

OUR IDEA OF PHOTONICS

UNIQUE.

Your individual photonics kit.

MODULARITY - Draw from a pool of over 90 modules and configure your system for your product and your process- again and again.

FLEXIBILITY- Create all your photonic products on one machine.

HIGH PRECISION - Precision redefined with positioning accuracies of less than 10nm.

GROWTH - Test your processes in the laboratory and transfer them to high volume production.

ECONOMY - Economy through large work areas, shorter cycle times and lower clean room costs.

The photonics market is on a steady growth course. The challenges in manufacturing photonic products include coping with the enormous product complexity, the highest precision requirements and the constantly changing requirements of the market.

With the unique modular machine concept of OurPlant you can bring these challenges to perfection. OurPlant embodies an adaptable and open production platform and represents the highest standards in automation of micro-optical products.

It connects the experts in photonics and microsystems technology and forms the basis for sustainable and future-oriented manufacturing concepts.

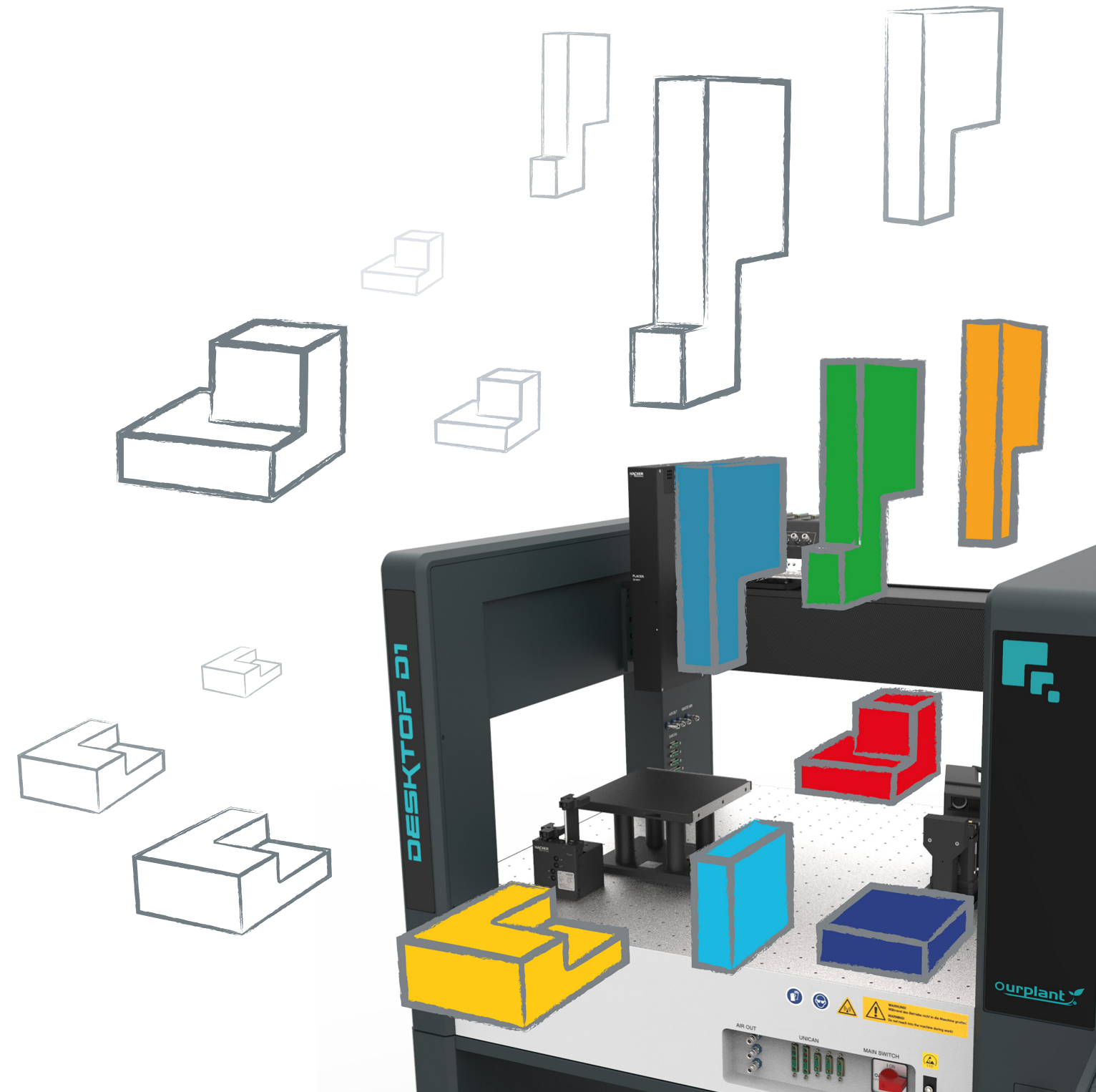
MODULARITY.

