

PRESS RELEASE

SurFunction opens up a new dimension of sustainable surfaces through DLIP integration of fiber laser technologies

Saarbrücken, 19th May 2025 – SurFunction GmbH, an innovation leader in the field of laser-based surface structuring, is taking DLIP (Direct Laser Interference Patterning) technology to a new level with the modular ELIPSYS[®] platform. For the first time, the industrial integration of powerful and particularly cost-effective fiber lasers is possible. This globally significant innovation opens up disruptive possibilities in the field of functional, cost-effective, and environmentally friendly surface systems modeled on nature.

The modular key to broad industrialization

By incorporating cost-effective fiber laser technology, SurFunction's ELIPSYS[®] platform enables the fast, efficient, scalable, and inline production of a new generation of high-precision micro- and nanostructures for the first time. This combination not only offers a significant reduction in system and operating costs, but also significantly expands all areas of application in industrial practice. This opens up a wide range of new application opportunities and market potential, for example in medical technology, aviation, transportation, and the energy sector.

High flexibility in industrial production

The integration of fiber laser technologies now also allows the use of dynamic and robot-assisted DLIP systems – ideal for large-area applications, automated manufacturing environments, and flexible production processes. The possible applications are virtually limitless – from friction-optimized structures to ideal surface pretreatment. Existing DLIP systems can also be significantly increased in performance and more effectively integrated into existing production lines.



Diverse industrial applications

The new surface solutions based on the ELIPSYS[®] platform open up a virtually unlimited spectrum of industrial applications with sustainable added value.

Examples:

- Energy efficiency and friction optimization, e.g., for drive trains, pumps, or energy generation systems
- Wear reduction in tools and sliding components
- Biocompatible textures, such as for implants, catheters, and other medical devices
- PFAS-free non-stick structures for packaging, household products, or technical applications
- Antibacterial and hydrophobic surfaces for hygiene products, electronic applications, or vehicle interiors, among others
- Anti-reflective or adhesion-controlling textures in electronics, optics, or printing technology

Synergies through complementary technologies

A further advantage of the now expanded ELIPSYS[®] platform is the ability to specifically combine DLIP structures with conventional or alternative surface finishes. This creates hybrid solutions with previously unattained performance, e.g., in the form of structured layers, selective adhesion modulation, or smart surfaces.

Dr. Dominik Britz, co-founder and Managing Director of SurFunction: "SurFunction sees this innovation as a revolutionary step toward establishing a new generation of industrial surface platforms modeled on nature. Our ELIPSYS[®] platform, with its now possible fiber laser connection, not only redefines the future of surface processing but also marks a decisive milestone on the path to particularly high-performance, cost-effective, industrially highly scalable, and at the same time responsible surface solutions."

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Global implementation prepared

The ELIPSYS[®] platform, which enables a new generation of DLIP surface functionalization on an industrial scale, is comprehensively patented and has already been successfully validated in industrial practice. Collaboration discussions – for example, with established fiber laser manufacturers – are currently underway, and further pilot applications are being prepared. Together with leading industrial partners, the goal is to set new standards in functional surfaces, scale them internationally, and broadly integrate them into industrial series processes.

The future of sustainable surfaces begins

ELIPSYS[®] provides a platform technology that can transform today's industrial surface treatment: from chemical to physical, from additive to structural, from static to smart. SurFunction aims to make a substantial contribution to the ecological design of future industrial value creation.

Interested customers and partners can obtain further information about the technology and live demonstrations directly from SurFunction.



Upcoming trade fair: Connectors User Congress / 26th - 28th May / Würzburg

If you have any questions, please contact:

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The background of DLIP and ELIPSYS®:

Surface structures play a crucial role in the performance of almost all technical components, as research over generations has clearly shown. Nature itself offers fascinating examples of the efficiency of surface structures: The non-stick properties of the lotus plant or the iridescent color effects on butterfly wings are only possible through complex micro- and nanostructures. However, industrially replicating these natural phenomena has so far been a significant challenge due to a lack of technologies that allow for cost-effective production.

Fundamental solutions to these problems have been found through groundbreaking research in recent decades and the invention of "Direct Laser Interference Patterning" (DLIP) by Prof. Dr. Frank Mücklich and Prof. Dr. Andrés Lasagni. DLIP has laid the foundation for revolutionizing the way we design surfaces at the micro- and nanoscale level. It utilizes the principle of interference, comparable to the interaction of colliding water waves. This analogy can be applied to light rays that are split and then superimposed in such a way that they interfere at the material surface. The resulting structures, previously only found in nature, are highly efficient and precise.

The consistent further development of DLIP technology by SurFunction GmbH has opened the door to broad industrial application. ELIPSYS[®] (Extended Laser Interference Patterning System), the most advanced DLIP generation, enables the

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particularly fast and economical creation of complex surface structures that improve the properties of a wide variety of products (e.g., non-stick, antibacterial, energy-efficient, low-friction, highly electrically conductive, or counterfeit-proof). DLIP and ELIPSYS[®] thus mark a turning point in the manufacturing and functionalization of material surfaces for a wide variety of industries.

About SurFunction GmbH (www.surfunction.com):

SurFunction is a leading systems provider in the field of deep/green tech with a focus on surface modification. The company, headquartered in Saarbrücken, uses a wide range of laser-based processes based on award-winning and patented interference technologies (DLIP). This enables cost-effective, cross-scale surface structures, modeled on living nature, to be created in record time. Surfaces can thus be equipped with new, high-performance, and particularly environmentally friendly properties.

True to the motto "nature knows best," SurFunction unlocks innovation potential and provides companies from numerous industries with significant competitive advantages. SurFunction pursues the goal of improving its customers' products or processes and making an active contribution to resource conservation. To achieve this, it offers comprehensive systems expertise – from surface functionalization as a service to the integration of complete systems into industrial production environments.