Interreg North-West Europe
EUROPEAN UNION
OIP4NWE
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NEWS
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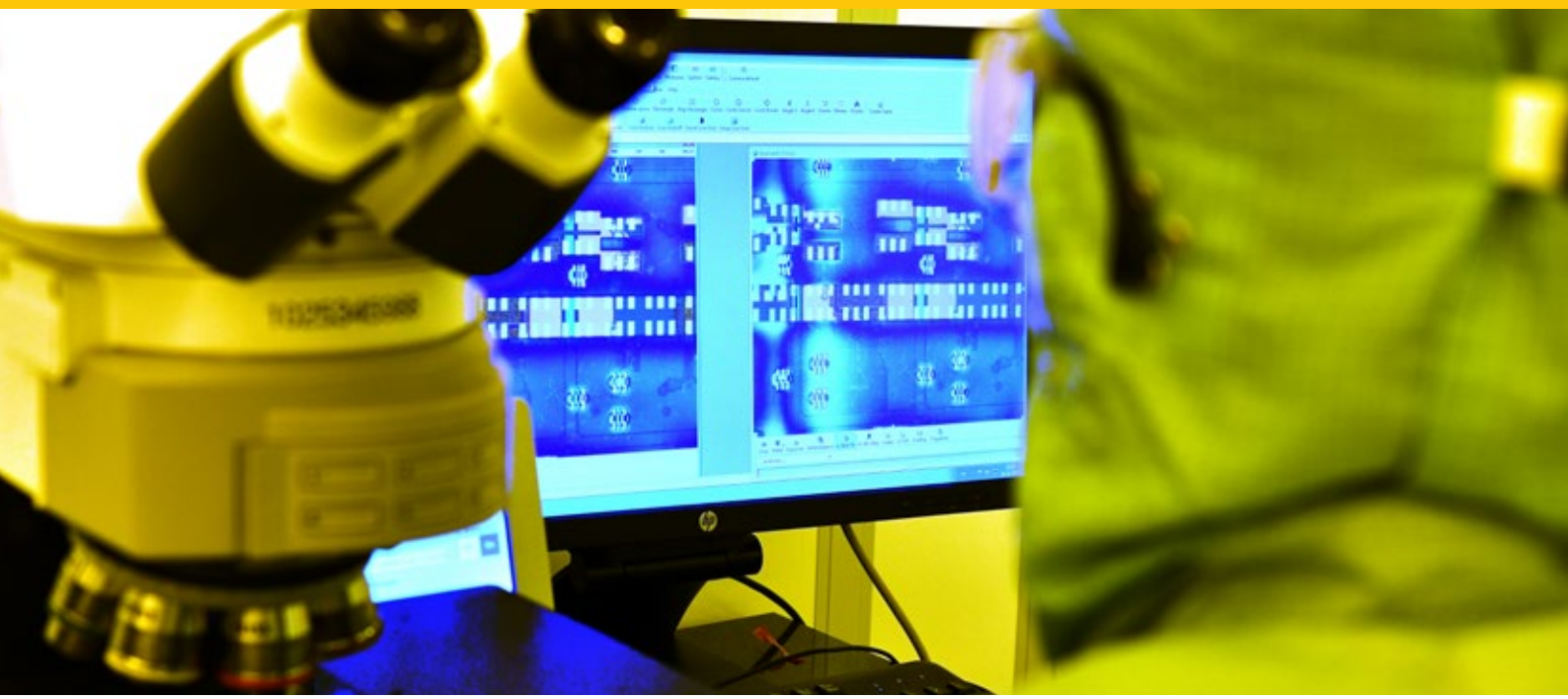


OIP4NWE pilot line; waiting in the wings!

The OIP4NWE project aims at establishing an open innovation pilot line for the development of generic photonic integration technology. Equipment manufacturers, a pure-play foundry and researchers collaborate to establish the infrastructure and processes dedicated to the pilot production of photonic integrated circuits (PICs) based on Indium Phosphide. The capabilities include the whole process chain from e.g. epitaxial deposition of materials, structuring, isolation up to a final packaging.

To reach this goal, the project has set-up its objectives as follows:

1. Set up an open access pilot line for InP Photonic Integrated Circuits (PICs), validated at TRL7 with improved throughput and cost.

