Equity Story LPKF

TOMORROW‘S TECHNOLOGY TODAY

November 2024 | Dr. Klaus Fiedler, CEO |

GLOBAL PLAYER

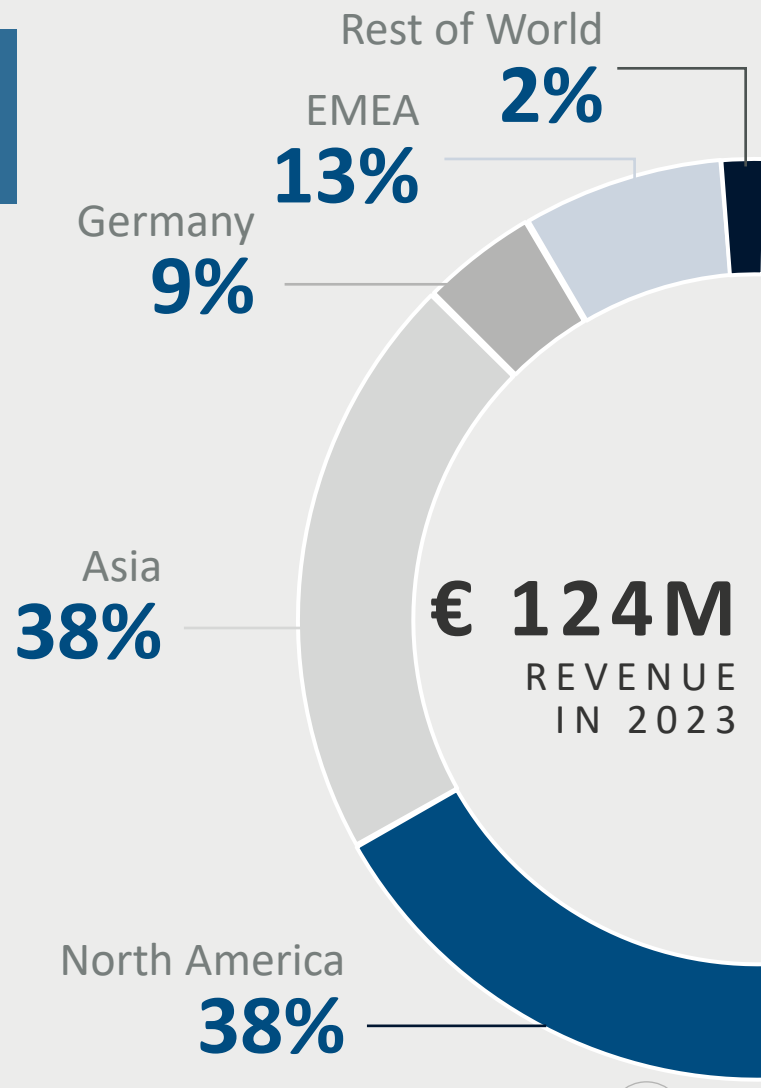
LPKF is a globally active technology company based in Garbsen, Germany. Our expertise is in the fields of precision laser processing, microsystems technology, application know-how, and software together with training and professional support. Investing in the development of innovative processes provides our customers with competitive advantages and open up new growth markets.

