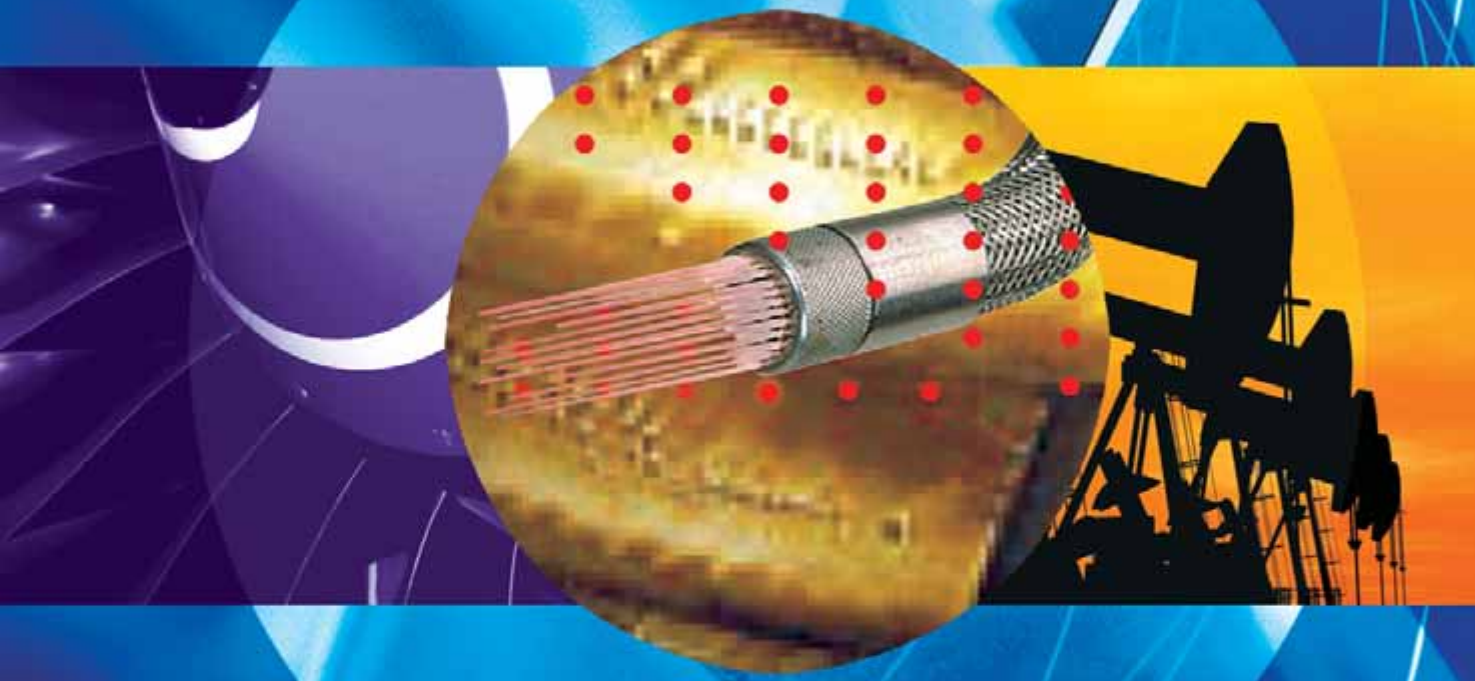
KARL STORZ
Industrial Endoscopy



MEASUREMENT TECHNOLOGY

STORZ
KARL STORZ—ENDOSKOPE
INDUSTRIAL GROUP

Remote Visual Inspection Technology

- we give you the answer -

A modern endoscope must generate an image of concealed body cavities as brilliant as possible.
Decisive factors in this consideration are light intensity, depth of focus, magnification, contrast and resolution.

The basis of an optimal image transmission in endoscopy was the introduction of the rod lens system by Professor Harold H. Hopkins, allowing a highly realistic image of the surface and structure of internal organs to be produced – this lens system has been subjected to continual further improvement and is setting standards worldwide.

Exact Measurement plays more and more an important part during inspections.
High accuracy, simple handling and fast measuring ensures during critical inspections saving time and money.

To get the point:

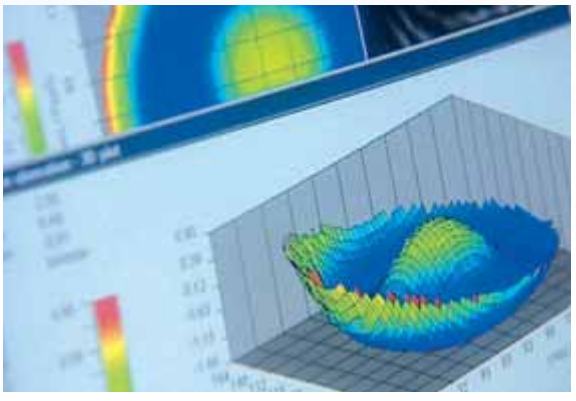
The high optical quality and the Multipoint Measurement Technology of KARL STORZ endoscopes are a delight to all practitioners.

