MICROMACHINING EXCELLENCE

3D-MICROMAC AG

3D MICROMAC

ABOUT 3D-MICROMAC

OUR MISSION: SETTING WORLDWIDE STANDARDS IN LASER MICROMACHINING

3D-Micromac is the leading specialist in laser micromachining. Our experts develop processes and laser systems at the highest technological level. Our technologies and systems are successfully utilized in high-tech industries and by innovators such as the photovoltaic and semiconductor industries, microdiagnostics and failure analysis, display and smart glass production, electronics manufacturing, medical technology, and ophthalmic optics. We aim to satisfy customer demands even on the most complex projects completely.

3D-Micromac adheres to high-performance and future-oriented processes at high production efficiency. Our technologies have set international standards for true innovation. Since we place great importance on continually expanding our know-how, we diligently keep up with the latest research. We combine recent results with our customers' demands to realize them in practice.

» Our international customers place great value on future-oriented and user-friendly processes. Our solutions help them increase production efficiency and lower cost.

OUR CORE COMPETENCIES

STANDARD SYSTEM OR SPECIAL SOLUTION?
WE TAILOR OUR SYSTEM TO YOUR NEEDS

At 3D-Micromac, we provide our customers with high-quality, reliable, and user-friendly systems for all laser micromachining applications and branch-specific solutions. Our products help increase production efficiency, optimize processes, and lower costs in various technology areas.

Our expertise and engineering competency allows us to stand alongside our customers as a reliable partner in technology and process development. More than twenty years of expertise are the basis of our innovations. Long-time experience in excimer- and ultrashort pulse laser systems and roll-to-roll laser machining of flexible substrates are the cornerstones of our success.

We support our customers across the entire product life cycle, from process development and selection of a suitable machine design to commissioning and comprehensive servicing. As cooperative and trusting partners, we swiftly and reliably meet our customers' requirements.

» What is our motivation? The ever-new technical challenges that make us grow.

OUR MARKETS

PRODUCTION SOLUTIONS FOR INNOVATORS AND GROWTH MARKETS

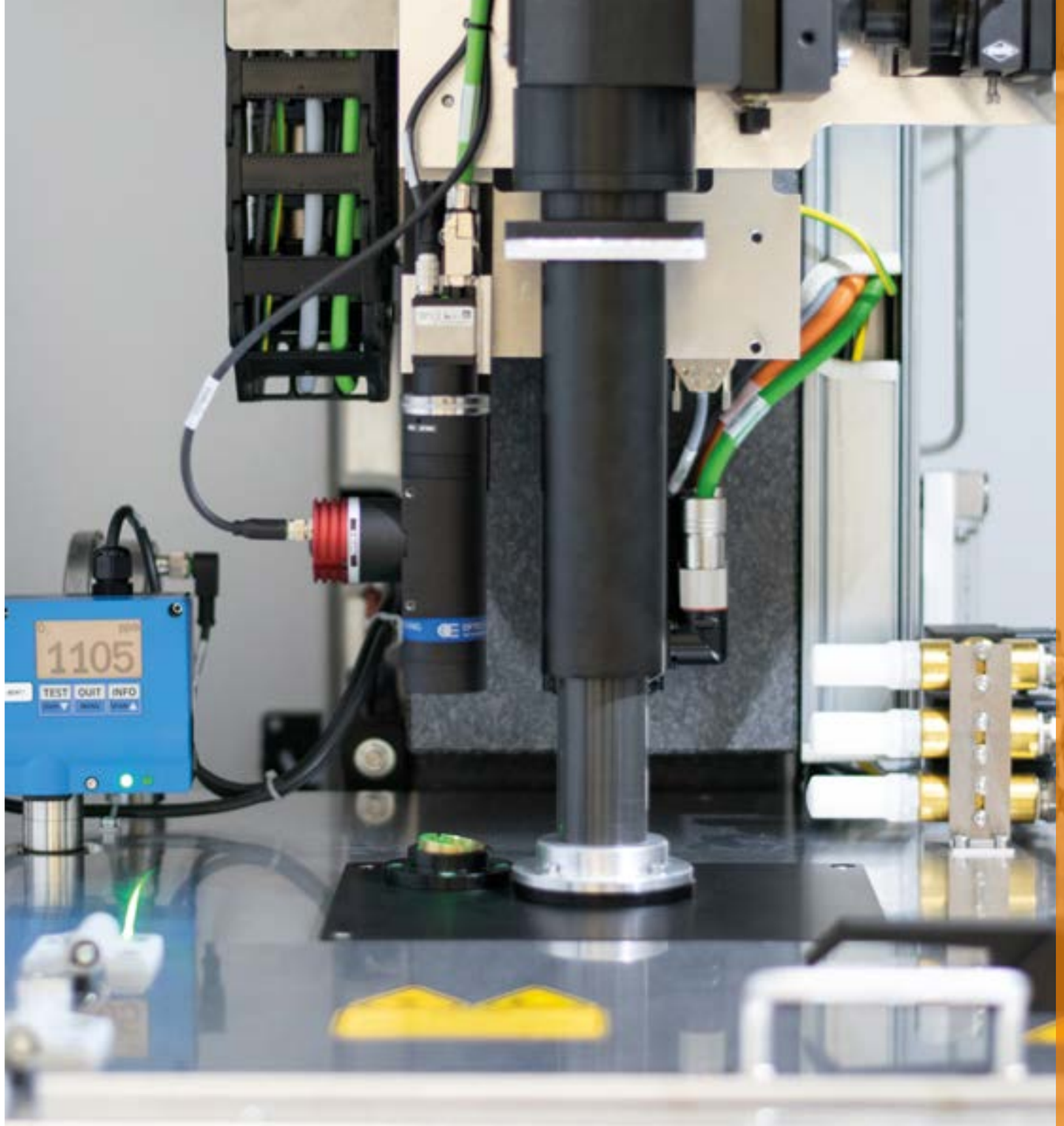
Innovative laser processes are revolutionizing industrial manufacturing worldwide. They are characterized by extraordinary reliability, productivity, precision, and flexibility. Our laser processes are the ones that make efficient series production of new and innovative components and products possible.

