,5 m to PC and add. Daisychain for add. modules

*The input pressure must be 0,5 bar higher than the pressure for the air gauges.

Maximum pressure 8 bar

Description

- **MESAS tetra ethernet** is an extremely flexible interface with 4, 8, 12 or 16 input ports for various types of transducers and analogue voltage.
- The interface box is connected to the standard Ethernet adapter port of a Microsoft Windows 7 or Windows 10 computer.
- COM Objects or SOAP or Telnet allow reading measurement inputs into third-party software like Microsoft Excel VBA applications.



YOUR ADVANTAGE

- Huge variety of connectable measuring equipment
- Flexibility of a modular system.
- High speed and precision, real time scanning of several inputs (e.g. 1140 measured values/s for a 4 channel interface box)
- Fits to any Microsoft Windows 7 computer with RJ45 Ethernet adapter

Software

- Drivers, Test program and communication software providing COM objects for in-process and out-of process communication with third-party software, like Microsoft VBA applications, Visual C, Borland Delphi etc.
- Software requirements:
 - Operating system e.g. Microsoft Windows 7 or Windows 10.
 - MESAS MQMD software or third-party software programmable for processing of COM objects.
 - This software is not included in the standard delivery.

Technical Data

Measuring inputs:Transducer inputs for LVDT, Halfbridge:

Resolution: 0,1 µm, Range +/- 2mm

Brands: Solartron, IET, Marposs, Mahr, Tesa ... others on request

- Analogue inputs:

Voltage DC +/- 5V, +/- 10V, 0-5V, 0-10V

... others on request

Power:

4/8/12/16 channel: external AC adapter

(110-240V IN, 50-60Hz, 1A, 12 V OUT)

Galvanic isolation 1000 V

Interface:

- Ethernet (TCP/IP), web services(SOAP)

W x H x D:

- 4 inputs : approx. 125 x 60 x 96 mm

- 8/12/16 inputs : approx. 260 x 96 x 180 mm

- 4 inputs : approx. 0,5 kg

- 8/12/16 inputs : approx. 3,5 kg

Protection type:

- IP 54, NMEA

Cables:

- Power cord 2 m, AC adapter cable 1,4 m

- Data cable RJ 45 Ethernet Cat 5 length up to 40 m, standard 2.5 m

MESAS MQMD Software

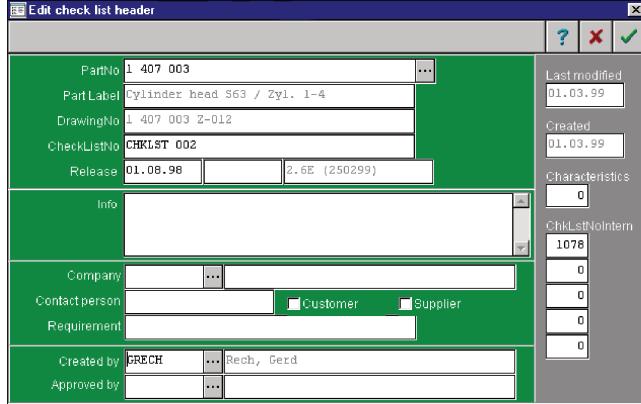
MESAS Quality management systems do not only provide a variety of Vers.ard functions capable to solve most problems of quality management, but also a number of flexible tools enabling you to create special solutions by yourself. And if this is even not enough, our team of highly qualified programming and application engineers will elaborate your individual solution. Take the chance to profit by our expertise as a hard- and software system provider.

- MESAS MQMD Software for Microsoft **Windows®** is the innovative consecution of MESAS Software operating successfully on DOS® systems for over 10 years.
- Traditionally **easy handling** due to
 - transparent menu structure
 - online assistance
 - catalogue functions
- **Centralized or decentralized data management**
- interfaces to existing MESAS SPC systems operating under DOS®
- **Data export to external software** like Q-DAS qs-STAT or Microsoft Excel
- Open **Client/Server** architecture
- **Static and dynamic** measuring routines
- **Easy programming editor** for assignment of measuring inputs to their respective characteristics, for definition of mathematical or logical relations between measuring inputs, for measurement control and operator instruction
- **Tool correction programming**
- **Drivers for various types of measuring equipment** (transducers digital measuring equipment, incremental probes, pneumatic probes, digital measuring equipment etc.)
- **Comprehensive reporting system** for quality documentation - adoptable to your requirements
- Planning and realization of your **Quality Management Network**

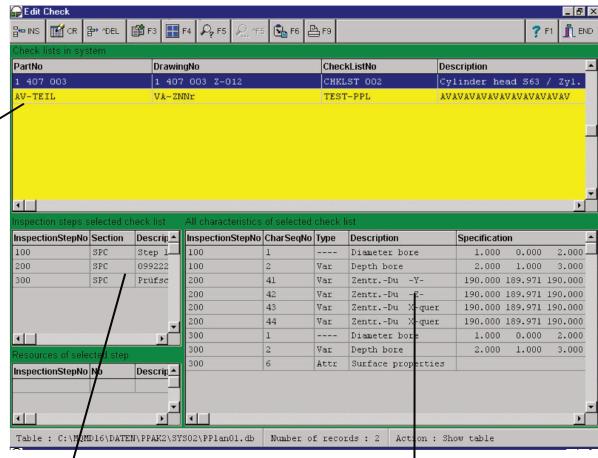
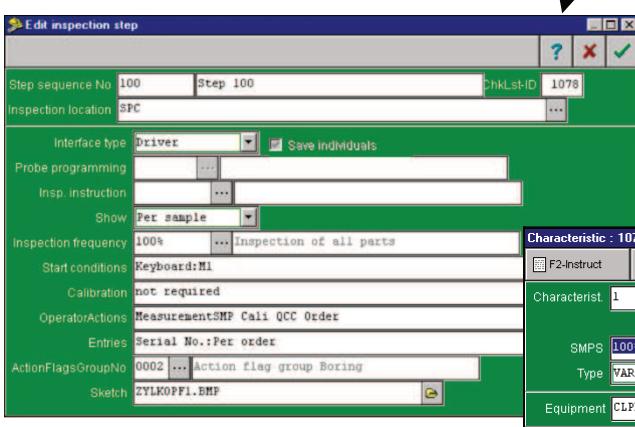
Check list specification and management

- For simple check lists or complex applications
- Flexible programming of measuring control for static and dynamic measuring tasks

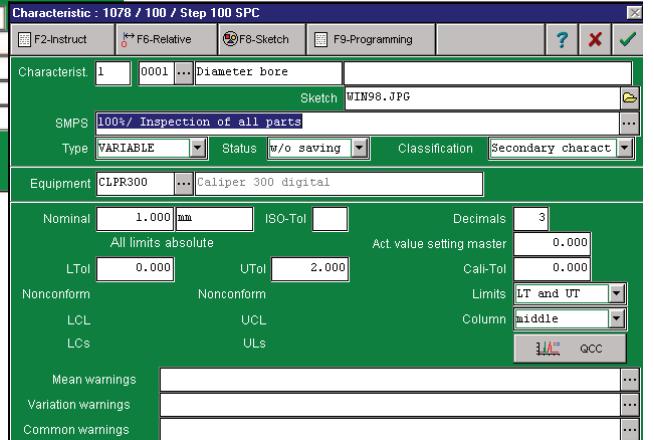
Header:
Part related data like part no. or part name etc.



Inspection steps:
Parameters for inspection and calibration, inspection intervals and frequency, conditions for operator convenience, etc.

Characteristics:
Specification of nominals, tolerances, warning- and control limits etc.



MQMD Measuring

The software can be operated by means of a Vers.ard ASCII-keyboard or by the industrial MESAS operator panel.

Measurement displays

- Column display
- Part picture
- Alpha-numerical listing
- chronol. listing of individual measurements
- Quality Control Charts
- Multiple Quality Control Charts
- or combinations of the above displays

Measurement results are coloured differently depending on their quality :

- G : OK
N : Rework
A : Scrap
W : Violation of warning limits

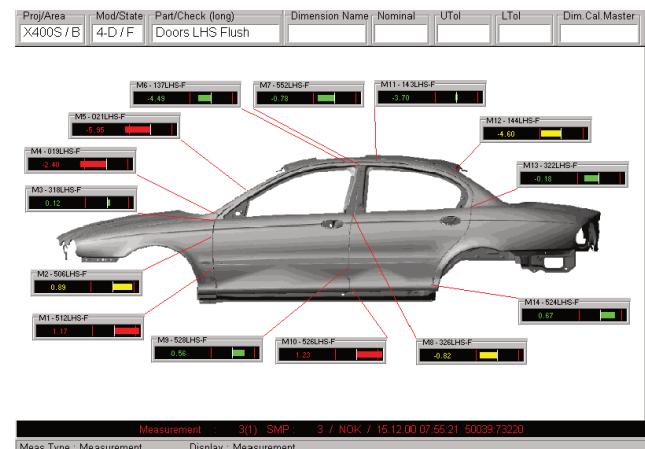
The sample result shows up automatically at the end of a sample.

Online messages indicate special events like Run, Trend, Middle Third

Ongoing calculation of control limits and capability indices (cp, cpk)

The display on the right shows a combination of alphanumeric listing with column display and zoomed value of the selected characteristic.

