

# TARGOMAT-IV

High speed precision post etch 2-spindle-drilling machine with automatic optical CCD-camera-registration. The precise system for the entire multilayer process.



Swiss Quality

## Range of Applications:

- Drilling of registration holes into artwork targets
- Drilling of registration holes into post etch inner layer targets
- Drilling of tooling holes into targets of pressed multilayer for CNC-drilling machines
- Drilling of registration or tooling holes for further steps in production, e.g. screen printing, solder mask, AOI-tooling etc.
- Statistical process control with output of registration results and dimensions
- Optimatest for high precision measurements on multilayers



# PRINTPROCESS AG

# TARGOMAT-IV



- The system for precise registration for the entire multilayer process.
- The Targomat-IV is already the 4th-generation and the result of continuous improvement.
- World wide more than 100 systems in operation and proven in 24/7 production.
- Very flexible operative range and fast job change and set up
- For the processing of artwork, inner layer, outer layer, tooling holes for bevelling, screen print, soldermask, AOI, V-scoring etc
- High precision drilling for a wide range of panel thickness 20µm up to 6mm without top drill entry board

- Automatic optical registration with CCD-camera and high precision telecentric lenses
- Automatic spindle distance adjustment
- High precision Air-Spindles with 24.000 rpm or optional High-Frequency-Spindles up to 60.000 rpm
- Handwheels for manual alignment
- Vacuum table for perfect fixation of the panels during registration (optional: top pressing plate)
- 3rd drilling spindle for mis layup prevention (optional)
- Panel thickness from 20µm up to 6mm (8mil up to 0.24")



## Various automation systems (Option)

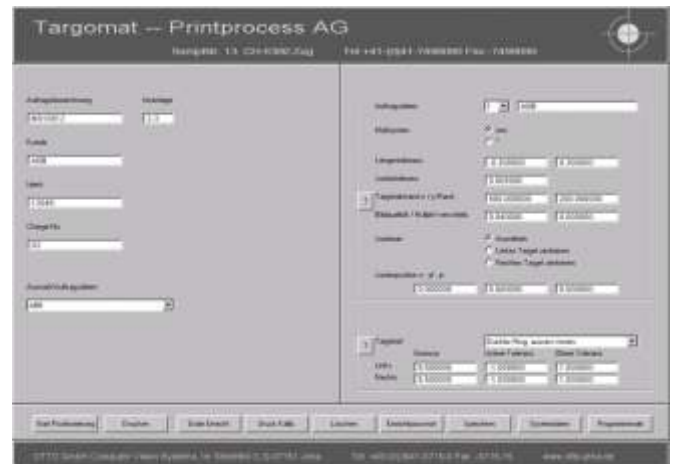
- Manuel loading and automatic horizontal output
- Automatic adjusting panel stopper when editing the panel parameter.
- Precentering with liftable acceleration transport section, automatic input and output at Targomat.
- Automatic loader and unloader
- Control functions enable the operation inline with other machines.

# TARGOMAT-IV



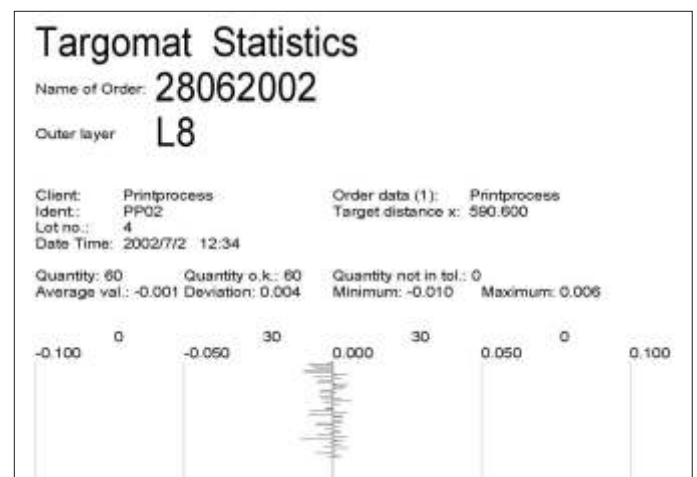
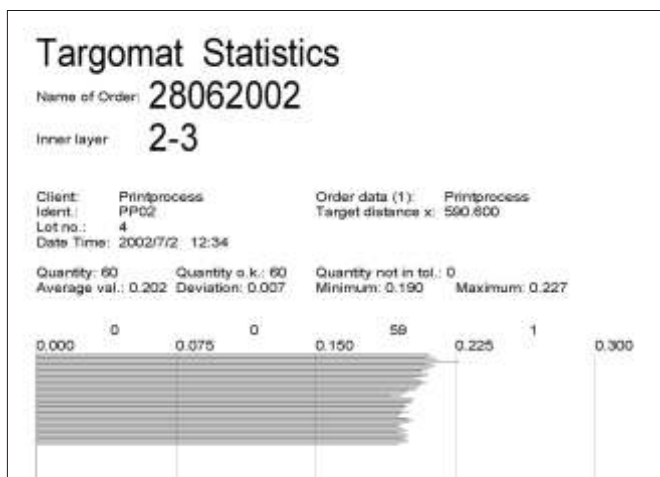
- Windows based image processing software
- Real time monitoring of the Vision-system
- Statistical process control SPC
- PLC with operator terminal on the control panel
- Detecting of targets with transmitted light and optional with additional reflecting light
- Specially developed measuring lenses and sophisticated software algorithms enable reproducible resolution of the lens coverage of 1/10 Pixel converted, which corresponds a measuring accuracy of 0,001mm eg. 1µm