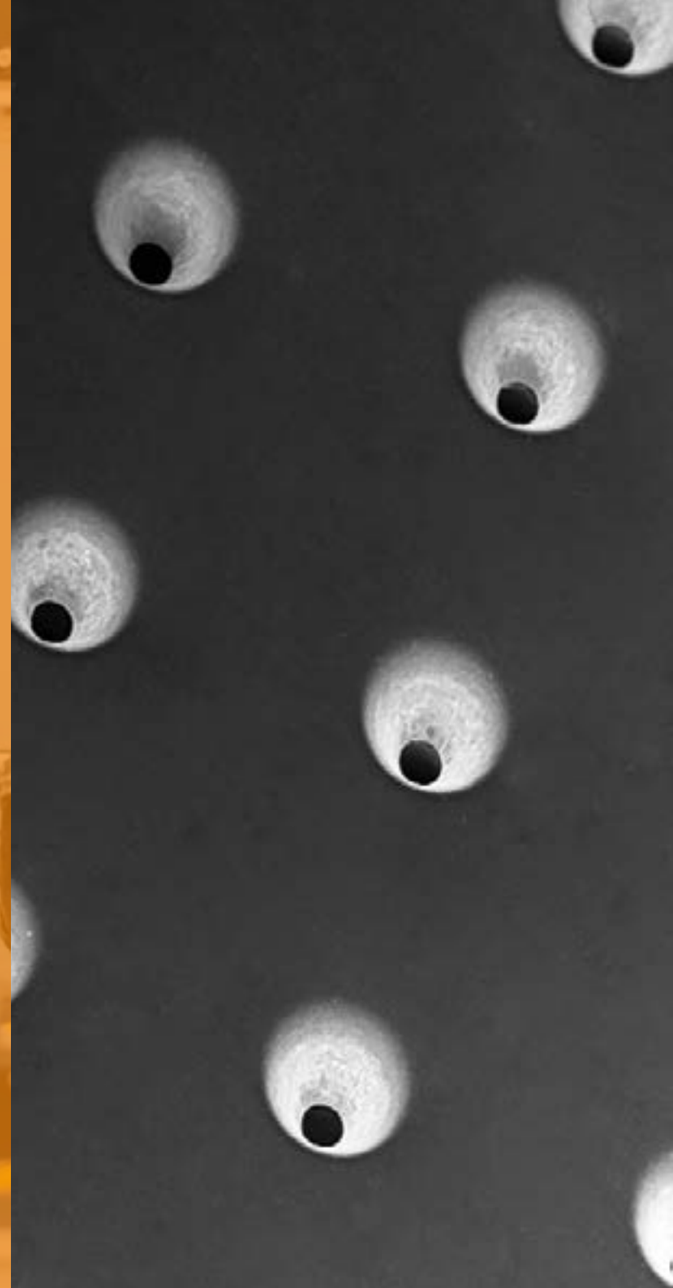
» As trusting and cooperative partners, our experts provide technological solutions from the initial idea to series production.