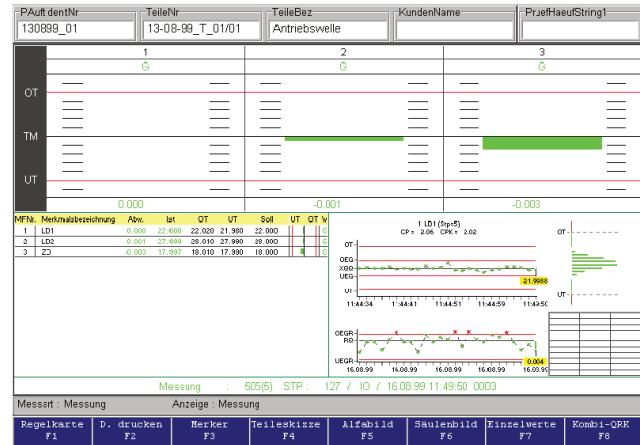
OrderIdentNo	PartLbl	DrawingNo	OperationName	CharLabelShort
0	Under head 563 / Zyl 1-4	1 407 003 Z-012		Diameter bore
	1 G	6 G	41 G	42 G
	2 G	4 G	43 G	44 G
UT	-	-	-	-
TM	Green	Green	Yellow	Green
LT	-	Green	Yellow	Yellow
	0.904	1.893	0.0	189.971
				189.990
				189.976
				189.973
Measurement : 246(1) SMP = 50 / OK / 04.03.99.03.01.44				
Meas.Type : Measurement Display : Measurement				
QCC F1	PrintScreen F2	ActionFlag F3	Part sketch F4	AlphaScreen F5
Columns F6	Originals F7	Combi-QCC F8		



OrderIdentNo	PartLbl	DrawingNo	OperationName	CharLabelShort
0	Under head 563 / Zyl 1-4	1 407 003 Z-012		Diameter bore
1	Diameter bore	-0.096	0.904	UT W SMP for charact. "Diameter bore"
2	Depth bore	-0.107	1.893	CharType: Variable
6	Surface properties	0.0	0.0	Smp-No.: 50
41	Zent-Du -Y-	-0.029	189.971	Smp-Size: 5
42	Zent-Du -Z-	-0.010	189.990	Quantity: 1
43	Zent-Du -X-quer	-0.024	189.976	Xbar: 0.9040
44	Zent-Du -X-quer	-0.027	189.973	S: 0.00000
				Min: 0.904
				Max: 0.904
				Range: 0.000
				0.904
Measurement : 246(1) SMP = 50 / OK / 04.03.99.03.01.44				
Meas.Type : Measurement Display : Measurement				
QCC F1	PrintScreen F2	ActionFlag F3	Part sketch F4	AlphaScreen F5
Columns F6	Originals F7	Combi-QCC F8		

MESAS MQMD Software

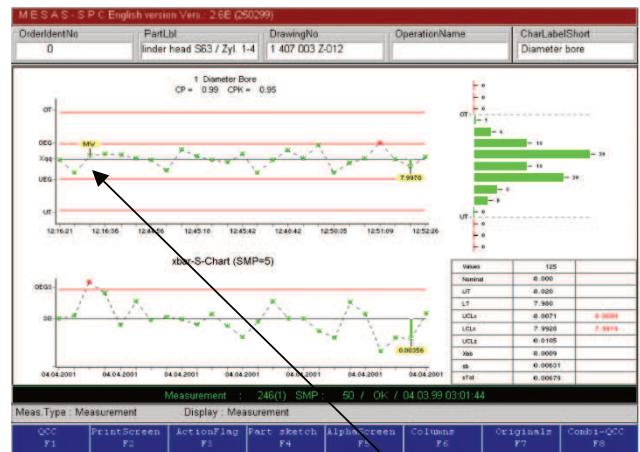
The displays can be combined individually.
 The display on the right shows a combination of columns, alphanumeric listing and quality control chart.



Quality control charts for online evaluation of the production process

- Versard Xbar-/ S-chart with histogram based on the last 25 samples
- Xbar-/ S-chart based on alternating groups of samples
- Xbar-/ R-chart over the last 25 samples
- Xbar-/ Rr-Karte (moving range) over the last 100 measurements
- C-chart for attribute characteristics
- Individuals chart over the last 100 measurements

Action flags can be added to the quality control chart to mark special events like tool change, faulty measurement etc.

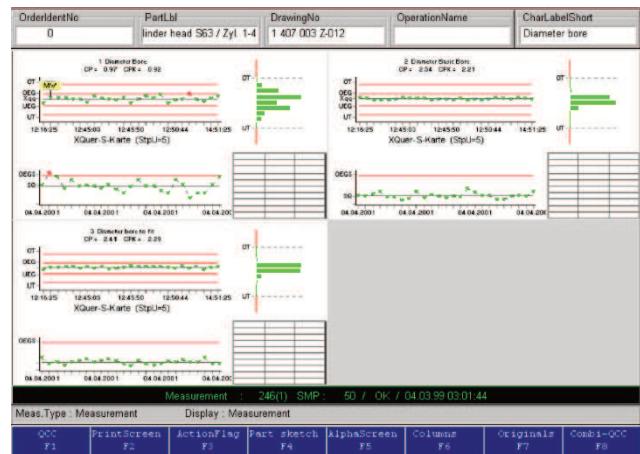


X-bar/s-chart with action flag (sample 3)

Multi-QCC:

- up to 4 quality control charts or
- up to 9 x-bar charts

Displayed on the screen at the same time.



MQMD Long Term Evaluation

MQMD Long Term Evaluation is a program for statistical evaluation, visualisation and reporting of measuring data gathered by MESAS MQMD for Windows and MESAS SPC for DOS.

Evaluation based on IATF 16949 or customer request:

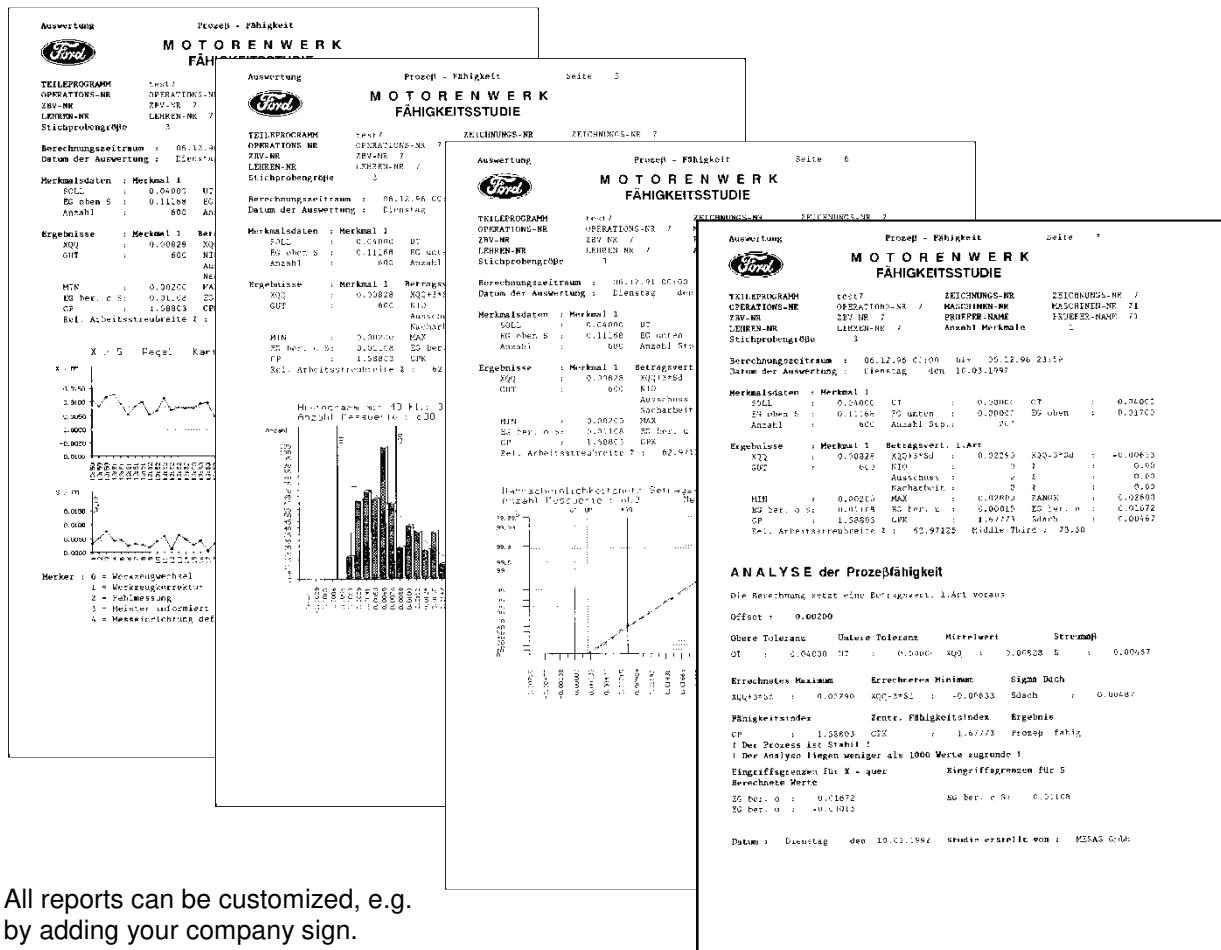
- Preliminary process capability
- Process capability
- Measurement evaluation

Automatic or manual selection of distribution check method:
e.g. Normal-, Log-Normal-, Weibull, Rayleigh-, Folded distribution etc.

- Filter criteria for selection of measurements:
parts, characteristics, evaluation period, serial numbers, operators, machines etc.
- Choice of indices for variation and position
- Choice of quality control charts
- Calculation of control limits and process capability indices
- Automatic elimination of outliers
- Facility to highlight and/or exclude individual samples from evaluation

Diagrams on screen and printer

Pareto Analysis	Share of faulty characteristics
Histogram	Variable number of classes
Attribute chart	Fault index p/pn or cu for attribute characteristics
Sample chart	Alphanumeric listing of samples
Multi-individuals-chart	Individuals chart for several characteristics in one diagram
Vers.ard quality control chart	Xbar- / s-chart or X-bar- / R-chart
Multi- quality control chart	4-12 quality control charts on the screen at the same time
Moving quality control chart	Calculations are not based on fixed samples but on alternating groups of samples
Serial numbers	Simple individuals chart with serial number and operator
Overview	Up to 15 characteristics with alphanumeric information and histogram



All reports can be customized, e.g.
by adding your company sign.

MQMD Master Data

Master data are global, program wide data, which are not subject to many changes, once they have been entered (e.g. parts- and characteristics data, suppliers, machines etc.). Master data are the base for catalogue assisted working with check lists and inspection orders.