>45 years of experience

>750 dedicated employees

>10% of revenue invested in R&D

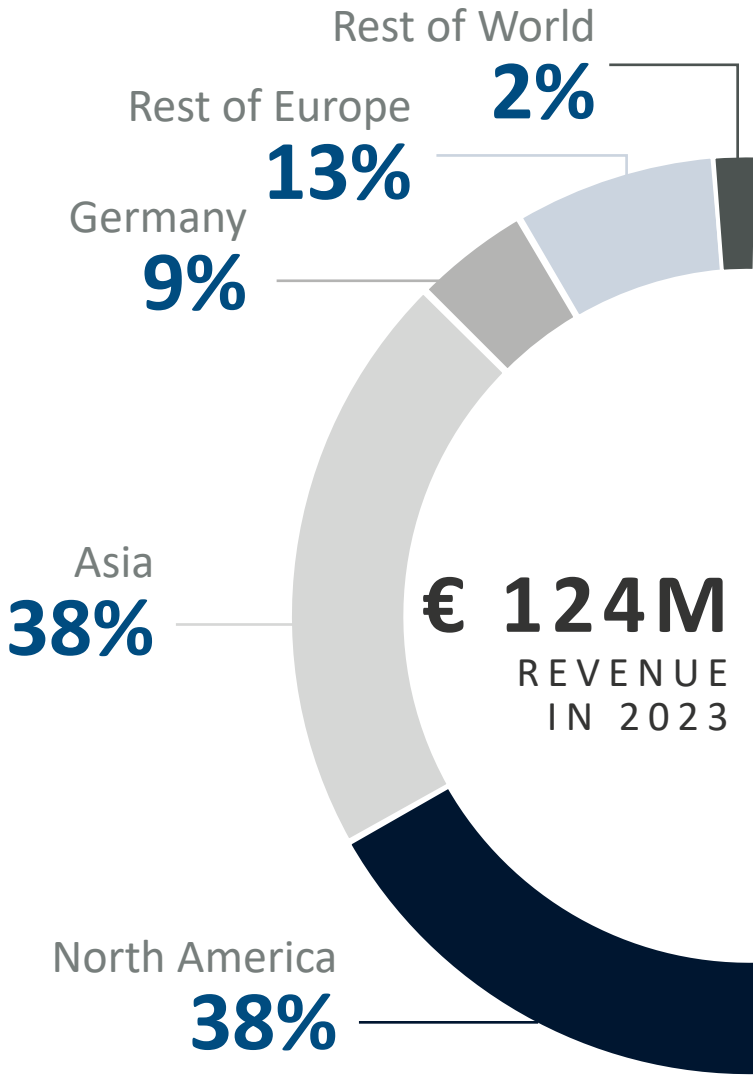
Active in **>70 countries**



KEY TAKEAWAYS FROM FIRST 9 MONTHS 2024

Solid business performance despite challenging environment

- Megatrend AI and transformation in the semiconductor market drive strong demand for LIDE products
- Ongoing reluctance to invest in the automotive market leads to slight adjustment of guidance for the full year
- Concrete measures to reduce fixed costs and optimize overall efficiency have been identified and are being implemented
- Revenue with EUR 82.1 million slightly up year-on-year, Q3 revenue and earnings in line with forecast*
- We anticipate order entry in the Electronics and Solar segment to improve in the coming months
- We do not expect any short-term improvements in the Welding segment because of the weakness of the automotive sector.

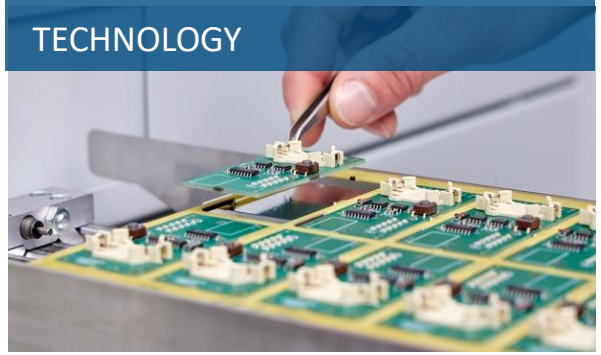


*LPKF's guidance for Q3 2024: Revenue between EUR 26 to 31 million, adjusted EBIT between EUR -3 to 2 million.

OUR CORE BUSINESS & NEW MARKET INITIATIVES

ELECTRONICS

DEPANELING & SURFACE-MOUNT TECHNOLOGY



DEVELOPMENT

RAPID PCB PROTOTYPING

WELDING

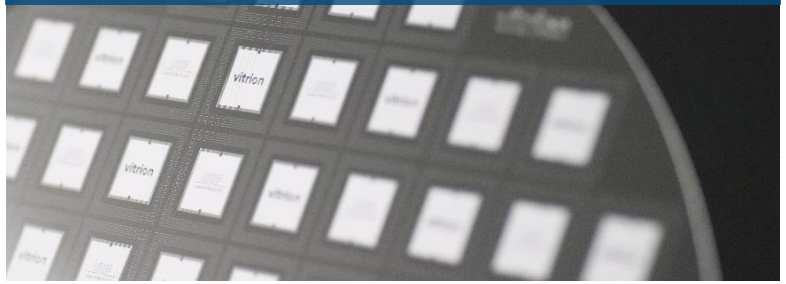
PLASTIC WELDING

SOLAR

THIN-FILM LASER PROCESSING

ELECTRONICS/SEMICONDUCTOR

LIDE IN ADVANCED PACKAGING

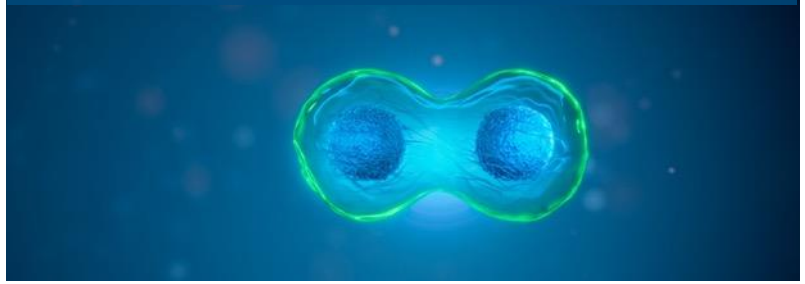


ELECTRONICS/DISPLAY

LIDE IN GLASS MICRO PROCESSING

DEVELOPMENT/BIOTECH

ARRALYZE FOR SINGLE CELL BASED RESEARCH



GROWTH STRATEGY: CONSISTENT APPROACH ACROSS BUSINESS UNITS

GROW THE CORE

Superior customer benefit through sustained technology advantage	→ **gain share**
Focus on growing application fields	→ **Increase addressable market**
Active product portfolio management to avoid commoditization	→ **sustain margins**

Serviceable Addr. Market
EUR 350 million

Ø Annual Growth Rate
8%

EXPAND INTO NEW MARKETS

Leverage core competencies to enter new markets with disruptive solutions
Focus on scalable business opportunities
Proactive approach to secure core IP and first mover advantage