Using KARL STORZ products is the best way to save time and money

Optical elements for endoscopy

Glass fibers provide the basis for the transmission of light and images

Optical components are subjected to quality



Computer-controlled quality assurance for the optical systems

Multipoint Measurement Technology System

- your advantages -

Over 60 years of experience in developing lens systems helped us to create a brilliant combination of Lens system and CCD chip technology. All Videoscopes with Multipoint Measurement Technology together with TECHNO PACK®X offer a unique combination of brilliant optical lenses technology, Multipoint Measurement Technology and TECHNO PACK®X documenting software.

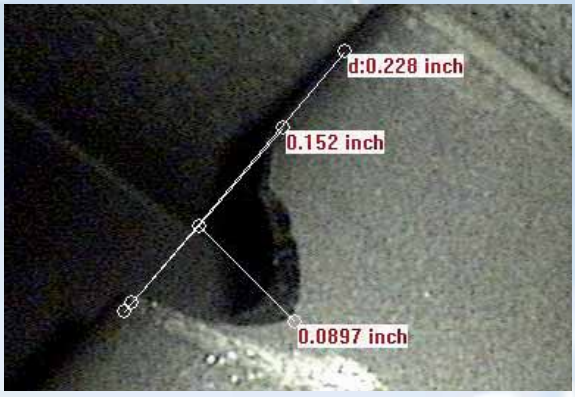
KARL STORZ employs this high quality and technology in one of the smallest compact system on the market.

Additionally TECHNO PACK®X offers a comparison measurement capability software.

One of the biggest benefit is that Multipoint Measurement System can inspect and measure all in one with no changing of tip: Only one tip is necessary.
Accurately measure features and defects on a wide range of inspection targets

- “SEE and Measure” Function, only one tip necessary
- No replacing of the Videoscope
- No tip changing necessary
- Easier handling guarantee saving money and time
- Accuracy of approx. 98% in every starting position of the videoscopes
- Full screen function. No half images as used for the stereo measurement technology
- Bright and sharp image with measurement tip
- TECHNO PACK®X Measurement Software guarantee results 3 to 4 times faster as other measurement systems
- Measurement Zoom for accurate cursor placement
- Validation process to feedback correct configuration of individual system components, which allows a correct measurement
- Save measurement images with justification tip data for future re-measurement. On TECHNO PACK®X Desktop Software
- Measurement results in millimetres or inches

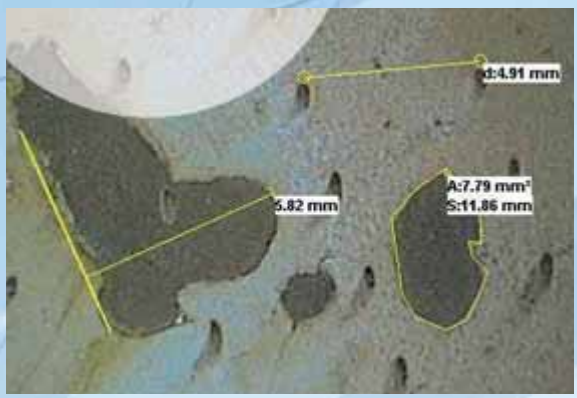
Full image helps to find easily notches in the blades



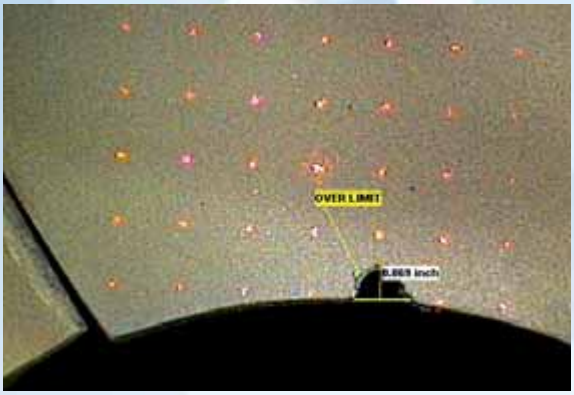
Line to Point Measurement on the notch

Measurement Features

Patent Multipoint Measurement Technology for accurate, simpler and faster measurement:



