Condor *Sigma W12*

Fully integrated solution for automated wafer testing (up to 300 mm)

Technology leader in bond testing worldwide

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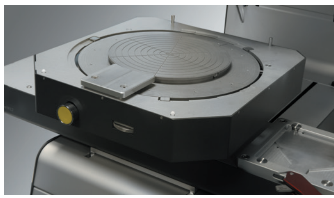

Customized wafer chuck with quick clamp position for calibration jigs

Performance and flexibility

The Condor *Sigma W12* is the most advanced bond tester on the market, combining the unique strengths of the Condor series with the latest technologies and innovations. Whenever you need a bond tester for testing wafers you can choose between a fully integrated solution with wafer loader or a stand-alone tester. For your specific application we can offer multiple types of customized wafer chucks.

Six sensors RMU: Changing cartridges manually no longer required

Revolving Measurement Unit

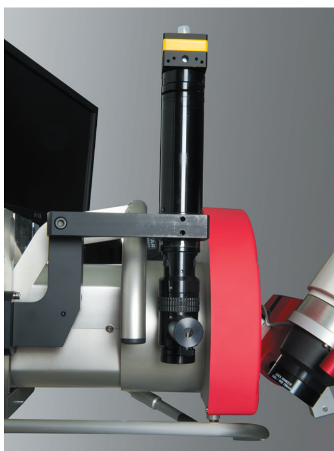
XYZTEC is well known for many innovative bond testing solutions. The Revolving Measurement Unit (RMU) being a good example that was derived from a better understanding of our customers' needs. The *Sigma* RMU sets new standards with its capability of up to six pull- or shear sensors with different tooling always ready for immediate use. Sensors are permanently and safely fixed to the machine, require no warm up time and easily selected by the simple click of button.

Fully integrated calibration solution for multiple ranges

Soft landing and high resolution

The Condor *Sigma W12* can perform a wide variety of tests with forces ranging from less than 0.1gf to 10kgf. Intelligent software enables extremely rapid movements and automatically slows down as the test area is approached. Large stage travel distances come as standard and rapid power up is guaranteed with multiple home positions. Shear sensors have the most precise step back accuracy in the industry and programmable landing forces.

fastest wafer bump tester available


High resolution camera system: Mitutoyo optics

Built-in image capture and automation camera

For automation, pattern recognition and image capture the standard configuration contains a perpendicular camera rigidly fixed close to the test point. There are multiple magnifications to choose from including an optical resolution of 1.5µm. The Condor *Sigma W12* can also include a high resolution camera system with Mitutoyo optics that guarantees the very best image quality and detail. Vision processing comes complete with fully programmable algorithms including big bump recognition.

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Chosen by the world's top 4 semiconductor packaging houses

Fully integrated

Wafer handlers

Together with the market leaders of wafer handling equipment we offer a fully integrated and automated solution.

Leading edge products for up to 300 mm equipment frontend module (EFEM) platforms.

High precision, fully automated, low vibration, maximum throughput and extensive safety features.

Automatic wafer size detection, PID controlled centered lift pins with guaranteed secure wafer loading and un-loading.

Sideview camera

Using a conventional microscope tool alignment from left to right can easily be judged but front to back is more difficult. The addition of a side view camera ensures the tool can be perfectly aligned in all directions.

Side view camera, directly mounted on the frame

Big bump removal

To prepare for wafer probing, big bumps need to be removed by shearing them off and cleaning any debris. Fully programmable vision algorithms are used to check if big bumps are successfully removed.

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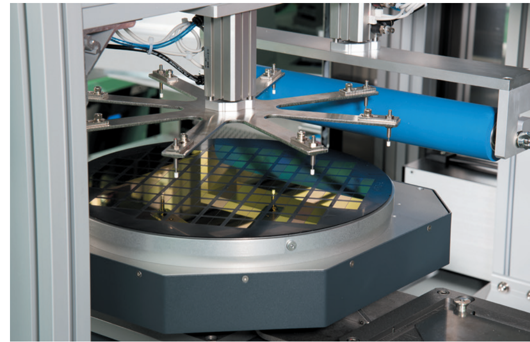
Wafer pusher

In most cases the high air flow of XYZTEC vacuum chucks easily pulls down warped wafers. In cases of extreme warpage an optional wafer pusher ensures precise clamping.



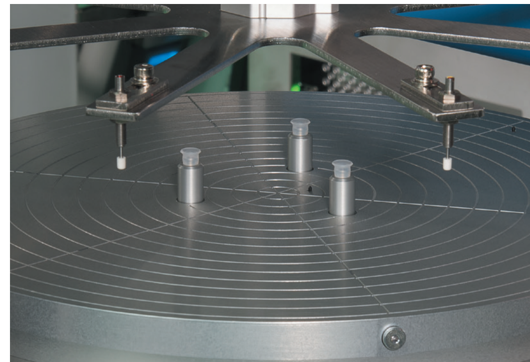
Wafer pusher besides the wafer loading arm

Wafer chuck cleaner

To make sure no debris is on the wafer or on the chuck a special cleaner is offered to perform fully automated pre- and post test cleaning.

Intelligent lift pins

PID controlled wafer lift pins come equipped with soft flexible tips that gently secure flat and warped wafers. Vacuum sensing and switching is intelligently timed with the lift pin position throughout the load, clamp and unload cycle.



Fully extended centered wafer pins with vacuum tips

Wafer alignment

Advanced optical sensors guarantee precise wafer loading and alignment.