Serviceable Addr. Market
EUR 1.4 billion

Ø Annual Growth Rate
17%

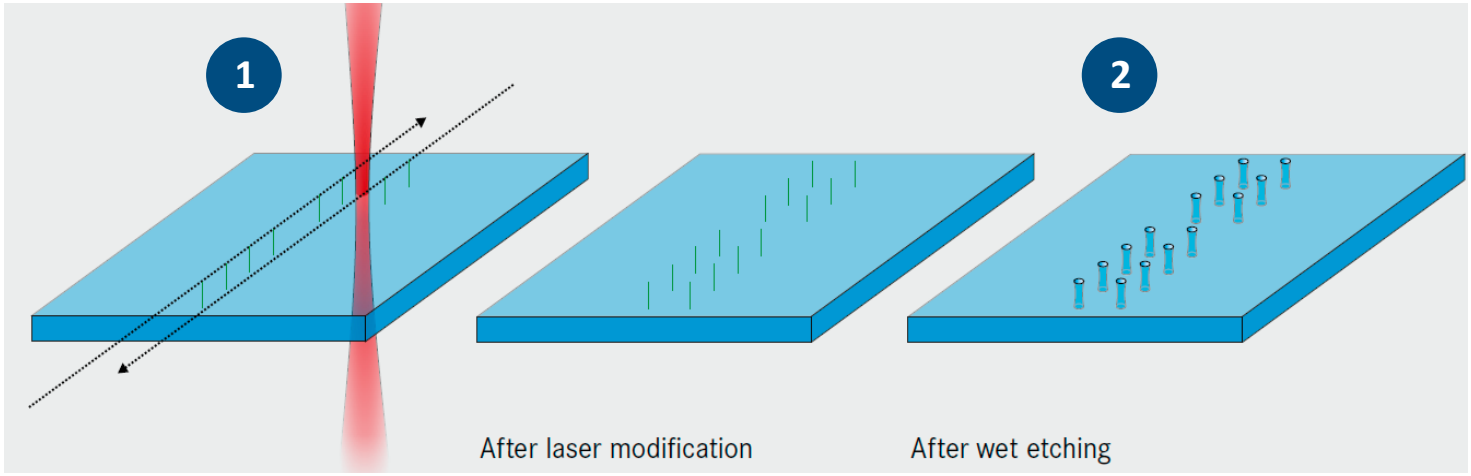
Deep Dive

LIDE – TECHNOLOGY

LASER INDUCED DEEP ETCHING: HOW IT WORKS

LASER PROCESSING

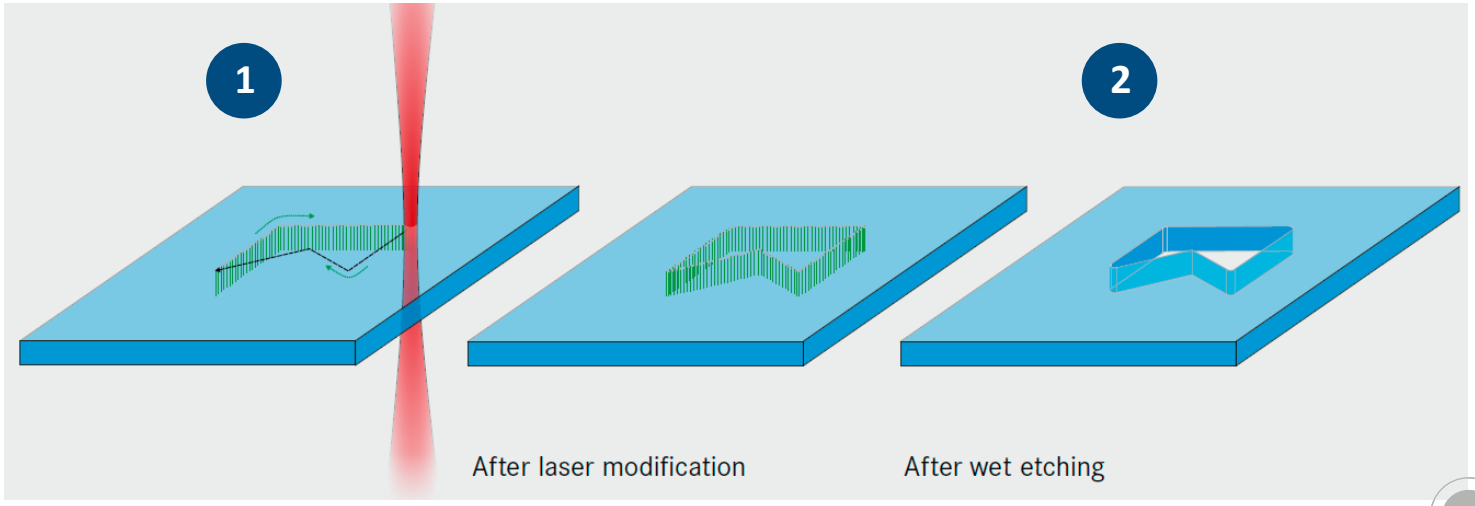
- In the **first step**, glass of **up to 1mm** can be structured by a **single laser pulse**. Pulse positioning accuracy is >5µm Cp >1,33.



Micro-Drilling

ETCHING

- In the **second step**, the laser structured substrates are wet etched.
- The laser-modified regions display a much higher etch rate than the bulk material.
- The result is the formation of hourglass shaped holes with a tunable taper.



