

PRESS RELEASE

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Marco Wieland (Mapper Lithography) receives the Martin van den Brink Award

Award for ‘technical conscience’ of electron beam lithography

Marco Wieland (Mapper Lithography) yesterday received the Martin van den Brink Award. This system architecture award was presented at a gala dinner held at the Evoluon in Eindhoven as part of the Dutch Technology Week. The event was organised by the Dutch Society for Precision Engineering (DSPE) in collaboration with Brainport Industries. Marco Wieland is the CTO and co-founder of Mapper Lithography in Delft. He serves as the ‘technical conscience’ in the development of electron beam lithography into a full-blown supplement to optical lithography. This conventional lithography is the technology with which Martin van den Brink’s ASML has grown to become world market leader.

System architecture

The success of the Dutch high-tech industry is partly thanks to thinking in terms of system architecture. At a high level of abstraction, system architecture describes the design for a complex machine that is usually made up of multiple modules. The system architect is responsible for the main design and coordinates the contributions of all the disciplines involved. He ensures that the different modules, which are mostly built and nowadays also co-developed by suppliers, are combined to create one optimally functioning machine.

Martin van den Brink

The most successful exponent of system architecture thinking is the Veldhoven-based company ASML, which was spun off from Philips in 1984 and is now the global leader in lithography machines. Lithography is the crucial production step that determines the performance of semiconductor chips. It is partly thanks to ASML’s machines that we have tablets, smartphones and other high-tech electronic products today. Since ASML’s start in 1984, Martin van den Brink, its current President and Chief Technology Officer, has played an important role in the development of optical lithography.

Award

To highlight the importance of system architecture, the Martin van den Brink Award was established in 2012 thanks to an initiative from DSPE, TNO, Brainport Industries, High Tech Systems Platform, Point-One and High Tech Campus Eindhoven. The first award was presented that same year to Erik Roopstra, system architect at ASML. In 2016, Jan van Eijk, former CTO of Mechatronics at Philips Applied Technologies and Emeritus Professor of Advanced Mechatronics at the Delft University of Technology (TU Delft), received the award. For the third edition of the award, DSPE, in collaboration with Brainport Industries, organised a gala dinner at the Evoluon in Eindhoven as part of the Dutch Technology Week. No less than 180 guests from high-tech companies and universities of technology attended the dinner and the award presentation on the evening of Thursday 7 June. Martin van den Brink, after whom the award was named, presented the award to Marco Mieland, M.Sc., for his crucial role in the development of e-beam lithography..



YOUR PRECISION PORTAL

Marco Wieland

Marco Wieland studied Applied Physics at TU Delft from 1993 to 1999 and performed his graduation assignment in the group of Prof. Pieter Kruit, professor in the optics of charged particles. After graduating in 2000, Wieland founded a company, Mapper Lithography, together with his fellow student Bert Jan Kampherbeek and Professor Kruit. When ideas for improvement of mask-based optical lithography did not reach a successful conclusion, they focused on maskless e-beam lithography. This alternative technique directly 'writes' structures on semiconductor wafers using tens of thousands of parallel electron beams. This makes the expensive optics and masks of optical lithography superfluous, but itself has completely different challenges, such as the super-fast control and magnetic shielding of the electron beams, in addition to known issues such as vibration isolation, advanced metrology and heat dissipation control. Mapper has now demonstrated nanometer accuracy for both wafer table positioning and electron beam control, and a first alpha machine is running in the clean room of the French LETI. For the commercialisation of the technique, the further increase of the wafer throughput and cost reduction are additional tasks.

As CTO, Wieland, together with COO Guido de Boer, is ultimately responsible for the architecture of the Mapper machine, the development roadmap of the company and the development of the various technical solutions. His contributions to this have been laid down in dozens of patents. In short, every reason for the judging panel to distinguish Marco Wieland on behalf of DSPE with the Martin van den Brink Award 2018. The judging panel consisted of Jos Benschop (ASML), Pieter Kappelhof (Hittech Group), Adrian Rankers (Mechatronics Academy), Hans Krikhaar (DSPE) and Martin van den Brink (ASML).

About DSPE

The Dutch Society for Precision Engineering (DSPE) has been the network for precision engineers in the Netherlands for over 60 years. DSPE wants to stimulate the sharing of knowledge and experience and highlight the importance of precision engineering and mechatronics for the Dutch high-tech industry. To this end, DSPE organises events, Special Interest Groups (about optics and opto-mechatronics, thermomechanics, etc.) and a Young Precision Network. DSPE also publishes the Mikroniek magazine and dedicates itself internationally to education in precision engineering. In order to stimulate young talent and honour extraordinary achievements, DSPE presents several awards, including the Martin van den Brink Award.

Note for press (not for publication)



For more information, please contact DSPE chair Hans Krikhaar, +31 6 - 51 37 87 98.

Please find attached a photo. For more photos of the award presentation, please contact Annemarie Schrauwen, info@dspe.nl.