Improving the application of paint and coatings

Benefits:

- Coating thickness topology
- Preventing irregular patches
- Multi-layer measurement (up to 5 layers)
- Intuitive, reproducible, fast and safe to operate
- Up to 10 programmable measurement templates

The Automatic Layer Thickness Measurement machine (ALTM) can produce accurate and reproducible pattern measurements on applied coated panels. This device is used in the paint and coating industries to determine the layer thickness variations on a substrate in order to determine thickness fluctuations and thus optimise the application process. Optimising the application process is done in order to prevent irregular patches.

Operator friendly

Operating the ALTM is easy because of the intuitive Graphical User Interface. The operator merely places the substrate in the machine and selects the appropriate testing pattern parameters to start the ALTM measuring process.

Measurement procedure

Start by manually placing the substrate against the pawls in the left upper corner before starting the machine.

The machine automatically detects if the substrate is Ferro (Fe) or non-Ferro (nFe) and will use this for automatic calibration before every measurement. The measurements will be marked accordingly.

The operator can choose one out of three different software options in the menu by using either the touchscreen or the PC's mouse:

- *Quick measurement*
- *New measurement*
- *Open template*

After selection of the grid, by pressing the start button, the ALTM will fully automatically measure the selected pattern. During this process the measurement sensor will move over the panel and go down to measure each point.

The measurements will be applied in a grid. Compared with hand-made measurements, they reach a higher precision, are faster and are more reproducible. The data can be exported easily to a spreadsheet program such as Excel ®.

The measuring speed can be re-adjusted for every single test pattern.

During measuring, the display continuously shows the measured percentage and largest deviation between all measured points. It can also show the maximum deviation between all measured layers, in case multiple layers need to be measured.

The sensor automatically returns to its starting point after finishing the measurements and the substrate can be removed immediately.

Quick measurement

Whenever the operator needs to perform a single measurement, he will just enter the X and Y coordinates after placing the metal substrate and press start. The measured value will be shown but will not be saved.

New Measurement:

The software allows easy setting of the offset relative to the upper left corner for the measurements in the X and Y directions.
The operator should set the distance between the measurement points in the X and Y directions and also the number of measurement points. During the measurement the software shows immediately the measurement value in micrometres. In addition, the maximal deviation per coating layer or the maximal deviation over all coating layers is shown immediately.
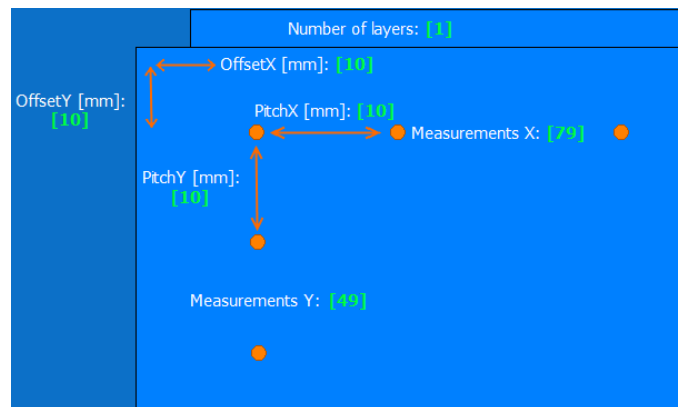
Intuitive:

The user can set each parameter intuitively by pressing it and changing its value. This can be done directly either by hand on the touchscreen with the slider or the value can be typed.
The software automatically adjusts the pitch size to the number of measurements and vice versa if the software detects they exceed the maximum plate size.

Routing visualisation and optimisation:

Each measurement routine will be visualised during the process together with all set values. During the measurement process the operator can hover over any measured point, which will turn green, to read back its value.

The percentage indication will show the user the progress.

Each last measured value will be shown in large font. The measurement path is optimised by efficient routing.
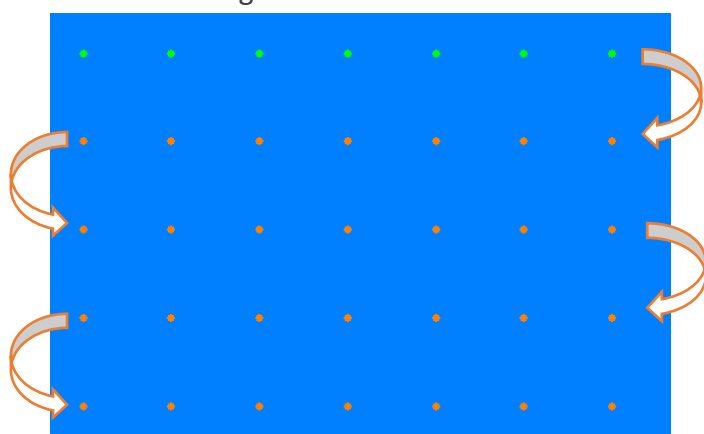
Templates:

If the set values will be used more often, they can be saved as a user defined template, which can be opened quickly. Whenever the operator needs to perform certain measurements on a regular basis, it is possible to store the measurements and open them later on. A maximum of 10 measurement templates can be stored.

