

PVA  TePla

CAPITAL MARKETS DAY

LONDON | SEPTEMBER 2, 2025

TODAY'S SPEAKERS



Jalin Ketter
CEO



Carl Markus Groß
CFO



Dr. Jan Pfeiffer
Vice President
Research & Development



Dr. Peter Czurratis
Vice President
Metrology



Dr. Udo Broich
Vice President
Material Solutions

09.00-09.15 | INTRODUCTION & OVERVIEW

09.15-10.00 | STRATEGY

10.00-10.30 | COFFEE BREAK

10.30-11.30 | MARKETS

11.30-12.00 | FINANCIALS

12.00-12.45 | Q&A

12.45-14.00 | GET TOGETHER & LUNCH



AGENDA

COMPANY OVERVIEW

PVA OTEPIA

INTRODUCING: PVA TODAY

A GLOBAL PROVIDER OF HIGH-TECH SOLUTIONS FOR MATERIALS INSPECTION AND PRODUCTION



TWO SEGMENTS WITH STRONG SYNERGIES

- Transformation from a specialist for crystal growing systems to a **technology partner for high-performance materials and metrology inspection solutions**
- We have **streamlined our product lines** and identified **cross-selling opportunities**
- In **Metrology**, we offer leading measuring instruments for quality control and failure analysis in high-volume production
- In **Material Solutions**, we provide technologies for creating and refining complex materials



NEW GLOBAL SALES AND SERVICE APPROACH

- We focus on scaling our business activities globally
- The expansion of our international sales and service capabilities and new product showrooms allow us to **actively identify and address new markets and customers** for our product portfolio
- We are implementing **24/7 support structures** for the metrology business, particularly in Asia and North America



CENTRALIZED R&D APPROACH

- The Technology Hub bundles global R&D activities and capabilities
- Identifies and commercializes new materials and technologies, providing our customers with **comprehensive solutions for complex processes**

OUR END MARKETS

DEMAND FOR HIGH-TECH SOLUTIONS ACROSS INDUSTRIES KEEPS RISING

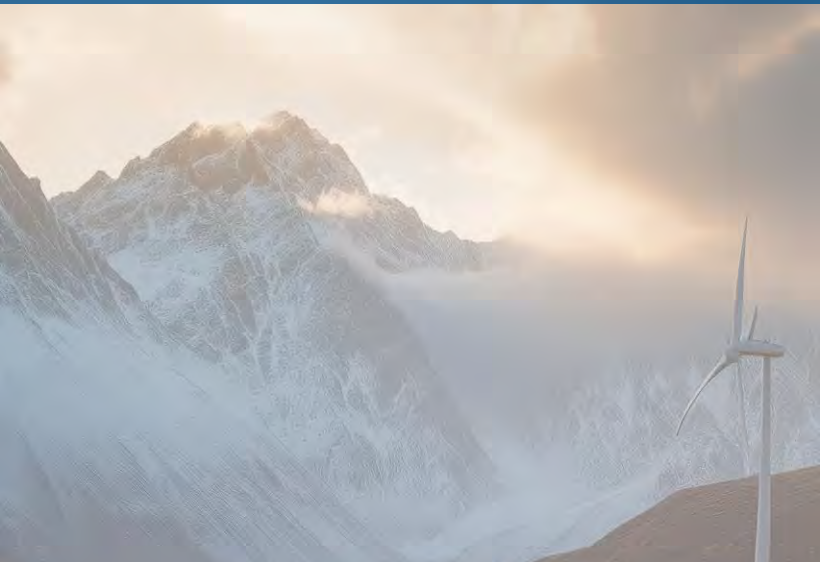
SEMICONDUCTOR



Generative AI, Machine Learning, Cloud Computing and 5G Networks drive demand for high-tech components.

- **Reliable and fast metrology solutions**
- **Synthesis for Silicon and compound semiconductors**

ENERGY



For renewable energy to be viable, Battery Energy Storage Systems and high voltage electronics are essential.

- **Powder synthesis for battery anodes**
- **Synthesis systems for compound semiconductors**
- **Joining of central components for the energy transition**


AEROSPACE & DEFENSE



Both the defense sector and civil aviation have become increasingly sophisticated. High-tech materials and manufacturing are key.

- **Compound semiconductors**
- **Lightweight high-performance materials**

AUTOMOTIVE



Modern cars and electric vehicles in particular rely on a plethora of sensors and high-voltage components.

- **Powder synthesis for battery anodes**
- **Synthesis systems for compound semiconductors**
- **Joining of central components for the energy transition**

METROLOGY

LEADING TECHNOLOGIES FOR INSPECTION AND QUALITY CONTROL

ACOUSTIC



Non-destructively detecting cavities, voids, bubbles, inclusions, and delaminations using ultrasound, primarily in the semiconductor industry.

- **SCANNING ACOUSTIC MICROSCOPY (SAM)**

OPTICAL



Non-destructively identifying defects and characterizing thin-film properties in semiconductor wafers.

- **SCANNING INFRARED DEPOLARIZATION (SIRD)**
- **HYPERSPECTRAL VISION**
- **ELLIPSOMETRY**

CHEMICAL



Identifying contaminations and conduct trace elements analysis in semiconductor wafers (destructive).

- **VAPOR PHASE DECOMPOSITION (VPD)**

MATERIAL SOLUTIONS

GENERATING AND PROCESSING HIGH-TECH MATERIALS AND COMPONENTS

SYNTHESIS



Creating new materials by transforming solid, liquid, or vapor sources into solids with tailored properties.

- CRYSTAL GROWING
- CHEMICAL VAPOR DEPOSITION
- CHEMICAL VAPOR INFILTRATION
- SINTERING
- POWDER SYNTHESIS

JOINING



Combining solid materials to create complex parts tailored for specific performance needs.

- DIFFUSION BONDING
- HIGH-TEMPERATURE VACUUM BRAZING

REFINING



Adjusting material properties for specific uses via heat treatment, without changing its shape or basic composition.

- PURIFICATION
- HEAT TREATMENT
- DEGASSING

SURFACE TREATMENT



Modifying surfaces to enable further treatments or enhance properties like wear or corrosion resistance.

- PASSIVATION
- ACTIVATION
- CLEANING / STRIPPING
- PLASMA NITRIDING

A blue-tinted photograph of a business meeting. In the foreground, a hand in a suit sleeve holds a white pen, pointing towards a tablet. The tablet displays various data visualizations, including a bar chart, a line graph, and two pie charts. Another hand is visible on the right, also pointing at the tablet. The background is blurred, showing other people in business attire. The overall scene conveys a professional and analytical atmosphere.

STRATEGY

STRATEGIC CORNERSTONES

TRANSFORMING THE GROUP FOR SUSTAINABLE GROWTH

- Gain market share in key growth industries such as advanced semiconductors
- Grow into more balanced revenue contributions from both segments
- Improve margins via product mix and scalability

SEGMENTS GROWTH

REGIONAL FOCUS

- Focus on individual growth markets in Europe, Asia, and North America
- Expand sales and service infrastructure to address new markets and unlock recurring revenues

- Make targeted investments in organization and production
- Support growth through targeted M&A activities and strategic partnerships in both Metrology and Material Solutions

STRATEGIC INVESTMENTS

INNOVATION

- Drive new processes and materials through the Technology Hub and leverage synergies between technology lines

METROLOGY

GAINING MARKET SHARE, SCALING EFFICIENTLY, EXPANDING PRODUCT PORTFOLIO

ACOUSTIC METHODS | GROWTH POTENTIAL: +++



- Focus on the semiconductor industry, particularly in Asia and North America
- Significantly increase market share by introducing new technologies, targeting growth drivers such as Packaging
- Secure technological leadership through continuous development of existing technologies
- Scale cleanroom production capacity
- Implement 24/7 support infrastructure in Asia and North America

OPTICAL METHODS | GROWTH POTENTIAL: ++



- Focus on the semiconductor industry
- Expand activities from pure frontend-related applications to backend and packaging
- Follow R&D roadmap to enhance throughput, scale existing products, and qualify technologies for new materials
- Expand product portfolio with technologies that provide strong growth possibilities

CHEMICAL METHODS | GROWTH POTENTIAL: +



- Focus on the semiconductor industry
- Follow R&D roadmap to further develop existing technologies with a focus on throughput
- Extend new applications for existing technologies that require high accuracy

METROLOGY PORTFOLIO DEVELOPMENT

SUPPORTING THE DEVELOPMENT OF THE METROLOGY OF THE FUTURE THROUGH PARTNERSHIPS AND TARGETED M&A

ACOUSTIC

Full vertical integration of **desconpro engineering**

- Strengthens manufacturing capacities for fully automated metrology systems
- Secures important automation expertise
- Builds on years of successful cooperation
- Prerequisite for scaling metrology production

OPTICAL

Strategic partnership with **SENTECH Instruments**

- Expands product portfolio to include metrology systems for layer thickness measurement
- Taps into an existing volume market within the semiconductor industry
- Joint development, production and sales exclusively through PVA

Acquisition of **DIVE imaging systems**, now renamed into "**PVA Vision**"

- Expands product portfolio to include optical microscopy through DIVE's hyperspectral vision technology, supplemented by AI
- Development of new markets within and beyond the semiconductor industry

NEW METHODS

Expansion of metrology portfolio with patented **X-ray technology** (currently being developed within the new PVA Vision)

MATERIAL SOLUTIONS

ADDRESSING NEW MARKETS, EXPANDING REGIONAL FOOTPRINT, INCREASING AFTER-SALES

SYNTHESIS | GROWTH POTENTIAL: ++



- Focus on aerospace & defense, energy, and automotive industries
- Leverage technological know-how for new, high-performance materials, e.g. battery material solutions
- Expand regional footprint in North America and Asia
- Increase recurring revenue streams from after-sales

JOINING | GROWTH POTENTIAL: ++



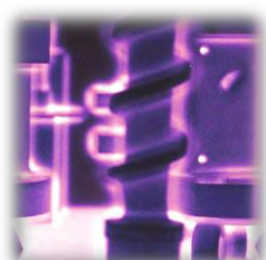
- Focus on energy and aerospace & defense industries
- Leverage technological know-how for complex and high-quality joining components
- Expand regional footprint in North America and Asia
- Increase recurring revenue streams from after-sales

REFINING | GROWTH POTENTIAL: +



- Focus on semiconductor and energy industries
- Focus on high-purity graphites
- Increase regional footprint in North America and Asia
- Increase recurring revenue streams from after-sales

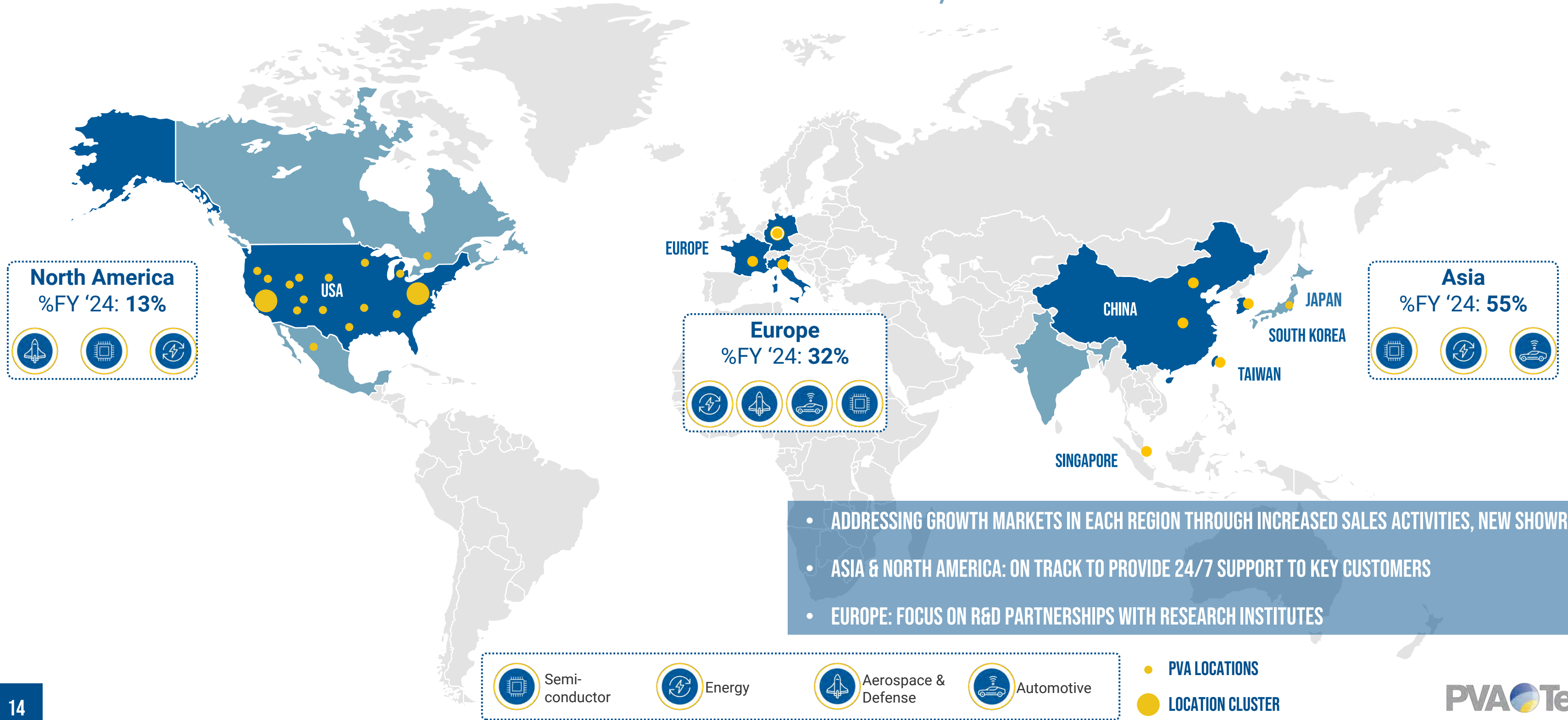
SURFACE TREATMENT | GROWTH POTENTIAL: +



- Focus on semiconductor industry
- Expand product portfolio into semi backend and Advanced Packaging
- Reorganize plasma business (portfolio cleanup) and follow R&D roadmap to further develop existing technologies
- Centralize production, focus on key sellers