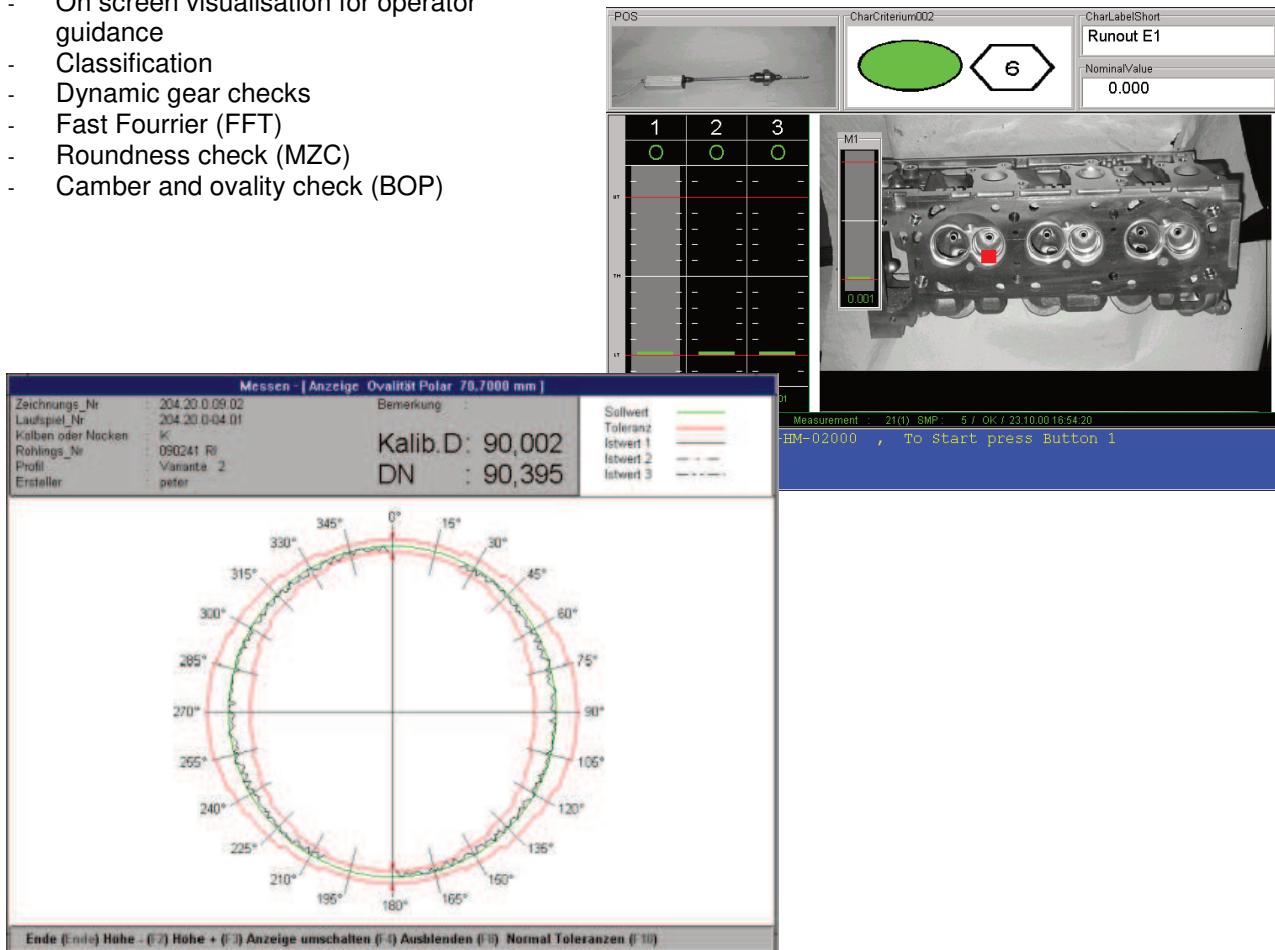
Defining master data is useful, if you intend to centralize and evaluate your quality data within a superior or company-wide system (e.g. quality network).

The catalogisation and uniqueness of the master data allow an unambiguous assignment of the collected inspection data.

The master data management software provides a variety of catalogue criteria. Which ones you actually use, is depending on your company requirements.

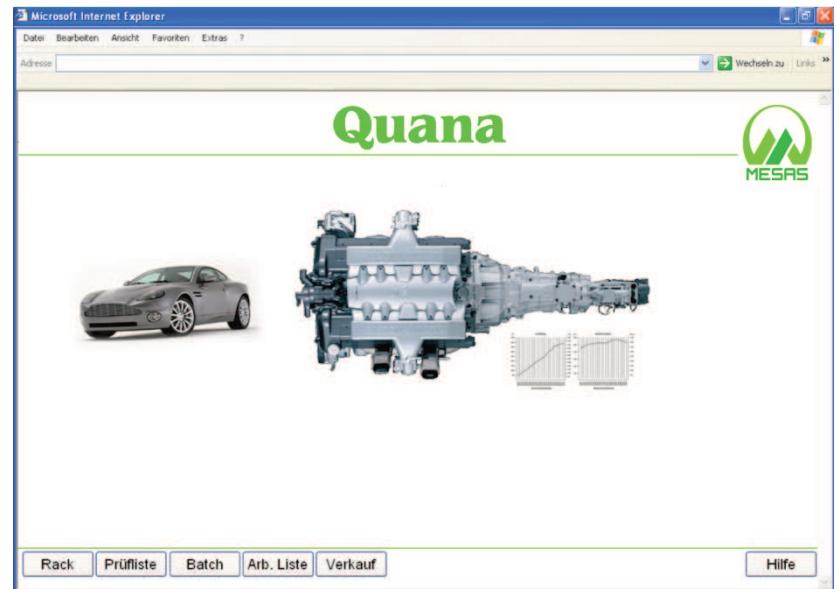
Special Solutions

- On screen visualisation for operator guidance
- Classification
- Dynamic gear checks
- Fast Fourrier (FFT)
- Roundness check (MZC)
- Camber and ovality check (BOP)



MESAS Quana Manufacturing Execution System

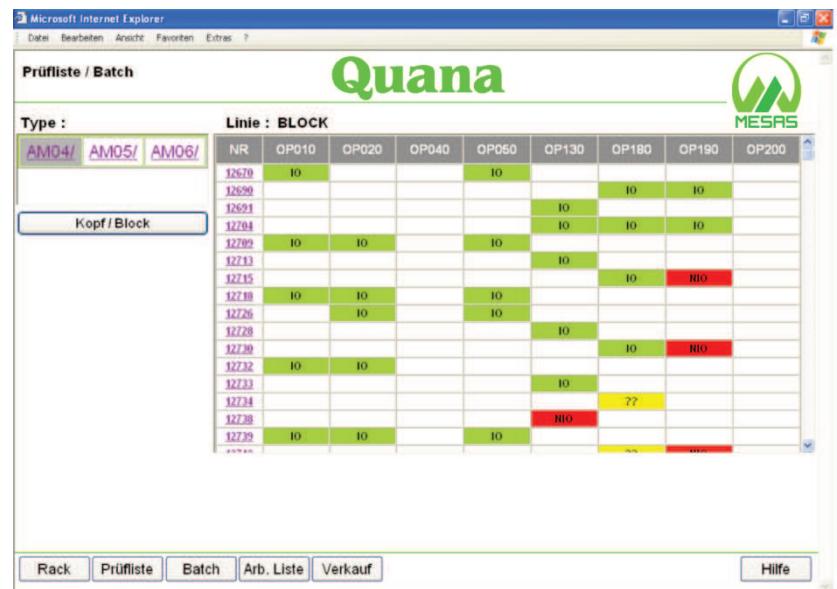
As an integrating link between commercial ERP systems and the control instruments of the shop floor, Manufacturing Execution Systems (MES) provide the information base for interaction of business processes. Customized and well structured MES solutions optimize production due to improved realization of production planning targets and faster response to production events.



Due to the use of web based applications up to date production data can be accessed from anywhere in the network.

Example: Welcome screen of the web-interface

Realtime monitoring / Batch traceability



Prüfliste / Batch								
Type :	Linie : BLOCK							
NR	OP010	OP020	OP040	OP060	OP130	OP180	OP190	OP200
AM04/	IO							
AM05/				IO		IO	IO	
AM06/					IO	IO	IO	
					IO	IO	IO	
						IO		
Kopf / Block								
12670	IO							
12690								
12691								
12704								
12705	IO	IO			IO	IO	IO	
12713					IO			
12715						IO		
12718	IO	IO			IO			
12726		IO			IO			
12728					IO			
12730						IO		
12732	IO	IO						
12733						IO		
12734							??	
12738						IO		
12739	IO	IO		IO				

The check list / batch shows an online up to date state of processing for each part.

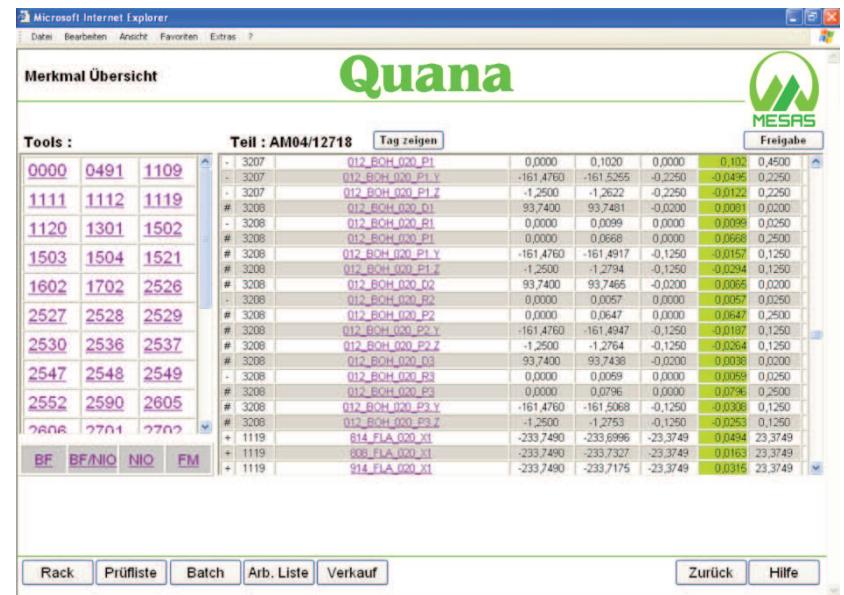
Serial number - List of operations

Traceability of assemblies and batches

In case of customer complaints it is possible to show up all batches referring to a batch no. / serial no. as well as the characteristics measured.

For each part / characteristics there is a link to the corresponding tool.

This link allows to identify any potentially faulty part in case of a tool malfunction.

