



HELIOS

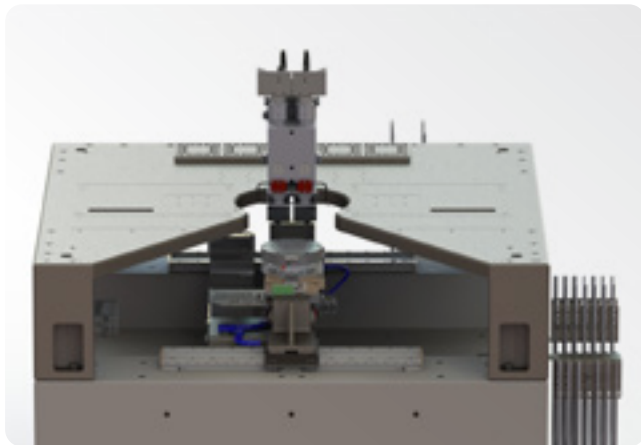
Photonic Visual Inspection Tool



TAKING YOU
STEPS AHEAD

HELIOS

Photonic Visual Inspection Tool



HELIOS is our front-end metrology tool for automated optical inspection of Photonic Wafers and singulated PICs (Photonic Integrated Circuits). Automated Visual Inspection offers full control of your processes. Our machine enables you to gather detailed data and metrics in a split second compared to manual inspection.

Capture the variations between manufactured wafers and PIC-design. Improve your PDK's with clear and high-quality inspection data. HELIOS offers you tailored and accurate information on functional structures, therefore closing the feedback loop. The outcome of this is faster, more reliable data and a higher PIC-yield.

Built for defect detection, capable of more

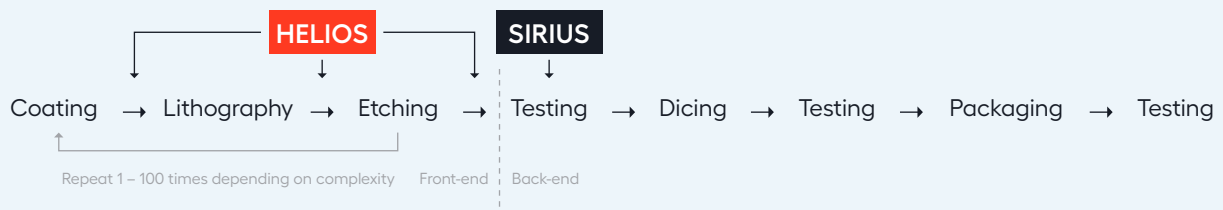
HELIOS is built for automating front-end inspection tasks. It scales with your production needs, ranging from high-mix low-volume MPW runs to low-mix high-volume dedicated runs. Taking you from lab to fab.

With its high level of automation, there is next to no human interference. We trained HELIOS with machine learning to locate anomalies and detect particles. But it can also be trained for waveguide interruption, 3D focus stacking, overlay defects, chemical residues, edge cracking, waveguide proximity, mask defects and other platform based classifications.

HELIOS connects to MES using the SEC/GEM interface and it is compatible with SEMI E142/E85 standards.



Where are our machines used?



System specifications

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Software system specifications

Recipe Generator	Quick and flexible recipe editor & E142 map generation
Compatible with	Multi Project Wafers (MPW) & Dedicated Runs, GDSII
Report	Extensive automated reporting
GUI	Wafer map, Heat map
Algorithms	Standalone algorithm
Framework	OpenEPDA implementation

Hardware system specifications

Wafer table compatible	4 inch to 8 inch wafers
Wafer loading	Automatic using Cassettes or SMIF pods
Simultaneous imaging in 2 magnifications	500 nm/pixel and 125 nm/pixel
Field of view	2.0 x 2.0 mm (low res), 0.5 x 0.5 mm (high res)
Smart illumination	Bright and Dark field illumination
High speed auto-focus module	Z-position at 5 nm resolution & settling time < 20 ms
Selection mode	Region of Interest imaging mode

Data handling specifications

Interface protocol	SEC/GEM interfacing with MES
Image confidentiality	NAS (2FA Network Attached Storage)
Wafer alignment	Customer specific alignment markers
Data management	Exchange test protocols, wafer maps, recipes and test reports in EZ-MES