CUSTOMIZED
LASER MICROMACHINING SYSTEMS

We focus on laser micromachining of virtually any material using short pulse and ultrashort pulse lasers and short-wave lasers (UV). Because of our many years of experience in laser technology with solutions for production and industry-related research, our machines achieve the best processing results in the µ and sub-µ range. The line-up of laser systems ranges from drills for producing nozzles, micro-welding machines for making implants, machines for microstructuring and cutting, and roll-to-roll systems for manufacturing flexible electronic devices up to complex DUV laser systems.

Our qualified experts will gladly help you find the perfect solution for your tasks. Being developer and manufacturer at the same time, we can tailor all applications and systems exactly to suit your needs.





SEMICONDUCTOR INDUSTRY AND SENSOR MANUFACTURING

Cost, quality, and throughput are significant factors in achieving successful manufacturing in the semiconductor industry. With the growing adoption of new types of wafer substrates, thinner wafers, and scaling to smaller dimensions and larger size substrates, laser micromachining is evolving as a highly-requested technology that ensures and enhances semiconductor device yields.

Furthermore, traditional scaling of feature sizes in microelectronics is becoming increasingly cost-prohibitive to add more functionality to devices within a smaller footprint. As a result, chip manufacturers are looking for new methods to increase device performance. That has created a greater need for processing surface layers without affecting buried structures and selective exposure of functional areas on the device – challenges ideally suited for selective laser processing.

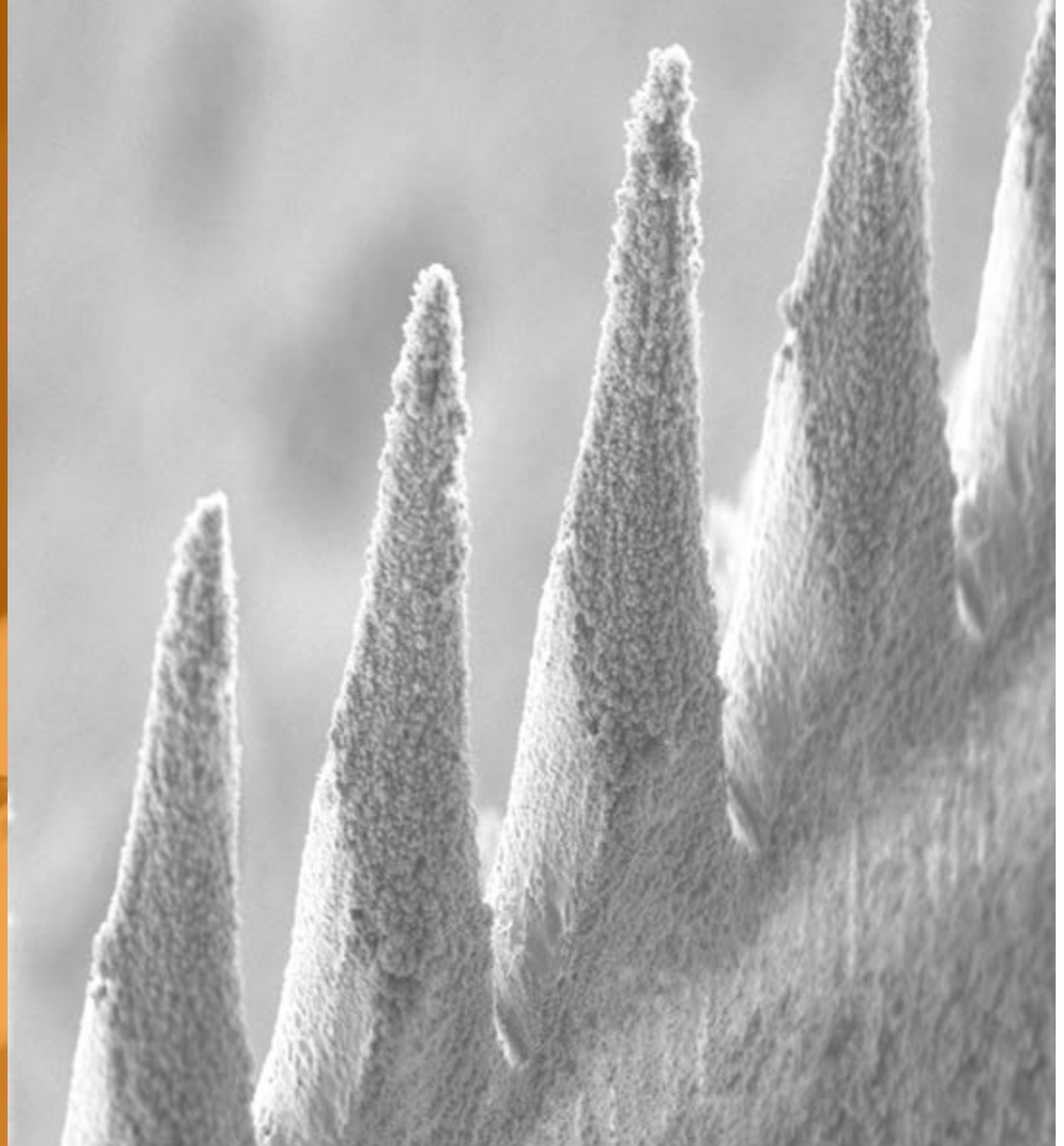
3D-Micromac addresses these critical needs with its innovative laser systems, such as microPRO™ XS OCF laser annealing system for ohmic contact formation and microVEGA™ xMR laser annealing system for monolithic magnetic sensor formation.