REGIONAL FOCUS

ADDRESSING NEW CUSTOMERS AND GROWTH MARKETS IN NORTH AMERICA, EUROPE, AND ASIA TO FURTHER DIVERSIFY GLOBAL REVENUE CONTRIBUTIONS, WITH OVERWEIGHT ON ASIA



STRATEGIC INVESTMENTS

PREPARING THE ORGANIZATION FOR SUSTAINABLE GROWTH

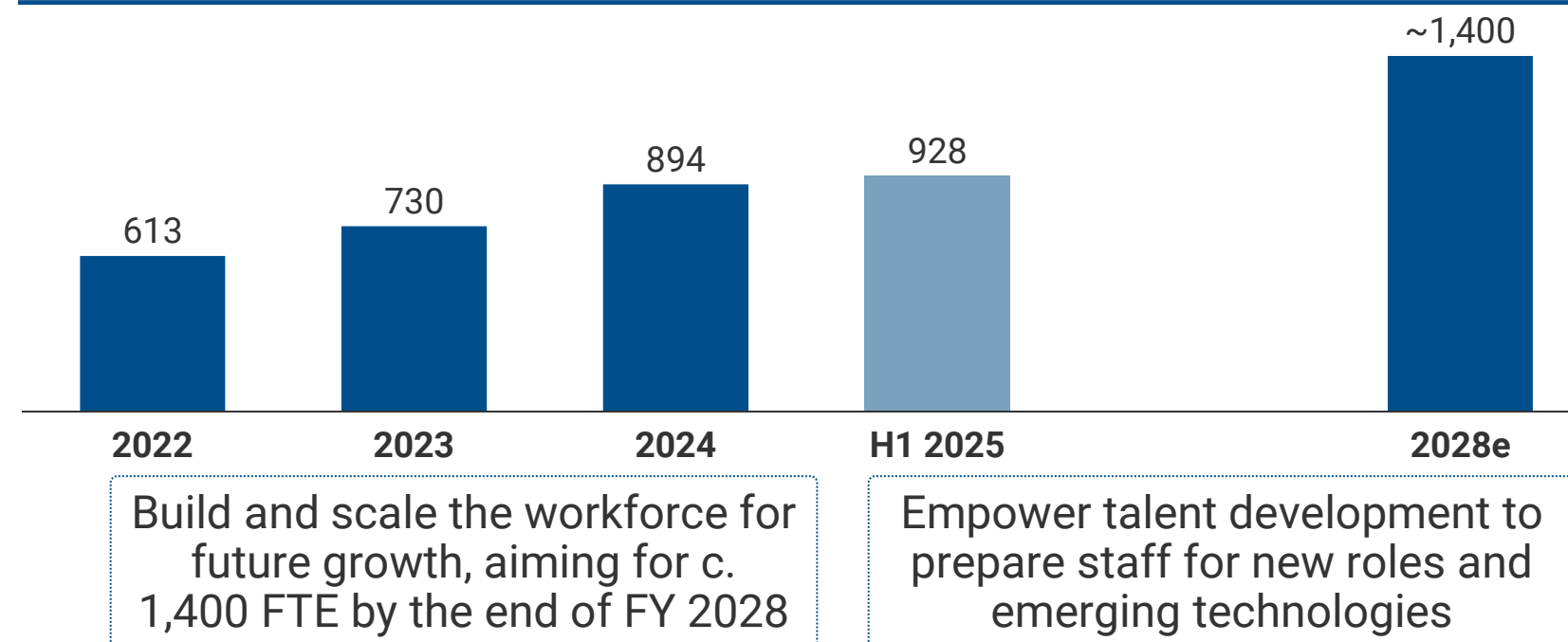
Investment focus

- Accelerate innovation through **strengthened investments in R&D**, securing technological leadership
- Drive **operational excellence** by professionalizing the corporate structure, implementing a new CRM system and other software solutions to unlock efficiency gains
- Pursue **comprehensive change in company culture** by eliminating knowledge silos and strengthening internal networks, thus leveraging cross-selling opportunities
- Support **organic growth potentials** through capacity increases, most recently in Wetzlar, Germany, and Italy

M&A principles

- Should extend technology portfolio, which will be aligned with semiconductor metrology roadmap
- Should match our regional development plans
- Should open new customer segments with mid-cost, high-volume solutions
- Should provide technologies that have the potential to scale in volume

FTE development



Possible M&A targets

- Targets with matching technologies and imminent changes in leadership due to retirement of founders
- Technology startups with potential and a need for support infrastructure (administrative, R&D, investments, brand awareness)
- Companies with which we have established relationships (e.g. current suppliers, partners)
- Carve-outs from other companies that have the potential to thrive within our organization

INNOVATION

STRATEGIC BENEFITS FROM NEW R&D APPROACH

TECHNOLOGY HUB AS INNOVATION CATALYST

Established in 2024 to integrate physics, chemistry, material and computational science, and data analytics in one dedicated unit. Focus on high-impact materials (e.g. SiC, AlN) and advanced metrology solutions.

FASTER TIME-TO-MARKET

Streamlined development cycles and early-stage market engagement to ensure readiness when demand peaks.

EVOLVE INTO SOLUTIONS PROVIDER

Leveraging in-house commercialization experience to support emerging materials and processes from early-stage readiness levels into a sustainable industrial standard.

SYNERGY WITH GLOBAL R&D NETWORK

Coordinated research across product groups, leveraging expertise in Material Solutions and Metrology to create cross-fertilization of ideas.

MARKET-DRIVEN INNOVATION

Close collaboration with customers to address emerging needs in semiconductors, e-mobility, energy storage, aerospace, and other high-tech industries.

EMBEDDED SUSTAINABILITY

Prioritizing resource efficiency, product longevity, and reduced environmental footprint from the design stage.

R&D STRATEGY UPDATE

SECURING STRONG STRATEGIC POSITION WITH FUTURE MATERIALS AND APPLICATIONS

R&D PARTNERSHIPS

4" ALN CRYSTALS

- Partners: PVA, Leibniz Institute for Crystal Growth Berlin (IKZ), Siltronic AG
- PVA contributes its process and equipment know-how
- **Goal:** Commercialize AlN for industrial applications such as high-power / high-frequency devices
- **Advantages:** Ultra-wide bandgap, high breakdown voltage, high thermal conductivity
- **Impact:** Strengthens European semiconductor materials value chain, puts PVA at the helm of future applications

IMEC

- Partnership with imec, a world-leading research and innovation hub for nanoelectronics and digital technologies
- Extension of 20-year partnership that so far only comprised SAM
- Expansion to joint qualification and field testing of **all existing and new metrology solutions** from PVA TePla
- Strengthening innovation capabilities and presence across the semiconductor value chain
- Exploring additional collaboration on ultra-pure Silicon Carbide development for future applications (e.g. quantum computing)

INTERNAL R&D MILESTONES

SiC PROCESS

- Completed synthesis process for SiC source powder
- Completed marketable baseline 6" growing process
- Started 8" growing process with first growths; expected to be completed by early 2026
- Co-developed and introduced new systems to the market based on developed process know-how:
 - Powder synthesis system
 - Annealing system
 - 3D metrology inspection solution
 - Qualification of Scanning Infrared Depolarization (SIRD) for SiC

SILICON CARBIDE ACTIVITIES HAVE SIGNIFICANT POTENTIAL DUE TO ITS RELEVANCE FOR SECTORS SUCH AS ENERGY, AUTOMOTIVE, AND DEFENSE

- Silicon Carbide (SiC) offers key advantages in power electronics, with market growth driven by battery electric vehicles (BEV), renewables, and fast-charging infrastructure as well as applications in the defense sector

Market overview

- SiC device revenue grows by 22% between 2025 and 2029
- While SiC device revenue is expected to grow significantly, wafer fab equipment is likely to stagnate due to past overcapacity build-up
- This is not the case for critical tools, such as Physical Vapor Transport (PVT) for crystal growth, as well as metrology equipment
- The need for metrology equipment comes from challenges in production yields in the transition from 6" to 8" wafers; rising requirements for wafer quality, defect detection, and yield optimization are driving demand

USP

- PVA possesses **deep process and technology know-how** across the entire value chain
- PVA offers **comprehensive technologies across the value chain**

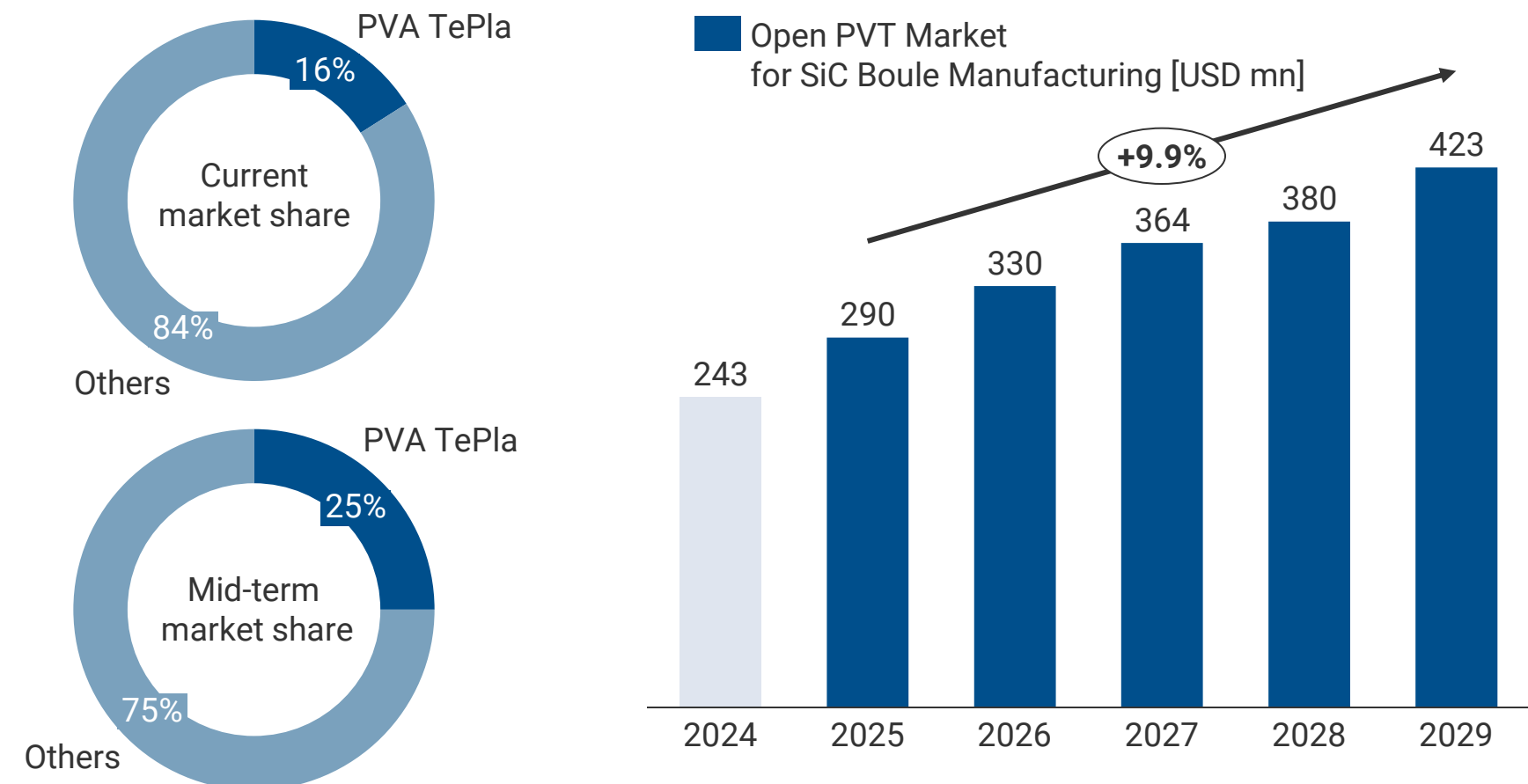
Examples of companies needing this technology