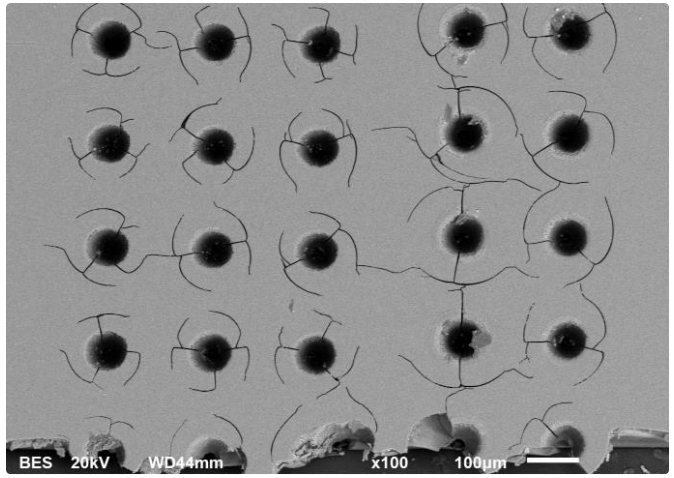
Micro-

LIDE IS SUPERIOR TO OTHER GLASS PROCESSING METHODS

CONVENTIONAL LASER GLASS PROCESSING

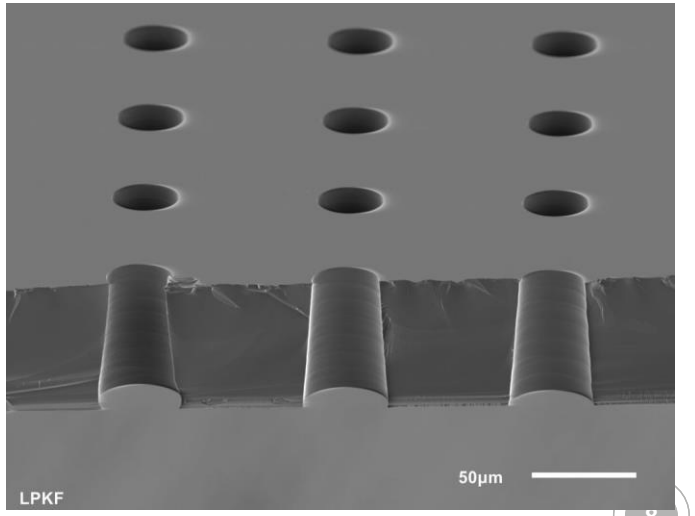
Conventional glass processing limits the application of glass due to:

- This (Micro) cracks
- Chipping
- Thermally induced stress
- Low accuracy
- Low reproducibility and yield
- Debris and vapors
- Limited aspect-ratios



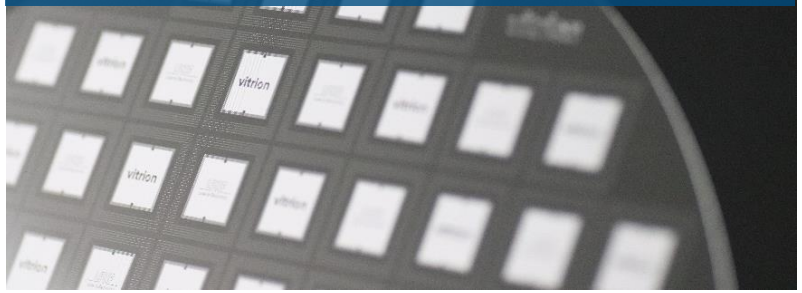
LIDE: MICROCRACK-FREE PROCESS

LIDE generates highly accurate and defect free microstructures in glass in a cost-effective manner.

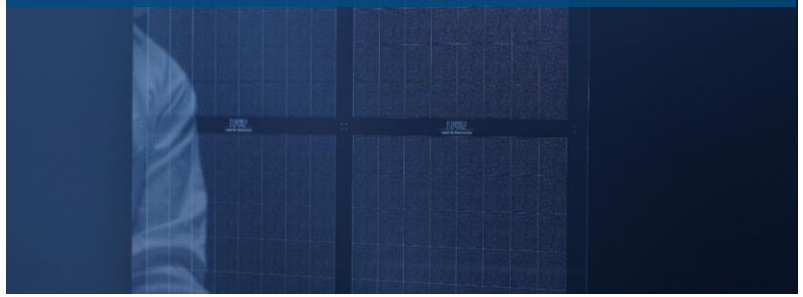


LIDE HAS A WIDE RANGE OF APPLICATIONS

WAFER LEVEL PACKAGING



PANEL-LEVEL PACKAGING



DISPLAY

MICROFLUIDICS

CHANGE STARTS FROM THE TOP

intel

"After a decade of research, Intel has achieved industry-leading glass substrates for advanced packaging. We look forward to delivering these cutting-edge technologies that will benefit our key players and foundry customers for decades to come."

–Babak Sabi, Intel senior vice president and general manager of Assembly and Test Development

tsmc

Tech News: TSMC Advances into Panel-Level Advanced Packaging Technology

SMYG LIMITED
1.061 Follower:innen

21. Juni 2024

In response to the burgeoning demand for advanced packaging technologies driven by AI applications, TSMC is gearing up to introduce a breakthrough in its packaging capabilities. Reports indicate TSMC's plans to adopt Panel Level Fan-Out (PLFO) packaging, promising output capacities several times higher than current advanced packaging technologies.

SAMSUNG

Tech Industry

Samsung accelerates race against Intel in glass chip packaging development — glass substrates boost performance

News By Anton Shilov published May 8, 2024

Mass production reportedly starts in 2026.

Samsung accelerates race against Intel in glass chip packaging development — glass substrates boost performance | Tom's Hardware (tomshardware.com)

Tech Industry > Manufacturing

Intel's Glass Substrates Advancements Could Revolutionize Multi-Chiplet Packages

News By Anton Shilov published September 18, 2023

Intel reaffirms plans to use glass substrates for multi-chiplet packages, later this decade.

AMD

AMD is reportedly set to use glass substrates for CPUs between 2025 and 2026

News By Anton Shilov published July 11, 2024

Glass substrates offer significant benefits over conventional organic substrates.