DISPLAY AND SMART GLASS

The display market is subject to constant change and innovations – from LCD to OLED to MiniLED. MicroLEDs (µLEDs) are a promising technology with great potential. Furthermore, the increasing use of VR (virtual reality) and AR (augmented reality) glasses in the industry and private sphere also drives demand for high-resolution MicroLED displays. 3D-Micromac is ready for tomorrow's requirements.

As the market's first manufacturer of a laser-based MicroLED transfer module for mass production, we are the ideal partner for MicroLED production processes with many years of experience in the field of laser technologies. Besides Laser-Induced Forward Transfer (LIFT), we provide Laser Lift-Off (LLO) systems for separating the finished chips from the growth wafer as well as trimming processes for MicroLEDs – individually or in combination. For augmented reality, 3D-Micromac provides laser-based cutting solutions for separating high-refractive index wafers.

Furthermore, 3D-Micromac offers unique processing technologies and innovative process management for the cost-effective and high-quality processing of wafers and large glass substrates. That includes laser cutting by producing filaments and modifications, laser drilling, layer-by-layer ablation, and manufacturing 3D structures. All processes meet the requirements of industrial customers and guarantee clean, gentle processing with excellent processing quality.



MICRODIAGNOSTICS AND FAILURE ANALYSIS

Microstructure diagnostics and failure analyses are pivotal for improving functional materials and sophisticated electronic components. Laser-based specimen preparation techniques are relatively new in material science and failure analysis. Nevertheless, ultrashort pulses and optimized processing routes are now speeding up microstructure diagnostics and failure analysis in various fields. They are unlocking access to deeply buried structures and large-area preparation at micrometer precision. At the same time, they avoid cross-contamination and free up time for using other tools within the analysis chain more efficiently.