SYNTHESIS & METROLOGY

SILICON CARBIDE PRODUCTION PROCESS

DRIVING GROWTH AND QUALITY IN SiC MANUFACTURING



PVA EXPECTS TO OUTGROW THE MARKET

OUR MARKET POSITION HOW WE GROW

ALL TECHNOLOGY DIVISIONS CONTRIBUTE TO OUR MID-TERM REVENUE TARGET; METROLOGY WILL BE STRONGEST DRIVER

	Subdivision	Growth Drivers	Revenue Contribution	Mid-Term Revenue CAGR Expectations
METROLOGY	Acoustic		REVENUE EURm 98 2024 2024 2028 ■ Acoustic ■ Optical ■ Chemical	18% – 22%
	Optical			45% – 63%
	Chemical			13% – 18%
MATERIAL SOLUTIONS	Synthesis		REVENUE EURm 172 2024 2024 2028 ■ Synthesis ■ Joining ■ Refining ■ Surface Treatment	5% – 11%
	Joining			19% – 26%
	Refining			2% – 4%
	Surface Treatment			23% – 29%

COMBINED EXPECTED REVENUE 2028 of EUR mn ~500



MARKETS | SEMICONDUCTOR

WELL POSITIONED ALONG THE ENTIRE SEMICONDUCTOR VALUE CHAIN





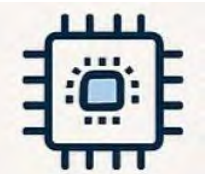





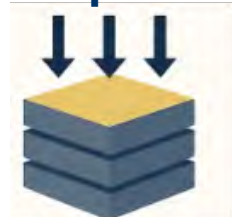
MARKET DRIVERS OPEN UP ADDITIONAL APPLICATION OPPORTUNITIES FOR METROLOGY IN BACKEND & PACKAGING

		Raw Materials	Frontend	Backend/Packaging
Metrology	Acoustic	2D/3D Inspection (ingots, various materials)	2D/3D Inspection (bonded wafers, layers, TSVs, HBM)	3D Inspection (IC packages, modules, DCB, IGBT)
	Optical	Surface & volume inspection	Surface inspection, Thin layers	Surface inspection
	Chemical	Metallic and organic contaminations		
Material Solutions	Synthesis	Bulk materials (Si, SiC, InP, AlN, ...), Graphite coatings	CaF optics for High-NA EUV, EUV, DUV	CVD Bulk SiC
	Joining		Wet etching, High-NA EUV, EUV, DUV	
	Refining	High-purity graphite		
	Surface Treatment		200mm Resist Ashing	Hybrid Bonding, Bonding, before molding

Growth opportunity
 Limited exposure
 Established position

CHIP EVOLUTION & INSPECTION NEEDS

FROM TRADITIONAL DEVICES TO TODAY'S ADVANCED ARCHITECTURES

<p>Traditional</p>	<p>Logic</p>  <p>CPU, Microcontroller</p>	<p>Memory</p>  <p>DRAM, Flash</p>	<p>Power</p>  <p>MOSFET, IGBT</p>	<p>Sensor</p>  <p>MEMS, Pressure</p>	
<p>Today</p>	<p>Logic</p>  <p>CPU, GPU, AI-Chiplets</p>	<p>Memory</p>  <p>HBM, 3D NAND 8/16 stacks</p>	<p>Power</p>  <p>SiC, GaN, high-doped Si DCB, IGBTs, sintering layers</p>	<p>Sensor</p>  <p>Various sensors (e.g. LiDAR, LED)</p>	<p>Photonics / Optical</p>  <p>Silicon Photonics</p>
<p>Ways of Inspection</p>	<p>2D Inspection</p>  <p>Surface inspection contamination, staining, bow, sub μm layers</p>		<p>3D Inspection</p>  <p>Volumetric inspection Full depth, layer interfaces, Interconnects, TSVs, volume defects</p>		

AI-CHIPLETS, HBM & 3D NAND

SAM: ESSENTIAL FOR HIGH-END PACKAGING INSPECTION

NEW DEVICES AND PACKAGING METHODS CREATE COMPLEX DEFECTS – REQUIRING VOLUMETRIC INSPECTION

AI-Chiplets (Logic)



- Heterogeneous integration
- High interconnect density

Risk: Bonding misalignment

Packaging Methods:

- Fusion Bonding
- Hybrid Bonding
W2W, D2W

HBM (Memory)



- Vertical stacks, TSVs
- Thermal & mechanical stress

Risk: Delamination, voids

Packaging Methods:

- Fan-Out Packaging
- Wafer-Level Packaging

3D NAND (Storage)



- Layer scaling >200
- Structural integrity challenges

Risk: Warpage, defect localization

Packaging Methods:

- Panel Technology

METROLOGY PORTFOLIO: SCANNING ACOUSTIC MICROSCOPY (SAM)

SAM OFFERS THE HIGHEST FLEXIBILITY AND ACCURACY
AT COMPETITIVE PRICES AGAINST OTHER TECHNOLOGIES

SURFACE INSPECTION



Optical Microscopy

Resolution: Sub μm range



Scanning Electron Microscopy

Resolution: nm range



Laser Scanning

Resolution: Sub μm range



X-Ray 2D

Resolution: Sub μm range

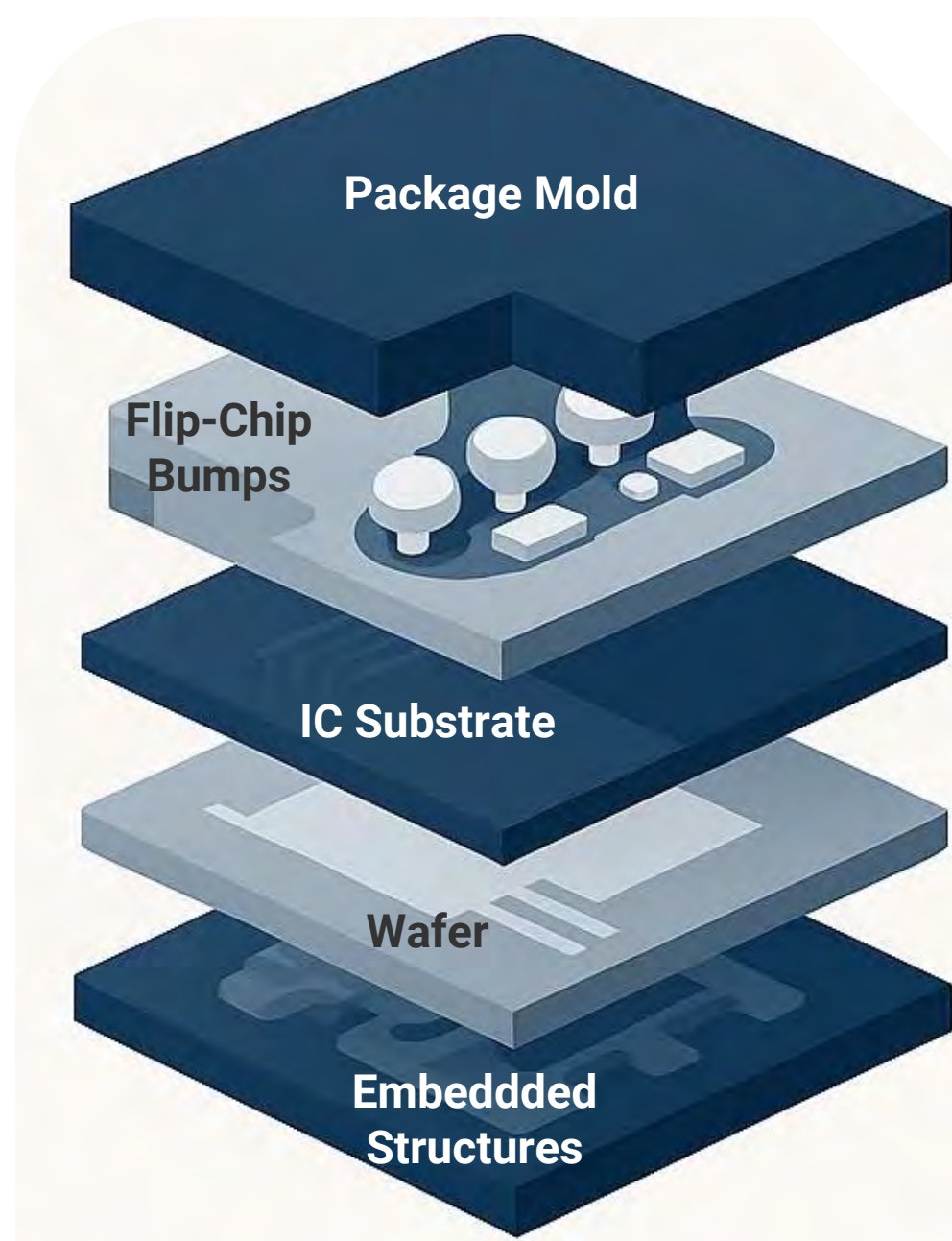


Ultrasound / SAM

Resolution: Sub μm range

Focus:

Chip-offs, microcracks, contamination, missing devices, coating thickness uniformity



VOLUMETRIC INSPECTION



Infrared / Laser (NDT)

Resolution: $\sim 10 \mu\text{m}$

Time: few minutes

Limit: metal layers



X-Ray 3D (CT) (destructive in thin layers)

Resolution: $5-10 \mu\text{m}$

Time: up to 10 hours



SAM (NDT)

Best balance of resolution, depth, and speed

Resolution: $5-15 \mu\text{m}$

Time: few minutes – 2 hours

Depth: full inspection possible

Focus:

Voids, cracks, delaminations, bonded interfaces, D2W, W2W, TSV structures

SAM IS OUR MAINSTAY METROLOGY TECHNOLOGY. DUE TO ITS FLEXIBILITY AND HIGH ACCURACY, IT WILL GREATLY PROFIT FROM THE TRENDS OF HYBRID BONDING, 3D INTEGRATION, AND HIGH-END PACKAGING

Market overview

- The CAGR for metrology wafer fab equipment (WFE) revenues is estimated at around 6% between 2025 and 2030
- Acoustic metrology, specifically, grows at around 9%, excluding the additional need for adequate metrology in advanced packaging
- Due to its significant potential in high-end packaging, we see ample demand for SAM equipment in the near term