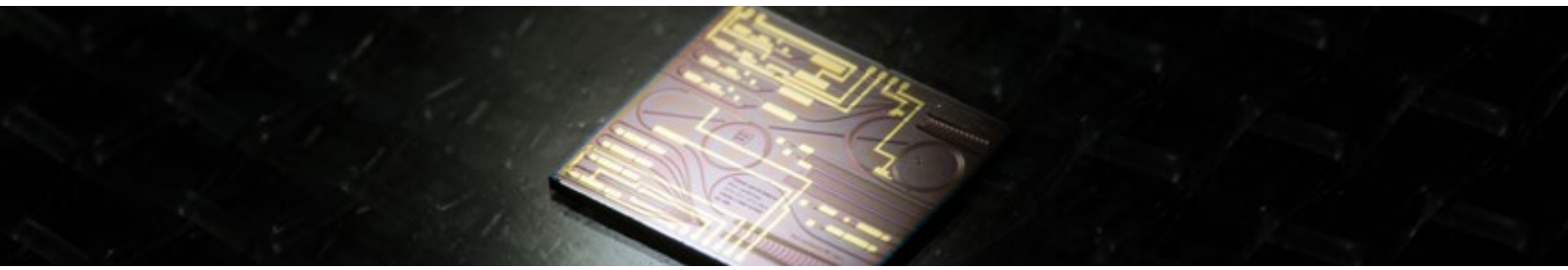
2. Provide technology support to SMEs looking to mature their PIC-based products through open collaboration.

3. Establish an open innovation environment for PIC technology in Europe: Collaborative ecosystem: researchers, fabs, equipment manufacturers, SMEs Working on state-of-the-art equipment development and fabrication methods.

1. A cutting edge PIC pilot line

To cover the whole process chain, the pilot line is divided in three parts.

In the first gate, an epitaxy planetary reactor – the tool-of-record for laser production – is utilized to deposit semiconductor materials to 4-inch wafers. The worldwide unique planetary reactor sets



new standards from technological side and guarantees the best layer uniformity and tunability, which are crucial parameters for lasers.

At site two, a fully automated align-and-attach assembly system to produce optoelectronic and photonic components ensures high packaging yields and throughput times. The system guarantees high-precision optical alignment between PICs and input/output fibers.

The final stage is dedicated to packaging. Flip-chip packaging is a critical electrical interconnect technology on die level to achieve high placement accuracy between devices and substrates or interposers. Further properties and features of the final components, such as thermal management, can be integrated in this step as well.

After a final quality check, you receive your individual PIC-prototype for further processing and integration in your devices or systems.

2. First experiences with customer needs

After the pilot line was set up, an extensive testing phase was made to validate the functionality. Additionally in this phase, the members of the project could gain precious insights in customer demands and needs. The lessons learned build the basis for the long-term effects of the project and the network to be established. To attract customers from various industries to join the test phase, innovation vouchers were given to lower both, the costs and the risk of implementing a new technology.

3. The TransNational Network (TNN)

To further strengthen the PIC-Activities in the North-West European region even after the project ended, the partners established the "TransNational Network". It's a one stop shop with low-threshold access to a technology which strengthens innovativeness and competitiveness of companies and institutes across Europe. A high number of actors across Europe support the network as regional contact points. Here SMEs can obtain initial information about the services, but also about the innovation potential that can be unleashed by using this new technological approach. Over that, it is a network where you can have exchange of ideas and best practices with other professionals – or establish new cooperations.

www.nweurope.eu/oip4nwe

OIP4NWE
Open Innovation PIC Pilot

The Interreg NWE-Project "OIP4NWE" aims at establishing an open innovation pilot line for the development of a generic photonic integration technology for the production of Indium Phosphide Photonic Integrated Circuits (PICs). Integrated photonics is the emerging technology where the manipulation of light takes place on a chip, making the components an order of magnitude cheaper, smaller and more energyefficient compared to today's solutions. By providing these services to SMEs across Europe, the project reduces PIC access barriers and strengthens the competitiveness and innovativeness of European SME sustainably on the global markets.

Current generic PIC facilities are of a laboratory nature and inadequate for manufacturing and packaging PICs with cost-efficiency, speed and reliable quality. There is a strong need to increase the technology readiness level (TRL) from the current 4 to 7. The equipment for PIC manufacturing and packaging is of an innovative, specialised nature that cannot be obtained from a single country. As application of PICs grows, North-West Europe needs to stay ahead. Therefore, intense collaboration between innovation stakeholders at transnational level is an important goal of the project.

The project is funded by the Interreg North-West Europe programme, which fosters transnational cooperation to make North-West Europe a key economic player and an attractive place to work and live, with high levels of innovation, sustainability and cohesion.

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