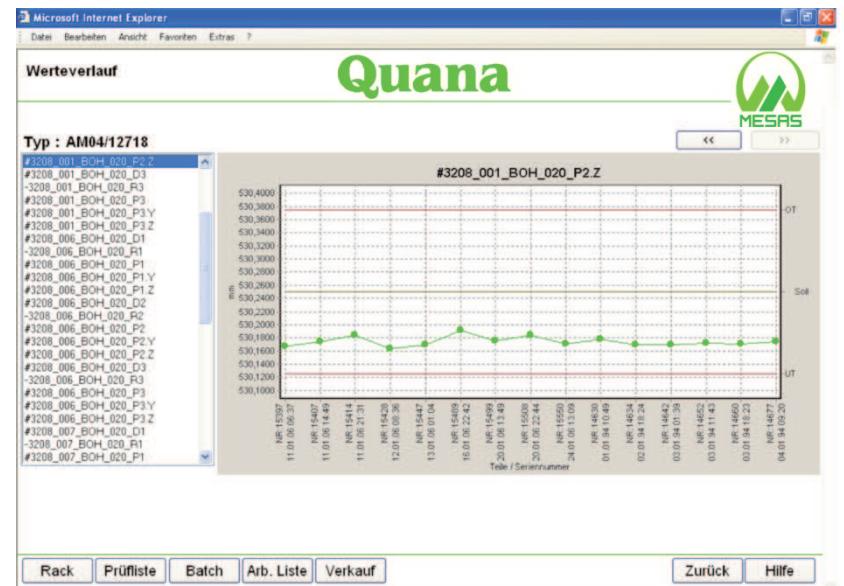


The screenshot shows a Microsoft Internet Explorer window displaying a table of assembly characteristics. The table has columns for characteristic ID (e.g., 0000, 1111, 1120, etc.), name (e.g., 0491, 1112, 1301, etc.), and value (e.g., 1109, 1119, 1502, etc.). Each row contains a link to a specific tool or workstation. The interface includes navigation buttons at the bottom: Rack, Prüfliste, Batch, Arb. Liste, Verkauf, Zurück, and Hilfe.

Characteristics with link to production tool and workstation.

For each individual characteristic charts can be displayed on the screen and reports can be printed printed out for documentation.

All data can be exported to qs-Stat® for additional statistical evaluation.



Graphical display of the batch values.

MESAS Gauge Management software

The main condition for reliable quality control in production and in-/output of goods is the reliability and accuracy of the inspection, measuring and test equipment being used.

MESAS PMV is a versatile, flexible and powerful tool for control and management of gauges. Data are stored in databases, which, if used in a network, allow central access to any information throughout the plant. Connectivity to various types of data bases (like Borland, Interbase, Oracle) ensure protection of your investment while it provides long term availability of both data and software.

Quick and easy use

Master data for gauge types, characteristics as well as operators, suppliers, machines etc. are the base for catalogue assisted data input providing unambiguousness of data and accelerating inspection.

Specification of parameters for individual gauges (suffixes):

- Check interval
- Location
- Supplier
- Cost center etc.

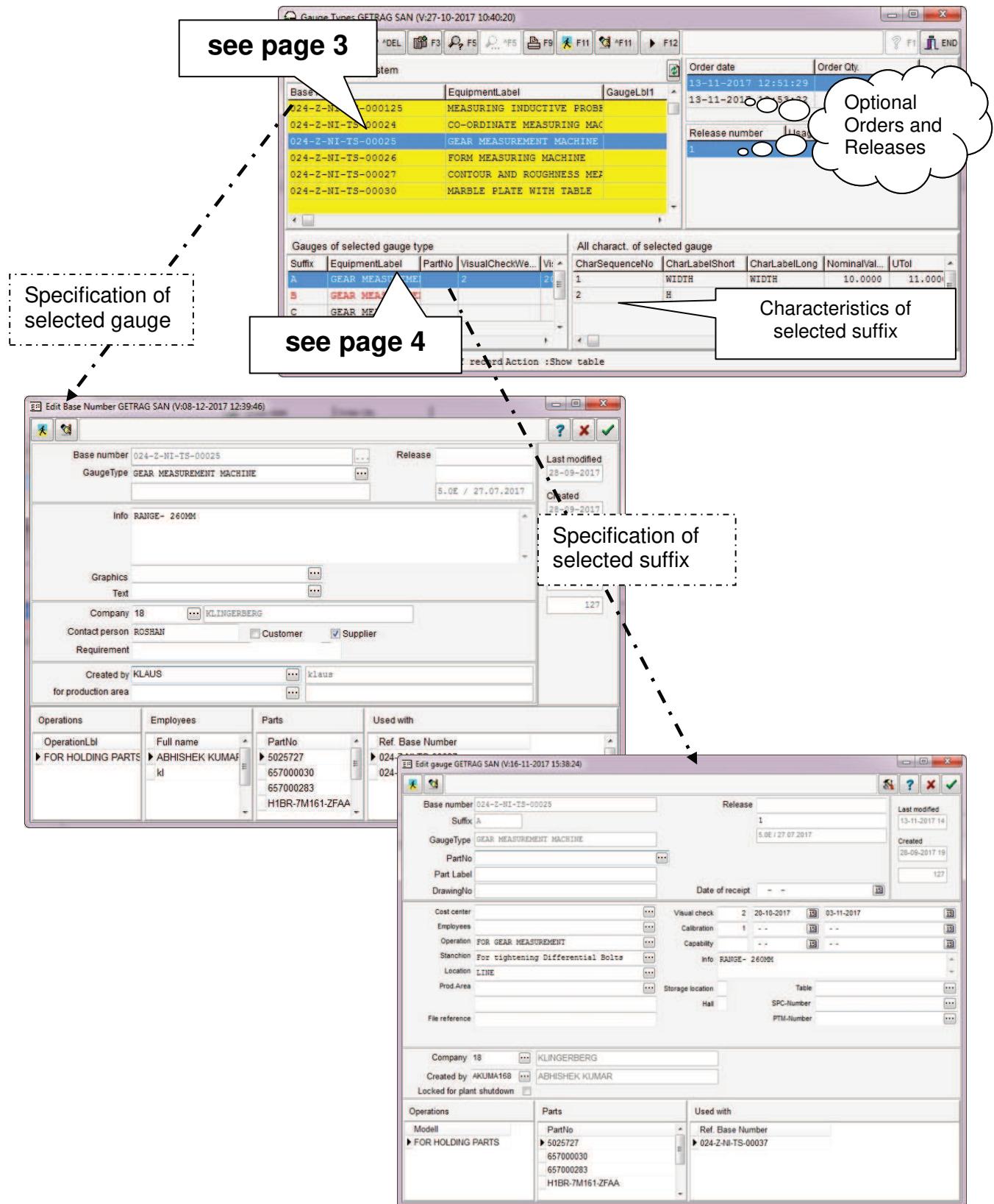
The dates for the next visual check, measurement or capability check are calculated automatically taking into consideration non-production periods, like plant shut down.

Visual, Measurement and Capability Check.

Measurement is taken manually or (as an option) automatically by reading data from an external measuring machine.

Gauges can be excluded from monitoring, if applicable.

Gauges



The screenshot displays four windows of the MESAS Gauge Management software:

- Main Window (Top Right):** Shows a list of gauges with their base numbers and labels. A callout box labeled "see page 3" points to the list.
- Optional Orders and Releases (Cloud Callout):** A callout box pointing to the top right of the main window.
- Specification of selected gauge (Left Callout):** A dashed line connects to a detailed view of a selected gauge's suffix information.
- Characteristics of selected suffix (Bottom Right Callout):** A callout box pointing to the characteristics table of the selected suffix.
- Edit Base Number Window (Bottom Left):** Shows details for a specific base number (024-Z-NI-TS-00025) including company info, contact person, and operations.
- Edit Gauge Window (Bottom Right):** Shows details for a specific gauge (024-Z-NI-TS-00025) including cost center, employees, and operations.

Existing gauges

Base number	EquipmentLabel	GaugeLbl1
024-Z-NI-TS-000125	MEASURING INDUCTIVE PROBE	
024-Z-NI-TS-00024	CO-ORDINATE MEASURING MAC	
024-Z-NI-TS-00025	GEAR MEASUREMENT MACHINE	
024-Z-NI-TS-00026	FORM MEASURING MACHINE	
024-Z-NI-TS-00027	CONTOUR AND ROUGHNESS MEA	
024-Z-NI-TS-00030	MARBLE PLATE WITH TABLE	

Gauges of selected gauge type

Suffix	Specification of selected gauge	VisualCheckWe...	Vi...
A	Specification of selected gauge	2	20
B			
C	GEAR MEASUREME		

All charact. of selected gauge

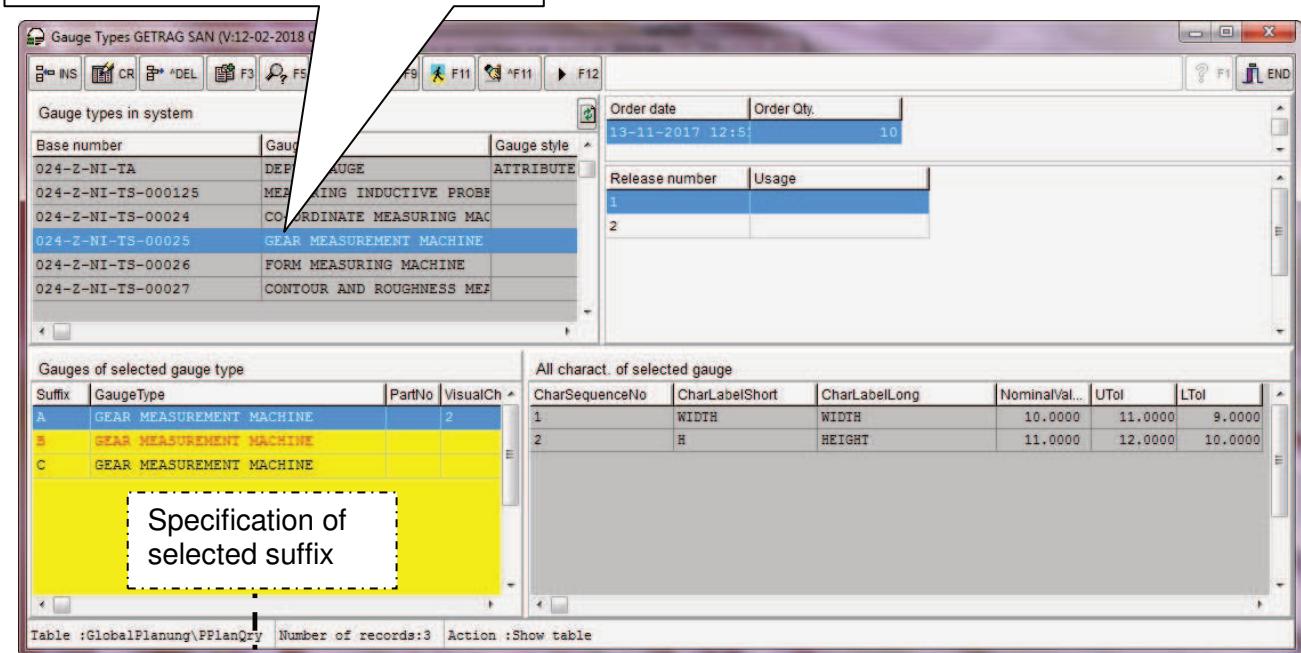
CharSequenceNo	CharLabelShort	CharLabelLong	NominalVal...	UTol
1	WIDTH	WIDTH	10.0000	11.0000
2	H	HEIGHT	11.0000	12.0000