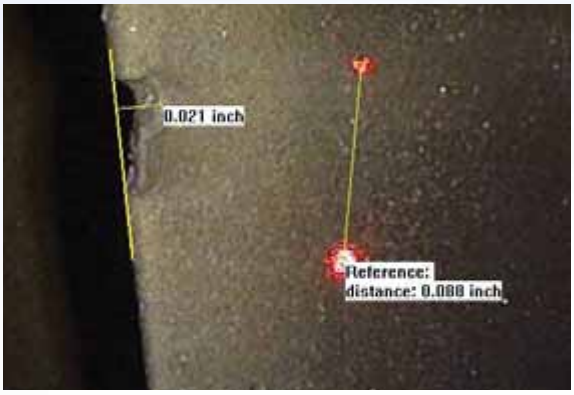
Overview of different mesurement types



Line to Point Measurement with comments

- Accuracy of approx. 98% in every starting position of the videoscopes
- Accurate Measurement on curved and skewed edges
- 7 types of Multipoint Measurement
  - Distance (Length)
  - Depth
    - Depth (Surface to Surface)
    - Depth (Point to Surface)
    - Depth (Point to Point)
  - Line to Point or Point to Line
  - Area incl. In-circle
  - Multiline

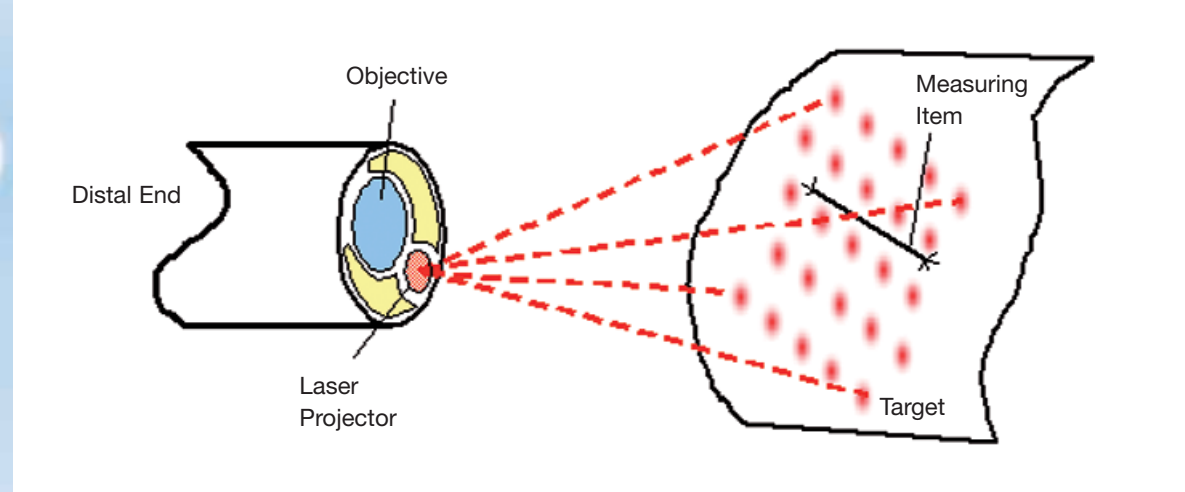
Comparison measurement capability with TECHNO PACK®X features:



Line to Point Measurement with comparison measurement

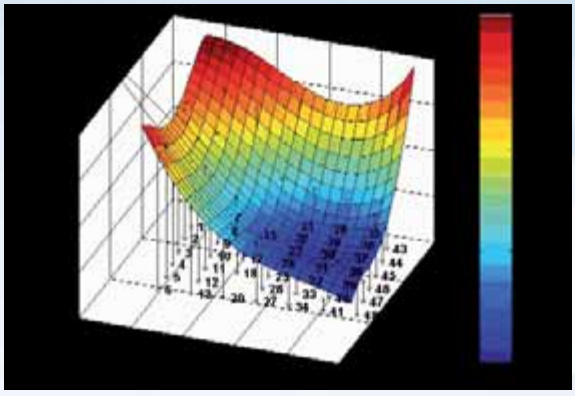
- 4 types of Multipoint Measurement
  - Distance (Length)
  - Line to Point or Point to Line
  - Area incl. In-circle
  - Multiline

How it works



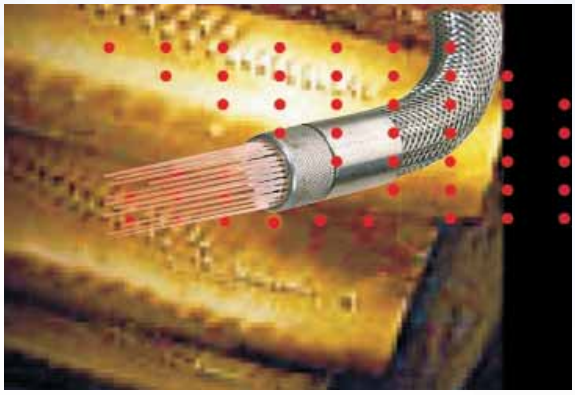
The Multipoint Measurement System uses a 3D laser system with 49 laser points which allows the camera in co-operation with the Software to detect the surface structure of the subject surface.