Multiple layers:

If more than 1 layer should be measured, the number of layers should be set. A maximum of 5 layers can be measured. Additional paint or coating layers should be applied between the measurements. When the next paint or coating layer is applied, replace the plate and press start again to measure the next layer. Results will be stored in a separate tab for each layer. Optionally either the original or the subtracted results between each layer measurement will be stored.

The operator may also set the system to show the maximum deviation over all layers.

Export format:

After the measurements are completed, they can be opened in a spreadsheet program like Excel ® by pressing the 'export' button. The output can be further used as a topology mapping.

Besides a date & time stamp and substrate material (Fe or nFe) indication, the coordinates with corresponding measurement data are shown for further analysis and can be saved in the computer or on a USB stick.

	A	B	C	D	E	F
1	29/04/2019 02:58:45 - f	X[10]	X[35]	X[60]	X[85]	X[110]
2	Y[10]	82	76	61	63	66
3	Y[35]	87	77	73	76	81
4	Y[60]	90	87	86	89	89
5	Y[85]	89	87	92	93	91
6	Y[110]	87	86	94	95	89
7	Y[135]	88	86	91	87	89
8	Y[160]	83	88	91	87	92
9	Y[185]	86	90	96	99	99
10	Y[210]	87	87	93	101	107
11	Y[235]	87	89	95	95	96
12	Y[260]	90	92	97	100	97
13	Y[285]	92	95	107	107	103
14	Y[310]	89	95	104	107	105
15	Y[335]	92	92	96	103	101
16	Y[360]	93	97	98	103	100
17	Y[385]	98	100	102	99	101
18	Y[410]	99	101	101	95	96
19	Y[435]	95	89	91	91	94
20	Y[460]	203	91	89	87	88
21						
22						

Safety

The ALTM is designed and built to meet current European CE regulations.

CE

Process

The machine measures in a precise way the thickness of the applied coating . After evaluating its deviation, the coating application process can be optimised to improve the product.

Spare parts

NeoTec can deliver additional and spare parts, and also custom parts. Please contact the manufacturer for more information.

Benefits

- High precision, reproducible, fast, safe
- Measures completely automatically according to a routed pattern.
- Automatic substrate detection between Ferro (Fe) and non-Ferro (nFe)
- Simple export to a spreadsheet program like Excel ®.
- Suitable for a wide range of materials of various sizes
- Possibility to incorporate different tools (including custom tools and/or pattern(s))
- Complete package delivery with all necessary accessories

Included with the ALTM:

- Calibrated machine with an operators manual which is also included in the software.

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Technical specifications:

The dimensions of the machine can be customised.
For special requests: contact manufacturer

Instrument:

Power supply	[VAC]:	230/50Hz
		115/60Hz
Standby	[W]:	~12
Consumption	[W]:	~40

Dimensions without bottom frame:

(WxHxD)	[cm]:	124x37x82
	[in]:	48.8x14.6x32.4
Weight	[kg]:	~34
	[lbs]:	~75

Dimensions with bottom frame:

(WxHxD)	[cm]:	124x125x82
	[in]:	48.8x49.2x32.4
Weight	[kg]:	~90
	[lbs]:	~198

Substrate:

Substrate dimension	[cm]:	80x50
(maximum)	[in]:	31.5x19,7
Substrate thickness	[mm]:	<15
(maximum)	[in]:	<0.6

Sensor (other sensors on request)**:**

Substrate material	:	Fe/nFe
Measurement range	[µm]:	0-2000
	[in]:	0-0.078
Measure-accuracy	[µm]:	+/-2 (+3% reading)
(@10-40°C)	[in]:	+/- $78x10^{-6}$
Sensor pressure	[N]:	5 – 10
	[lbs]:	1.1 – 2.2
Measure-time/sample	[s] :	~0.5
Minimum measuring	[mm]:	20
surface	[in]:	0.78
Minimum thickness of	[mm]:	Fe:0.2 / nFe:0.05
base material	[in]:	Fe:$7.8x10^{-3}$/nFe:$2x10^{-3}$
Minimum radius of	[mm]:	5
convex curvature	[in]:	0.2
Minimum radius of	[mm]:	30
concave curvature	[in]:	1.18

Positioning:

Reproducibility X-Y	[mm]:	+/- 0.1 [in]: +/-3.9 $x10^{-3}$
Hysteresis	[mm]:	+/0.1 [in]: +/-3.9 $x10^{-}$
Position speed max	[mm/s]:	76
	[in/s]:	3