NXT GEN hightech

LioniX INTERNATIONAL

Semicon 08:

Metrology Equipment for critical scaling of PIC Production

Within this project, two machines are being developed to test integrated photonic chips with the aim of becoming a global leader in visual and prober test equipment for integrated photonics as part of the consortium. Three generations of machines are being developed in which fundamental research is transformed into working machines.

Advancing Photonic Integrated Circuit (PIC) Production: LioniX International role in the Semicon 08 Metrology equipment for critical scaling of PIC production project

LioniX International is a globally recognized leader in the development of customized microsystem solutions, specializing in photonic integrated circuits (PICs) and modules. Since its founding in 2001, the company has been at the forefront of innovation, offering a unique vertically integrated approach that spans the entire product development cycle—from initial concept to fully operational devices. Central to their technology is the patented TriPleX® platform, known for its ultra-low loss waveguiding capabilities, which has made LioniX a trusted partner in various high-tech sectors including telecommunications, quantum computing, and medical technology.

As the photonic integrated circuit (PIC) industry continues to expand, the need for precise and scalable metrology equipment has become paramount. The Semicon 08 Metrology equipment for critical scaling of PIC production project, part of the NXTGEN HighTech initiative, is focused on developing state-of-the-art metrology solutions to meet these challenges. At the forefront of this project is LioniX International.

Critical Role in the Semicon 08 Project
In the NXTGEN Hightech Semicon 08 project, LioniX International plays a pivotal role by contributing its expertise in PIC design, fabrication, and testing. Leveraging the reliable TriPleX® platform, LioniX provides essential test materials for the project's consortium, MEKOPP 2. These materials include processed wafers equipped with features like waveguides, vertical coupling features, out-of-plane grating couplers, and metal leads. These components are crucial for generating training data for AI-assisted testing methods, a key innovation within the project.

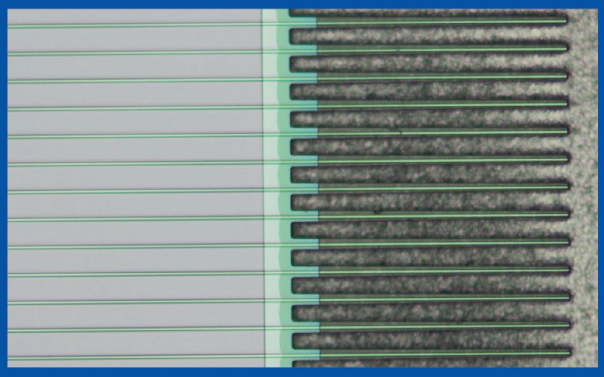
Beyond material provision, LioniX offers valuable insights and guidance on the testing and inspection processes for photonic wafers. This involves advising on the necessary interfaces and testing parameters required for various applications, ensuring that the testing procedures developed within the project align seamlessly with industry needs.

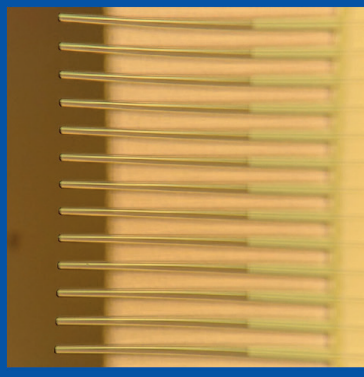
Expectations and Future Impact
LioniX International has high expectations for the outcomes of the project. The company anticipates significant advancements in PIC production efficiency through enhanced testing and inspection methodologies. The project's goal of achieving wafer-scale testing and inspection is expected to substantially increase production yield, quality, and throughput. Moreover, the collaboration between PIC producers and testing device manufacturers within the consortium is expected to lead to the development of standardized testing and inspection procedures across the industry.

Added Value and Industry Integration
LioniX International's unique value in the project lies in its comprehensive understanding of both the end-user and testing machine developer perspectives. As a vertically integrated solutions provider, LioniX bridges the gap between these two critical aspects, ensuring that customer requirements are fully integrated into the testing environment and foundry workflows. The company's extensive experience in the PIC industry enables it to contribute to the creation of testing devices that are not only innovative but also practical and immediately valuable to the industry.

Ongoing Contributions and Future Plans
LioniX has already made significant contributions to the project, including providing consulting on workflow requirements, delivering AI defect recognition training data, and producing various test materials for visual, optical, electrical, and electro-optical testing. As the project progresses, LioniX remains committed to delivering further testing materials and data, piloting the integration of new testing machinery into their workflows, and sharing insights on inspection throughput and yield improvements.

Conclusion
LioniX International's involvement in this project underscores its leadership in the PIC industry and its commitment to advancing technology through collaboration and innovation. With its deep expertise and vertically integrated approach, LioniX is not only helping to shape the future of PIC production but also setting new standards for testing and inspection in this rapidly evolving field.





About **NXTGEN Hightech**

The NXTGEN Hightech program has been awarded a grant from the Dutch National Growth Fund to stimulate structural and sustainable economic growth in the Netherlands. Learn more:

www.nxtgenhightech.nl

For more information please contact us:
info@lionix-int.com