

Press release

Aachen, April 23, 2026

Innovations from laser technology for the industry

Presentation of the Innovation Award Laser Technology 2026 in Aachen

The prestigious Innovation Award Laser Technology 2026, which comes with a price of 10.000 €, has been awarded to Dr. Tobias Dyck, Head of the LEAF Business Unit at 4JET microtech GmbH in Alsdorf. Presented by the Arbeitskreis Lasertechnik e.V. on April 22, 2026, in Aachen's historic Coronation Hall, the award recognizes Dr. Dyck and his team for their groundbreaking project: "LEAF Laser Riblets – Shark Skin for Greener Aviation." Chosen by a ten-member international jury from a highly competitive pool, their work stood out among three distinguished finalists. The ceremony welcomed approximately 350 industry leaders, researchers, and guests to celebrate this milestone in applied photonics.

The evening opened with an inspiring keynote by Dr. Lutz Aschke, President of the European Technology Platform Photonics21. He reflected on Europe's remarkable progress in photonics and laser technology, outlined a forward-looking vision for the sector, and emphasized that maintaining this momentum would require sustained strategic political support and targeted investment – a call that was very well received by the audience. His address set a thoughtful and optimistic tone for the ceremony, which was expertly moderated by journalist, broadcaster, and physicist Kristina zur Mühlen. With her confident manner and winning charm, she guided the audience through an unforgettable evening filled with appreciation and inspiration.

Awarded biennially, the Innovation Award Laser Technology honors manufacturers, industrial users, researchers, and developers who have successfully translated application-driven laser research into real-world industrial solutions. The prize is administered by the Arbeitskreis Lasertechnik e.V., a network of over 200 members dedicated to fostering collaboration, knowledge exchange, and technological advancement across the rapidly evolving laser sector.

The 2026 Prize winners and their projects are summarized as follows:

1st place:

„LEAF Laser Riblets – Shark Skin for Greener Aviation“

Team:

Dr. Tobias Dyck, 4JET microtech GmbH, Alsdorf, DE
Dr. Anne Michel, 4JET microtech GmbH, Alsdorf, DE
Daniel Bold, 4JET microtech GmbH, Alsdorf, DE
Maik von Ringleben, 4JET microtech GmbH, Alsdorf, DE
Mark Houben, 4JET microtech GmbH, Alsdorf, DE
Dr. Michiel Top, 4JET microtech GmbH, Alsdorf, DE
Romina Vilella, 4JET microtech GmbH, Alsdorf, DE
Tobias Köhler, 4JET microtech GmbH, Alsdorf, DE
Vera Petersen-Krauß, 4JET microtech GmbH, Alsdorf, DE

The award-winning project focuses on laser-based fabrication of riblet structures on surfaces. Inspired by shark skin, these microstructures reduce drag and improve aerodynamics. Using 4JET's Laser Enhanced Air Flow (LEAF) technology, riblets can now be incorporated directly into the paint layer of components over large areas for the first time. This process uses a high-power CO₂ laser system with interference technology that generates multiple microstructures simultaneously, making it significantly faster than previous methods.

This technology has great potential in aviation. Riblet structures on aircraft surfaces can reduce fuel consumption by up to three percent. This equates to savings of around 2.5 billion U.S. dollars per year and a reduction of almost ten million tons of CO₂ in long-haul passenger traffic. Furthermore, LEAF technology opens up new possibilities for more efficient wind turbines, ships, and high-speed trains because improved aerodynamics and hydrodynamics contribute to higher energy efficiency and lower emissions.

2nd place:

„Beyond Free-Space Beams: Pure Stability and Robust Fiber Delivery to Open New Frontiers for Ultrafast Lasers“

Team:

Gwenn Pallier, Cailabs, Rennes, FR
Dr. Jean-François Morizur, Rennes, FR
Dr. Clément Jacquard, Rennes, FR
Dr. Dmitry Nuzhdin, Rennes, FR
Pierre Sevellano, Rennes, FR
Adeline Orioux, Rennes, FR
Dr. Andreas Rudolf, PT Photonic Tools GmbH, Berlin, DE
Dr. Sebastian Eilzer, PT Photonic Tools GmbH, Berlin, DE
Paul Froemel, PT Photonic Tools GmbH, Berlin, DE

The PureBeam project addresses a key challenge in the industrial application of ultrashort-pulse lasers – beam guidance. Until now, this aspect of an ultrashort-pulse laser system has been complex and prone to failure. Although femtosecond lasers enable high-precision manufacturing processes, it is precisely because of this hurdle that their use in industrial applications has so far been limited.