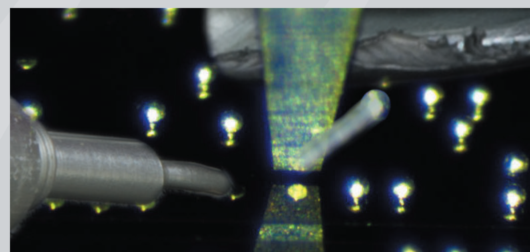
CBP Jaw Cleaner

During use solder builds up in the cavity of cold bump pull (CBP) jaws. This reduces their grip efficiency and affects the quality of your measurements. The patented CBP Jaw Cleaner with a high temperature and high pressure air jet quickly melts the solder and then blows it away after each test.

CBP Jaw Cleaner on the X-stage

Reliable debris removal

Test debris is reliably captured by a rigid and optimally positioned automatic wafer cleaning solution. Sheared balls are removed quickly by a combination of an air jet and vacuum pickup.



Reliable cleaning solution to remove debris from the wafer after shear tests

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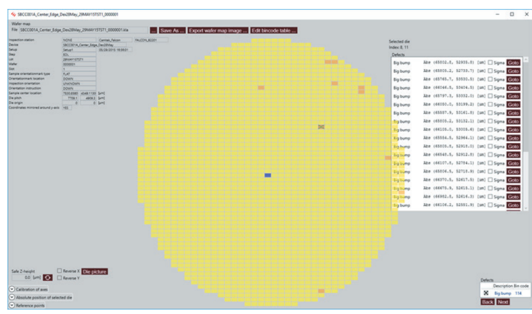
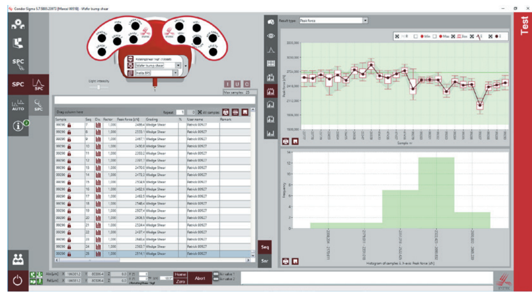
Import/export of wafer map files

The Condor *Sigma* software offers import- and export of multiple file formats for wafer maps (KLARF, INF, etc.). After the import the map shows a complete overview. The system will guide you step by step through all marked defects.

The tested positions are clearly marked on the map. When all tests are finished, the wafer map and test results can be exported for full traceability. For each die a high resolution picture can be made that shows and marks the tested bumps. An offline viewer is available to check the exported wafer map files and the test results.


The wafer map control screen, offers import of multiple wafer map file formats and shows defects and tested positions


Condor *Sigma* software SPC screen with box plot and sample histogram

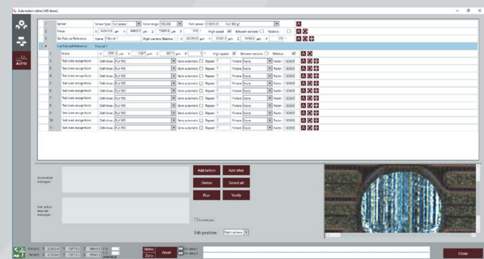
Auto focus and SPC

The XYZTEC Condor *Sigma* series also offers extensive software for bond testing with full statistical process control (SPC), automation and vision. Camera systems can be used to generate pictures for all tests, failed tests or specific measurements.

Quick auto focus guarantees optimal picture sharpness. Pictures and/or the live camera images can be used by the operator when grading.

Complete automation

The Condor *Sigma* software offers the most capable automation in the market. Powerful vision software can find fiducial marks, defects (big bumps), solder balls, pillars together with the automatic grading of shear tests. Automation can also be fully integrated with the wafer loader for operator free testing.


XYZTEC Condor *Sigma* software automation editor

Specifications

Force sensors	Revolving measurement units (up to 6 sensors) Single measurement units (1 sensor) Ranges 10gf, 100gf, 1kgf, 10kgf Maximum Shear force Maximum Pull and Push force Accuracy Resolution Minimum landing force Correlation with other testing systems Digital correction of temperature and creep Calibration weights OIMl class M1 or NIST class 1	 10 kgf 10 kgf ±0.075 % 24 bit 2.5 gf
Stages	Resolution of built in optical linear encoders X travel Y Travel Z Travel Axis (X,Y & Z) speed Hook concentricity Tool rotation accuracy	30 nm 500 mm 370 mm 90 mm 50 mm/s ±10 µm ±1 °
Frame	Foot print X Foot print Y Height Weight	1300 mm 935 mm 608 mm 95-100 kg
Controls	Ergonomic layout to SEMI S8 Microscope moves in focal arc and swivels to side for easy access Microscope adjustable in X & Y and through complete Z travel Keyboard drawer Two ergonomic joysticks with 6 buttons each LED illumination	
Work holders	Maximum flexibility for wafers up to 12 inch Quick release, high force and positional accuracy interface Compatible with previous XYZTEC and competitor tooling	
Software	Supports Microsoft Windows 7/8/10™, 32 and 64 bit systems Easy to learn intuitive graphical user interface Minimum number of mouse clicks Customizable screens, optimized for wide and touch screens Integrated report editor and data export Easy data sorting, grouping and filtering Integrated SPC and system GR&R analysis Multiple languages, multiple user network environment Export to XLS, DOC, PPT, PDF, XPS, CSV, XML, DBF, KLARF, INF, etc.	
Services	Electric 110-240V single phase no air required	

Specifications are subject to change without prior notice.

XYZTEC

XYZTEC teams

XYZTEC's international team for sales and service and our international offices

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