Ready for your special requirements.

You can adjust your micro-assembly system with support of the modular construction principle according to your needs. Our modular machine concept enables you to react individually to the requirements of the photonics market.

- ❧ Benefit from a **pool of over 90 modules**
- ❧ Create all your products on one machine
- ❧ **Plug&Produce** thanks to electronic, mechanical and software-based interfaces according to OurPlant standard
- ❧ Integrate your own modules and software into your machine to react more individually to the demands of the market- **Intellectual Property** is our top priority.
- ❧ The OurPlant XTec and OurPlant X3 are available with optional **laser protection**.
- ❧ **Clean room suitability** depending on process requirements

OurPlant brings product developers and process engineers together to work on ideas and solutions. By working together with our technology experts, the development speed on the platform increases and you can benefit from an enormous variety of technologies and modules.

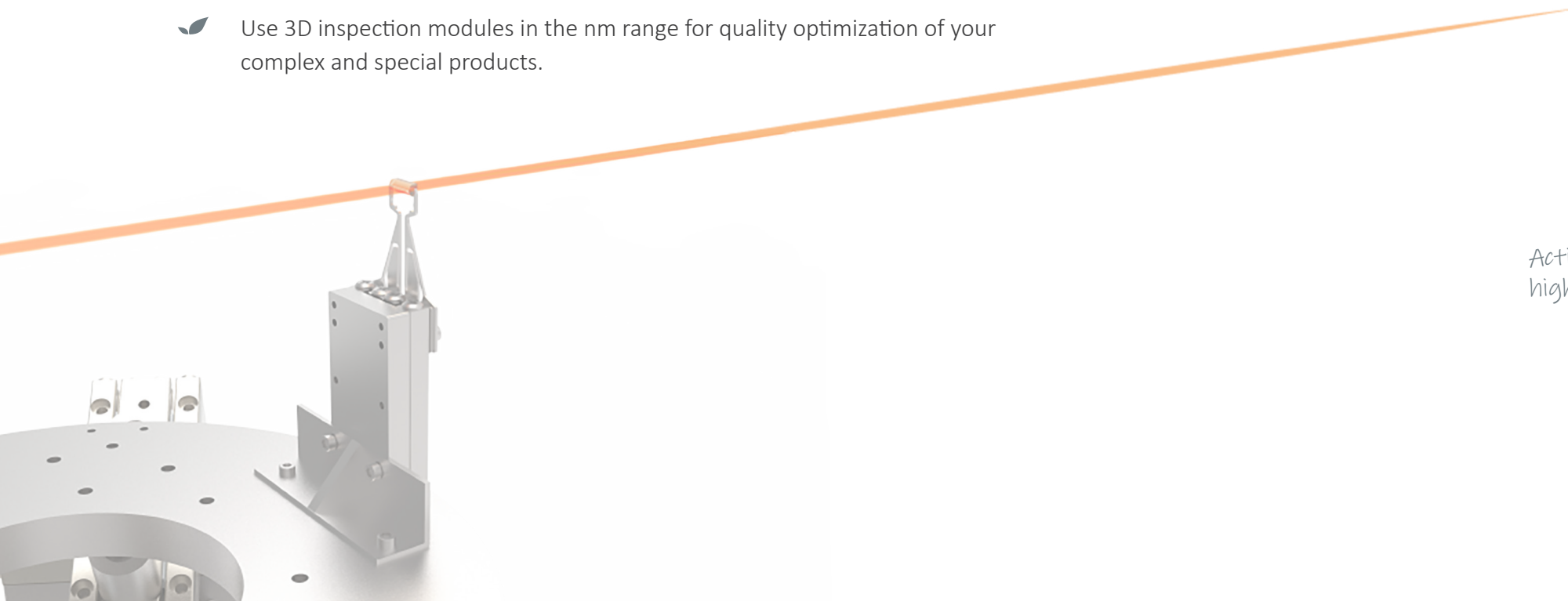


HIGH PRECISION.