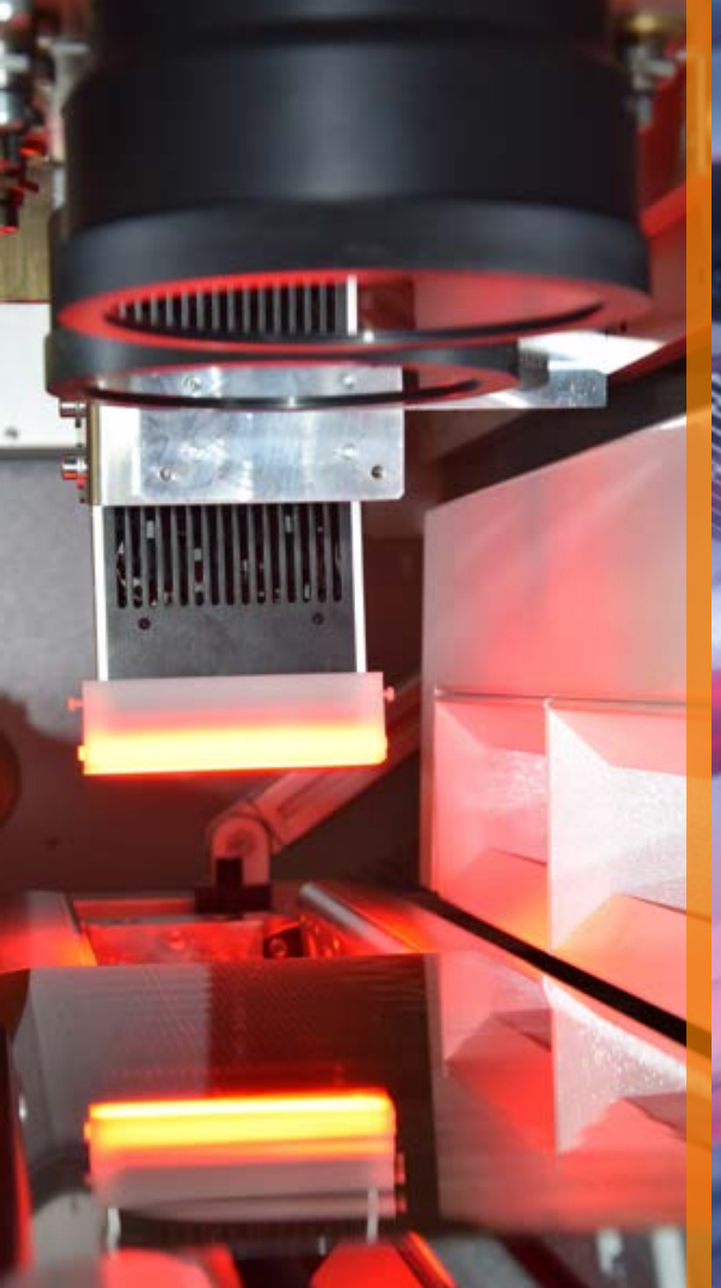
With its microPREP™ systems, 3D-Micromac offers a laser-based high-throughput preparation solution for semiconductor and materials failure analysis that complements TEM, SEM/FIB, APT, X-CT, and micromechanical testing processes in equal measure.

