

STVision

Sommer Technology for Visions

Bergstraße 5 a
85410 Haag
Germany

TEL. 0049- 8167 – 8615
FAX 0049- 8167 – 957714
Mobil 0049- 178- 695 2889



Wafer Inspection System Of Sensor Components Jan 2005 STVision

This is a small stand alone wafer inspection station. It provides a compact and efficient tool to do a 100% optical wafer surface inspection.

The system is specifically suited for testing of new production lines in the lab. It allows manual load of the wafer to the XY table. The teach is easy and fast. The user can select from a number of inspection tools, which are specifically suited for non-standard wafer surfaces, typical sensor elements.

Operation is fast. Up to 10 images per second can be processed. Each image is high resolution 1280 x 1024 pixel. And you can select the optical magnification from a motorized zoom measurement lens.

The system accepts complete wafers, or blue tape wafer after sawing.

The system executes

- Detection of die position on wafer,
- Pattern correlation,
- SFDIE tool to measure general die surfaces,
- Special PIT tool to find small defects in a uniform surface,
- Special structure alignment tools, to verify the position of metal on wafer
- Measures missing structures on wafer,

- Chips and cracks on wafer,
- Surface contamination on the pads,
- Damages of pad,
- Misaligned passivation mask,
- Contamination on the passivated surface area,
- Epoxy wetout.



The system is stand alone, but is prepared to be linked to a standard wafer handler for automatic load / unload.

It is prepared for 8 inch wafer (12 inch is option).

encapsulation in the leadframe. The system speed of up to 36'000 die for wafer surface inspection allows to process complete wafer in the minutes range.

Operation Mode

The wafer is placed to the table either manually or with a standard wafer loader. Vacuum is activated to fix the wafer to the ground plate.

Alternately, the ground plate can be glass, to allow backlight inspection of perforated structures, as they occur in sensor technology.

The wafer is aligned, and the system adjusts focus to three points on the wafer. From this, the system autofocuses automatically for the whole scan.

One high resolution, high speed array camera with 1280 x 1024 pixel and 10 frames per sec is operated in hardware triggered mode. The XY table moves with constant speed of up to 10 frames / sec. Camera images are triggered by hardware at a fixed pitch rate. The typical configuration is set for one image per die. Small die can be packed multiple into one camera image. Large die can be split among multiple camera images.

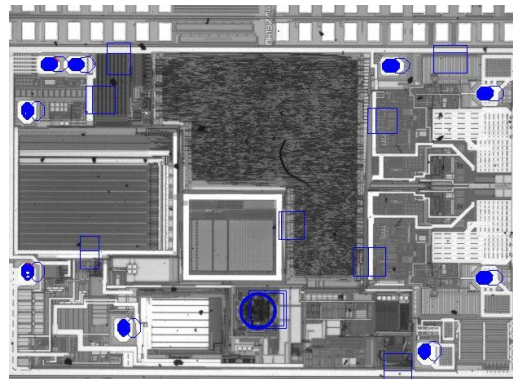
The user can select from toplight (confocal or dark field) and back light illumination.

A variety of inspection tools allow custom configuration of the inspection task. This way the engineer is capable to adjust the inspection sequence to his personal requirements, and test it in the prototype qualification.

Zoom optics: The automatic motorized zoom allows any magnification from 1x1 mm to 26x20 mm image size. You can define precision and resolution versus system performance according to your requirements.

Wafer map: The system reads the wafer ID code, read the map automatically, and generate measurement output in map form.

Batch Operation: From a network production control, the system receives sequences of wafer maps and executes inspection automatically. The external loader places a wafer, the system reads the configuration ID, and auto loads the proper inspection teach. The inspection, alignment etc is all automatic. The system can operate in unobserved night shifts.



Technical Data

Camera for Die Inspection		
Camera resolution	1280 x 1024	Pixel
Image min	1x1	Mm
Image max	26 x 20	Micron
Min defect size (max zoom) on pads	>= 3	micron
Defects on wafer	>= 5	micron
Alignment	<= 3	micron
chips	>= 3	micron

Performance up to (configuration dependent)	36000	Cycles / sec
Illumination	Confocal top	
	Darkfield top	
	backlight	
Strobe pulse	>= 10	microsec