BUSINESSKOREA Since 1983

tsmc

TSMC said to adopt larger glass substrates for FOPLP

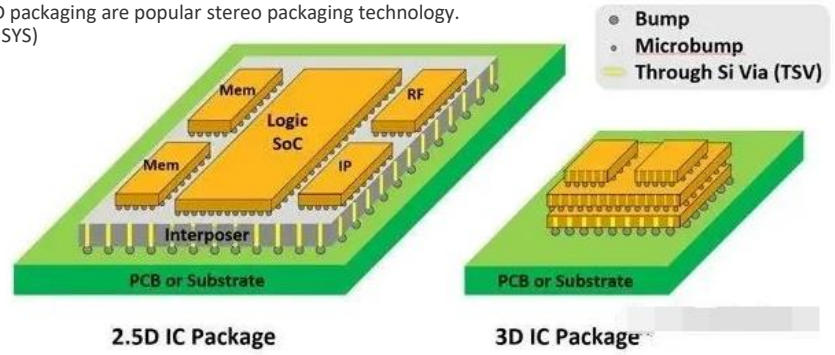
Rebecca Kuo, Tainan; Rodney Chan, DIGITIMES Asia | Wednesday 24 July 2024 | 0

ADVANCED PACKAGING: HETEROGENIOUS INTEGRATION AND GLASS

SEVERAL MONOLITHIC CHIPS ARE PACKED INTO ONE

- More performance (computing power of chip is combined with new components for high communication speeds)
- lower consumption
- reduced costs (less large/expensive silicon elements)
- Supply chain becomes more resilient (combination of different chip manufacturers and their strengths)

2.5D and 3D packaging are popular stereo packaging technology.
(Source: ANSYS)



BENEFITS OF GLASS SUBSTRATES AND INTERPOSERS:

- Superior mechanical, physical, and optical properties
- Enables larger sizes and complex shapes
- Better scaling and higher yields
- Lower power usage

CHALLENGES OF GLASS:

- Brittle and difficult to handle
- Requires new equipment and process investments
- Integration with existing manufacturing methods requires defect free glass processing

BENEFITS OF THE LIDE-PROCESS

- **Precision and Quality:** Creates high-quality microstructures with high aspect ratios (1:10 to 1:50) in glass without defects.
- **Speed and Efficiency**: Fast and suitable for high-volume production.
- **Cost-Effectiveness:** Reduces production costs with high precision and rapid processing.
- **Versatility**: Processes various glass thicknesses (from 100µm to 1.1mm) for multiple applications.
- **Industry leading quality**: Preserves glass properties by avoiding any defects in the glass.
- **More then TGVs**: Creates TGVs as well as open and closed cavity structures and free combination of all.
- **High Yield:** Improves yield rates, reducing waste and increasing efficiency.
- **Mature technology**: LIDE has a proven track record in serial production.

COMPETITION

LIDE IP: Protected by several patents in all markets

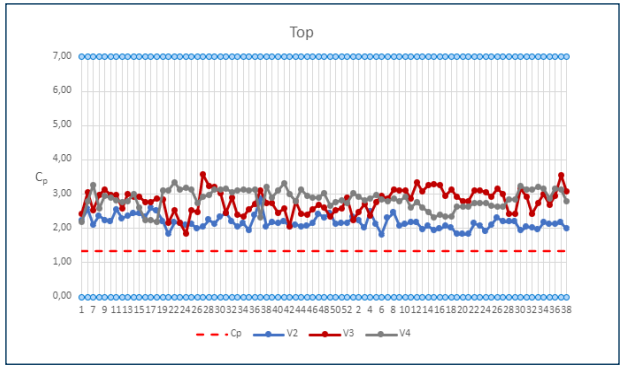
Glass Manufacturers:
Companies like Schott, Corning, AGC and NEG actively develop and offer glass for semiconductor applications, but don’t offer processing equipment.

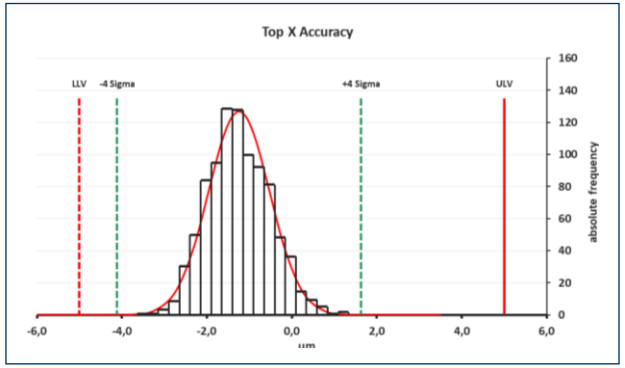
Mechanical Engineering Companies: Companies with laser expertise (e.g., Han's Laser China, E&R Taiwan, Philoptics Korea) have developed laser processes.

- **Laser Process Issues:** This process is less advanced than LIDE, causing cracks and instability.
- Still in **development phase**, no track record, no experience in volume production.