USP

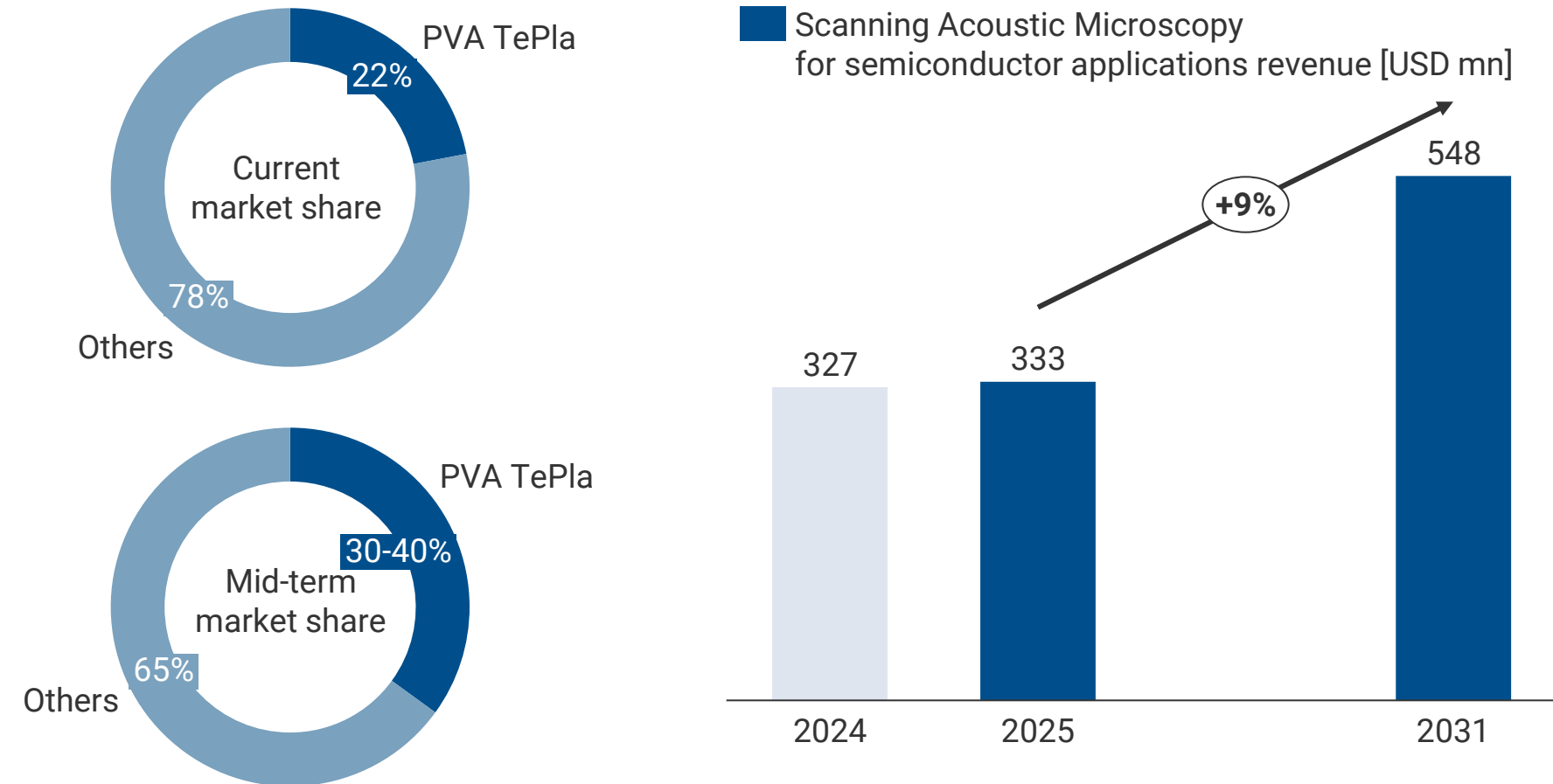
- PVA TePla is **technology leader** for acoustic metrology
- PVA's SAM systems offer **unique transducer technology** with **uncontested resolution** and **high inspection throughput** (array technology)
- We offer solutions for high bow, HBM multifocus, back-end transmission
- We expect to stay dominant in the field and to **further increase our market share**

Examples of companies needing this technology

LOGIC	MEMORY

ACOUSTIC METROLOGY

SCANNING ACOUSTIC MICROSCOPY OUR PRIMARY GROWTH DRIVER



PVA TEPLA EXPECTS TO OUTGROW THE MARKET

STRATEGIC COOPERATION WITH SENTECH TO CREATE A FULLY AUTOMATED ELLIPSOMETRY TOOL FOR THE 200 & 300MM SI, SIC, AND GAN WAFER MARKET

Market overview

- Ellipsometry is well established in its main application film/layer thickness measurement
- Primarily used in epitaxy, chip processing, potentially in packaging
- The general ellipsometry market shows only limited growth, in line with the general metrology & inspection market that sees a CAPEX cycle peak in 2026
- However, it is a well understood market with low entry barriers and a high need for automation

USP

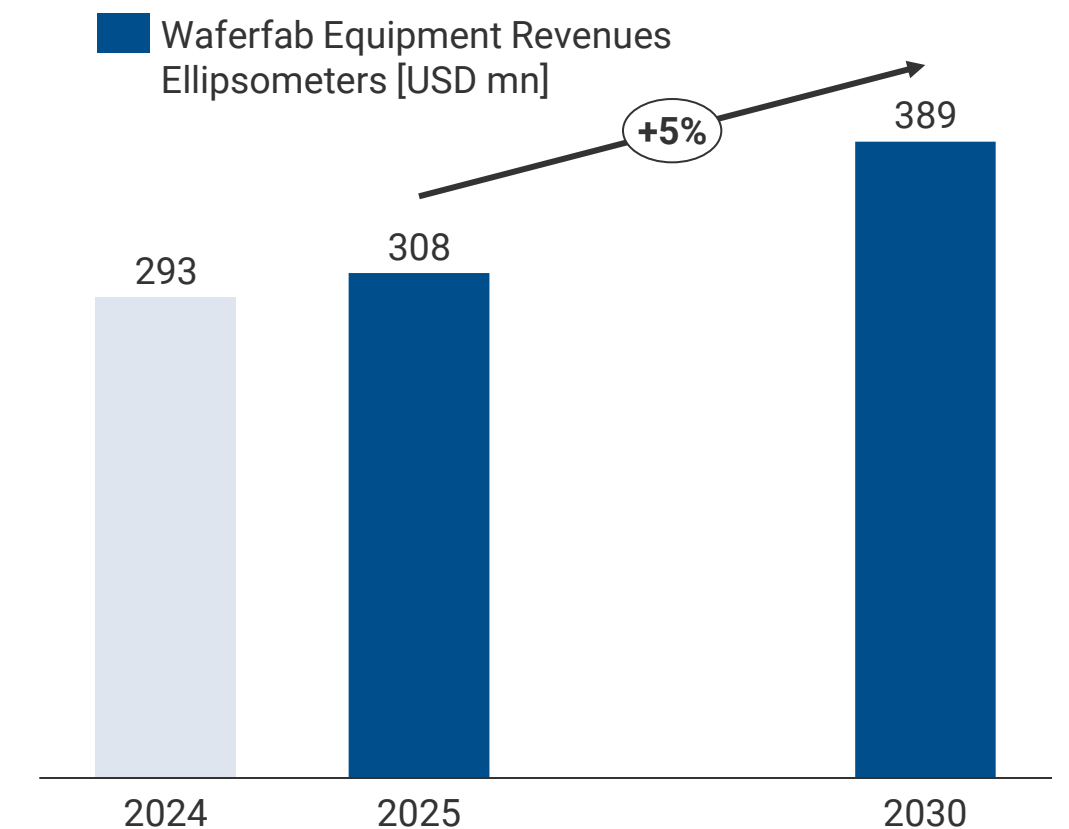
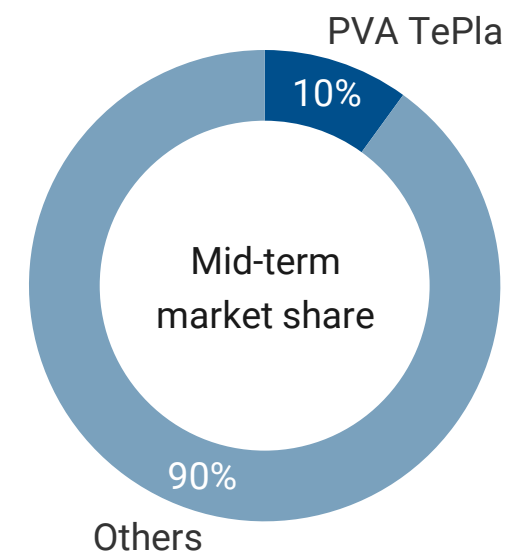
- **High throughput, high accuracy, competitive pricing, automation experience**
- Partners will present a prototype in November 2025, market entry with first systems in Q1 2026 with low seven-digit revenues in 2027

Examples of companies needing this technology



OPTICAL METROLOGY PORTFOLIO EXPANSIONS

ELLIPSOMETRY A NEAR-TERM OPPORTUNITY



PVA TEPLA EXPECTS TO OUTGROW THE MARKET, GRADUALLY REPLACING THE EXISTING EQUIPMENT

NEW HYPERSPECTRAL VISION INSPECTION IS AN OPTICAL METHOD THAT PROVIDES A DRAMATIC SPEED ADVANTAGE IN LAYER INSPECTION

- Main application is measuring layer thickness, roughness, staining, cracks, surface defects simultaneously
- Where ellipsometry can provide more data on a single sample point, hyperspectral vision offers fast evaluation of the entire substrate
- Software analyzes the data with the help of machine learning / AI

Market overview

- Substrates can be semiconductors – dies of wafers, metals, polymers, ceramics, and glass
- Other fields of application are coatings in bipolar plates for fuel cells, PCB contaminations, and photovoltaics

USP

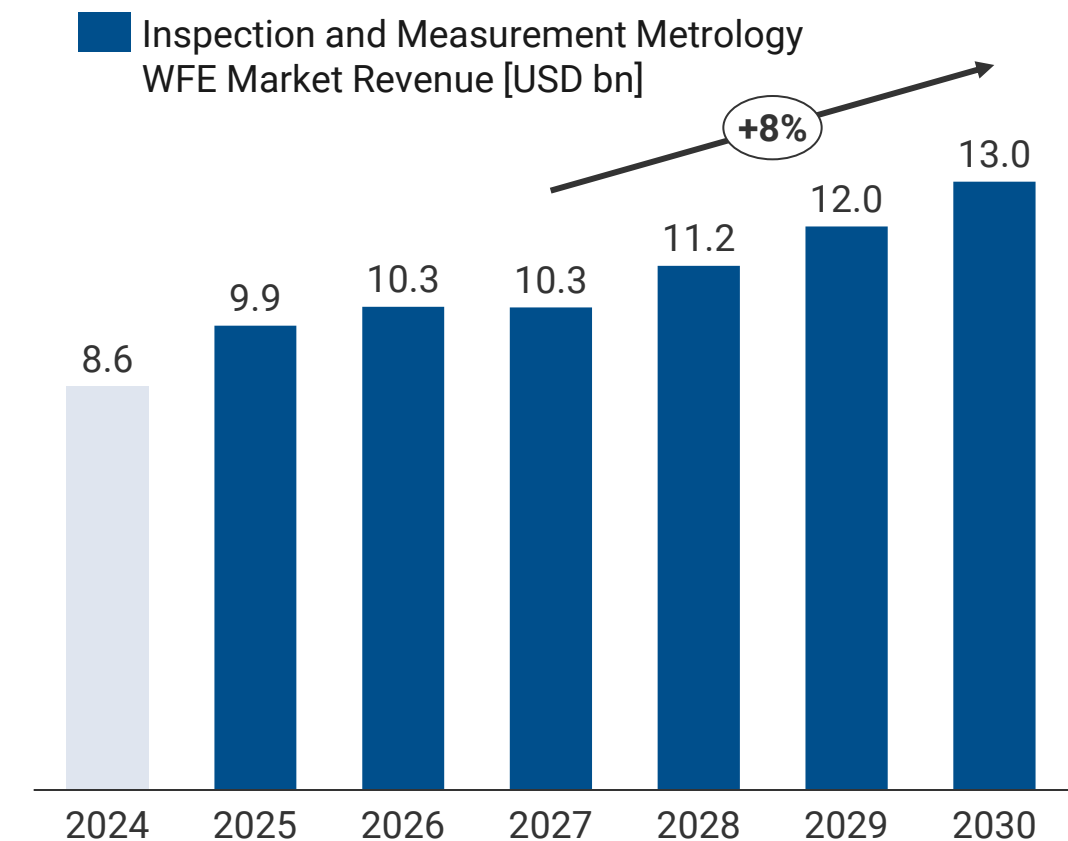
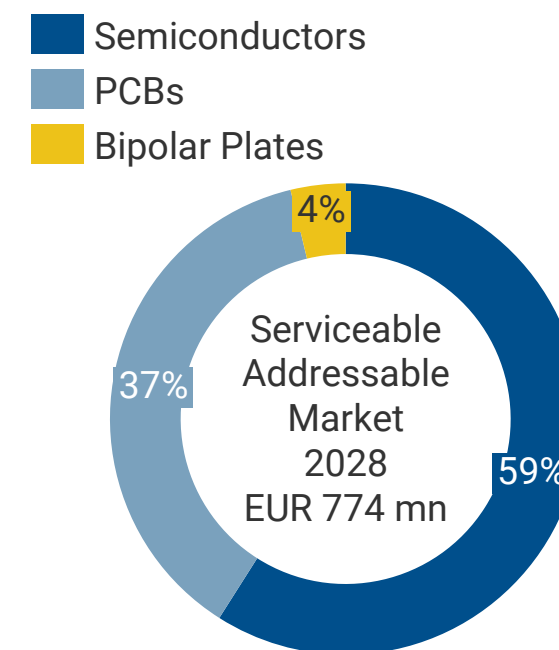
- Thanks to its speed advantage and comprehensive measurement, hyperspectral vision is poised to become the **future of fast optical wafer inspection**
- PVA expects a working prototype in Nov 25
- We further intend to offer **cluster systems** that combine multiple metrology methods