The TECHNO PACK®X Software algorithm analyses the position of each laser point and calculates a 3D Image of the surface and returns a high accuracy measurement result.



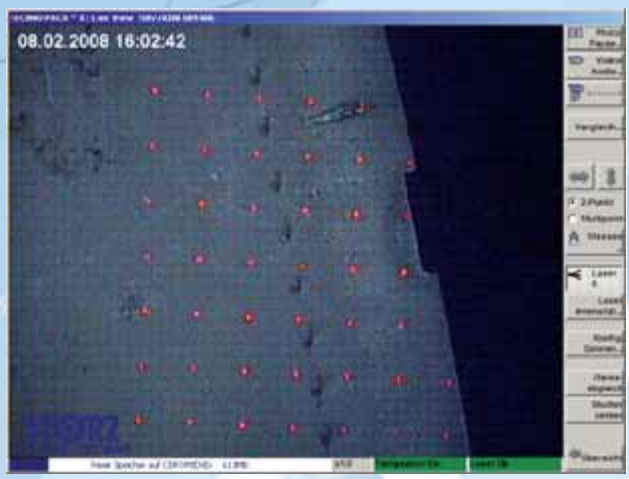
Calculated algorithm analyse

All multipoint measurements videoscope obtain a laser, which allows the user to generate these 49 laser points.
Four interchangeable measurement tips allow “SEE and Measure” Function.



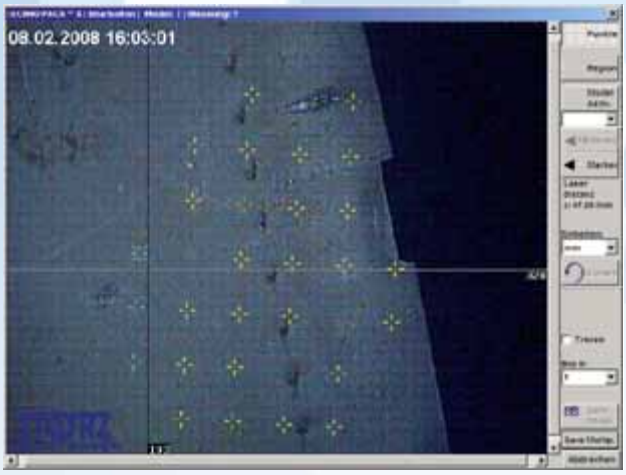
Mutlipoint Measurement videoscope

Three easy steps to find the measurement result



1. Set as much as possible laser points to the subject surface on which you want to measure

Hints:
- Set Light source intensity to min.
- Laser points should be clear and sharp
- The object which you want to measure should be set 1/3 of the image size



2. Define the surface and activate Model

Hints:
- Z-Value helps to find the correct settings

Z Value is the distance between Laserpoint ans Videoscope.

3. Select Measurement type and measure

Hints:
- Zoom can help for correct cursor placement
- The result will be displayed directly in the field

Easy, fast and accurate
KARL STORZ Multipoint Measurement Technology

Validation Process

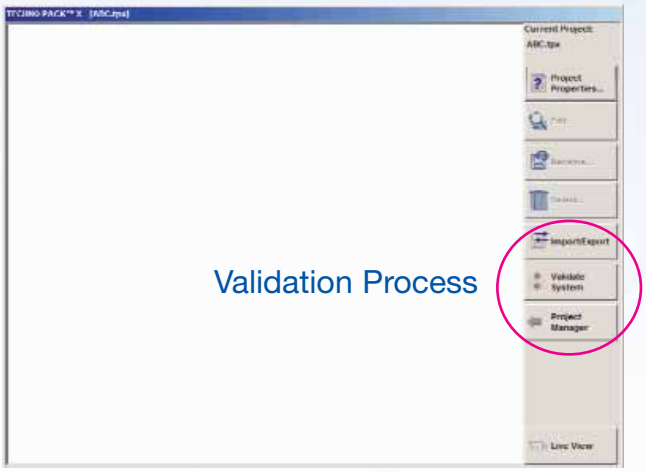
The validation process is checking automatically the configuration between

- Videoscope
- Multipoint Measurement interchangeable tips
- Tips selection software file
- TECHNO PACK® X unit

The test conforms correct configuration of individual system components, which allows a correct measurement. The user gets information about the systems if they work correctly.

If the result is negative the system automatically creates a failure code. This process is a unique function only offered from KARL STORZ

The Validation process works only in connection to validation tool and TECHNO PACK® X Software Version 1.18.4.9 or higher.



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