Acquire Automation XT

Powerful automation software made by FRT

Fully automated execution and evaluation of measurements is possible with the recipe-based software FRT **Acquire Automation XT.** This software provides comprehensive capabilities, from manual measurement to fully automated measurement with one-button operation and integration into production control systems, e.g. via a SECS/GEM interface. Choose the suitable measurement and eva-luation routine for your measuring task from a variety of packages. For recurring structures, a layout wizard with a graphical user interface (GUI) can support you in teaching the measuring positions. In addition, sample fine alignment via pattern recognition is available as an option. You can easily configure various measurement tasks using different sensors to run consecutively as a measurement sequence. This includes the execution of measurements, processing and analysis using intelligent algorithms, output and visualization of results in the form of reports and the export of results in various data formats. The current DIN EN ISO and industry-specific standards such as SEMI are complied with as a matter of course. With its SEMI-compliant user interface, the FRT **Acquire Automation XT** satisfies all requirements for use both in production and the laboratory. The software is also available as workstation and naturally contains user administration functions including assignment of individual user rights.
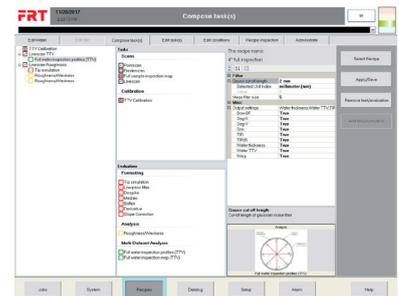
AVAILABLE PACKAGES

TTV, Bow and Warp   **Bumps, Vias and Trenches**   *Critical Dimension and Overlay*

Film Thickness   *Roughness, Waviness and Flatness*   **Step Height**   *Defect Inspection*

Saw Marks   **Wafer Stress**   *Lens Shape*   **Angle Evaluation**   *Fine Alignment*   *...*
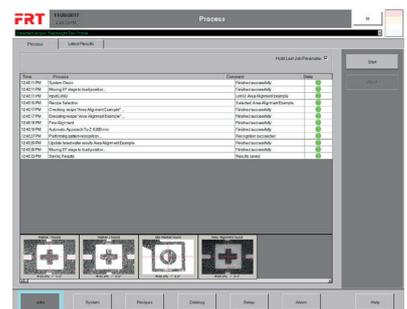
SOFTWARE CHARACTERISTICS

- fully automated 2D and 3D measurements
- easy modular teaching of measurement tasks (recipes)
- teaching and performing of temperature profiles (optional)
- automated measurement via recipes, calculation of desired sample parameters and creation of reports
- pattern recognition and automated fine alignment
- teaching of various wafer and die geometries
- pass/fail criteria according to customer requirements
- sorting capability
- SEMI and DIN-EN-ISO conformal analysis
- global and local parameter output
- various data filter and simulation functions
- customized SECS/GEM interface
- assignment of individual user rights

BENEFITS

- measurement, control and analysis in one powerful software
- efficient and easy operation via SEMI compliant structure and GUI
- can be combined with every MicroProf® tool
- flexible and adaptable to future customer requirements
- application-specific consulting and service from skilled FRT experts

Recipe creation according to individual requirements

Automated measurement process sequence
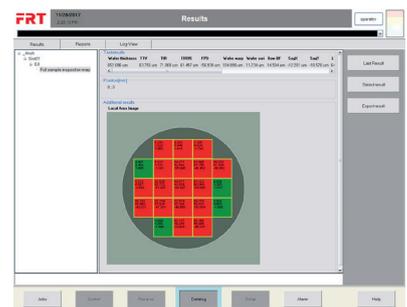
Result view with wafer map