Examples of companies needing this technology



OPTICAL METROLOGY PORTFOLIO EXPANSIONS

HYPERSPECTRAL VISION UNIQUE MID-TERM OPPORTUNITY



WE EXPECT STRONG FUTURE GROWTH WITHIN THE SEMICONDUCTOR INDUSTRY DRIVEN BY FAST MARKET PENETRATION STARTING IN 2026

FURTHER PERSPECTIVES FOR MID- AND LONG-TERM REVENUE CONTRIBUTION WITH NEW DEVELOPMENTS IN X-RAY TECHNOLOGY

- Where SAM can provide fast evaluation of the entire wafer or module in 3D inspection, x-ray offers more data on a single sample point
- Software analyzes the data with the help of machine learning / AI

Market overview

- X-ray is an established method for defect inspection in the semiconductor value chain
- Combined with technology improvements for existing solutions, PVA will address new fields of technology in line with the semiconductor metrology roadmap
- Additionally, PVA wants to win market share in existing fields

USP

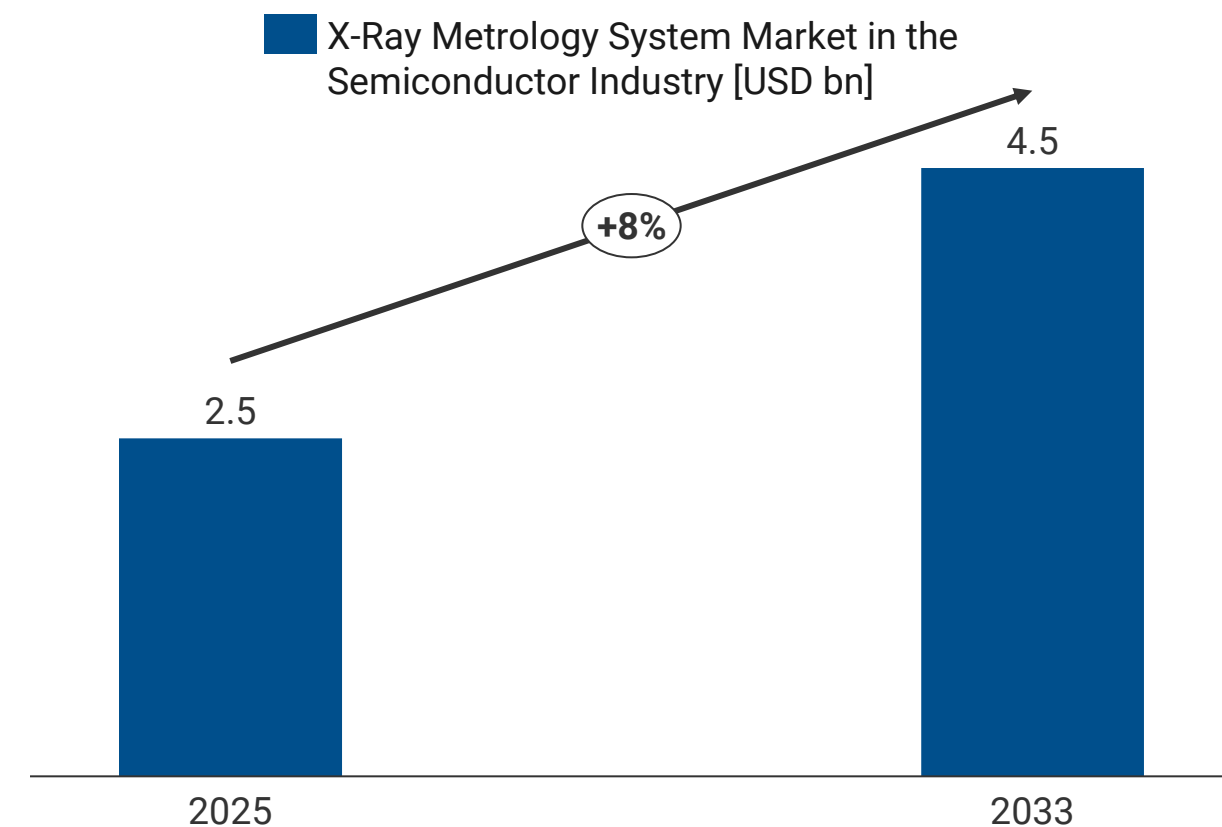
- Patented technology, in-house production of key components
- High automation, high throughput
- Best-in-class resolution

Examples of companies needing this technology

LOGIC	MEMORY

NEW METROLOGY METHODS PORTFOLIO EXPANSIONS

X-RAY COMPLETING 3D TECHNOLOGY PORTFOLIO



WE EXPECT STRONG FUTURE GROWTH WITHIN THE SEMICONDUCTOR INDUSTRY DRIVEN BY MARKET PENETRATION STARTING IN 2028

A blue-tinted landscape featuring a winding road, a modern car, and wind turbines against a backdrop of mountains. The scene is set in a valley with rolling hills and a clear sky. A white car is parked on the right side of the road, facing away from the viewer. In the background, several wind turbines are visible, and the mountains are partially covered in snow. The overall atmosphere is clean and modern, suggesting a focus on sustainable energy and transportation.

MARKETS | ENERGY

ENERGY MARKET

OPPORTUNITIES FOR PVA TECHNOLOGIES

Global energy investment reaches USD 3.3 trillion in 2025

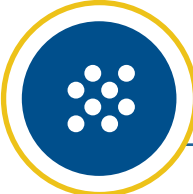
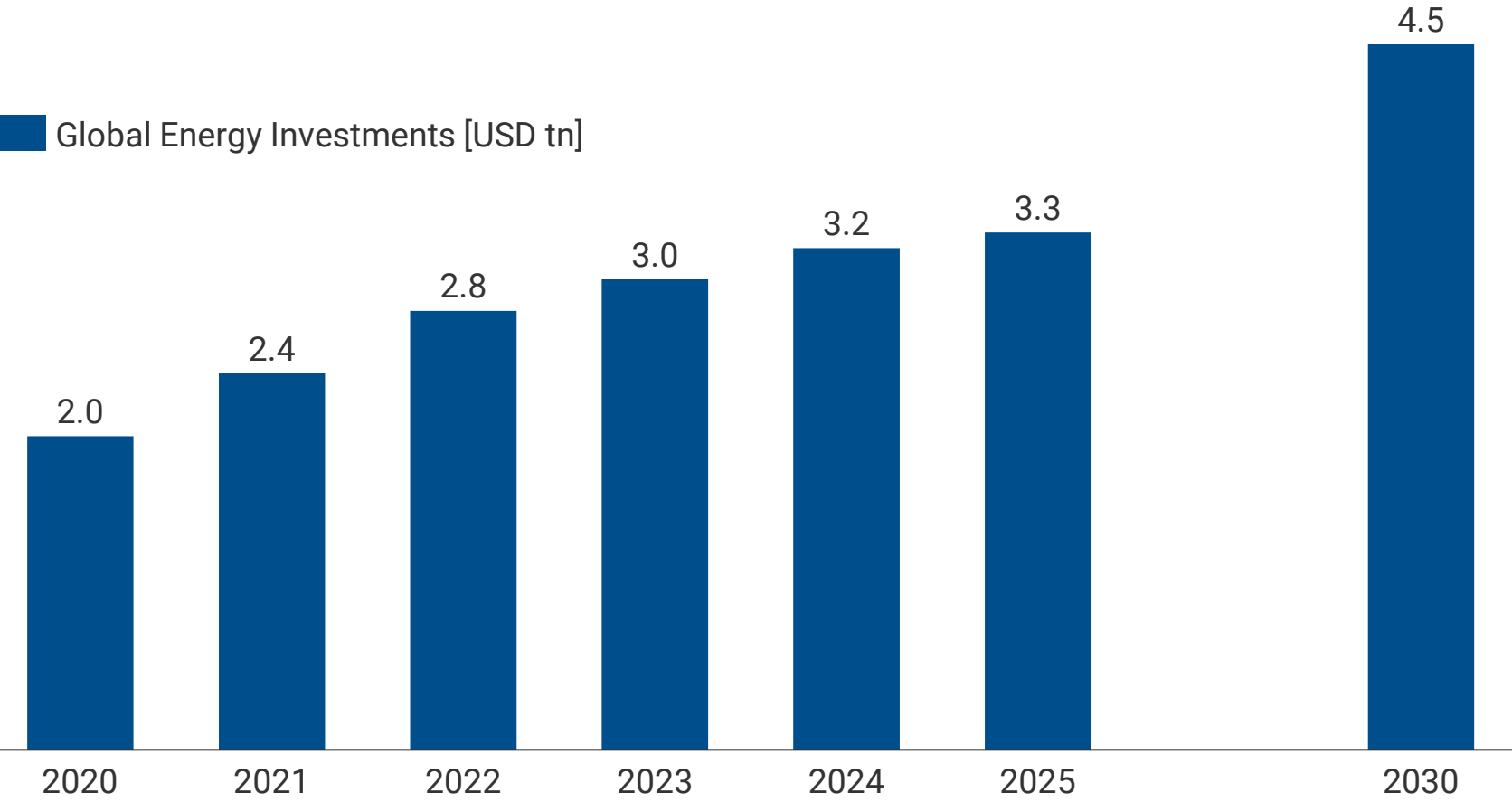
Driven by rising global energy demand and decarbonization targets

Clean energy: USD 2.2 trillion (fossils: USD 1.1 trillion)

Target: USD 4.5 trillion by 2030 (IEA Net Zero)

+36% investment growth required by 2030

Key drivers: power grid, storage, H₂, semiconductors



POTENTIAL FOR PVA TECHNOLOGIES

Crystal Growth & Power Semiconductors: PVA provides crystal growing systems for Silicon and SiC – essential for power electronics in EVs, grids, and energy storage applications

High-Temperature & Vacuum Systems: Hydrogen and battery material development depending on precision thermal and vacuum systems – a core strength of PVA’s technology portfolio

Plasma Technology: Surface activation and cleaning of electronics, sensor components, and power systems enable reliable, high-performance energy technologies

Quality Control via SAM: Scanning Acoustic Microscopy (SAM) systems are increasingly used to inspect critical components in energy systems, such as semiconductors and battery modules.