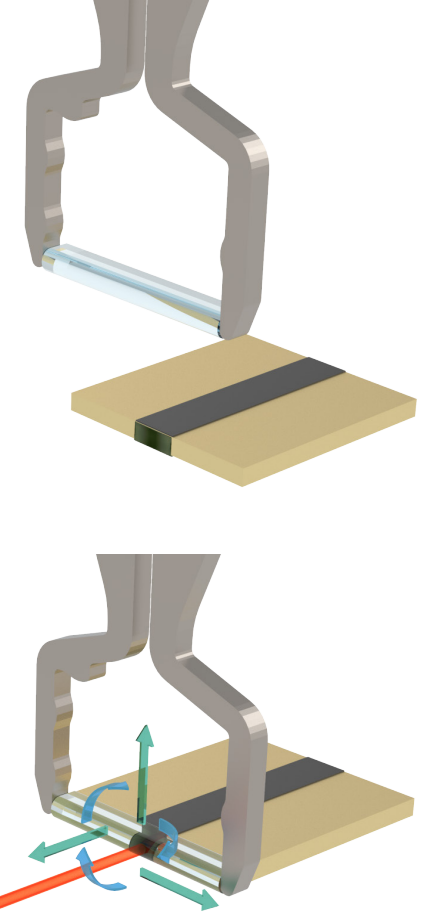
Precise alignment and positioning.

Your photonic products require precise alignment of optical components. With the expert knowledge of strong partners, we integrate motion systems such as hexapods into your OurPlant system.

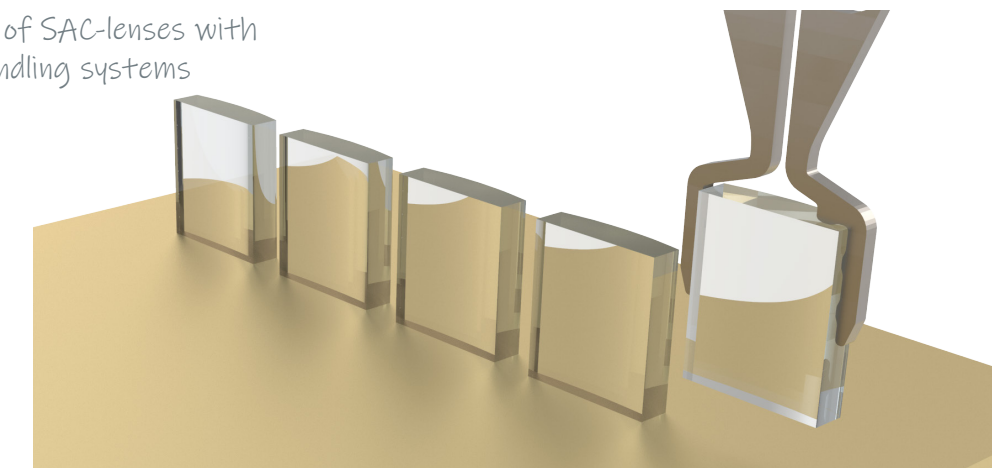
- ✦ Positioning accuracy less than 10 nm
- ✦ High-precision handling systems manipulate your highly sensitive optical components in six degrees of freedom and form the basis for Active Alignment.
- ✦ Use 3D inspection modules in the nm range for quality optimization of your complex and special products.



Active alignment of FAC-lenses with high-precision handling systems



Active alignment of SAC-lenses with high-precision handling systems



INDIVIDUALITY.

Ready for your specific process steps.

Align a lens until an exact concentration of light is achieved. Fix this lens with UV glue and cure it. Or position camera chips by 3D manipulation and insert them into a housing. - Regardless of whether your task involves processing of imaging or image recording media, the right equipment is always available.

Here you will find a selection of modules that we have already successfully used in the automation of photonic processes.

Material loading.

Conveyor:

The type of conveyor depends on the substrate. A version with step belt is especially recommended for sensitive, optoelectronic substrates.

Universal Support:

This precision substrate holder is a robust work surface. It is used for flat components, such as ceramics, with a maximum size of (8 x 8) inches.

Gel-Pak® Support:

This vacuum supported tray for 2", 3" and 4" magazines has been successfully used as a component carrier for optical elements.



Inspection systems.

Camera 3D:

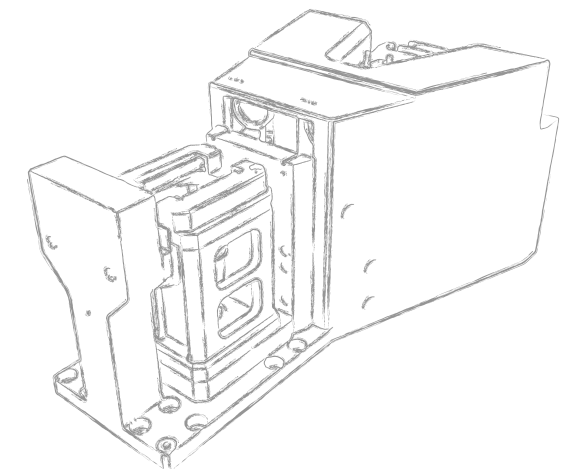
The Camera 3D is an inspection head with 3D optical detection and automatic position correction. Using a stereoscopic camera system, it observes the component and substrate surfaces from two different perspectives. From the acquired image data, an exact 3D position is calculated.