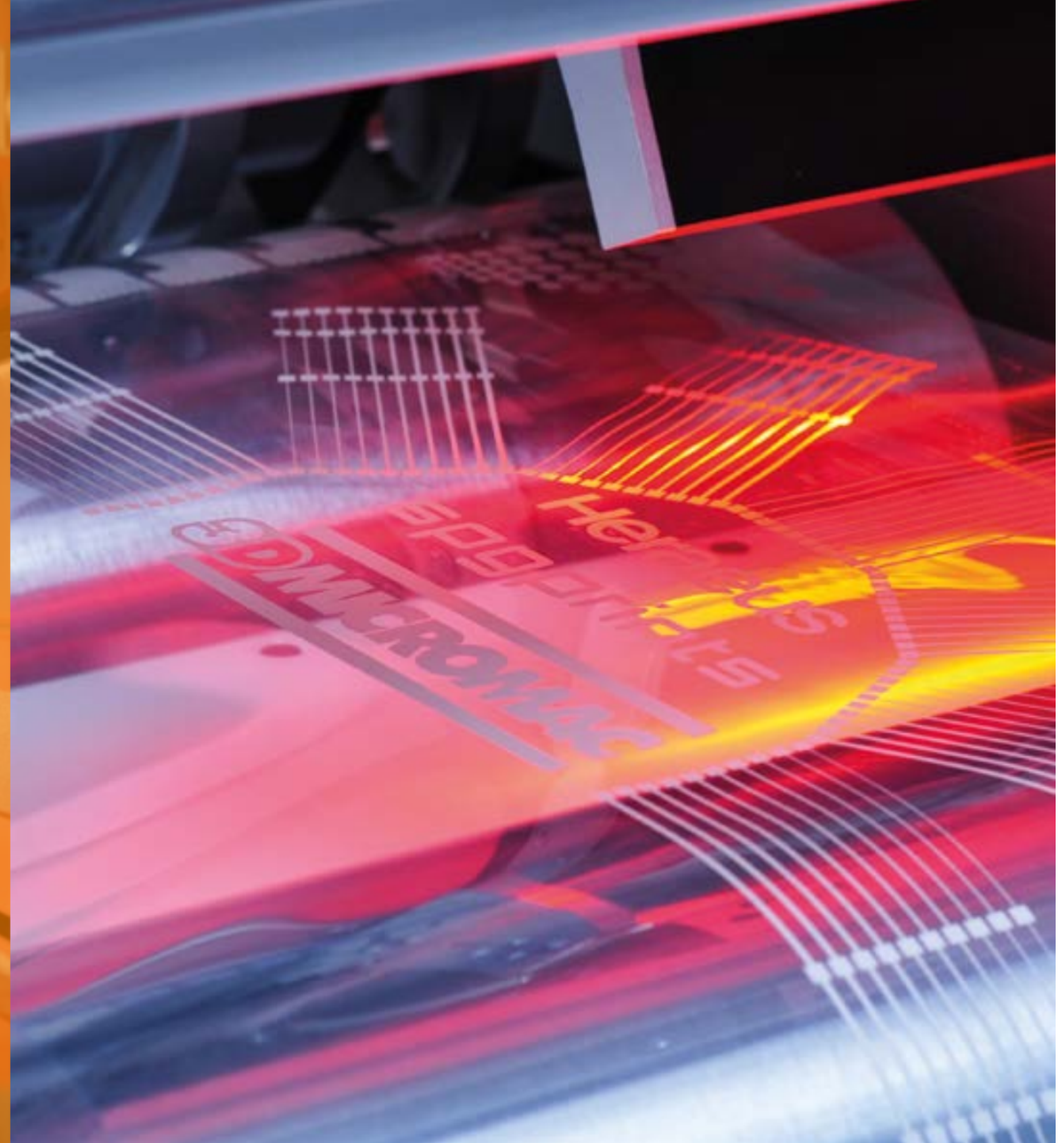
PHOTOVOLTAIC INDUSTRY

In photovoltaics, all production solutions must meet cell and module manufacturers' demands for achieving maximum throughput rates and yield while diminishing cell and module manufacturing costs. For years, 3D-Micromac has been working on innovative laser processes and solutions that optimize manufacturing processes, productivity, and effectiveness of silicon solar cells, thus easing the constant cost pressure that continuously challenge solar cell manufacturers.

Our industry-approved microCELL™ laser systems have revolutionized cell and module production by cutting solar cells into half- and shingled cells using the damage-free Thermal Laser Separation (TLS) process.

In addition, with the microFLEX® PV systems, 3D-Micromac offers powerful roll-to-roll processing for producing flexible thin-film solar cells.





ROLL-TO-ROLL SYSTEMS

Thin, lightweight, and flexible - these features enable applications in numerous areas, such as consumer electronics, medical devices, photovoltaics, and lighting. The steadily growing demand for flexible devices requires new production processes for mass production.

The combination of laser micromachining and roll-to-roll processing guarantees high quality and maximum throughput for producing flexible, lightweight, and large substrates.

For more than 15 years, 3D-Micromac has been developing and manufacturing its microFLEX® systems for roll-to-roll laser machining. This reliable and sophisticated machine technology can reduce the cost of producing flexible devices such as laser-cut RFID antennas, flexible thin-film solar cells, sensors, and many more.

Furthermore, 3D-Micromac offers the development and optimization of roll-to-roll laser processes and machines from the first idea to maturity for serial production in close cooperation with the customer. All stages of the process and technology development are conducted at 3D-Micromac's application lab: from preliminary tests and feasibility studies to developing (functional) prototypes and contract manufacturing of the final devices.

OUR STRENGTH: RELIABLE AND FAST SERVICES FOR ALL CUSTOMERS' NEEDS

Application and Process Development

In our application center, we model every step of the process and technology development, offering immediate support to our customers from pre-testing feasibility to functional prototype development. We provide advice during the development and optimization process and, together with our customers, find the most economical production solution.

Contract Manufacturing

In our laser contract manufacturing department, we offer customer-specific development of laser processes as well as manufacturing service for components in small and large series. Production efficiency and cost awareness are the top priority. We are happy to offer you frame agreements for your part manufacturing with us.

Machine Service

Our qualified service team is available around the clock and worldwide, offering fast and reliable service. Along with delivery, assembly, and commissioning, we offer user training as well as custom-tailored maintenance and service contracts. Reliability and competence are our strengths. We remain the point of contact for our customers across the entire system life cycle.

Good service means being in good hands - especially regarding production systems running 24/7. At 3D-Micromac, we provide this peace of mind.

» We support our customers throughout the entire product life cycle: From process development and selection of a suitable machine platform to comprehensive servicing.

OUR SERVICE

3D-MICROMAC IN A NUTSHELL

Key Facts

» Founded in 2002
» ~ 200 employees
» ~ 1000 laser systems sold

Core Competencies

» Laser micromachining systems
» Utilization of ultrashort pulse laser sources and excimer laser sources
» Roll-to-roll processing of flexible substrates

Facilities

» Headquarters in Chemnitz, Germany
» Customer application center and contract manufacturing
» Production area of 4,450 m²
» Worldwide sales and service network

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FACTS AND FIGURES

3D MICROMAC

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