HIGH-PERFORMANCE JOINING TECHNOLOGY IS ESSENTIAL FOR COMPLEX STRUCTURES AND ADVANCED MATERIALS – PVA TEPLA HOLDS A STRONG POSITION IN DIFFUSION BONDING

- Diffusion bonding is a solid-state joining process that creates high-integrity joints with highest strength, temperature stability, and corrosion resistance
- Advanced applications include multilayer components with microchannels for cooling tasks in green hydrogen electrolysis and waste heat recovery systems

Market overview

- The diffusion bonding market is highly fragmented
- PVA has established a leading technological position with a significant market share and strong references
- High growth potential driven by green hydrogen technology and energy saving technologies

USP

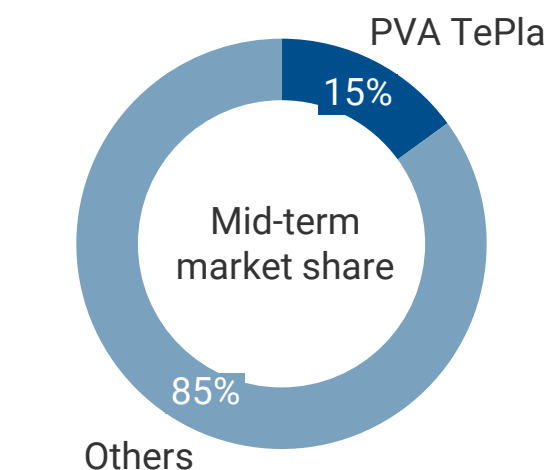
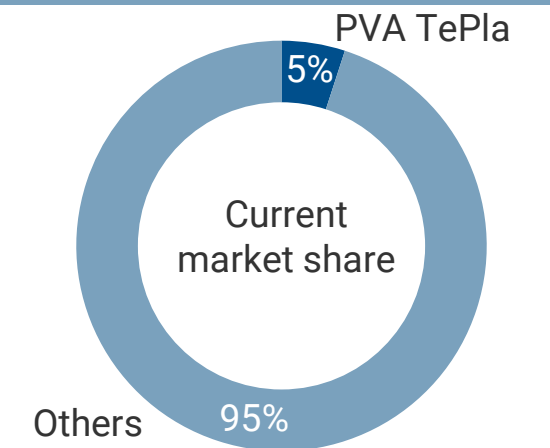
- PVA TePla is at the **forefront of diffusion bonding technology**, providing a **comprehensive technology offer**, including R&D support, process development, equipment, and metrology solutions
- **Setting standards for new solutions** with increased utilization, efficiency, and performance

Examples of companies needing this technology

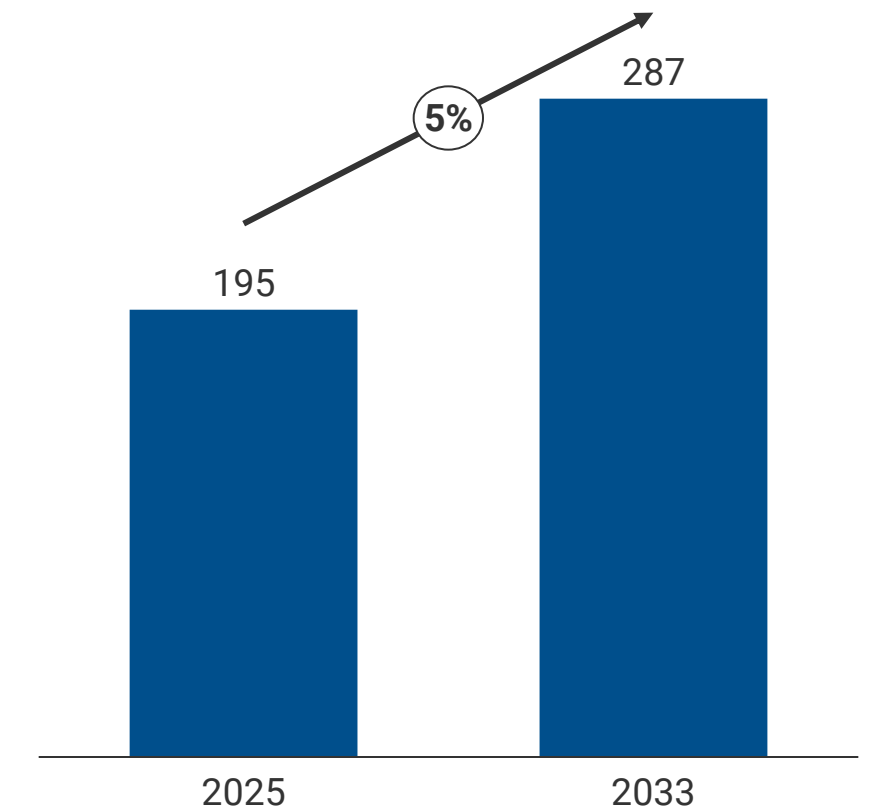


JOINING

DIFFUSION BONDING LEADING POSITION IN SPECIAL APPLICATIONS



Global Vacuum Diffusion Bonding Systems [USD mn]



PVA TEPLA EXPECTS TO SIGNIFICANTLY INCREASE MARKET SHARE

VACUUM BRAZING IS ESSENTIAL IN ADVANCED MANUFACTURING, ENABLING HIGH-PRECISION, HIGH-STRENGTH, AND CONTAMINATION-FREE JOINING OF COMPLEX COMPONENTS

- In vacuum brazing, materials are joined under high temperature and in a vacuum atmosphere by using low-melting filler metals
- Vacuum brazing enables realization of complex-shaped components and multi-material configurations
- One of most sophisticated application in brazing is the vacuum interrupter
- Vacuum interrupters are essential components of grid infrastructure, ensuring safe transmission and distribution of electrical energy

Market overview

- The vacuum brazing equipment market is highly fragmented
- For vacuum interrupters, PVA's core application, PVA has built a significant market share and strong references
- Vacuum interrupters have excellent growth perspectives driven by the energy transition and related grid expansion and modernization
- Regulatory implications of the ban of climate harmful SF6 insulation gas will further support the vacuum interrupter market

USP

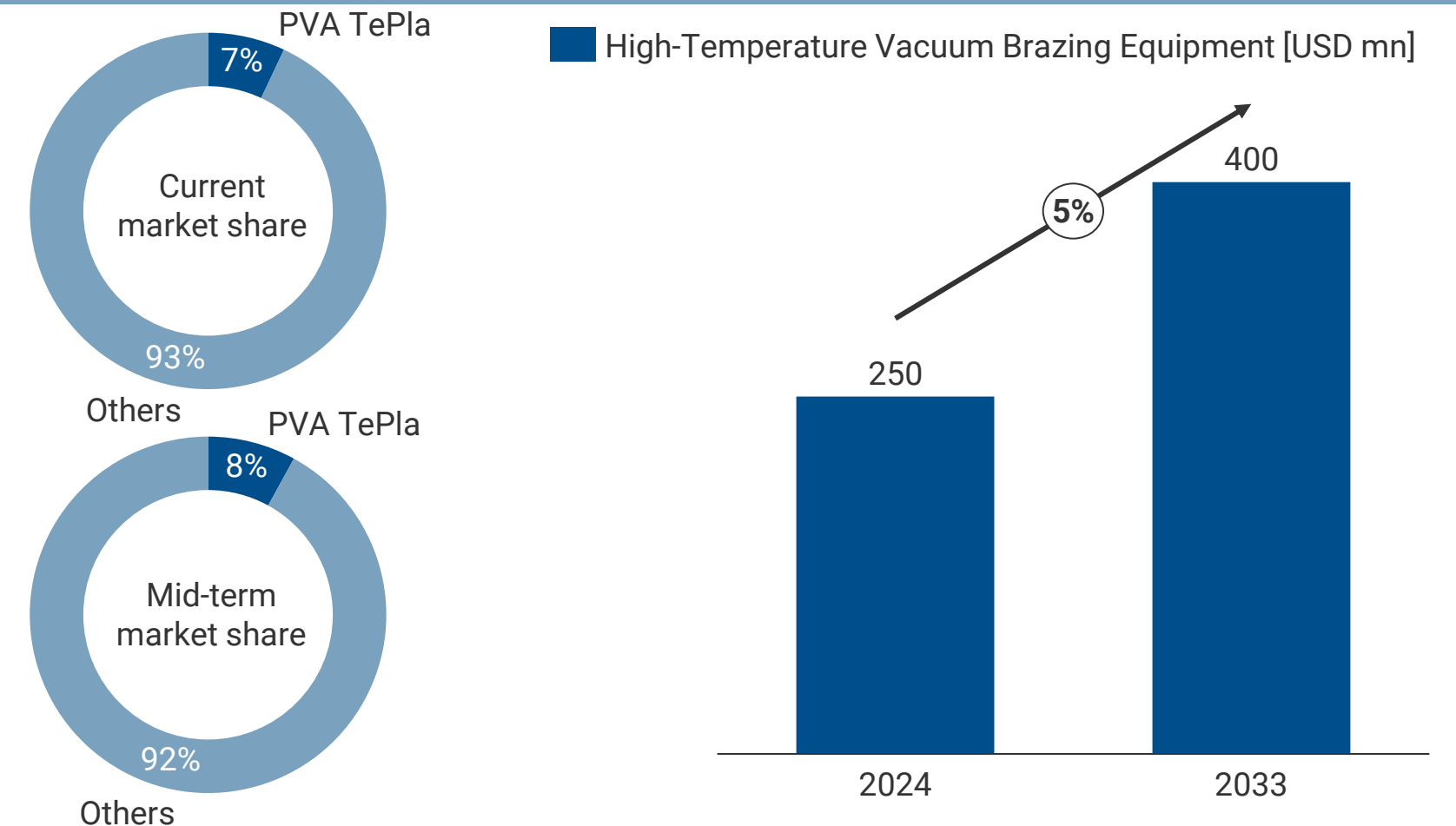
- Offering a **comprehensive technology package**, including process support, equipment, automation, and quality inspection

Examples of companies needing this technology



JOINING

VACUUM BRAZING A KEY ENABLER IN ADVANCED JOINING



PVA TEPLA EXPECTS TO GROW IN LINE WITH THE MARKET, WITH A MARKET LEADING POSITION FOR THE SUBSEGMENT VACUUM INTERRUPTERS

E-MOBILITY AND ENERGY TRANSITION REQUIRE SIGNIFICANT INCREASE IN ELECTRICAL POWER STORAGE CAPACITY

- While battery manufacturers are developing Li-ion battery alternatives, Li-ion is still the market standard
- Currently, graphite is the dominating material for battery anodes in Li-ion batteries, with natural graphite and synthetic graphite accounting for 90% of anode material Li-ion batteries in 2024

Market overview

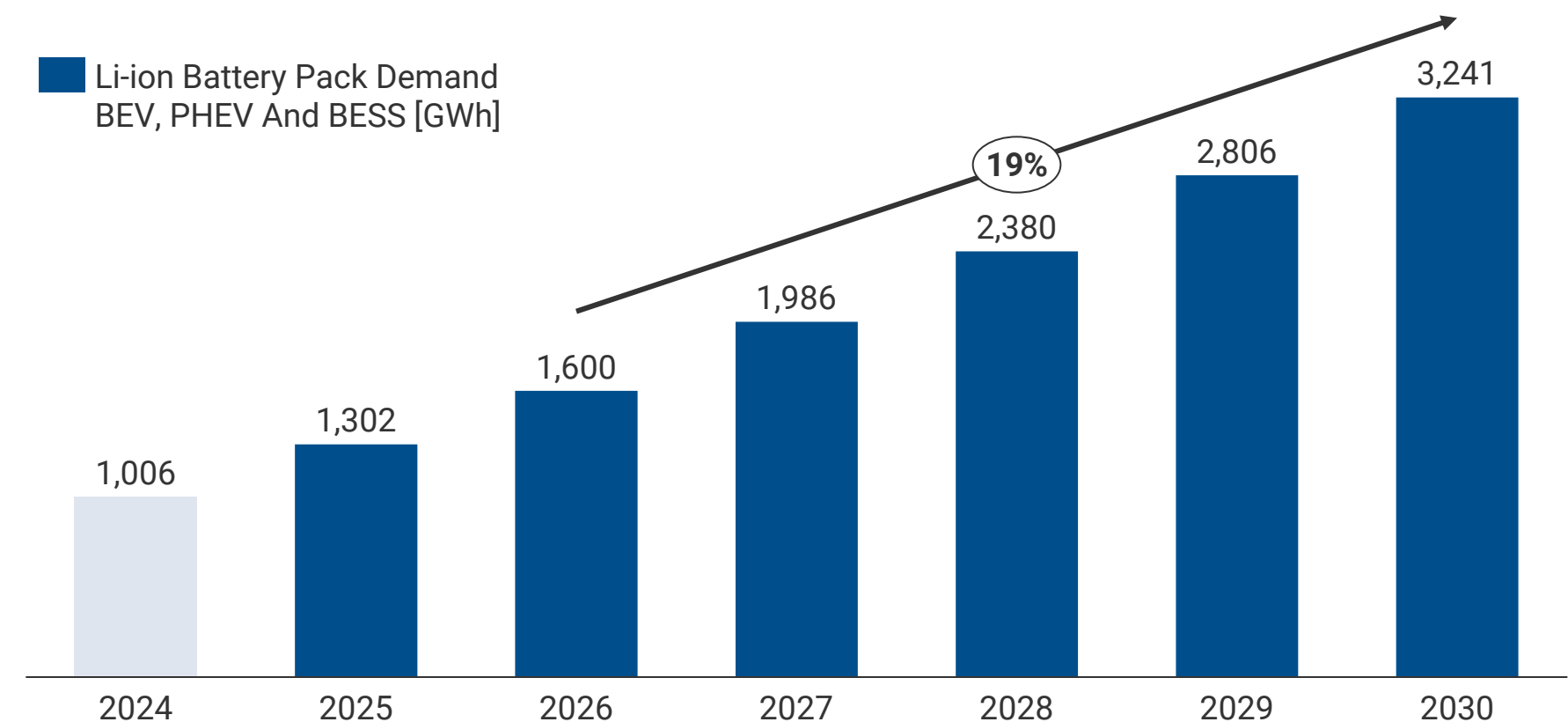
- The battery market is highly dynamic with short innovation cycles
- Graphite is a critical raw material with high dependence on China
- Trend to bolster supply chain resilience → synthesizing carbon material out of organic feedstock is becoming increasingly important
- Trend to alternative anode materials to achieve higher energy density (Silicon based compound materials, Nano-materials)