Performance specifications

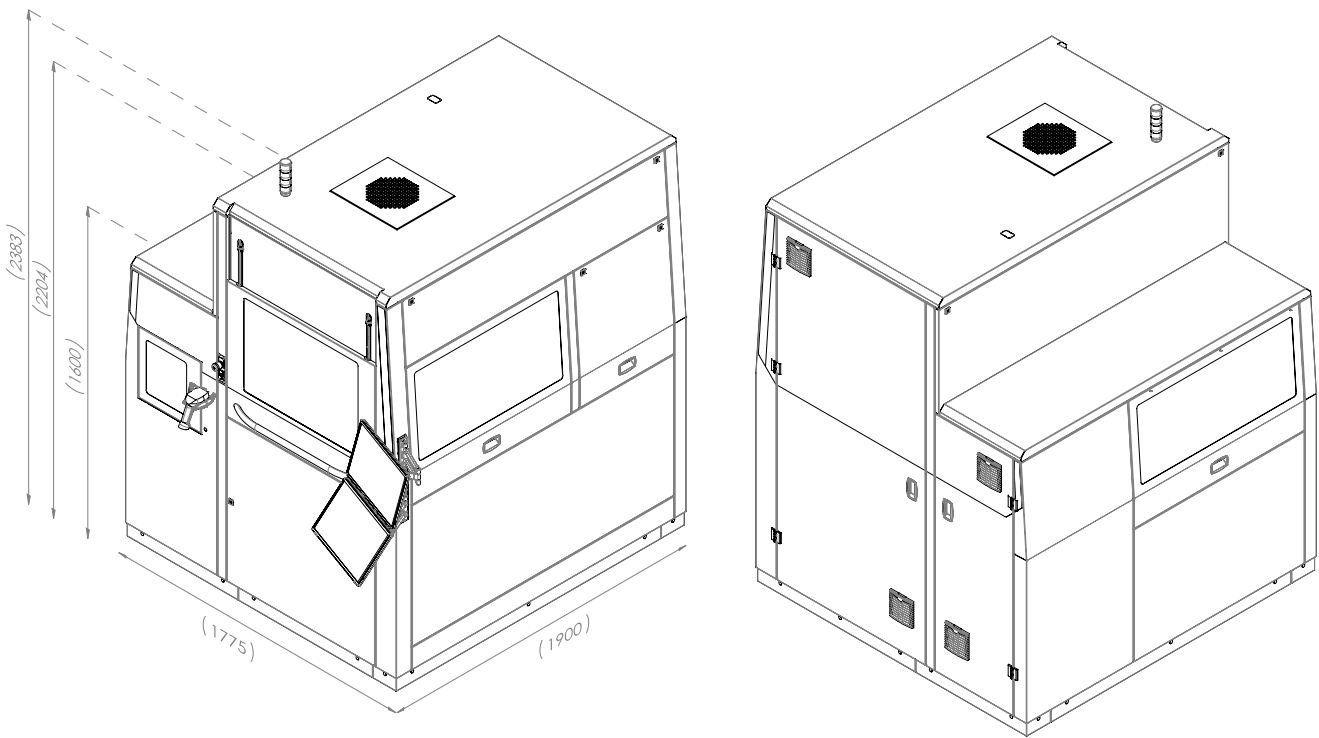
Wafers per hour	4 – 10
Stability of imaging	< 100 ms

System specifications

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Cleanroom requirements	
Environment	ISO 7 or better
Floor vibration	VC-C or better (standard cleanroom)
Machine footprint	1.8 m x 1.9 m (excluding 1 m free space around)
Network	1XRJ45 connection, CAT 5e
Electrical interface	400 VAC, 32A connection, Max fuse 25A
Gas, air or vacuum	> 6 bar pneumatic connection
Cable feed through	Bottom or top of the machine

Dimensions of HELIOS for your production floor



Everything you need to know

Photonic Visual Inspection Tool

The automated visual inspection of HELIOS offers full control of the process. Our machine enables you to gather detailed data and metrics in a split second compared to manual inspection. This efficiency leads to faster and more reliable data and a higher PIC yield.

HELIOS can be adapted to run multiple types of wafer substrates (SiN, SOI, InP, AIO, TFLN, AlN). In addition, the machine allows for flexibility by adding and swapping modules to reconfigure to customer needs. For example, the lens objectives are interchangeable for different magnifications (4x, 10x, 50x, 100x).



KEY BENEFIT

Take full control of your process

Improve your process quality. Allowing manufacturers to collect granular micro data and metrics at all points of the supply chain to make faster, more reliable data-driven decisions.

KEY BENEFIT

Eliminate manual inspection

Let your wafers be inspected by a well trained algorithm. This saves valuable analyzing time. HELIOS is built modular to be easily customized to your exact specifications.

KEY BENEFIT

Critical defects breakdown

Identify, classify and assign causality to features of interest. Detect both generic and customer-specific defects or contamination.

KEY BENEFIT

Improve PDK's

Improve your PDK's with shorter feedback loops and process parameters.

Take full control and start improving PIC production

Are you ready to take full control of wafer processing? Our system is ready to inspect your samples. Get in touch with us through sales@ims-nl.com or [+31 546 805 580](tel:+31546805580) and we will help you out.

