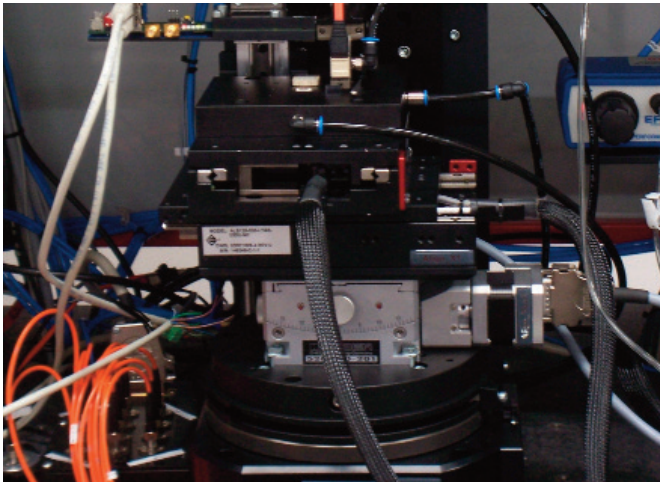

NanoGlue

Advanced Alignment and Gluing Station
for Production and Process Development



nanosystemtec



The axis configuration of the NanoGlue station will be customized to provide a tailored arrangement with an excellent price-performance-ratio. Upgrades in hardware and software can be performed as necessary.

High Capacity Production Solution

The NanoGlue Alignment and Gluing Stations combine ultra-precise hardware with a powerful software package. Depending on the device to be aligned and glued, the process time for a full cycle including loading and unloading takes several minutes.

The feedback signal for the alignment can be any position-dependent value, might it be optical power, beam pointing), polarization extinction ratio or a sensor output.

Modular Architecture

In order to provide the best price-performance-ratio, the functional groups in the NanoGlue are chosen and combined according to the specific process: for example the motion system, machine vision, dispenser, UV lamp and feedback signal instrumentation for the alignment process.

This is also true for the software package. If the requirements change, additional modules can be configured as needed. Typical examples are machine vision functions or even the upgrade from epoxy gluing to laser welding.

Repeatable Alignment and Gluing

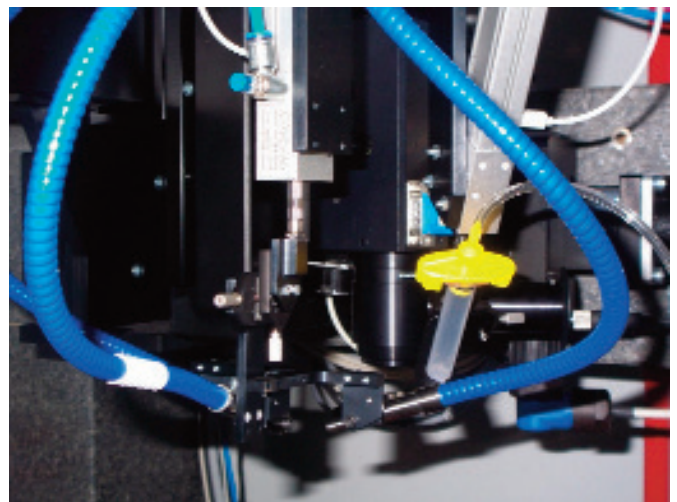
Thorough design and continuous optimization of all functional groups lead to superior mechanical stability. Mechanical references with tight tolerances provide a repeatable manufacturing situation from device to device.

High-precision alignment stages with crossed-roller bearings and absolute position feedback ensure active alignment in the sub micron regime.

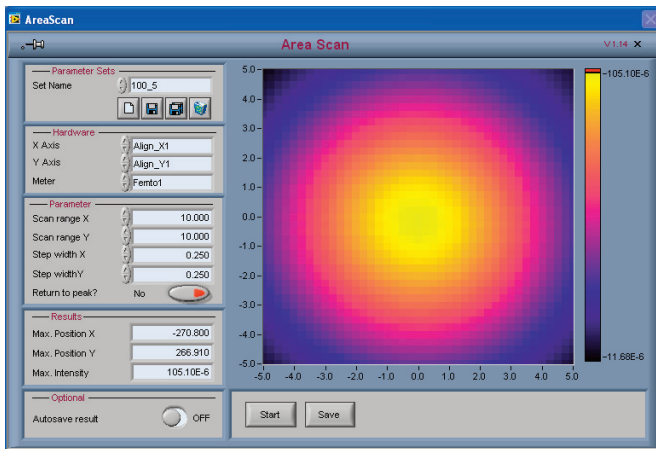
Fast search algorithms cut the process time to a minimum. These include spiral scans and proprietary optimization scans which are carried out for several axes simultaneously.