CANUNDA-USP PureBeam by Cailabs offers an innovative solution by enabling stable coupling in hollow-core fibres and reliably ensuring and maintaining beam quality, even when the input beam is subject to interference. This makes manufacturing systems more robust and efficient and makes USP lasers easier to integrate.

This technology unlocks new fields of application and, for the first time, enables true industrial-scale mass production in sectors such as semiconductor manufacturing, consumer electronics, medical technology, and the automotive and aerospace industries. This represents a major breakthrough on the path to scalable, cost-effective use of ultra-short-pulse laser manufacturing.

3rd place:

“Laser Mass Transfer of MicroLED’s – A breakthrough to Commercialization Using a Holistic System Approach”

Team:

Dr. Oliver Haupt, Coherent LaserSystems GmbH & CO. KG, Göttingen, DE

Ralph Aschenbach, Coherent LaserSystems GmbH & CO. KG, Göttingen, DE

Gordon Arand, Coherent LaserSystems GmbH & CO. KG, Göttingen, DE

Andre Sill, Coherent LaserSystems GmbH & CO. KG, Göttingen, DE

Third place in 2026 goes to Coherent, a company based in Göttingen. The company is developing innovative laser mass transfer technology for manufacturing MicroLED displays. This technology addresses a key challenge facing the display industry: achieving cost-effective and scalable production. Although MicroLEDs have great potential for long-lasting, high-resolution displays, their widespread market introduction has been limited thus far due to high manufacturing costs and low yields.

Coherent’s integrated approach enables the ultra-fast, contactless transfer of Micro-LED chips as part of a holistic solution that combines fast, contactless Micro-LED laser transfer, a high-precision system architecture and a comprehensive software package – including AI functionality – to optimize transfer strategies and parameters from wafer to panel. The result is a significant increase in throughput and yield, whilst manufacturing costs are noticeably reduced.

This technology will open up new applications in the display industry, as well as in microelectronics and optical communications in the future. It will also help make MicroLED displays economically viable and scalable.

Jury

The 2026 jury consisted of Dr. Guido Bonati (Sill Optics GmbH, Wendelstein, DE), Christoph Franz (4D Photonics GmbH, Isernhagen, DE), Dr. Johanna Helm (FEV Europe GmbH, Aachen, DE), Dr. Willem Hoving, Eric Mottay (h-nu, Bordeaux, FR), Prof. Juan M. Pou Saracho (Universidade de Vigo, Vigo, ES), Prof. Barbara Previtali (Politecnico di Milano, Milan, IT), Dr. Pablo M. Romero (AIMEN, O Porriño, ES), Dr. Kira van der Straeten (DVS Technology AG, Dietzenbach, DE) and Dr. Sabrina Vogt (Saint-Gobain Research Germany, Herzogenrath, DE).

Prof. Stefan Kaieler (LZH e.V., Hannover, DE), Dr. Markus Kogel-Hollacher (Arbeitskreis Lasertechnik e.V., Aachen, DE), and Katharina Schulte (Arbeitskreis Lasertechnik e.V., Aachen, DE) were responsible for the organization.

Selection process and finalists

An international jury of personalities from industry and research compiles a shortlist of the best candidates. The award winner and the runners-up are then selected by the jury as outstanding finalists on the basis of their achievements and the published criteria. The winner receives prize money of €10,000 and is awarded the title of "AKL Fellow".

Further information:

- **about the Innovation Award and the finalists:** www.innovation-award-laser.org
Here you can also download photos of the award ceremony on April 22, 2026 in Aachen Town Hall as well as detailed descriptions of the finalists' innovations.
- **about the Arbeitskreis Lasertechnik AKL e.V.:** www.akl-ev.de
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- **about the AKL - International Laser Technology Congress (April 22-24, 2026):**
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Caption: from left to right: Dr. Claus Schnitzler, Ulrich Berners, Dr. Jochen Stollenwerk, Dr. Lutz Aschke, Gwenn Pallier, Dr. Tobias Dyck, Dr. Oliver Haupt, Kristina zur Mühlen, Dr. Markus Kogel-Hollacher