USP and strategic approach for rising growth potential

- PVA has **decades of experience** in semi-grade graphite purification and realization of highly customized solutions
- Identification and cooperation with leading technology players, thus creating a strong network
- Establish a battery competence team for business development
- Growth potential is closely tied to the commercial success of our cooperation partners when moving from prototype to production scale

SYNTHESIS

GRAPHITE FOR ANODE MATERIAL MID-TERM OPPORTUNITY



WE EXPECT TO ESTABLISH OUR SYSTEMS WITH VARIOUS PLAYERS IN THE BATTERY ANODE MARKET IN 2026



MARKETS | AEROSPACE

AEROSPACE & DEFENSE

GLOBAL MARKET OVERVIEW



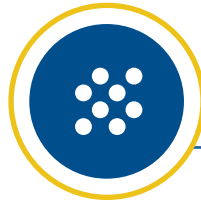
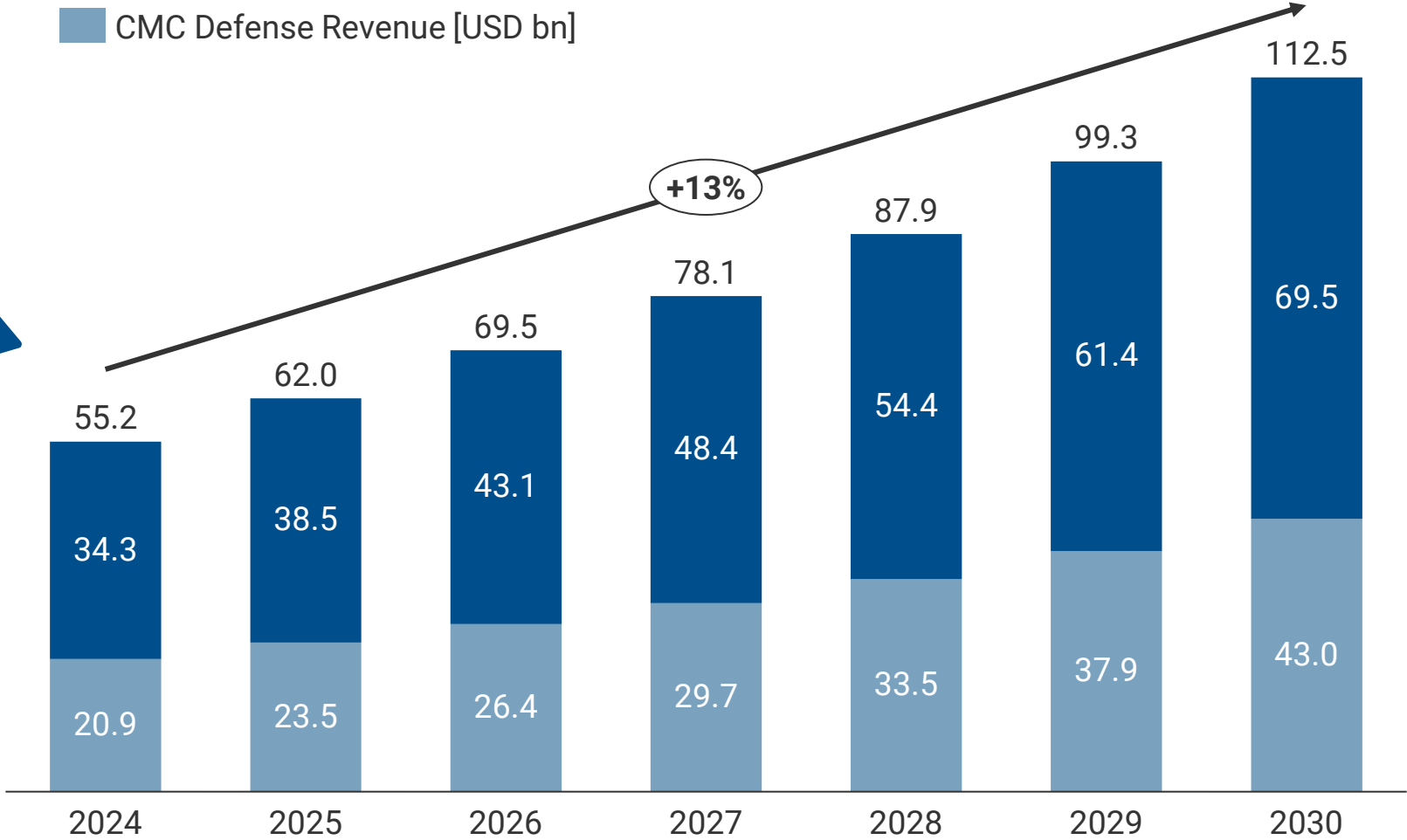
ADVANCED MATERIAL SYNTHESIS

Ceramic matrix composites for aircraft brake systems, turbine airfoils, rocket engine combustion nozzles, re-entry vehicle airframes

Chemical vapor deposition for optical materials of IR sensor systems and high temperature resistant coatings of hypersonic vehicles (see next slide)



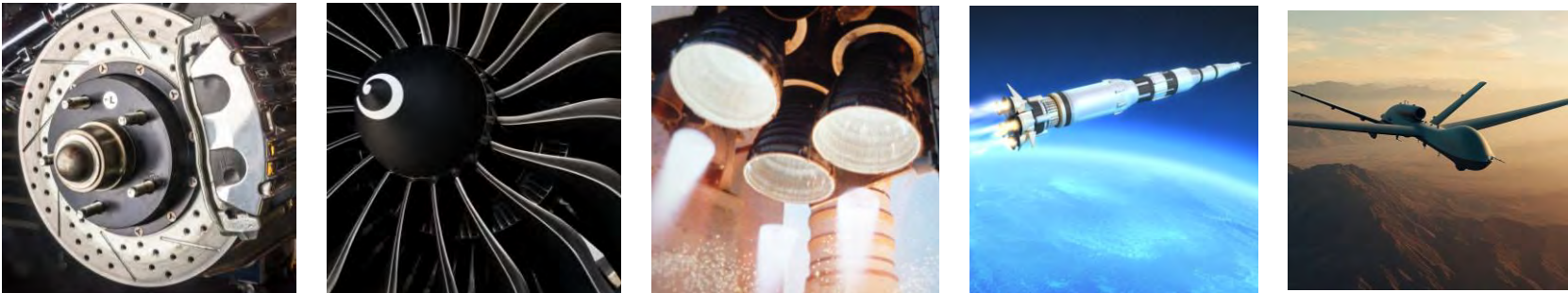
■ CMC Aerospace Revenue [USD bn]
■ CMC Defense Revenue [USD bn]



FURTHER POTENTIAL

Joining technologies for complex structures and reliable material bonds

High-performance material synthesis for defense applications



EXPANDING OUR DEEP KNOWLEDGE IN THE FIELD OF CHEMICAL VAPOR INFILTRATION AND DEPOSITION INTO NEW MARKETS AS TECHNOLOGY LEADER AND FIRST MOVER

- **Chemical Vapor Infiltration/Deposition** is the core process for the synthesis of Ceramic-Matrix Composites
- Fiber pre-forms are coated by thin ceramic layers forming the matrix of the fiber-enforced CMC material
- Process is performed in a high temperature reaction chamber by decomposition of a complex precursor gas and condensation of reaction products onto the substrate (fiber)

Market overview

- PVA has over 30 years of experience in CVD/CVI and has become a technology and market leader in these technologies
- Strong growth potentials driven by aerospace and defense application (aircraft engine components, thermo-protection systems)

USP and strategic approach for rising growth potentials

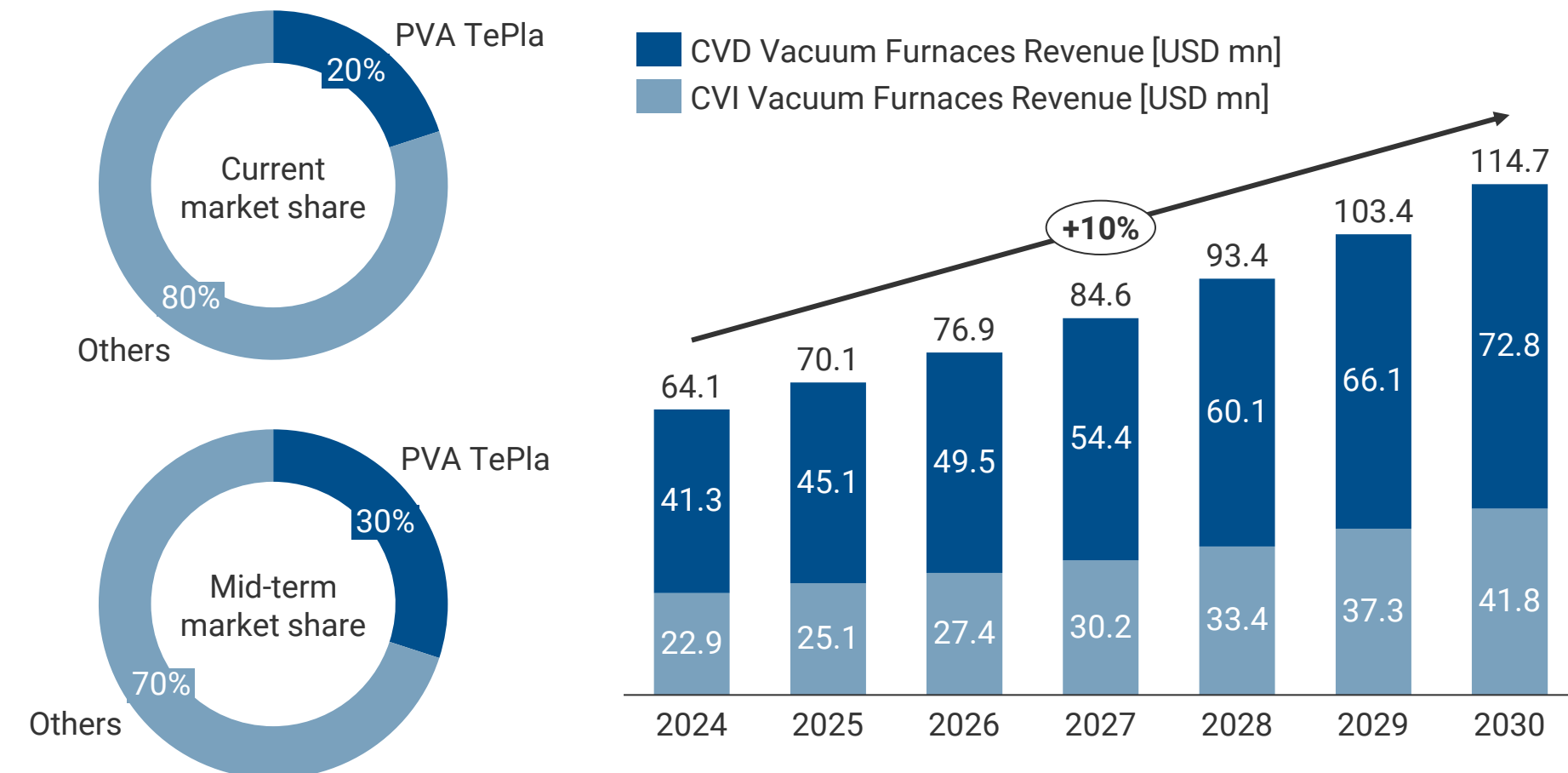
- Regional focus on most attractive market **North America** by increasing PVA footprint
- Improvement of access to governmental contracts in North America for defense applications
- Our R&D Hub continually explores **promising new applications** for this high-tech manufacturing method