Subside Inspection Unit:

The subside inspection unit measures optical components at their subside. The exact measurement guarantees a high assembly accuracy. The monochrome camera has a programmable ring light as well as an interior light and the option to connect an external lighting.

Camera 2D:

This inspection head for the optical recognition of structures on component and substrate surfaces captures the image data and processes it with the control software.





Assembly system.

Hexapods von SmarAct:

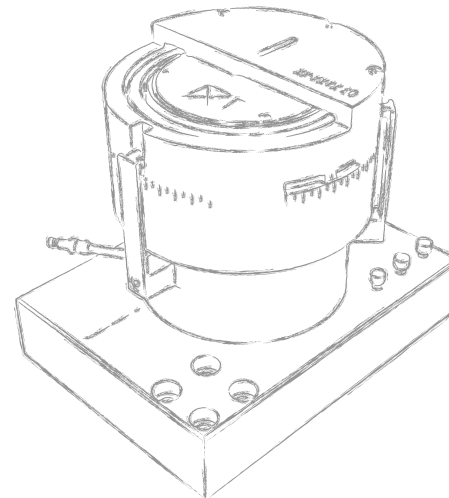
The hexapod system as a processing head or base plate module can be integrated into OurPlant systems. It is an optimized tool for Aligning optical components such as SAC and FAC lenses with movements in all 6 degrees of freedom.

3D Alignment Support:

The 3D alignment support is used to hold optics, lenses and appropriate substrates for the processing in different space coordinates during a photonic process. The rotation axis precisely approaches the coordinates that are specified by the control software.

Placer 2D:

The Placer 2D is a placement head that is used for precise alignment as well as for component placement. Positions in deep cavities can be easily reached with the head's Z-axis stroke of 150 mm. This placer 2D is used for the processing of COS (Chip on Submount) chips.



Direct Dispensing Unit:

The Direct Dispensing Unit was developed to provide homogeneous, reproducible layers of an adhesive at the underside of optical components within the process. Within the the direct dispensing process these components have the function of a stamping tool at the same time. So the glue is always applied on the underside of the component, which even allows the tightest of placements.

Dispenser D-X30:

The patented dispensing technology of the dispenser D-X30 applies volumes in the single-digit nanoliter range. The extraordinary precision is guaranteed by the control loop-based method with automatic regulation of the dispensing parameters in the event of viscosity or temperature fluctuations. Thus, consistent results are achieved throughout the process.

UV Curing Head:

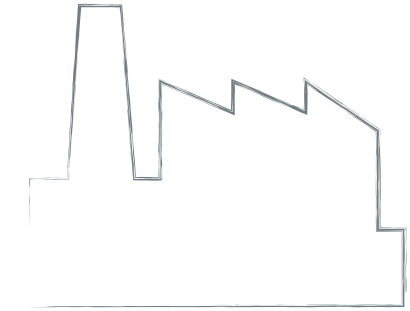
The UV Curing Head is equipped with a UV LED spot for curing and preactivation of photoactive adhesives. Furthermore it generates a live image with micron resolution of what is happening at the needle. An integrated needle heater (20 ° C... 130 ° C) heats the dispensing material up to the optimal process temperature.

VISIONARY.

From 1 to 1 million.

You want to develop an automated production for your photonic products and quickly start to produce your products in series?
No problem for the four all-rounders of the OurPlant machine family.

Realize your individual processes on the OurPlant Pocket and seamlessly install the validated processes on an OurPlant series production system.



completed subprocesses

functional product

medium series production

large series production

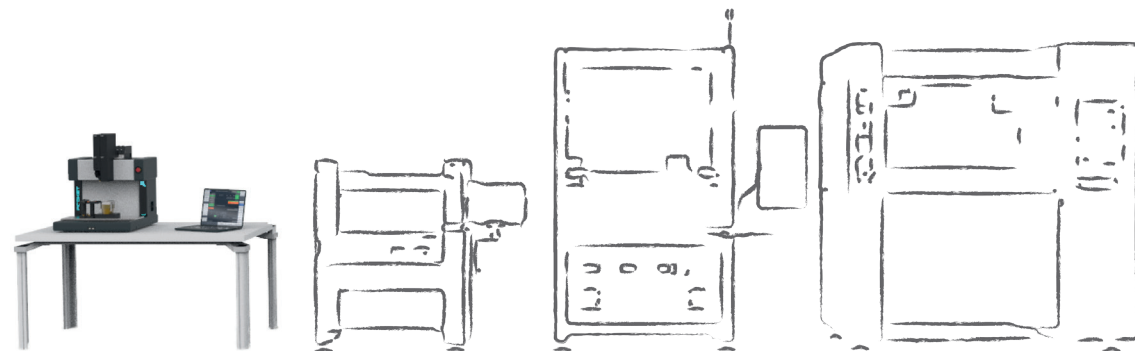


TECHNOLOGY TO THE POINT.

