

Fraunhofer helps PHIX on its way to large-scale production photonic chips

The Fraunhofer Project Center, on the campus of the University of Twente, will develop a special micro-assembly machine for photonic chips. This is an important step from small series to large-scale production in Twente, through the new PHIX Photonics Assembly. Fraunhofer presents the machine at the MicroNano Conference in Amsterdam on 12 and 13 December.

Photonic circuits, chips that work with light, are clearly on the rise, for example in telecom and medical applications. They are still often 'high-end' applications in small series. That will change quickly, if photonic chips are being used on a large scale in 5G networks for example, as is predicted LioniX International, a successful company at the University of Twente. The success of upscaling hinges on a production technique to cost-effectively assemble and package the photonic components. That is a completely different technique than is used for electronics chips; it concerns, for example, the connection of glass fibers with photonic circuits.

The Fraunhofer Project Center will develop an innovative machine for this and will supervise the new PHIX Photonics Assembly with knowledge of new production processes. This step is currently about mid-volume series between 1000 and 100,000, PHIX expects to grow into million series with a production line on the University of Twente campus in the long term.

In order to help the industry with integrated production solutions and to accompany new developments such as 'Industry 4.0', the Fraunhofer Project Center was opened at the beginning of this year, a collaboration between the University of Twente, Saxion and the Fraunhofer Institute for Production Engineering in Aachen. During the MicroNano Conference, on 12 and 13 December at the Beurs van Berlage in Amsterdam, Fraunhofer already shows several modules of the machine. Thanks to the modular construction, the machine can be adapted to the application: photonic components can also be connected to liquid chips (lab-on-a-chip systems) or micromechanical sensors.

Photonics is strongly represented in Twente, with a cluster of research groups within the MESA + Institute for Nanotechnology, an Applied Nanotechnology program within Saxion and successful spin-offs. The region is part of PhotonDelta, the ecosystem for integrated photonics in the Netherlands. In Twente the emphasis is on silicon nitride chips.

The Fraunhofer Project Center, the MESA + Institute for Nanotechnology and LioniX are all represented at the MicroNano Conference, 12 and 13 December in Amsterdam