LPKF LIDE PROCESS EQUIPMENT: STABILITY BY MATURITY

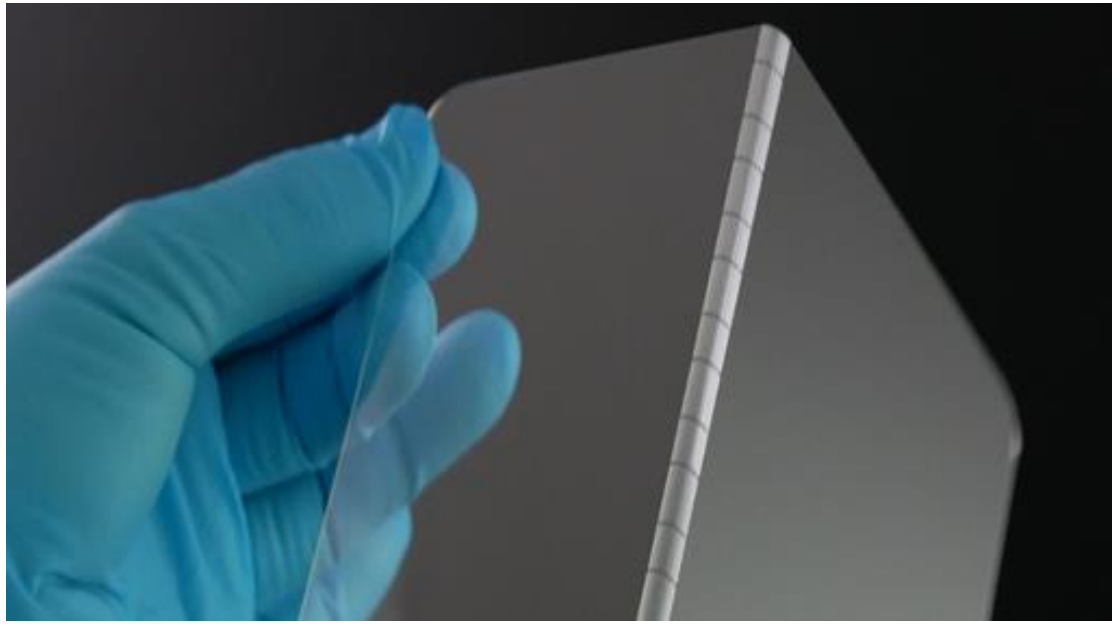
- Long term stability of process and equipment data available
- LPKF operates equipment since 2019 in Vitrion fab
- Double digit number of installed tools at customers worldwide
- SEMI compatibility (S2, S8)
- Cleanroom compatibility



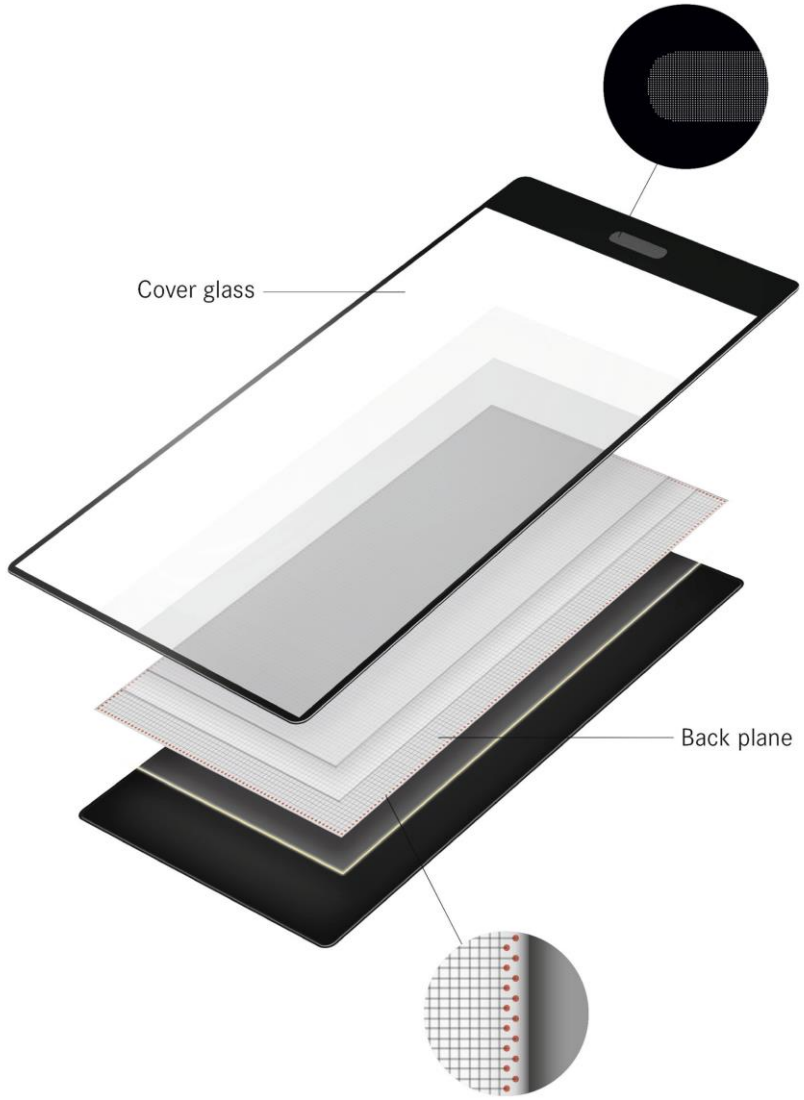


Unmatched maturity of LIDE process and process equipment proven by statistics.

FOLDABLE DISPLAYS: BACKPLANE



- LIDE equipment in operation for production of display backplanes
- JDA with major mobile display manufacturer