OurPlant Pocket.

With the OurPlant Pocket you can work alongside and support your manufacturing process development and product development. The compact tabletop system enables you to implement semi-automated processes. It is an excellent support for testing, developing and validating your processes.

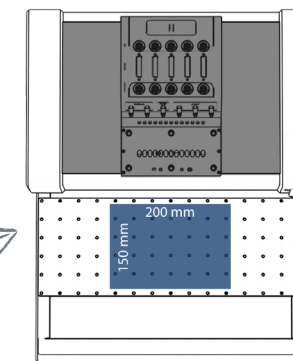
Thanks to the uniform compatibility of the OurPlant platform, the machine benefits from a wide variety of modules. The product design and manufacturing technology can be optimized directly by the product developer through a wide range of applications, such as microassembly, microdispensing and inspection processes.



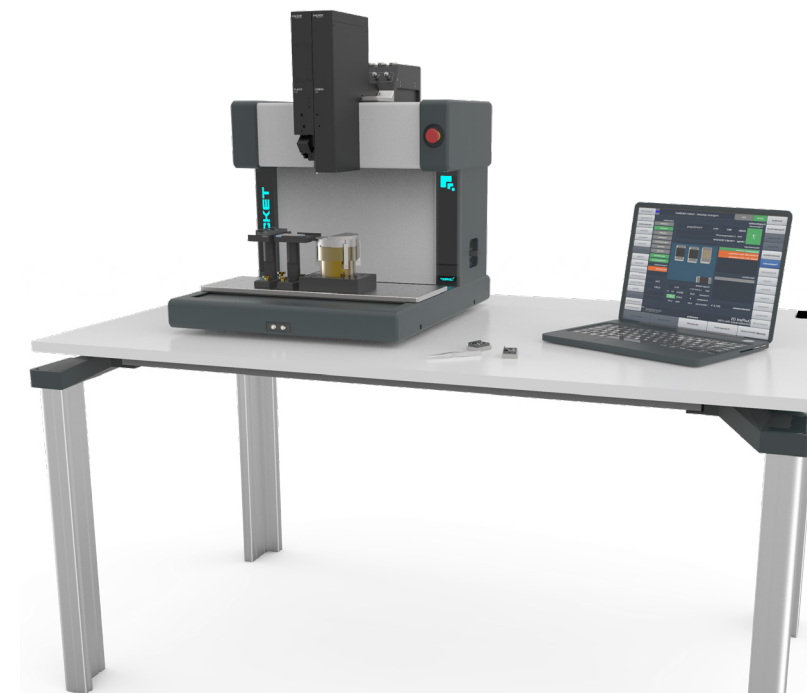
To Sum It Up.

- ✓ Dimensions (W x D x H): 550 mm x 660 mm x 600 mm
- ✓ Machine weight: approx. 80 kg
- ✓ Max. functional area (X x Y): 200 mm x 150 mm
- ✓ Max. speed axes (X / Y): 250 mm/s
- ✓ Repeatability: $\pm 1 \mu\text{m}$

Machine interface for max.
2 processing heads each 50 mm wide



Max. functional area with 1
processing head

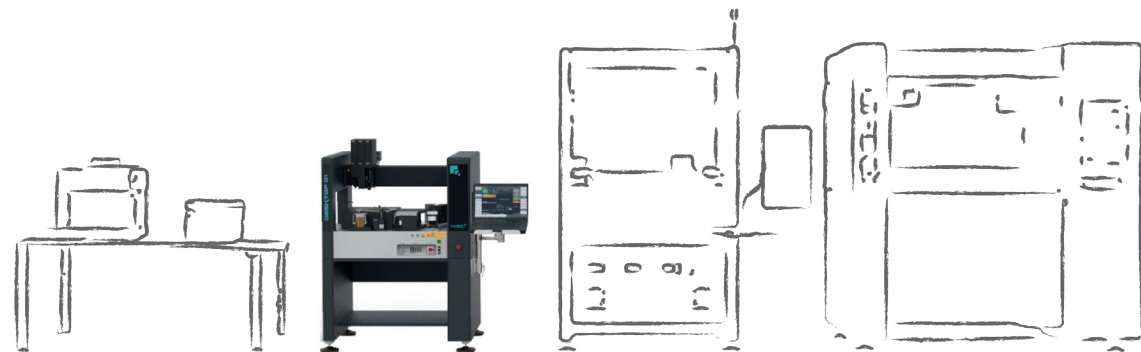


CLOSE TO THE PROCESS. OurPlant D1.