Edit Base Number GETRAG SAN (V:08-12-2017 12:39:46)

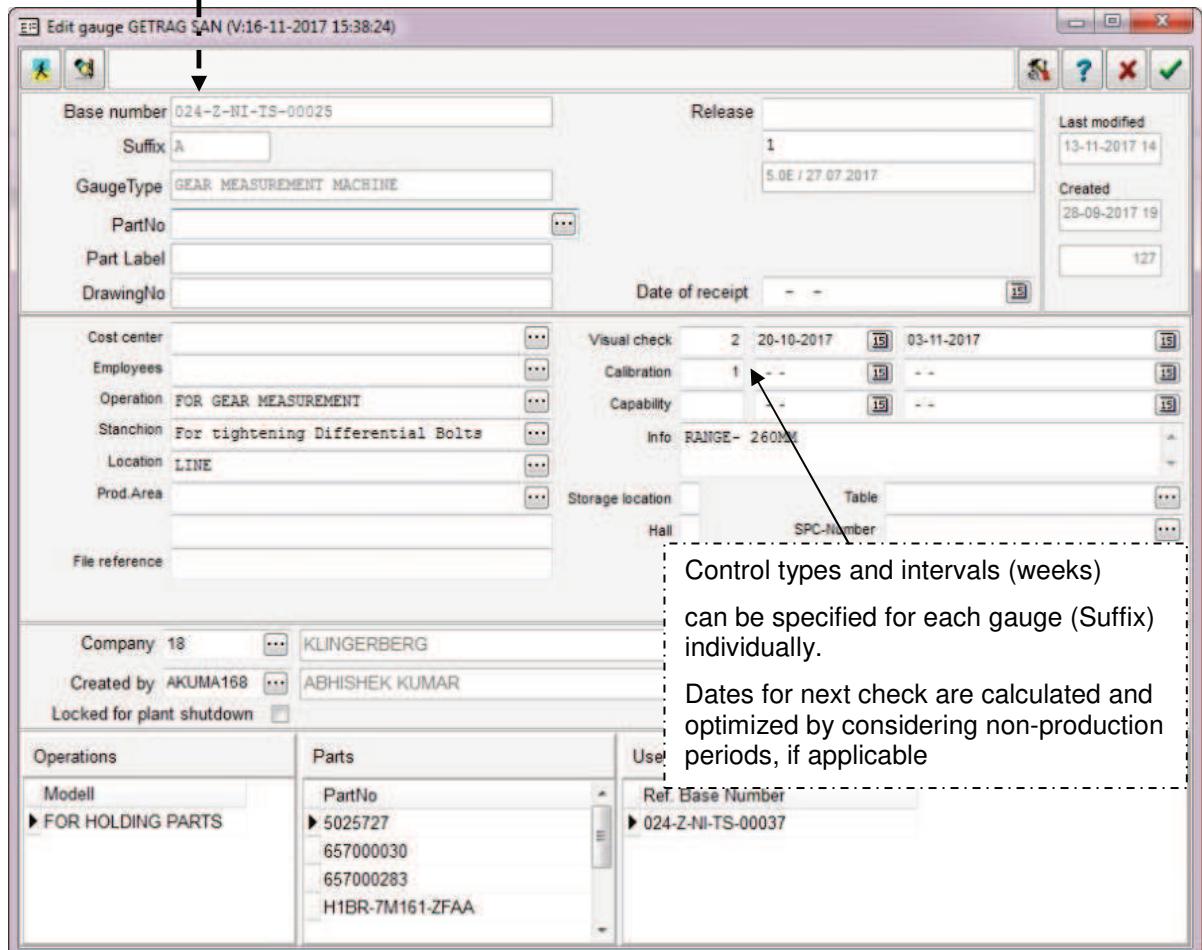
Base number	024-Z-NI-TS-00025	Release	
GaugeType	GEAR MEASUREMENT MACHINE		5.0E / 27.07.2017
Info	RANGE- 260MM		
Graphics			
Text			
Company	18	KLINGERBERG	Last modified 28-09-2017
Contact person	ROSHAN	<input type="checkbox"/> Customer	<input checked="" type="checkbox"/> Supplier
Requirement			
Created by	KLAUS	klaus	Created 28-09-2017
for production area			
Operations	Employees	Parts	Used with
OperationLbl	Full name	PartNo	Ref. Base Number
FOR HOLDING PARTS	ABHISHEK KUMAR	5025727	024-Z-NI-TS-00037
	kl	657000030	024-Z-NI-TS-00134
		657000283	
		H1BR-7M161-ZFAA	

MESAS Gauge Management software

Suffixes of selected gauge

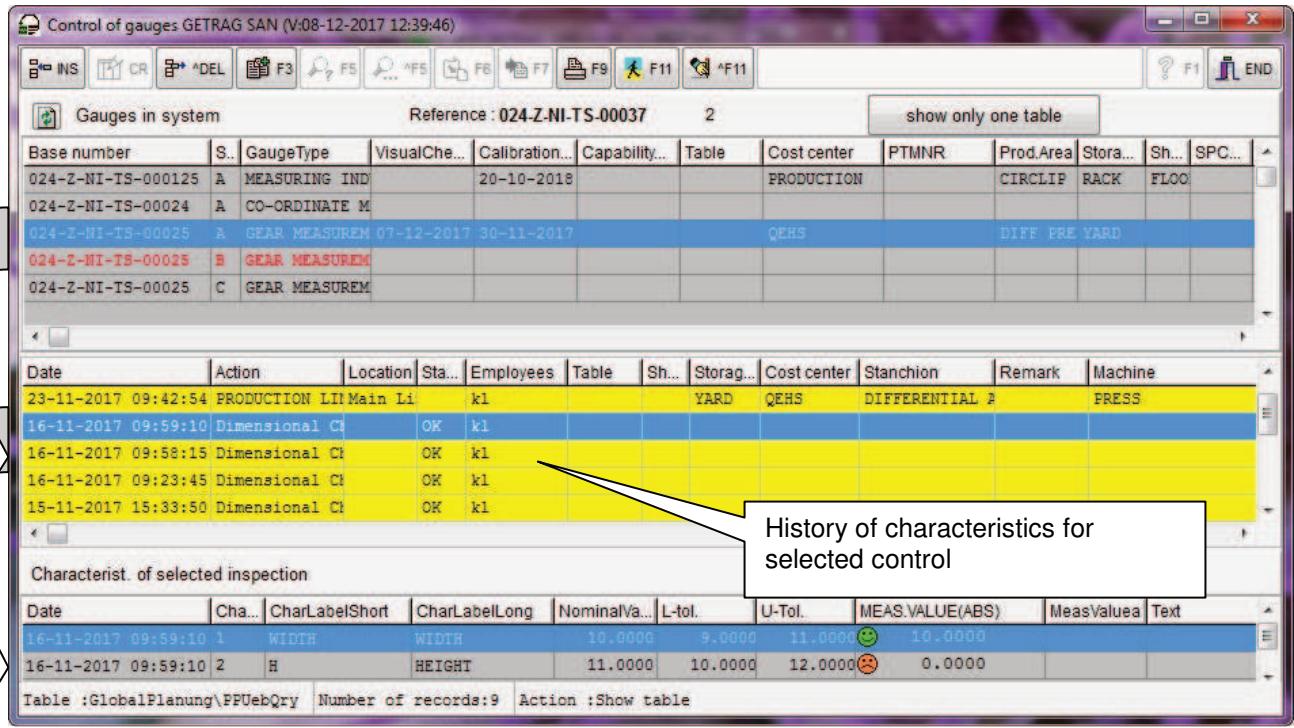


The screenshot shows a software interface for managing gauge types. On the left, a table lists "Gauge types in system" with columns for Base number, Gauge type, and Gauge style. One row is selected: "024-Z-NI-TS-00025 GEAR MEASUREMENT MACHINE". On the right, a table titled "Gauges of selected gauge type" shows "Specification of selected suffix" for suffixes A, B, and C. Another table titled "All charact. of selected gauge" lists character sequences and their nominal values.



The screenshot shows a detailed view of a selected gauge. It includes fields for Base number (024-Z-NI-TS-00025), Suffix (A), GaugeType (GEAR MEASUREMENT MACHINE), PartNo, Part Label, DrawingNo, Cost center, Employees, Operation, Stanchion, Location, Prod.Area, File reference, Company (KLINGERBERG), Created by (AKUMA168, ABHISHEK KUMAR), and Locked for plant shutdown. On the right, there are sections for Visual check, Calibration, Capability, and Info (RANGE - 260MM). A dashed box highlights the "Calibration" section with the text: "Control types and intervals (weeks) can be specified for each gauge (Suffix) individually. Dates for next check are calculated and optimized by considering non-production periods, if applicable".

Control



Control of gauges GETRAG SAN (V:08-12-2017 12:39:46)

Gauges in system Reference : 024-Z-NI-TS-00037 2 show only one table

Base number	S.	GaugeType	VisualChe...	Calibration...	Capability...	Table	Cost center	PTMNR	Prod.Area	Stora...	Sh...	SPC...
024-Z-NI-TS-000125	A	MEASURING IND		20-10-2018			PRODUCTION		CIRCLIP	RACK	FLOOR	
024-Z-NI-TS-00024	A	CO-ORDINATE M										
024-Z-NI-TS-00025	A	GEAR MEASUREM	07-12-2017	30-11-2017			QEHS		DIFF PRE YARD			
024-Z-NI-TS-00025	B	GEAR MEASUREM										
024-Z-NI-TS-00025	C	GEAR MEASUREM										

Date	Action	Location	Stat...	Employees	Table	Sh...	Storag...	Cost center	Stanchion	Remark	Machine
23-11-2017 09:42:54	PRODUCTION LII Main Li	k1				YARD	QEHS	DIFFERENTIAL P		PRESS	
16-11-2017 09:59:10	Dimensional C	OK	k1								
16-11-2017 09:58:15	Dimensional C	OK	k1								
16-11-2017 09:23:45	Dimensional C	OK	k1								
15-11-2017 15:33:50	Dimensional C	OK	k1								

Characterist. of selected inspection

Date	Char...	CharLabelShort	CharLabelLong	NominalVa...	L-tol.	U-Tol.	MEAS.VALUE(AB...	MeasValuea	Text
16-11-2017 09:59:10	1	WIDTH	WIDTH	10.0000	9.0000	11.0000	10.0000		
16-11-2017 09:59:10	2	H	HEIGHT	11.0000	10.0000	12.0000	0.0000		

Table :GlobalPlanung\PPUebQry Number of records:9 Action :Show table

Check results can be entered manually or automatically, e.g.:

- Automatic gauge check
- Length measuring machines
- Gauge capability software etc.