- Input and select up to 100 different job data from memory (online optional)
- Job data with editing of job name, accuracy of registration and tolerance, target type, sizes and tolerances, distance of the drilling spindles (targets), type of registration, image quality, 0-point offset, offset of registration position and lot size.
- Machine calibration software for optics and spindle distance with glass scale.
- Precise image processing system for measurement and registration jobs  $\geq 2\mu\text{m}$
- Measuring system in mm and switchable to inch (")

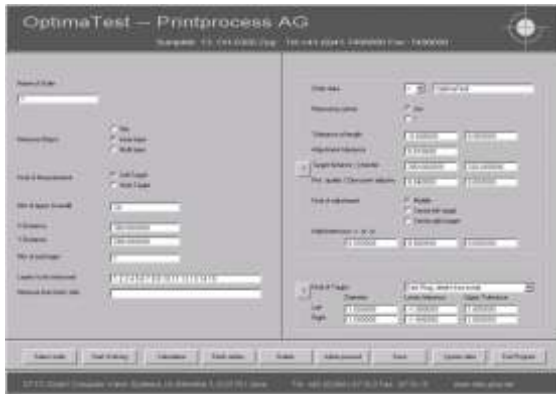


## Statistical Process Control SPC

- In the example bottom left, the inner layers were produced approx 200µm longer than the nominal size to compensate the shrinking of material during lamination.
- By compiling groups to match within the upper and lower tolerance range, the total registration of the package is considerably improved.
- All detected registration data will be saved and can be printed as a statistic data sheet. Optional online data transfer.
- In the example bottom left, the the boards shrank to +/- 10µm within the nominal size after lamination.

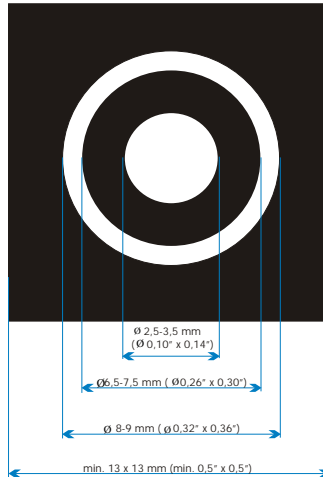
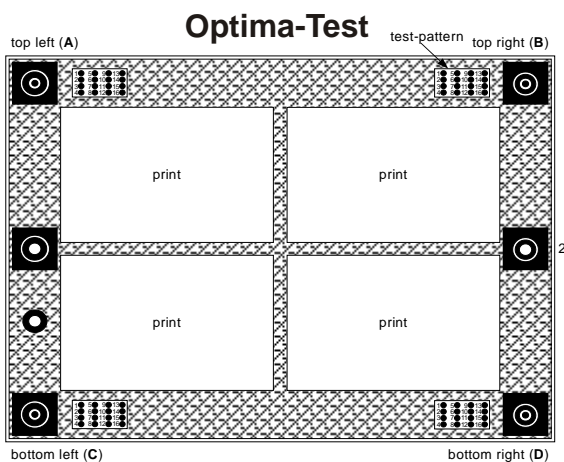


# TARGOMAT-IV



## OPTIMA-TEST Software (Option)

- The optional OPTIMA-TEST software can be used for the statistical report and control of layer to layer positioning
- By using the OPTIMA-TEST procedure the investment of a x-ray inspection/drilling machine is unnecessary.
- Additional feature for drilling tooling holes under consideration of OPTIMA-TEST measuring results (optional).



## Optimal Target

- By using the optimal target, the imaging system becomes optimally supported. Other targets which correspond to standard specifications are also readable. To achieve high precision of measuring accuracy, the targets are checked for possible defects, e.g. Etch defects, distortion, indentation and frayed holes. Badly deformed targets are automatically segregated.

## Technical Data

Process	Registration of artwork, inner layer, outer layer, tooling holes for bevelling, screen print, soldermask, AOI, V-scoring etc.	
Spindle/Target distance	220 – 820 mm 8 ½" - 32 ¼"	
Panel thickness	Standard 0,020 - 6,0 mm 8mil – 0,24"	
Alignment	Full automatic optical CCD-camera-registration	
Alignment method	2 target, 4 target for outer layer with OPTIMA-TEST (Option)	
Alignment accuracy	± 2 µm	
Registration accuracy	> 2 µm	
Repeatability accuracy	± 1 µm	
Job changing time	≤ 30 second	
Dust extractor conn.	d=60mm 3'500 l/min at 200 mbar	
Compressed air conn.	d=12mm 500 NI/min bei 6 bar	
	<b>TARGOMAT-IV manual</b>	<b>TARGOMAT-IV automatic</b>
Productivity/hour	up to 240 inner layer	up to 400 inner layer
Transport-System	Manual loading and unloading	Automatic inline with precentering
Operating side	Manual loading and automatic output	
Transport direction	In front of the machine	Left to right or right to left
Electrical conn.	240V, 50Hz, 6A 1/N/PE	240V, 50Hz, 7A 1/N/PE
Dimensions l x w x h	760 x 1'870 x 1'400 mm 29,92" x 73,62" x 55,11"	2005 x 1'870 x 1'400 mm 78,93" x 73,62" x 55,11"
Weight	ca. 490 kg	ca. 860 kg