The OurPlant D1 is the basis for the seamless transition of your products into serial production.

The open system allows you to interact intensively with the process. Technology and experts meet and have the opportunity to produce first products in series.

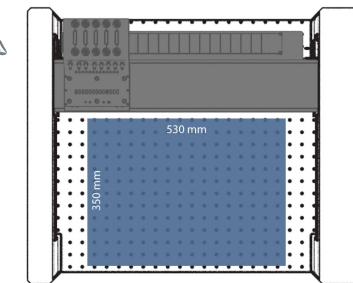
The modular machine concept guarantees the adaptability to future products and process requirements.



To Sum It Up.

- 🌿 Dimensions (W x D x H): 1000 mm x 800 mm x 1350 mm
- 🌿 Machine weight: approx. 570 kg
- 🌿 Max. functional area (X x Y): 530 mm x 350 mm
- 🌿 Max. speed axes (X / Y): 250 mm/s
- 🌿 Repeatability: $\pm 1 \mu\text{m}$

Machine interface for max.
5 processing heads each 50 mm wide



Max. functional area with 1
processing head

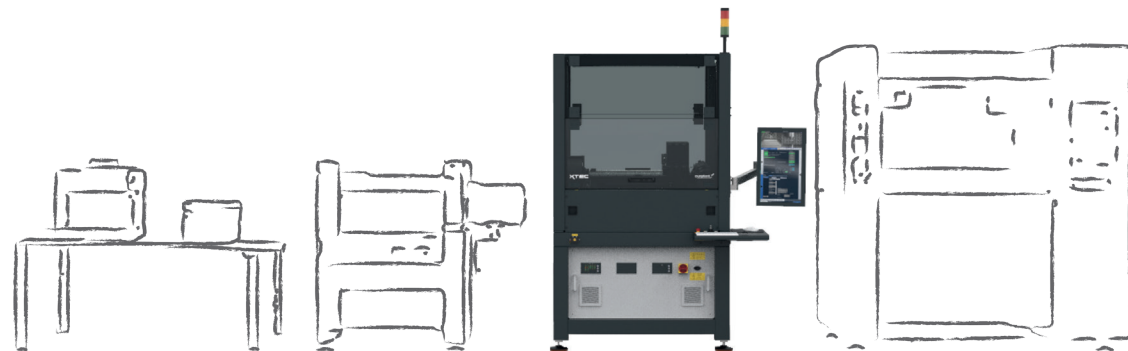


COMPACT PERFORMANCE. OurPlant XTec.

The OurPlant XTec is the compact all-round solution for series production of integrated photonic assemblies. Like the OurPlant Pocket and OurPlant D1, the machine can also be equipped with various functional modules of the platform.

Depending on your process requirements, the OurPlant XTec can be used for a variety of applications. For example, laser safety glass offers an option for solving a wide range of microassembly challenges.

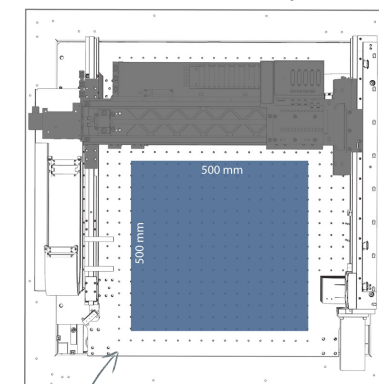
You get a versatile and highly efficient microassembly machine. This solution provides the possibility to produce even the most technically demanding photonic products in a very short time.



To Sum It Up.

- Dimensions (W x D x H): 1735 mm x 1455 mm x 2400 mm
- Machine weight: approx. 1200 kg
- Max. functional area (X x Y): 500 mm x 500 mm
- Max. speed axes (X / Y): 1600 mm/s
- Repeatability: $\pm 1 \mu\text{m}$
- Optionally with laser protection glass for infrared lasers