Characteristics GETRAG SAN (V:10-11-2017 07:00:02)

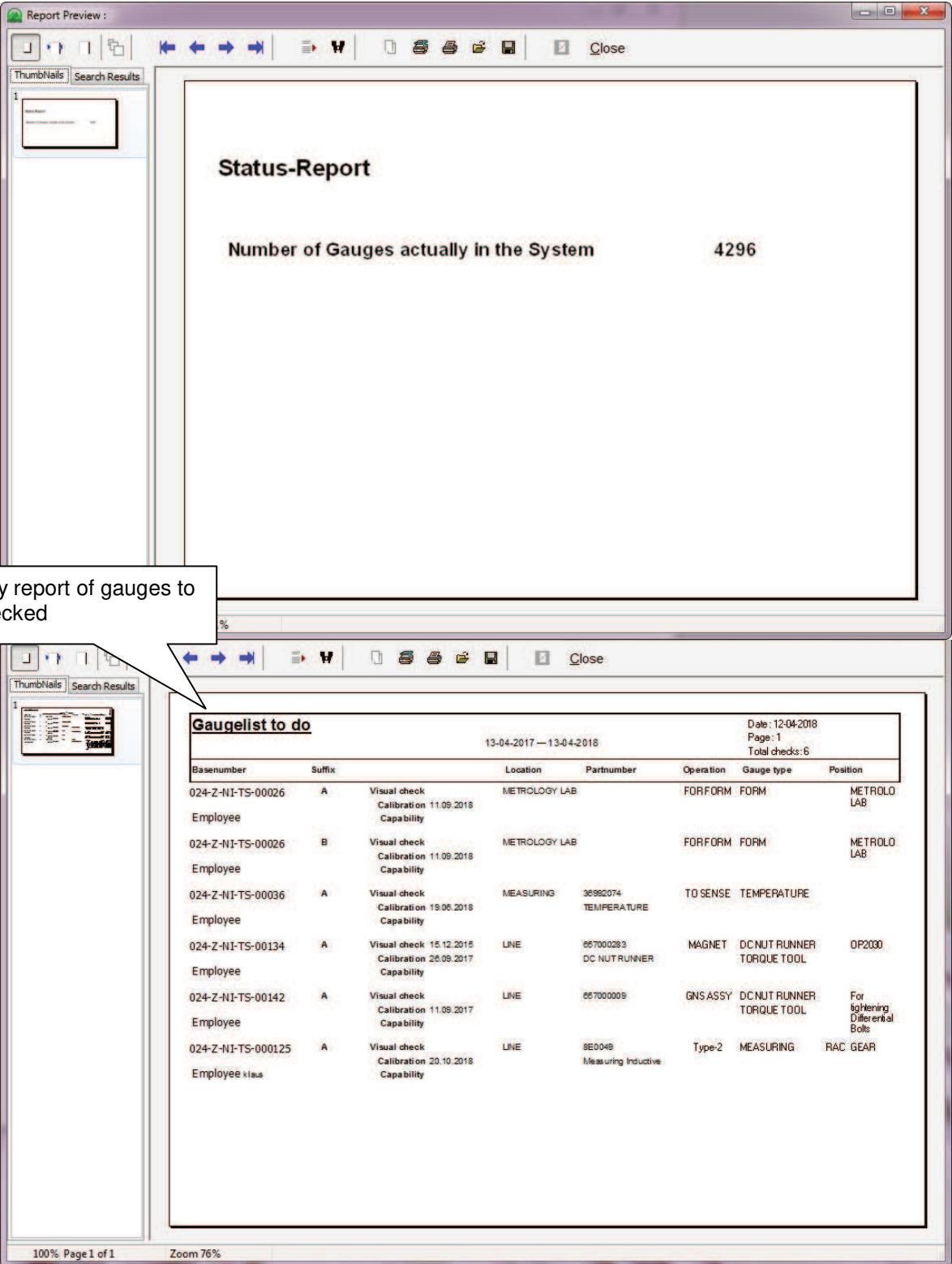
Base number	024-Z-NI-TS-00025								
Suffix	A								
Action	M								
Dimensional Check									
Date	16-11-2017								
C..	CharLabelShort	CharLabelLong	Nominal	L-tol.	U-Tol.	MEAS.VALUE(AB...	Unit	MeasValuea	Text
1	WIDTH	WIDTH	10.0000	9.0000	11.0000	10.0010	mm		
2	H	HEIGHT	11.0000	10.0000	12.0000	12.0020	MM		

This example shows the results of the checked characteristics (manual measurement)

Reports

The gauge management software comes with a set of standard reports.
Additional reports on request.

Weekly report of gauges to be checked



Status-Report

Number of Gauges actually in the System 4296

Gaugelist to do						
13-04-2017 – 13-04-2018						
Basenumber	Suffix	Location	Partnumber	Operation	Gauge type	Position
024-Z-NI-TS-00026	A	Visual check Calibration on 11.09.2018 Capability	METROLOGY LAB	FORFORM	FORM	METROLO LAB
Employee						
024-Z-NI-TS-00026	B	Visual check Calibration on 11.09.2018 Capability	METROLOGY LAB	FORFORM	FORM	METROLO LAB
Employee						
024-Z-NI-TS-00036	A	Visual check Calibration on 19.05.2018 Capability	MEASURING	36952074	TO SENSE TEMPERATURE	
Employee						
024-Z-NI-TS-00134	A	Visual check 15.12.2015 Calibration 26.09.2017 Capability	LINE	667000283 DC NUT RUNNER	MAGNET DC NUT RUNNER TORQUE TOOL	OP2030
Employee						
024-Z-NI-TS-00142	A	Visual check Calibration on 11.09.2017 Capability	LINE	667000009	GNS ASSY DC NUT RUNNER TORQUE TOOL	For tightening Differential Bolts
Employee						
024-Z-NI-TS-000125	A	Visual check Calibration 20.10.2018 Capability	LINE	8E0048 Measuring Inductive	Type-2 MEASURING	RAC GEAR
Employee Klaus						

100% Page 1 of 1 Zoom 76%

Monthly status report of checks

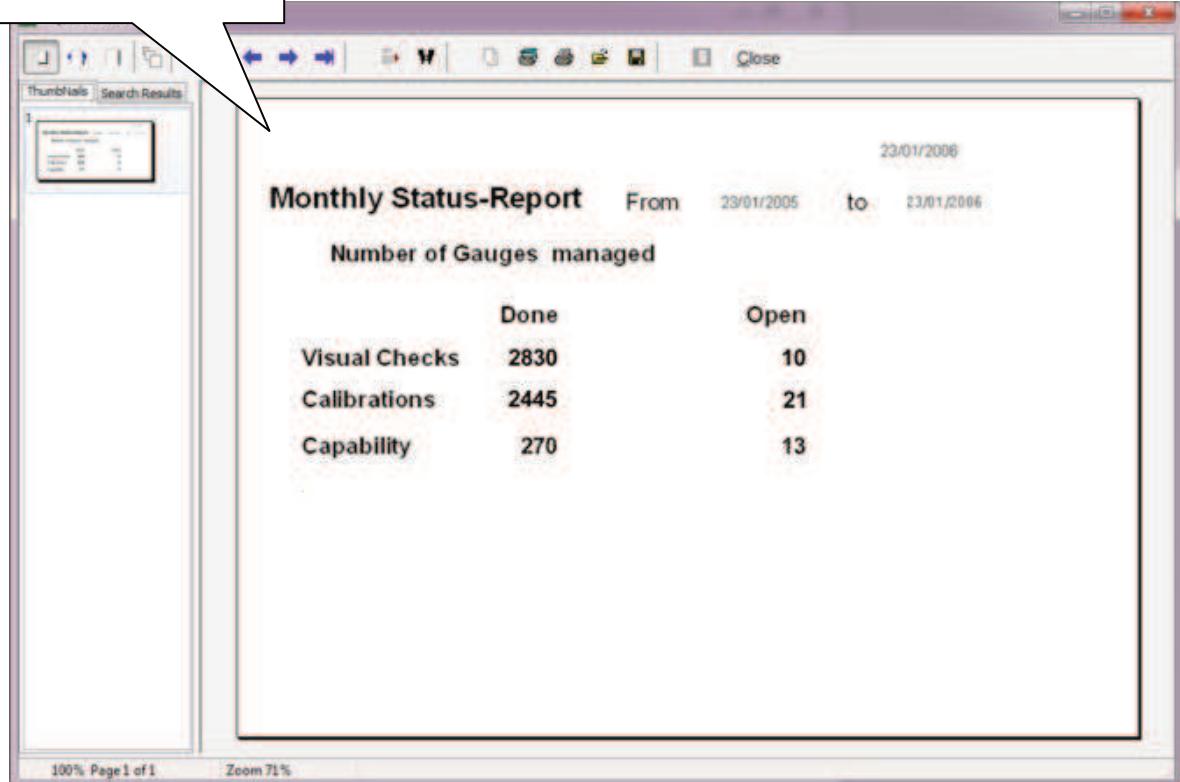
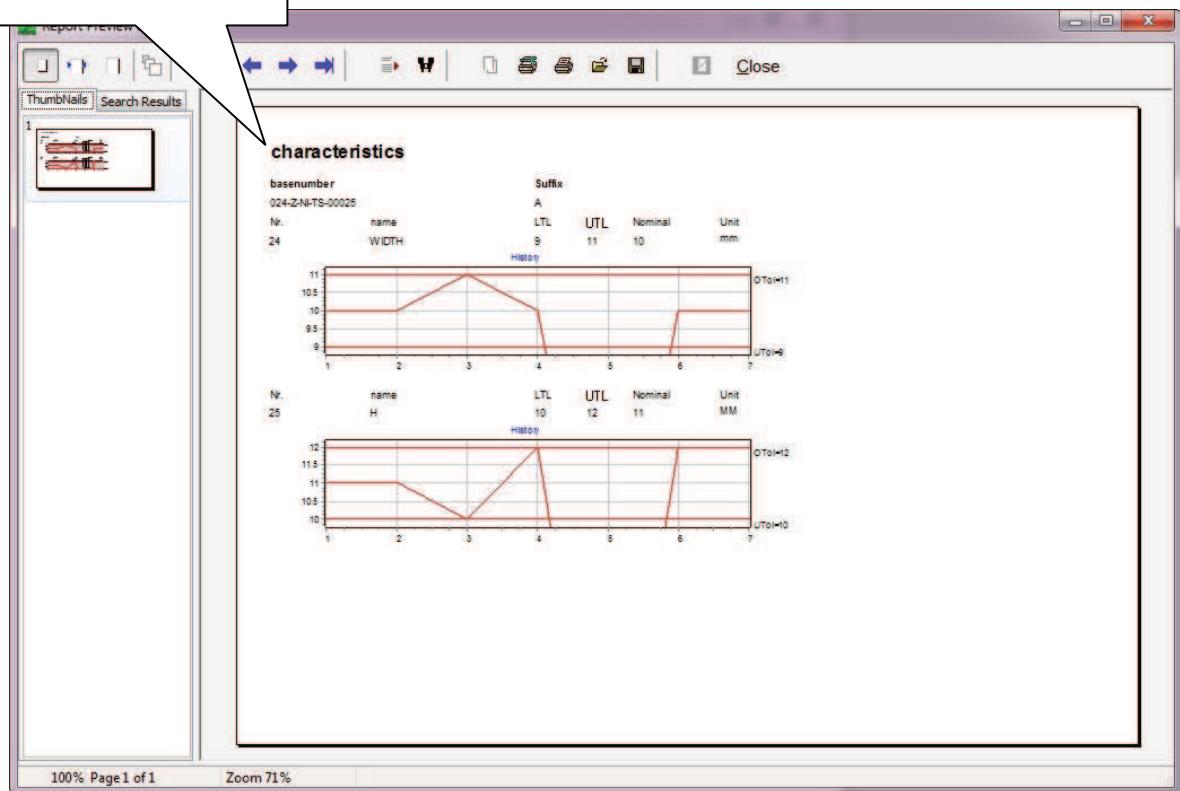


