

## Measuring Instruments for the Finishing Industry



### Measuring

Coating thickness · Wall thickness  
Roughness · Road layer thickness  
Pinhole detection

### Our gauges are used worldwide in:

Aviation and offshore industries  
Railways  
Automotive industry  
Bridge building, etc.

# Non-destructive Coating Thickness Measurement

## MiniTest™ 700 Series (DIN EN ISO, ASTM B244, B499, D7091, E376, AS 3894.3, SS 1841 60, SSPC-PA 2)

Intelligent coating thickness sensors with sensor-integrated digital signal processing

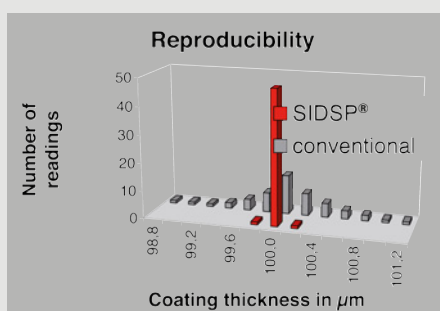
This new series of coating thickness gauges is based on the innovative SIDSP® technology. SIDSP® stands for Sensor-Integrated Digital Signal Processing – a technology where the sensors create and control the excitation signals for the sensor head fully digitally inside the sensor.

Unlike conventional techniques, this new technique does not involve any data loss or disturbance during data transmission via a sensor cable as the return signals are also directly digitally converted and processed to give you the complete coating thickness value.

The three models of the new series for measurement on steel or on non-ferrous substrates offer a solution to all your coating thickness problems where a reliable finish and perfect product appearance play a major



MiniTest™ 700



role, e.g. in the automotive and shipbuilding industry, in steel- and bridge construction or in the electroplating industry.

Wide choice of models and sensors to cover the thickness range from 0 to 15 mm.

## MiniTest™ 7400

High precision coating thickness gauge for measuring non-magnetic coatings on steel (0...35 mm) and insulating coatings on non-ferrous metals (0...7 mm).



MiniTest™ 7400

- wide range of wear-resistant probes
- easy exchange of probes through push-pull connectors
- menu-guided operation with configuration assistant
- large graphics screen

## MiniTest™ 650 (DIN EN ISO, BS, ASTM)

New series of rugged gauges for non-destructive coating thickness measurement.



MiniTest™ 650

- MiniTest™ 650 F for electroplating and paint coatings applied on steel (0 ... 3,000 µm)
- MiniTest™ 650 N for anodising, paint and other coatings on non-ferrous metals (0 ... 2,000 µm)
- MiniTest™ 650 FN dual gauge for measuring on steel and non-ferrous metals with automatic identification of the substrate material (0 ... 2,000 µm)

All gauges provide statistical functions to calculate statistics from a maximum of 9,999 readings and a USB-interface to connect the gauges to a PC. A protective rubber rim housing helps to absorb shocks.

### MiniTest™ 720 with internal SIDSP® sensor

720 F1.5	0... 1,500 µm	720 N07	0...700 µm
720 F2	0... 2,000 µm	720 N2.5	0...2,500 µm
720 F5	0... 5,000 µm	720 FN1.5/0.7	F0...1,500 µm/N 0...700 µm
720 F15	0...15,000 µm	720 FN5/2.5	F0...5,000 µm/N 0...2,500 µm

### MiniTest™ 730 with external SIDSP® sensor

730 F1.5	0... 1,500 µm	730 N07	0...700 µm
730 F2	0... 2,000 µm	730 N2.5	0...2,500 µm
730 F5	0... 5,000 µm	730 FN1.5/0.7	F0...1,500 µm/N 0...700 µm
730 F15	0...15,000 µm	730 FN5/2.5	F0...5,000 µm/N 0...2,500 µm

### MiniTest™ 740 with convertible SIDSP® sensor (internal or external)

Sensor 740 F1.5	0... 1,500 µm	Sensor 740 N07	0...700 µm
Sensor 740 F2	0... 2,000 µm	Sensor 740 N2.5	0...2,500 µm
Sensor 740 F5	0... 5,000 µm	Sensor 740 FN1.5/0.7	F0...1,500 µm/N 0...700 µm
Sensor 740 F15	0...15,000 µm	Sensor 740 FN5/2.5	F0...5,000 µm/N 0...2,500 µm

### MiniTest™ 4100-3100-2100-1100 (DIN EN ISO, BS, ASTM)

Coating thickness gauges for all non-magnetic coatings on steel and all insulating coatings on non-ferrous metals. Designed for multi-purpose applications, the unique MiniTest series proved to be one of the most well-known lines of gauges in the history of coating thickness measurement.