Machine interface for max.
6 processing heads each 50 mm wide



Max. functional area with 1
processing head

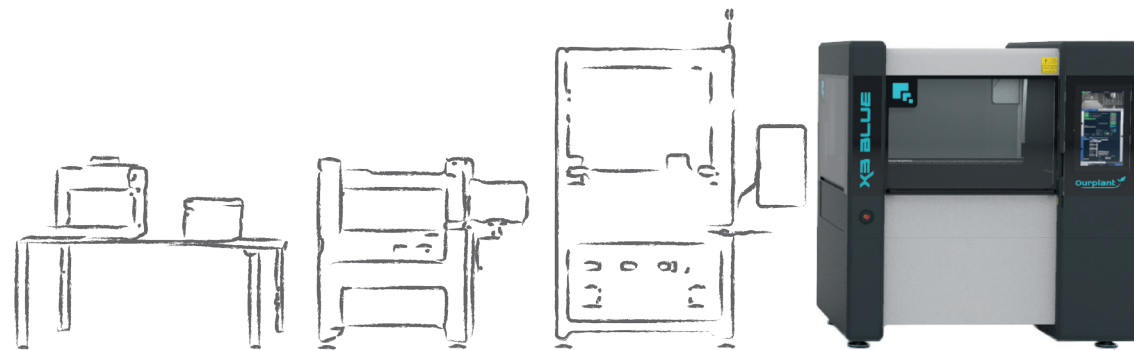


HIGHEST EFFICENCY.

OurPlant X3.

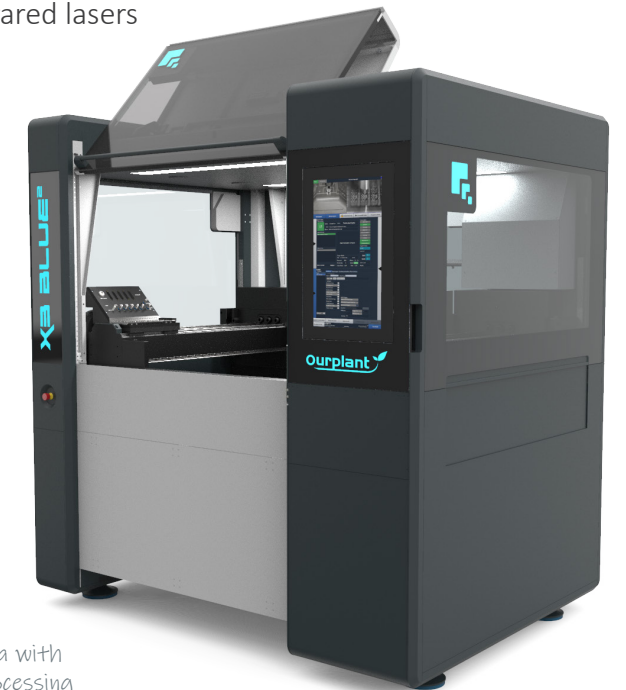
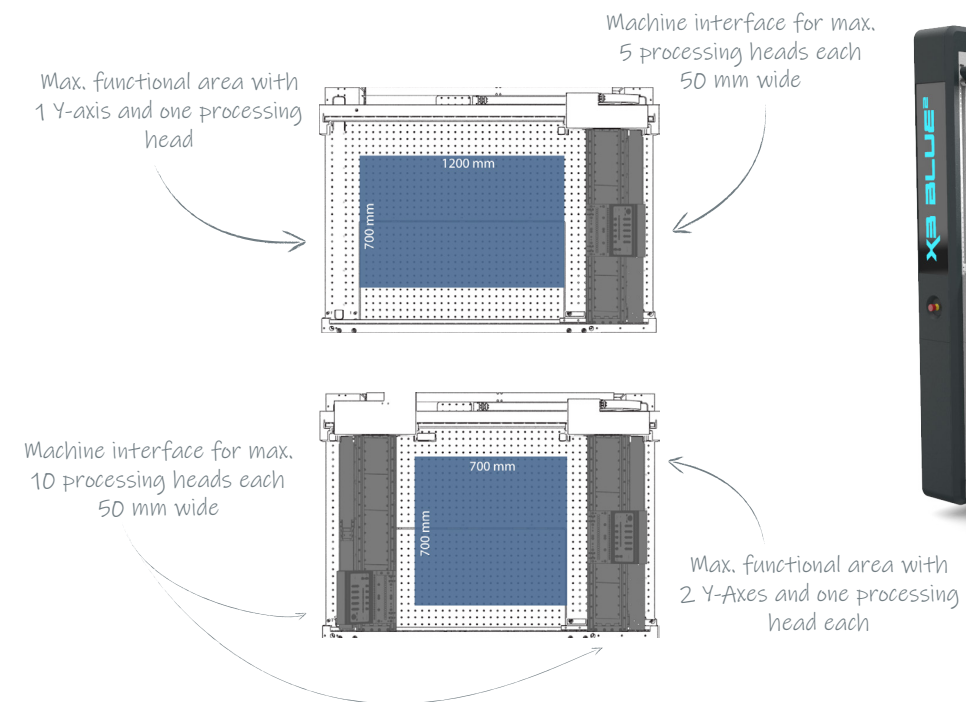
The photonics market is growing steadily, which is also reflected in the high demand for photonic products. The OurPlant X3 is the system of your choice for economical production, which means reducing cycle times and minimizing cleanroom costs.