Chart of measured characteristics



Description

PG 1000 Cutting Tool Inspection System

Compare the Features:

- 5 Mega pixel camera requiring minimum lighting, reduces hot spots from lighting
- 12x microscope, magnifications form 12.5x to 145x. Magnifications automatically synchronize to PC
- Automatic screen calibration with electronic magnification change stabilization
- Area of interest edge detection, on one or more areas.
- Save tool documentation by area of inspection for total inspection document or inspection guide for future inspection
- Totally enclosed camera and microscope for system protection

Model 1000-400-CMN

Package includes hardware, software & computer



Standard Hardware Configuration

Microscope:	00484-1A 12 x optical systems
Magnification:	12.5x, 20x, 30x, 40x, 50x, 60x, 70x, 80x, 90x, 110x, 120x, 125x, 130x, und 145x
Field of view:	12.5x = 25 mm, 20x = 16.7 mm, 30x = 11.6 mm, 40x = 8 mm, 50x = 6.6 mm, 60x = 5.4 mm 70x = 4.55 mm, 80x = 4.0 mm, 90x = 3.5 mm, 110x = 3.0 mm 120x = 2.8 mm, 125x = 2.6 mm, 130x = 2.5 mm, 145x = 2.3 mm
Camera:	5,0 Mega Pixel 1/2" USB colour camera
Computer:	Dell mini-tower, Core2Duo or AMD dual core processor, min. 1 GB RAM, min. 80 GB hard drive, DVI video input, 19" or 20" flat panel monitor Operating System: Windows 7 64bit or Windows 10 64bit

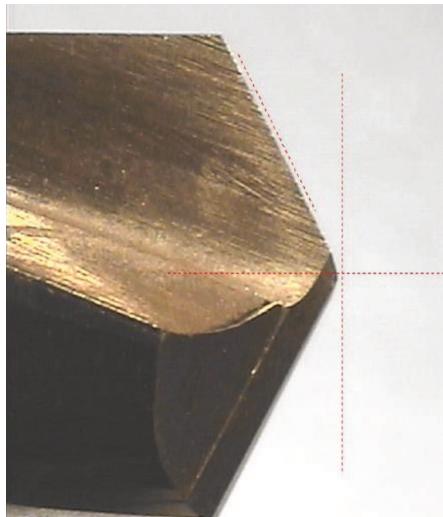
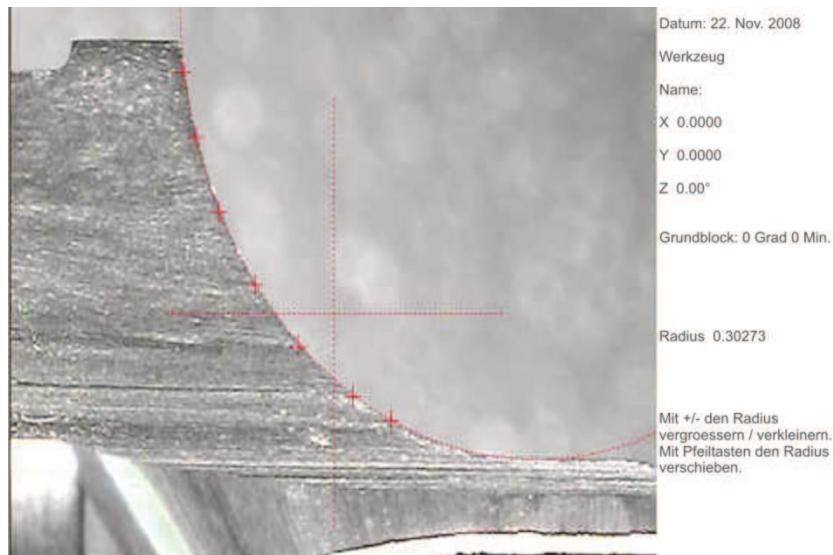


Scales:	RSF or Fagor
Screen Resolution:	Low= 0,20 mm (0,00078") 12.5x High= 0,0016 mm (0,000062") 145x
Live (manual probing)	Low= 0,10 mm (0,00039") 12.5x High= 0,0008 mm (0,000031") 145x
Live (with edge detection)	

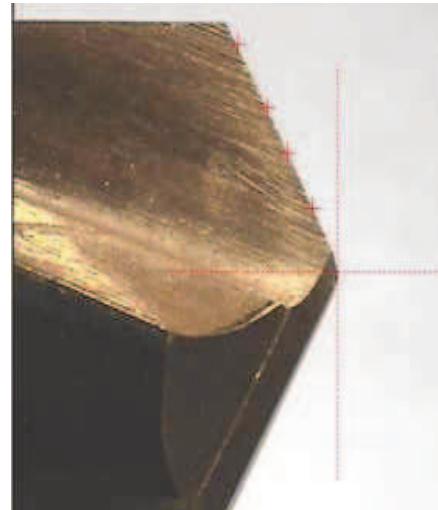
Standard Software Configuration

Software language: German, English, other languages on request

Screen display: Date, tool number and name input by operator, electronic crosshair (Z-axis)
 "X" horizontal and "Y" vertical, inch/metric display, menu bar, tool bar, status bar, note pad, Windows "Help" file



Automatic edge detection



Manual tracking by setpoints

Standard Software Configuration

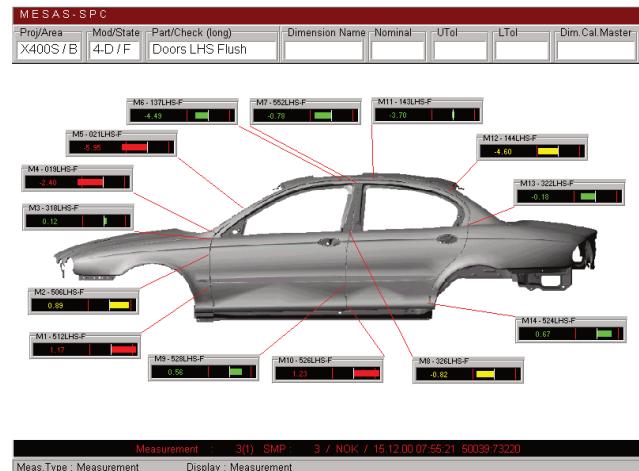
File:	Print and save images as CTM or JPG files, Image overlay, backup, restore
Image Settings:	Contrast, brightness, colour, monochrome
Setup:	Crosshair setup, magnification selection, system settings
Options:	Excel data storage (supplied by customer), qs-Stat optional
Calibration:	Calibrate using the PG 1000 calibration block. Both manual and automated process possible.
Calculations:	Measurements by screen point location, manual comparison to linear scales or by digitally automated edge detection The calculation options contain included angles, opening angles, diameters, radii, spiral angles, cutting, width, distances, rake angles, wedge angles, clearance angles, midpoints and centre thickness.
Comparisons:	Comparisons are done over a live image or alternatively to an imported CAD drawing as a DFX-file
Help-File:	extensive help-texts Network compatible Supports ISO

MESAS Car body measurement

Description

MESAS Car Body Measurement system provides fast and most precise measurement facilities of car bodies within the production area, without any preparation and without docking the body to the measurement system.

- Transmission range approx. 30m
- Measurement and documentation of flushness, gap and seal gap for a 5-door limousine incl. the front hood takes less than 20 minutes.



- **Gap and flushness** are measured wirelessly with digital calliper and digital dial gauge. Due to infrared transmission, the measurement data of the complete body can be transmitted **without additional data logger!**



- **Seal gaps** on doors and lift gate are measured with +/- 5mm standard gauges or with especially designed mini gauges.



Type 1:

The gauges are connected to an infrared transmitter interface which sends measurement values to the measuring and evaluation system.

Measuring equipment and gauges have infrared transmitter modules for direct communication with the measuring and evaluation system.

- Measured values are transferred to the measuring and evaluation system via infrared.
No wires between body and computer system!