LPKF Laser & Electronics SE

BUSINESS SEGMENTS

GROUP SEGMENT: ELECTRONICS

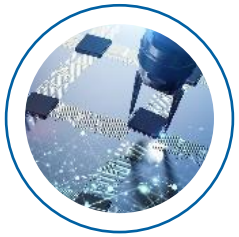
LOCATION

GARBSEN
GERMANY

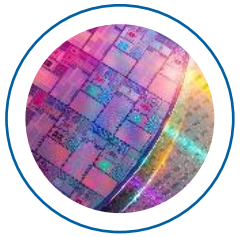
EMPLOYEES

153
WORLDWIDE

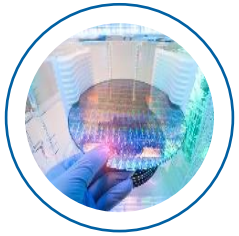
MAIN MARKETS



SMT



ADVANCED PACKAGING



SEMICONDUCTOR

DISPLAY

MARKET OFFERING

SMT TECHNOLOGY, DEPANNELING & MICRO PRECISION PARTS

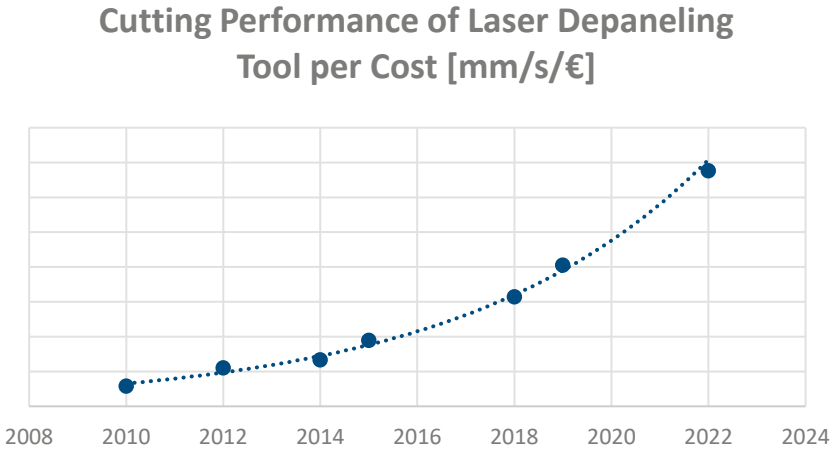
LASER INDUCED DEEP ETCHING (LIDE)

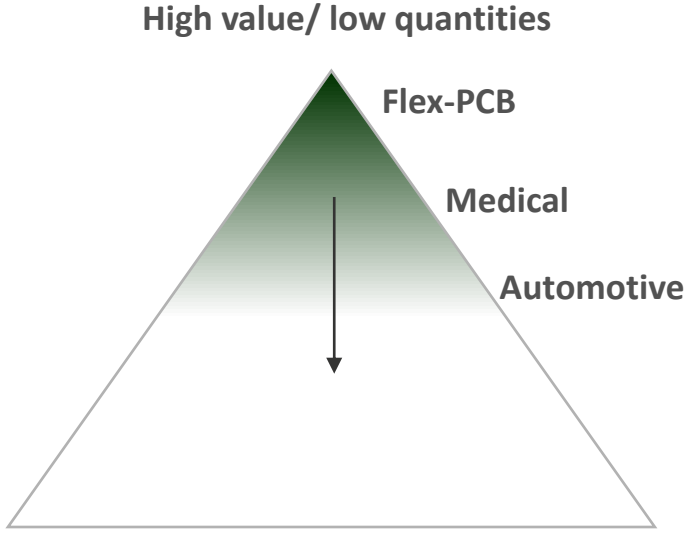
SERVICE & CONTACT MANUFACTURING

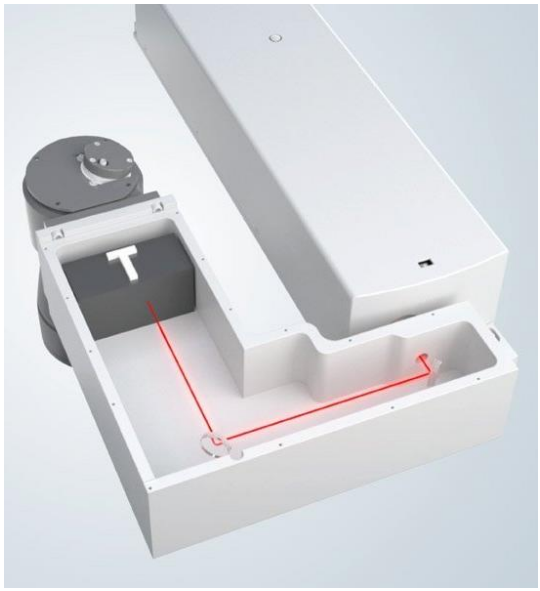
LaserMicronics
MICROMACHINING SERVICES
vitrion

DEPANELING GAINS MARKET SHARE

LPKF'S SOLUTION TO THE LASER POWER DILEMMA







- Approach: keeping quality at higher laser powers by high-speed beam deflection

LPKF Tensor

- Supplementary component of our beam delivery system
- Purpose: efficient and clean application of all of the available laser power
- Patented technology based on LPKF LIDE technology
- Up to 70% faster than competitors in the same performance class

GROUP SEGMENT: DEVELOPMENT

LOCATION

GARBSEN
GERMANY

NAKLO
SLOVENIA

EMPLOYEES

147
WORLDWIDE

MAIN MARKETS

ELECTRONICS

RF & MICROWAVE

MEDICAL

LIFE SCIENCE

MARKET OFFERING

EQUIPMENT FOR RAPID PROTOTYPING OF CIRCUIT BOARDS

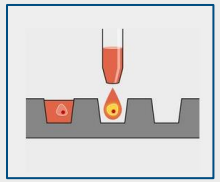
SOLUTIONS FOR SINGLE CELL ANALYSIS

WHAT IS ARRALYZE?

What we have …

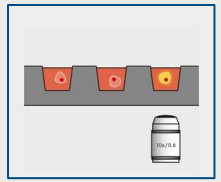
… is a Digital Cell Biology Platform for Discovery, Development and Delivering of Cell-Based Products.

… enables to screen huge cell populations, identify the cells of interest and isolate them.