A maximum of working space and the option to equip the machine with to independently working Y-axes offers you the highest production efficiency.



To Sum It Up.

- Dimensions (W x D x H): 1900 mm x 1500 mm x 2059 mm
- Machine weight: approx. 3600 kg
- Max. functional area (X x Y):
 - one Y-Axis: 1200 mm x 700 mm
 - two Y-Axes: 700 mm x 700 mm
- Max. speed axes (X / Y): 2100 mm/s
- Repeatability: $\pm 1 \mu\text{m}$
- Optionally with laser protection glass for infrared lasers



INDIVIDUALITY.

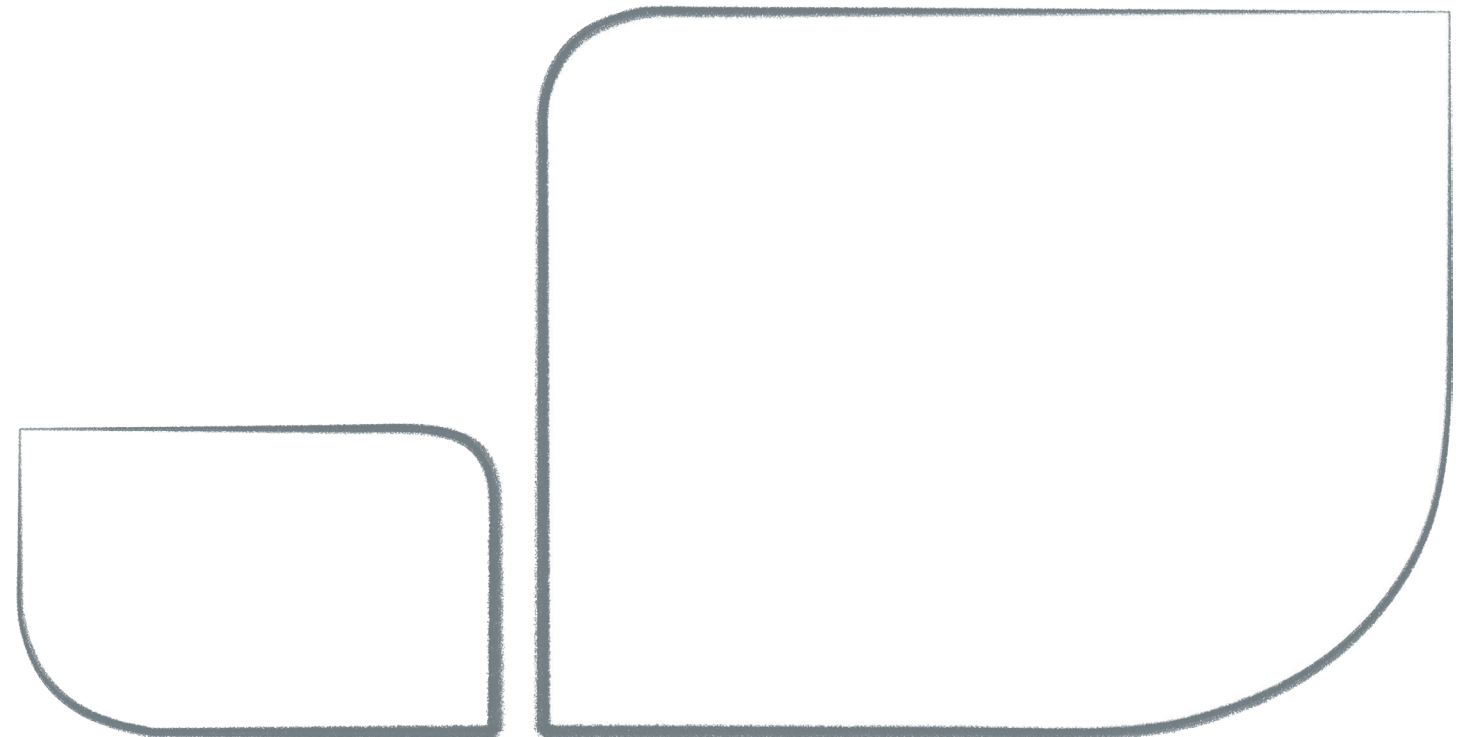
Your individual solution.

Learn more about the OurPlant world.

OurPlant- The Prime Micro Assembly Platform.
www.ourplant.net

OurPlant- Goes Open Source.
www.haecker-automation.de/en/open-source/

OurStore- Market Place for The Micro Assembly Platform.
www.store.ourplant.net





Häcker Automation GmbH

Inselsbergstraße 17
99880 Waltershausen / Schwarzhausen
Germany

Tel.: +49 36259 300-0
Fax: +49 36259 300-29
Mail: contact@haecker-automation.com