MiniTest™ 4100/3100/2100/1100

- dual probe for steel and non-ferrous metal substrates
- a wide variety of probes from 0...500 µm, ..., 0...100 mm can be connected
- 99 calibration memories available
- free-programmable memories for storing up to 10,000 readings, 500 batch memories
- large-sized display with back-light and operating aids
- storage of date and time of the individual measuring series
- analogue bars for quick recognition of changes in readings
- data port available for connecting to a PC or MiniPrint data printer
- various statistical modes including cp and cpk evaluation

### MiniPrint

This handy data printer can be directly connected to the MiniTest gauges for immediate or subsequent print-out of readings, statistics and histograms.

### MiniTest™ 70 Series

Versatile coating thickness gauges for fast and precise measurements of non-magnetic coatings on steel (0 ... 3,000 µm) and insulating coatings on non-ferrous metals (0 ... 2,500 µm).



MiniTest™ 70

- automatic identification of the substrate material
- built-in sensor
- proven measuring methods
- statistics function

### MikroTest® automatic (DIN EN ISO, BS, ASTM)

The original BANANAGAGE® since 1954

Magnetic coating thickness gauge working on the magnetic attraction principle. The sturdy metal housing and a clear glass scale combine to make this gauge a most efficient tool for non-destructive, quick and accurate coating thickness measurement.



MikroTest® automatic

Suitable for

- all non-magnetic coatings such as copper, chrome, paint, enamel, etc. on steel
- electroplated nickel coatings directly applied on steel

No power supply, completely automatic measuring procedure.

Measuring ranges: 0 ... 50 µm, 0 ... 100 µm, 0 ... 1,000 µm, 0.2 ... 3 mm, 0.5 ... 5 mm, 2.5 ... 10 mm

### PenTest (DIN EN ISO, BS, ASTM)

(without picture)

Magnetic pull-off coating thickness gauge according to the magnetic attraction principle for non-destructive, quick and easy measurement of all non-magnetic coatings such as paint, plastics, enamel on steel. Requires no power supply.

German patent

### SurfaTest Wet Film Gauge (DIN EN ISO) (without picture)

This handy gauge designed for freshly applied, wet paints is an indispensable measuring tool for any paint shop. Measuring range: 25 ... 800 µm

### QuintSonic® Ultrasonic Coating Thickness Gauge (DIN EN ISO, BS, ASTM)

Especially designed for non-destructive coating thickness measurement, this portable gauge measures paint, lacquer, plastic and other insulating coatings on plastic, wood, glass and other substrates. Also polymer coatings on metal substrates can be measured. Special feature: the gauge can measure the total coating thickness or separate the different layers of a multilayer coating in just one operation!

Measuring range: 10 ... 500 µm. A data memory for storing up to 10,000 readings is available for immediate or subsequent statistical evaluation of your measuring series.



QuintSonic®



## Non-destructive Road Layer Thickness Measurement

### StratoTest™ 4100 (DIN EN ISO, TPD StB)

Gauge for non-destructive measurement of bituminous road layers or other electrically insulating road layers according to the eddy current principle.

- gauge and probe mounted on movable dolly
- new, easy and reliable reflector base location method

- measuring ranges: 0...40 cm; 0...10 cm or 5...80 cm as an option
- digital display
- data storage for up to 6,000 readings including site reference code
- portable data printer available for documentation of readings and statistics
- data port for data transfer to PC for further processing and storage



StratoTest™ 4100

## Thickness Measurement of Refractory Bricks in Industrial Furnaces

### StratoTest™ 4100 C

Thickness gauge for measuring all kinds of refractory linings of industrial furnaces, kilns and ovens

- suitable for cement, Dolomite, Magnesite and other refractory bricks
- non-destructive measurement through eddy currents principle

- 10 times quicker than the coring method
- immediate display of brick thickness
- measuring range 0...30 cm
- special measuring technique to eliminate influences of metal inclusions or microstructural changes



StratoTest™ 4100 C

## Destructive Coating Thickness Measurement

### Paint Borer 518 S (DIN EN ISO)

Versatile and accurate instrument for measuring the thickness of organic coatings on all base materials such as paints and lacquers on wood, plastics or metal. For measurement,

a taper hole is bored into the surface to be measured by microscope (wedge cut principle).  
Measuring ranges: 2...200 µm; 3...300 µm; 5...500 µm