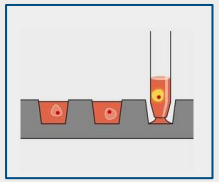
Dispensing Single Cells

- Single cell experiments
- High well density
- Small volume
- Customizable arrays



Live Cell Imaging

- 3 fluorescent channels
- Brightfield
- Phase contrast
- Functional assays
- Prove monoclonality



Cell Extraction

Isolate leads alive

APPLICATIONS

Cell Therapy	Monoclonal Antibodies	Cell Line Development	Synthetic Biology	more to come …

CUSTOMERS

Academics

Biotech Companies

Pharmaceutical Companies

GROUP SEGMENT: SOLAR

LOCATION

SUHL
GERMANY

EMPLOYEES

130
WORLDWIDE

MAIN MARKETS

THIN FILM SOLAR

TRANSPORTATION & FLAT GLASS

ARCHITECTURE

MARKET OFFERING

LASER PROCESSING OF THIN-FILM MODULES

LASER TRANSFER PRINTING (LTP)

GROUP SEGMENT: WELDING

LOCATION

FÜRTH
GERMANY

EMPLOYEES

147
WORLDWIDE

MAIN MARKETS

AUTOMOTIVE

MEDICAL

CONSUMER

OTHERS

MARKET OFFERING

APPLICATION CENTER
& CONSULTING

SERVICE & CONTACT
MANUFACTURING

LaserMicronics
MICROMACHINING SERVICES

MACHINE
AND TOOLS

ATA

Laser Welding of Absorbing to Absorbing Plastic Parts

All the advantages of laser plastic welding – such as process stability, cleanliness, localized energy input, and fast cycle times – are now achievable for bonding two laser-absorbing materials.

LPKF's ATA technology expands the range of laser-weldable parts beyond current limitations.

This innovation enables successful laser welding of complex 3D geometries, a broader spectrum of materials, various colors and properties.

Q3 Financial Report 2024

GUIDANCE & OUTLOOK

November 2024 |

2024 GUIDANCE AND MID-TERM ASPIRATION

Actuals 2023

Revenue

EUR 124,3 million

EBIT-margin

3.0%

Adjusted EBIT-margin*

3.5%

Guidance FY 2024

Revenue

EUR 125 – 130 million

(previously: EUR 130 – 135 million)

Adjusted EBIT-margin*

3.5 – 6.5%

(previously: 4 – 7%)

Mid-Term Aspiration

Core Business

- Medium to high single-digit growth for core business

New Technologies

- New technologies like LIDE and ARRALYZE can together contribute low triple-digit millions in revenue

EBIT-margin

- EBIT margin to reach attractive double-digit level

*Adjusted EBIT is EBIT adjusted for restructuring and severance costs and changes in the long-term incentive (LTI) due to fluctuations in the performance factor or the share price. LPKF expects these costs to amount to 0.5 - 1.5% of revenue in the 2024 financial year.

LPKF Laser & Electronics SE

THANK YOU!

LPKF Laser & Electronics SE

Q&A

Q3 Financial Report 2024

FINANCIALS

November 2024 |

KEY GROUP FIGURES 9 MONTHS 2024

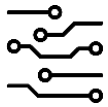
in Mio. EUR	9 Months | 2024	9 Months | 2023	Δ
Revenue	82.5	80.9	2%
EBIT	-6.7	-4.6	-46%
EBIT margin (%)	-8.1	-5.6	
Adjusted EBIT	-5.6	-4.6	-22%
Adjusted EBIT margin (%)	-6.8	-5.6	-21%
Incoming orders	84.1	94.0	-11%
Earnings per Share (EUR)	-0.35	-0.22	-59%
Free Cashflow	-1.7	-13.6	88%
	As of 09/30/2024	As of 09/30/2023	
Orders on hand	61.2	76.2	-20%
Employees (total number)	780	754	3%

Sales, profit, cash and orders

- YTD Sales slightly above 2023
- EBIT down 2.1m €, thereof ca. 1.1m operating margin and € 1m€ Consulting/Restructuring
- First cost reduction effects visible in September 24, main effect expected in 25
- HC increase mainly insourcing service Asia
- Order intake in Q3 weaker due to Welding/ Automotive, other BUs similar as in Q3 23

REVENUE AND EBIT BY SEGMENT

	Revenue			EBIT		
in Mio. EUR	**9 Months 2024**	9 Months 2023	Δ	**9 Months 2024**	9 Months 2023	Δ
Electronics	19.2	19.9	-3.5%	-5.6	-4.2	-33%
Development	17.6	20.2	-12.9%	-1.5	0.8	-288%
Welding	13.1	14.5	-9.7%	-3.8	-2.2	-73%
Solar	32.6	26.3	24.0%	5.3	1.0	430%
Gesamt	**82.5**	80.9	2.0%	**-5.6**	-4.6	-22%



ELECTRONICS

Improved OI in Q3, continuing deliveries as planned

LIDE continues well, many deliveries in Q4

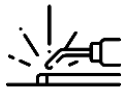
Additional cost in Semiconductor/LIDE, mostly project based

DEVELOPMENT

Demand recovery as expected, YTD suffering from weak H1

ARRALYZE under operational verification in several application fields

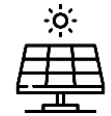
Investment in ARRALYZE continues to affect EBIT



WELDING

Slow market, competitive environment with some margin pressure.

Cost reduction measures started to be effective



SOLAR

Solid performance & deliveries

Improved profitability due to higher sales and improved margins.

FREE CASHFLOW

in Mio. EUR	9 Months | 2024	9 Months | 2023
Net Working Capital	35.5	33.7
Δ Working Capital	1.8	-6.2
Net cash used in / generated by operating activities	3.3	-7.7
Net cash used in investing activities	-5.0	-5.9
Free cashflow	-1.7	-13.6
Net cash position as per 09/30/2024	-3.7	-2.7

Free Cash Flow

Net Working Capital

- Still high NWC level due production for Q4 and Solar H125, improved collections Q3 especially in Solar as expected
- Mid term target continues to be NWC 10 – 15% of annual sales

Net Cash currently negative due to temporarily high working capital level – solid balance sheet

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