SUITABLE PACKAGES FOR YOUR APPLICATIONS

Available Packages	Software Characteristics	Output Parameters & Measurement Types
Basic Package*	Different types of measurements, coordinate and length outputs and comprehensive filter functions.	Point Scan, Circular Point Scan, Line Scan, Area Scan, Full Sample Inspection Map, Diameter Determination, Edge Alignment, Slope Correction, Arithmetic & Export, Contour Filter, Derivative, Threshold & Binarization, Despike Filter, Edge Exclusion, Gaussian Filter (Low Pass/High Pass), Histogram, Histogram Peak Filter, Interpolation, Median, Rotate & Mirror, Soften, Bilateral Smoothing, Denoise, Tip Simulation, Arithmetic Evaluation, XY-Location, Hybrid (Arithmetic), Hybrid (Value Pairs), User-Defined Output
TTV, Bow and Warp	Determination of TTV, Bow, Warp and a variety of other parameters on the basis of punctual measurement data, profile measurements and 3D measurement data. Evaluation of sample thickness and bow measurement according to SEMI standard. Determination of the parallelism of upper and lower topography measurement and the roll-off amount over the wafer edge.	Wafer Thickness, Center Thickness, Wafer TTV, Warp, Wafer Warp Front, Bow BF, Bow BF Front, Wafer Sori, Wafer Taper, TIR, TIR95, NTD, NTV, Sag X, Sag Y, Sag (avr), Profile Thickness, Profile TTV, Profile Bow EF, Profile Warp, Profile Sori, Profile Taper, TV5, TV9, GBID, GF3D, GF3R, SBID, SF3D, SF3R, SFLD, SFQR, Wafer FPD, LTIR, LTV, LFPD, Sample Thickness (Thickness (Default), Min., Max., Std., TTV), Bow, Parallelism, Roll-Off Amount (ROA Front (Avr., Min., Max.), ROA Back (Avr., Min., Max.), ROA TTV (Avr., Min., Max.), ROA Measurement Point)
Bumps, Vias and Trenches	Evaluation of bumps in 3D-measurements, automatic detection of steps in profiles and evaluation of the height or depth of features in area measurements with statistical evaluation.	Bumps (Height (Average, Min., Max., Range, Std.), Diameter (Average, Min., Max., Range, Std.), Number, Coplanarity, Quality, Data Charts), Automatic Step Height (Height/Depth, Inner Width, Outer Width, Inner Distance, Outer Distance, Number, Statistics)
Critical Dimension and Overlay	Determination of critical lateral structure sizes based on 3D measurement data or camera images. Determination of overlay parameters such as offset (x,y) and rotation. For this calculation, the results are obtained from two separate "Critical Dimension" results (Hybrid Evaluation).	Height, Width and Diameter of the detected feature, center coordinates related to the measured element (die), the measured sample (wafer) or xy table coordinates, Offset (x,y), Rotation, Overlay Vector Map, statistics and single values, Dynamic Segmentation Filter, Shape Quality, Inside Shape (Average, Min., Max., Range, Std.), Spill Out (Average, Min., Max., Range, Std.), Shape Area Difference, Quality
Roughness, Waviness and Flatness	Calculation of roughness and waviness values according to DIN EN ISO 4287. Determination of flatness using the TIR (Total Indicator Reading) value.	Ra, Rq, Rz, Rt, Rp, Rv, Rmax, Rz25, Rmax25, Wt, Lc, Ls, sRa, sRq, sRz, sRt, sRp, sRv, sRmax, sRz25, sRmax25, sWt, TIR
Step Height	Automatic recognition of (multiple) steps in profiles, evaluation of height or depth of features in area measurements with statistical evaluation.	Height/Depth, Inner Width, Outer Width, Inner Distance, Outer Distance, Number, statistics for each result parameter
Defect Inspection	Evaluation that detect, characterize and classify anomalies like particles or defects on a sample such as cracks, edged chips, digs, scratches, etc.. The defect inspection can be performed either contrast-based or fit-based, on both bare and structured samples.	Defect Mapping, Defect Count (Above Threshold, Below Threshold), Defect Position xy, Defect Size xy, Defect Area, Defect Type, Gray Value (Mean, Max., Std.)
Saw Marks	Evaluation of the depth of saw marks based on profile measurements.	Groove Depth, wafer position of the groove, profile position of the groove
Film Thickness	Evaluation of the film thickness of a single layer and layer stacks (several layers simultaneously).	Film thickness (Min., Max., Range, Std.), Quality (Min., Max., Range, Std.), Intensity (Min., Max., Range, Std.)
Wafer Stress	Determination of the wafer stress by measuring profiles (star-shaped through the center) before and after a coating process. Mapping of local stress is also possible with more than 8 profiles.	Stress (Avr., Min., Max., Range, Std.), value in center of wafer
Lens Shape	Star-shaped profile measurements over the lens apex to determine the shape of the lens and automatic determination of the shape of the lens via a fit of an ideal shape.	Radius of Curvature, Chi-Square (Average, Min., Max., Range, Std.), Standard Deviation (Average, Min., Max., Range), Sample Thickness at Vertex, Offset of Vertex, Range of Fit, Fit Data Charts, Difference Data Charts
Angle Evaluation	Determination and output of the angle between selected profile regions. Evaluation of profile measurement data and extracted profiles.	Angle
Bearing Curve	Determination of the percentage of data points (e.g. topography, film thickness or intensity) at each z-height for profile and area measurement data.	Material Ratios z(%), Material Heights %[z], Bearing Curve Graphs
Fine Alignment	Automatic determination and compensation of sample rotation and displacement by pattern recognition on reference marks, of rotation and misalignment of a die/element in relation to the die/element layout by means of pattern recognition on the die/element (site alignment) and of the displacement of a measurement area in relation to the die layout using pattern recognition on a measurement file (area alignment)	

* available with at least one additional package

SYSTEM REQUIREMENTS

- Windows™ 7 or 10
- minimum screen resolution: 1280 x 1024 pixels
- RAM-memory (32 bit): at least 2 GB (recommended: 4 GB or more)
- RAM-memory (64 bit): at least 4 GB (recommended: 8 GB or more)

FRT partners: VDMA, IVAM., SILICON SAXONY, semi, MEMS Industry Group®, Nano in Germany