Paint Borer

### GalvanoTest (DIN 50 955)

Versatile and sophisticated thickness gauge working on the coulometric principle to measure virtually all types of electroplated single or multilayer coatings such as chrome, nickel, cadmium, brass, silver, tin, and zinc on metal or non-metal substrates. The standard equipment (i.e. without any accessories) allows to

measure a variety of more than 70 coating/base combinations.  
Measuring range: 0.05...approx. 75 µm, digital display; areas of deplating: 0.25 mm<sup>2</sup>, 1 mm<sup>2</sup>, 4 mm<sup>2</sup>, 8 mm<sup>2</sup>. Special accessories available for measurement on wires. Data port for data transfer to PC, MiniPrint data printer and x-t-writer.  
**German utility model**



GalvanoTest



PIG

### PIG (Paint Inspection Gauge) DIN 50 986

Versatile instrument according to the wedge cut method to measure the thickness of organic coatings on metal, wood or plastic bases. The instrument can also be used for measuring the individual layers of multi-layer coatings.

Measuring ranges: 20...2,000 µm,  
10...1,000 µm, 5...500 µm,  
2...200 µm

For non-destructive paint thickness measurement see QuintSonic.

## Wall Thickness Measurement

### MiniTest™ 7400/7200 FH

The MiniTest 7400 FH/MiniTest 7200 FH is a portable thickness measuring device that offers the capability to precisely measure materials up to 10 mm thick. The small size and portability of the device enables it to be operated in production areas and quality laboratories. The MiniTest™ 7400 FH/MiniTest™ 7200 FH provide easy, non-destructive and highly accurate thickness measurement of all types of non-ferrous products, regardless of their size, shape, and material. It is ideal for applications where accurate measurement of sharp corners, small radii and/or complex shapes are required.



MiniTest™ 7400 FH/MiniTest™ 7200 FH

- Hardened probe tip
- High precision target balls for reproducible measurements
- Sensor-integrated digital signal processing
- Multi-point calibration up to 5 points

- Large, easy-to-read display
- Minimum and maximum readings
- Menu-controlled user interface
- Context-sensitive on-line help
- SPC capabilities

### MiniTest™ 403/405

ElektroPhysik's rugged thickness gauge family has been designed and built to satisfy the roughest industry conditions.



MiniTest™ 403/405

- Precision Ultrasonic Micrometer
- Rugged Quality Tool for rough industry conditions
- Dual-element Transducer
- Measures various materials from 0.63 to 500 mm
- Switch to select English or metric units
- Internal Data Logger (MiniTest™ 405)
- High Speed Scan

### MiniTest™ 406

ElektroPhysik has succeeded in adding the final touches to the rugged MiniTest 403/405™ line with the new multi-mode MiniTest™ 406.



MiniTest™ 406

- Precision Ultrasonic Micrometer
  - Fast Scan
  - Alarm (audible/visual)
  - Data logging
  - High-damped dual-element transducer
  - Pulse-Echo mode (Pit & Flaw Detection) from 0.63 to 500 mm
  - Echo-Echo mode (Through Paint & Coatings) from 2.54 to 25.4 mm
- Conveniently toggle between Pulse-Echo mode and Echo-Echo mode.

**Measures through painted or coated materials!**

## Delta TT100

The DELTA TT100 is a hand held microprocessor controlled wall thickness gauge specifically designed for measuring the thickness of all types of homogeneous materials of up to 225 mm thickness (with steel).

With uses in many areas of industry such as refineries, in the chemical in-

dustry or in steel construction, DELTA TT100 measures containers, tanks, autoclaves, cast parts, etc.

- fast and accurate wall thickness measurement
- 5 preset sound velocities
- stores 10 readings
- robust, user-friendly design



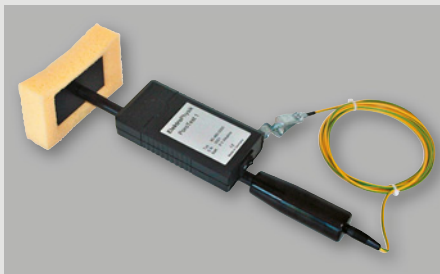
Delta TT100

## Porosity Detection

### PoroTest® 1

Light-weight and easy-to-use, the battery powered porosity detector is suitable for inspecting electrically non-conductive coatings on metallic substrates.

Working on the wet-sponge testing method, PoroTest® 1 uses 9V direct current which is completely risk-free to the operator. Coating thickness range: 0...300 µm.