MESAS References

Adam Opel GmbH	DE	Bochum
Adam Opel GmbH	DE	Rüsselsheim
AEG Hausgeräte GmbH	DE	Rothenburg/Tbr.
ALSTOM Power Generation AG	DE	Mannheim
Andreas Stihl AG & Co. KG	DE	Waiblingen
Audi AG	DE	Ingolstadt
BBZ	DE	Neunkirchen
Benteler Rothrist AG	CH	Rothrist
Bergmann Automotive GmbH	DE	Barsinghausen
BMW AG Bayerische Motoren Werke AG	DE	München
BorgWarner Transmission Systems	DE	Arnstadt
BorgWarner Transmission Systems	DE	Ketsch
Bosch Rexroth AG	DE	Homburg
Bosch Rexroth Corporation Mobile Hydraulics	US	Fountain Inn
Bosch Rexroth Otomasyon Sanayi ve Ticaret A.S.	TR	Bursa
Brabant Components BV	NL	AL OSS
Briggs & Stratton	US	Menomonee Falls, WI
Carl Freudenberg Sparte Dichtung + Formteile	DE	Weinheim
Ciba Vision GmbH	DE	Grosswallstadt
CNC Zerspanungstechnik BLUG GmbH	DE	Tholey-Theley
DaimlerChrysler AG	DE	Berlin-Marienfelde
DaimlerChrysler AG	DE	Gaggenau
DaimlerChrysler AG	DE	Kassel
DaimlerChrysler AG	DE	Rastatt
DaimlerChrysler AG	DE	Stuttgart
DONCASTERS Precision Castings GmbH	DE	Bochum
Euro-Tech Corporation	US	Menomonee Falls WI
Federal Mogul	TR	Istanbul
Federal Mogul	PL	Gorzyce
Federal Mogul GmbH	DE	Burscheid
Federal Mogul GmbH	DE	Nürnberg
Fertigungstechnik NORD GmbH	DE	Gadebusch
Fissler GmbH	DE	Idar-Oberstein
Flamm AG	DE	Aachen
Ford Amazon Plant	BR	Camacari Bahia
Ford Aquitaine Industries	FR	Blanquefort-Cedex
Ford Espana S.A	ES	Valencia
Ford Motor Company	GB	Dagenham
Ford Motor Company	US	Dearborn
Ford Motor Company Ltd.	GB	Southampton
Ford Motor Company Ltd.	GB	Bridgend
Ford Werke A.G.	BE	Genk
Ford Werke GmbH	DE	Köln
Ford Werke GmbH	DE	Saarlouis
Frankenstein Präzision	DE	St. Johann-Würtigen
Frenco Verzahnungslehren GmbH	DE	Altdorf
Freudenberg Produktionsservice KG	DE	Neuenburg
Geiger Fertigungstechnologie GmbH	DE	Pretzfeld
General Motors Powertrain Austria GmbH	AU	Wien
Georg Fischer GmbH & Co KG	DE	Mettmann

MESAS References

Getrag Ford Transmissions	GB	Halewood Liverpool
Getrag Ford Transmissions GmbH	DE	Köln
Getrag Ford Transmissions GmbH	FR	Blanquefort Cedex France
Grob-Werke	DE	Mindelheim
InspectionAir Gauge Limited	CA	Windsor, Ontario
H.J. Küpper GmbH + Co.KG	DE	Velbert
Harley Davidson Inc.	US	Wauwatosa, WI
Harmonic Drive AG	DE	Limburg / Lahn
Heidelberger Druckmaschinen AG	DE	Heidelberg
Heidelberger Druckmaschinen AG	DE	Amstetten
Hermann Erkert GmbH Präzisionsteile	DE	Sulzbach/Murr
Hirtenberger Defence Systems GmbH & Co. KG	AU	Hirtenberg / Austria
Intra Corporation	US	Westland MI
ITP GmbH	DE	Völklingen
ixetic Hückeswagen GmbH	DE	Hückeswagen
Jaguar Cars Ltd.	GB	Liverpool Halewood
Jaguar Cars Ltd.	GB	Allesley Coventry
Jaguar Cars Ltd.	GB	Birmingham West Midlands
Johann A. Krause Systemtechnik GmbH	DE	Chemnitz
Karl Schmidt Unisia Inc. Marinette Facility	US	Marinette WI
Kelch Präzisionsteile GmbH	DE	Schorndorf
Klumpp GmbH & Co. KG Automatendreherei	DE	Bretten-Rinklingen
Kolbenschmidt Shanghai Piston Co. Ltd.	CN	Shanghai
KS Kolbenschmidt GmbH	DE	Neckarsulm
KS Large Bore Pistons Inc.	US	Marinette Wisconsin 54143
KSM Castings Group GmbH	DE	Hildesheim
KTM-Sportmotorcycle AG	AU	Mattinghofen
KUKA Schweisanlagen GmbH	DE	Augsburg
Lakatos und Söhne GmbH	DE	Niederwürzbach
Leistritz Turbinenkomponenten GmbH	DE	Remscheid
LUK Automobiltechnik GmbH & Co. KG	DE	Bühl
MAGNA Powertrain AG & Co KG	AU	Lannach
MAHLE Brockhaus GmbH	DE	Roßwein
MAHLE Brockhaus GmbH	DE	Plettenberg
MAHLE GmbH	DE	Stuttgart
MAHLE Metal Leve S.A.	BR	Mogi Guaçu
MAHLE Pistons France SARL Ingersheim	FR	Wintzenheim Cedex
MAHLE Spótka z o.o.	PL	Krotoszyn
Mannesmann Rexroth AG	DE	Lohr am Main
MCQ TECH GmbH	DE	Blumberg
Mercopack	ES	Zaragoza
Metal Usti nad Labem a.s	Cz	Trmice
Michelin Kronprinz GmbH	DE	Solingen
Miele & Cie. KG	DE	Gütersloh
Mitec engine.tec GmbH	DE	Krauthausen
MTU Friedrichshafen GmbH	DE	Friedrichshafen
Neapco Europe GmbH	DE	Düren
Oerlikon Textile Components GmbH	DE	Hammelburg
Opel Powertrain GmbH	DE	Kaiserslautern
Opel Powertrain GmbH	DE	Rüsselsheim

MESAS References

Opel Powertrain GmbH	DE	Bochum
Otto Fuchs KG	ZA	East-London, Südafrika
Otto Fuchs KG	DE	Meinerzhagen
Otto Fuchs KG	DE	Viersen-Dülken
OVALO GmbH	DE	Limburg / Lahn
Porsche AG	DE	Stuttgart
Punch Powertrain NV	BE	Sint-Truiden
Rege Motorenteile GmbH & Co. KG.	DE	Eisenach
Rege Motorenteile GmbH & Co. KG.	DE	Witzenhausen
Rexroth Bosch Group Brueninghaus Hydromatik GmbH	DE	Ulm-Elchingen
Rexroth Bosch Group Brueninghaus Hydromatik GmbH	DE	Horb Am Neckar
Robert Bosch GmbH	DE	St. Ingbert
Rotenburger Metallwerke GmbH & Co. KG	DE	Rotenburg a. d. Fulda
Rütten GmbH & Co. KG	DE	Velbert
Saab Automobile Powertrain AB	SE	Södertälje, Schweden
Saginaw Deutschland GmbH	DE	Kaiserslautern
Saint-Gobain Sekurit Modulartechnik GmbH	DE	Würselen
Sealed Power Europe GmbH	DE	Barsinghausen
Selzer Fertigungstechnik GmbH & Co.	DE	Driedorf
SKF GmbH	DE	Lüchow
Sram Deutschland GmbH	DE	Schweinfurt
Sulzer EUROFLAMM Germany GmbH	DE	Bremen
Tekersan Jant Sanayii A.S. Pasalar Mevkii	TR	Bilecik / Türkiye
Thyssen Fahrtreppen GmbH	DE	Hamburg
TRW Deutschland GmbH	DE	Blumberg
Vibracoustic GmbH & Co.KG	DE	Neuenburg
Volkswagen AG	DE	Kassel-Baunatal
Volkswagen AG	DE	Salzgitter
Volkswagen AG	DE	Wolfsburg
Volkswagen Poznan Sp. z o.o.	PL	Poznan
Wieland Werke AG	DE	Ulm
ZF Fonderie Lorraine S.A.S.	FR	Grosbliederstroff
ZF Friedrichshafen AG	DE	Friedrichshafen
ZF Friedrichshafen AG	DE	Saarbrücken
ZF Friedrichshafen AG	DE	Schweinfurt
ZF Friedrichshafen AG	DE	Brandenburg
ZF Lemförder Fahrwerktechnik GmbH & Co. KG	DE	Damme
ZF Lenksysteme GmbH	DE	Bietigheim-Bissingen
ZF Lenksysteme GmbH	DE	Schwäbisch Gmünd
ZF Nacan Sistemas de Direcao LTDA	BR	Sorocaba - S.P. Brasil
ZF Sachs Espana S.A.	ES	Lezama (Viscaya)
ZF Sachs Slovakia a.s.	SK	Trnava
ZF Steering	CN	Shanghai
ZF Steering Systems LLC	US	Florence
ZF Transmissions Gray Court LLC	US	Greenville

This table is an extract of our customers worldwide.

MESAS References

Tool correction

Interface	Customer	Machine type	Part
Profibus	ZF Friedrichshafen AG, Friedrichshafen	Hessap	
BCD Parallel	Kolbenschmidt AG Hamburg	Renault	piston
BCD/Parallel	FAG Kugelfischer, Schweinfurt	Monforts	
BCD/Parallel	Ford Werke AG Wülfrath	Wanderer HESSAP Pittler Gehring	stub axle spindle carrier spindle carrier cylinder bores
BCD/Parallel	Ford Werke AG Valencia	Danobat Bliss Ryder	camshaft camshaft
BCD/Parallel	Ford Werke AG Köln	Weisser	clutch hub
BCD/Parallel	Hydromatik GmbH Ulm	Junker	drive shaft hydraulic pump
BCD/Parallel	Mercedes Benz AG Gaggenau	Heyligenstaedt	transmission shaft
BCD/Parallel	Steyr-Daimler Puch GmbH A-Graz	EMAG	drive shaft
BCD/Parallel	Volkswagenwerk AG Salzgitter	Diedesheim EMAG	flywheel flywheel
RS232	Fichtel & Sachs Schweinfurt	Gildemeister	shock absorber - piston
RS232	ZF Friedrichshafen AG Schwäbisch Gmünd	Gildemeister	steering rack housing
RS232	ZF Friedrichshafen AG Friedrichshafen	Gildemeister Eltropilot L	annulus, planet gear carrier
Limit check	Ford Motor Company Ltd GB-Dagenham	Mauser	cylinder head
Limit check	Ford Motor Company Ltd GB-Bridgend	Nagel	cylinder bore
Limit check	Ford Werke AG Wülfrath	Marwin	stub axle
Limit check	Ford Werke AG Düren	Monforts	drive shaft
Limit check	Ford Werke AG Köln	Cross Weisser Weisser Index Lamb Magdeburger	cylinder bore flywheel crankshaft camshaft cylinder block crankshaft
Limit check	Kolbenschmidt AG Neckarsulm	ExCellO	piston

MESAS References

Tool correction

Limit check	Kolbenschmidt AG Hamburg	Traub	piston
Limit check	Mercedes Benz AG Gaggenau	Monforts	torque parts
Impulse	Ford Motor Company Ltd GB-Swansea	Index	camshaft
Impulse	Ford Werke AG Köln	Norton/Naxos	camshaft