Rotational alignments are either executed with goniometers and rotation stages or with an integrated rotational platform. The system will be designed to have a common center point of rotation which is ideally located at the device to be aligned.

The motion stages are mounted onto a vibration-isolated granite structure. This solid set-up makes the NanoGlue insensitive against disturbing external influences.



The process can be fully automated including the resin dispensation and curing procedure. The dispenser and the UV guides are mounted to the motion system of the camera.



Specific functions in the TestMaster software package serve especially for multi-channel and rotational alignment. In addition, diagnosis functions are used to determine the parameter sets which provide a stable manufacturing process.

Multi Channel Alignment

Especially for planar waveguides, multiple channels need to be aligned. In this case, one or multi-axes rotational alignments are a pre-requisite. The NanoGlue stations provide both the mechanical capability as well as specific software algorithms for these tasks.

Exchangeable Device Holders

Depending on the device, the NanoGlue works with a tray concept or with interchangeable device holders. The modular concept with device specific holders allows running different device types on the same station easily. To change over from one device type to another takes only a few minutes.

If applicable, a tray is used. This facilitates the loading and unloading procedure. In addition, the production station is only used for the core process, while the loading and unloading can be performed on a separate and unexpensive loading station. In this case, two identical trays are used for one process. This increases the throughput from the station.

Powerful Machine Vision Capability

The NanoGlue Stations use automated machine vision algorithms. These include pattern recognition, edge detection and autofocus.

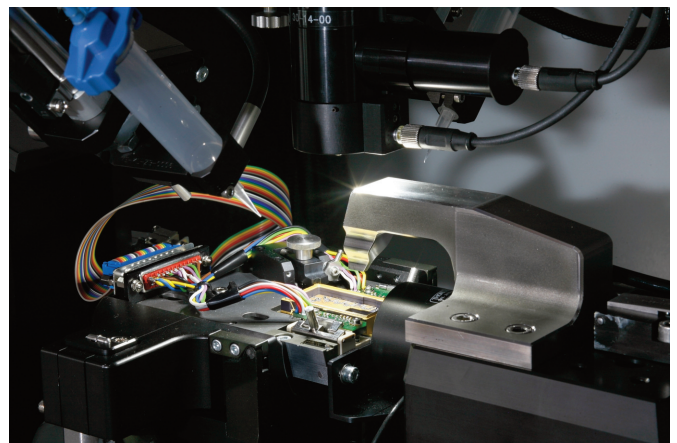
The LED illumination can be adjusted in brightness for ideal imaging conditions. By using a motorized zoom lens, the positions can be identified with an uncertainty of several micrometers in the high magnification while in the low magnification a large field of view can be shown.

By mounting the dispenser and UV guides to the motion system of the camera, the respective process steps (application of the resin and curing) can be included in the automated process routine. The dispenser needle is shuttled in the center of the camera picture so that the application of the glue can be monitored.

Mechanical and Electrical Customization

By customizing the NanoGlue station in the mechanical layout and the electrical set-up, the ideal manufacturing process for the respective device can be realized.

The modular concept makes it easy to combine functional groups both in hardware and software. New functions can be added at any later point in time with minimum effort.



Exchangeable device holders allow manufacturing different devices with minimum set-up time. An optional loading station facilitates the handling and pre-positioning of the various piece parts.

Different User Levels

Five user levels differentiate the access rights. These rights can be individually assigned for standard operators, skilled operators, service personnel, set-up engineers and administration mode. This structure provides a smooth and secure operation of the systems in high technology production environments.

Process Monitoring

Digital inputs on the general machine control or on the motion controller are permanently monitored and can be displayed. Depending on the process, automated actions follow when a certain interlock or emergency function changes the status. Also a power, pressure or vacuum outage will be detected. An automated shut-down can be executed.



Critical machine functions are permanently monitored. Automated sequences follow as soon as such an input changes its status. Standard monitoring signals include voltage, pressure, vacuum and interlock/emergency stop.



Remote access reduces the time when a support is needed. The tool works over a secured internet connection.

Remote Access

The NetViewer Remote Access software works over a secured internet connection. The fast and easy access helps to save time in case any support or trouble shooting needs to be executed on the system. For safety reasons, nanosystec can only access the system when the user accepts. For each event, a new session will be started.

Statistic Process Control

Process data can be retrieved during the production. It serves as a basis for quality assurance and process improvements. Typical values include positions, power level at maximum, power shift after assembly, cycle time, etc.

Connection to Database

Standard commands in the sequence editor write into or retrieve data from a local or network database. Depending on data retrieved, the process can be adapted accordingly.

nanosystec GmbH
Marie-Curie-Strasse 6
64823 Gross-Umstadt
Germany

Phone +49 (6078) 78254-0
Fax +49 (6078) 78254-10
Website: <http://www.nanosystec.net>
e-mail: sales@nanosystec.net