PoroTest® 1

### PoroTest® 7 (DIN EN)

Holiday detector for detecting pores and holes in insulating materials on conductive substrates such as steel, aluminium, etc. Typical applications: Linings and coatings applied on ducts, pipes, hulls, oil and storage tanks, enamel, paint, rubber and bitumen linings, vessels and tanks, GFK and other plastics materials. Tanks or vessels must be filled with water or other conductive material. Portable and storage battery supplied, PoroTest® 7 offers a great variety of electrodes. Test voltages:

- 0.5...7 kV for testing materials from 0.03 mm...1.7 mm thickness
- 3...30 kV for testing materials from 0.52...9.49 mm thickness
- 6...35 kV for testing materials from 1.4 mm...11.3 mm thickness

Now with electronic control of test voltage depending on material thickness and vice versa!



PoroTest® 7



## Gloss Measurement

### PicoGloss 560 MC (DIN, ISO, ASTM)

Small, portable gloss measuring device with universal 60° measuring geometry and mirror-gloss switch-over. The PicoGloss 560 requires only one calibration standard for calibration. LC display for convenient display of measuring and calibration values and further messages. An USB port is available for data transfer to a

PC. Free download of PC software. The PicoGloss operates on a micro battery for up to 10,000 measurements (in PC mode via USB port). The PicoGloss 560 MC comes in a carrying case including a high-gloss standard, micro battery, USB cable, lens cloth, and operating instructions.



PicoGloss 560 MC





TR 100

### TR 100

Dual gauge for measuring Ra (roughness average) and Rz (average maximum height of the profile). The small and handy gauge for quick and accurate measurement has especially been designed for use in workshops. A diamond tip

## Roughness Testing

of the piezoelectric stylus smoothly scans over the surface to measure roughness. Parameters available: Ra and Rz; three user-adjustable cut-off lengths. High-accuracy, easy-to-operate, large measuring range.



TR 200

### TR 200

Portable Surface Roughness Tester with graphical display on large LCD

- compact design
- easy-to-operate software menu
- 13 roughness parameters
- detector stylus position indicator
- auto-off after 5 minutes with auto-store

- RS 232 data output, direct to printer TA 220 or PC
- battery capacity 3,000 measurements (Li-Ion battery, rechargeable)



TH 170

### TH 170

Economical hardness tester with integrated impact device. Different models available for standard applications or special applications such as thin and shock-sensitive parts. Data memory for up to 270 readings, storable in 9 group files.

### TH 110

Versatile hand-held hardness tester suitable for use in laboratory and on the shop floor. This advanced gauge is distinguished by its high accuracy ( $\pm 6$  HDL) and simplicity of operation. Various impact devices are available to cover a wide range of applications. A built-in data printer is available for printout of test results, settings and histogram. Display of test results in all various hardness scales such as Rockwell C (HRC), Rockwell B (HRB), Rockwell A (HRA), Vickers (HV), Brinell (HB), Shore (HS) and rebound quotient L (HL). TH 110 can also be used for determining the tensile strength of metallic materials.

## Hardness Testing



TH 110





ColorTest

## ColorTest

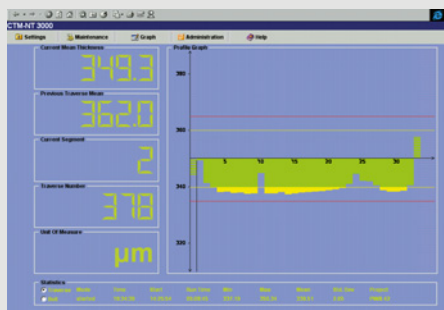
Spectrophotometric colorimeter with external measuring head and 45°/0° measuring geometry (DIN 5033). Colour spaces: XYZ, Yxy,  $\Delta E$  CIE  $L^*a^*b^*$ ,  $\Delta E$  CIE  $L^*u^*v^*$ . Spectral range: 400...700 nm. Comprehensive report software:

- data transfer
- data base management for colour readings and spectral information

## Colour Measurement

- graphical display of colour coordinates and differences
- trend line capability
- colour distances  $\Delta E$ , Passed/Fail tool
- statistics function
- printing functions

**True spectral analysis!**



## On-line Thickness Measurement CTM-S

On-line Thickness Measurement Systems for:

- flat films and sheets, thermoformed sheets made of PET, PVC, PUR etc.

- coextruded film
- coated and uncoated rubber sheets

Thickness range: 10  $\mu\text{m}$  ... 6 mm  
Measuring uncertainty: 1 % of reading

The measuring system is unaffected by variations in density, humidity and colour of the material to be measured as well as unaffected by variations in temperature or vibrations of the surrounding fields.



Please ask for our special product catalogues.

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