Examples of companies needing this technology



SYNTHESIS

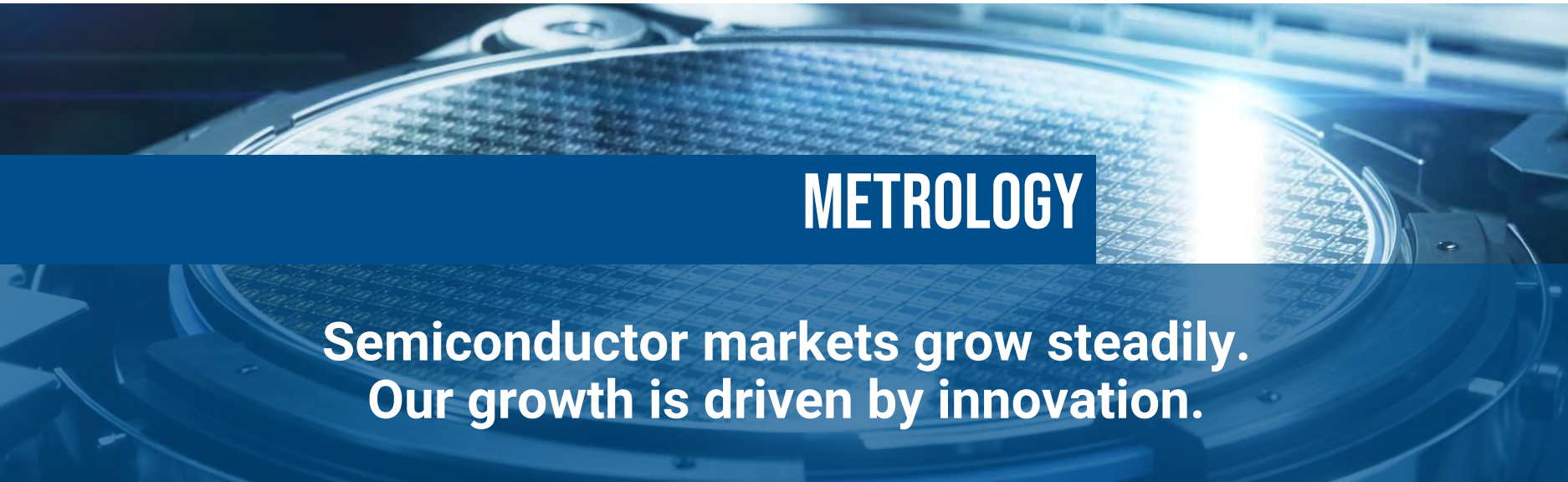
CHEMICAL VAPOR INFILTRATION (CVI) AND DEPOSITION (CVD) STRONG GROWTH POTENTIAL IN NEW APPLICATIONS



PVA TEPLA EXPECTS TO OUTGROW THE MARKET

INVESTMENT IMPLICATIONS FOR PVA

WE SEE STRONG GROWTH POTENTIAL THROUGH INNOVATION, DRIVEN BY MEGATRENDS



METROLOGY

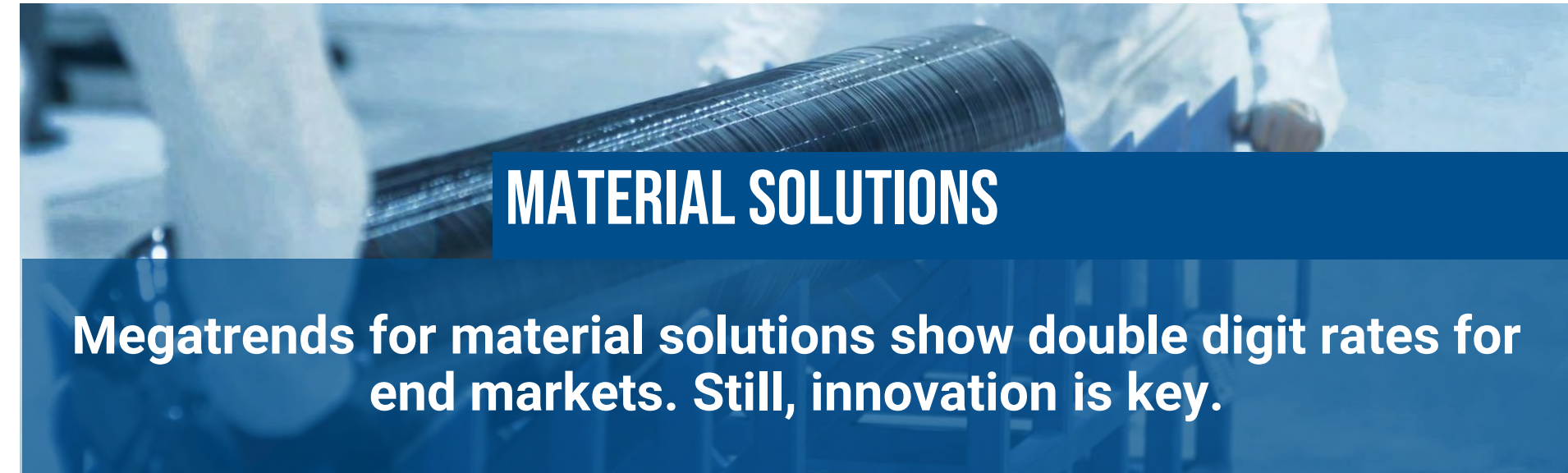
Semiconductor markets grow steadily. Our growth is driven by innovation.

→ EVOLUTION IN OUR CORE MARKETS

- High-end system architecture is more powerful, but production process is also prone to costly errors and requires effective metrology
- High potential growth in acoustic metrology

→ INNOVATION IN OUR PRODUCT PORTFOLIO

- Automation of Ellipsometry opens the door for us into established markets. High throughput automated machines will help us gain market share and outgrow the market
- Hyperspectral vision is a cutting-edge technology that has the potential to roll up the market. We expect to gain market share by being first mover, adding to the established technology
- X-Ray completes our portfolio of optical metrology methods, providing us with another established defect detection method for the semi industry



MATERIAL SOLUTIONS

Megatrends for material solutions show double digit rates for end markets. Still, innovation is key.

→ TREND TOWARDS COMPOUND SEMICONDUCTOR MATERIALS

- Where Silicon is a commodity, compound semiconductors like Silicon Carbide are fairly new on a large-scale production basis and require special equipment on the synthesis side

→ DEVELOPMENTS IN MANUFACTURING TECHNOLOGY

- The requirement for lightweight, high-performance parts drives our business in diffusion bonding

→ INNOVATION IN OUR PRODUCT PORTFOLIO

- Synergies in graphite purification and synthesis driven by e-mobility and renewables

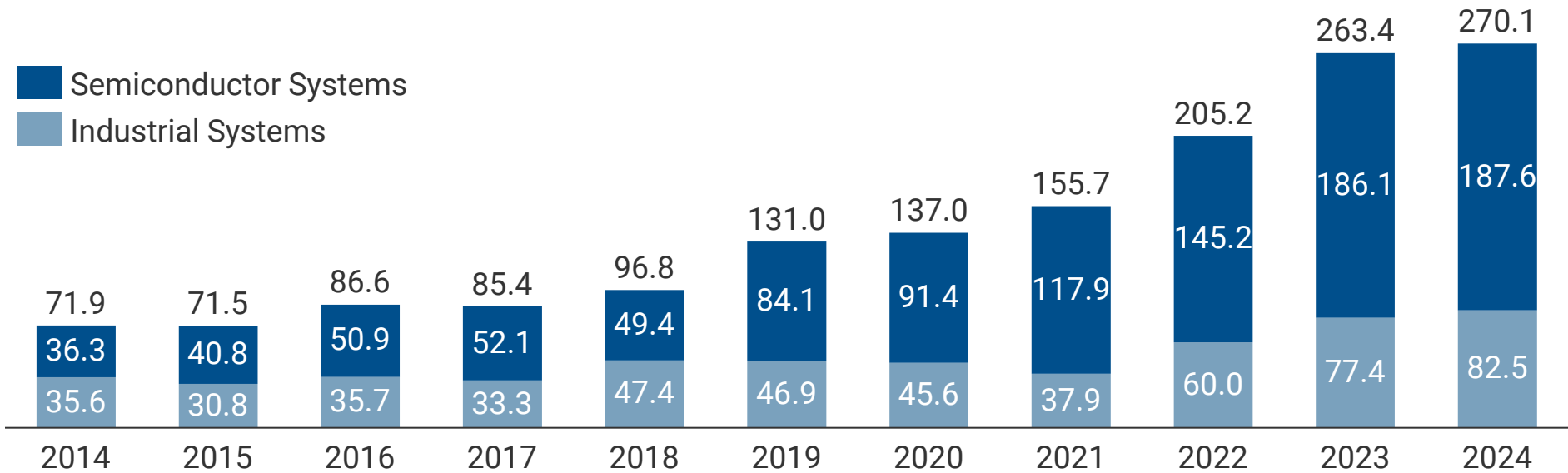


FINANCIALS

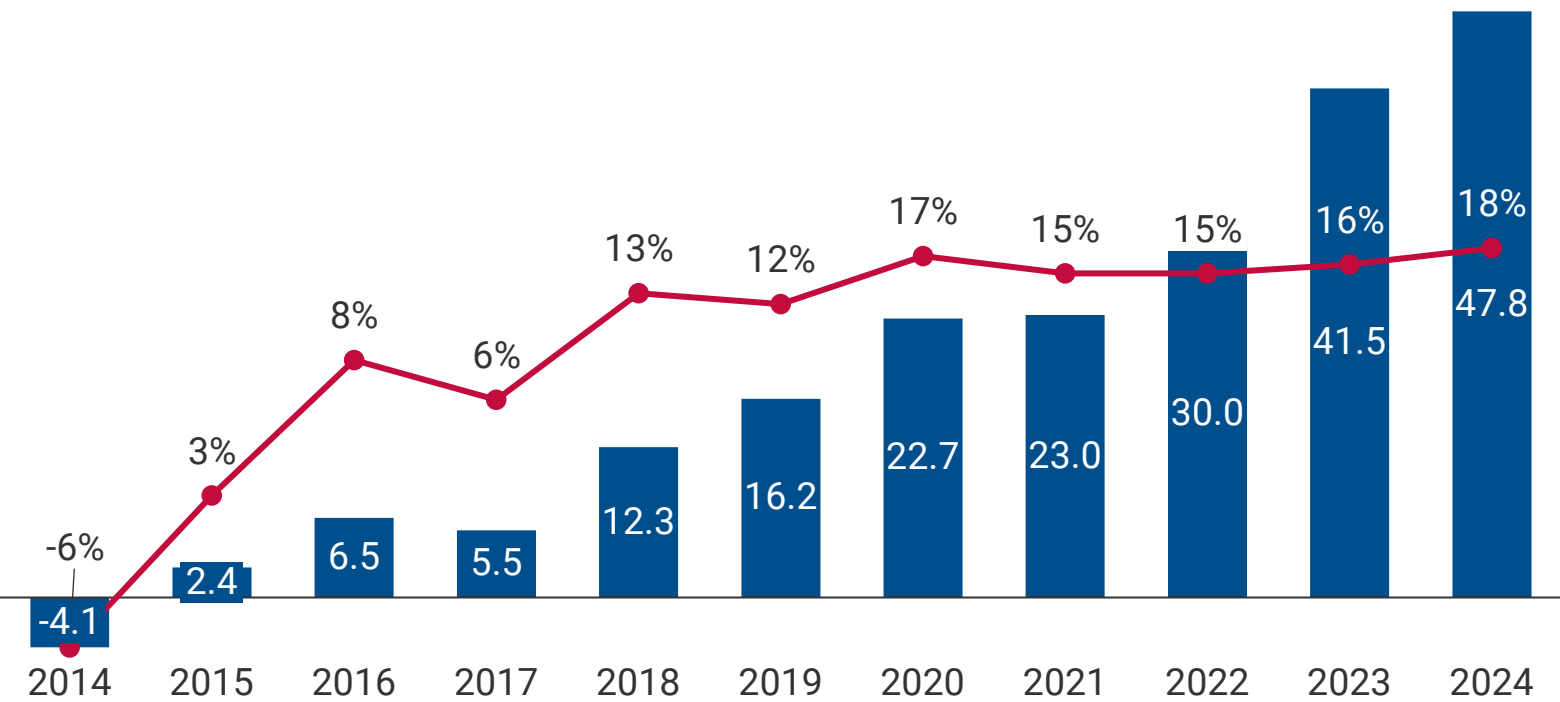
HISTORICAL KPI DEVELOPMENT

GUIDANCE FOR 2025 CONFIRMED AT LOWER END OF FORECAST RANGE:
REVENUE BETWEEN EUR 260-280M, EBITDA EUR 34-39M

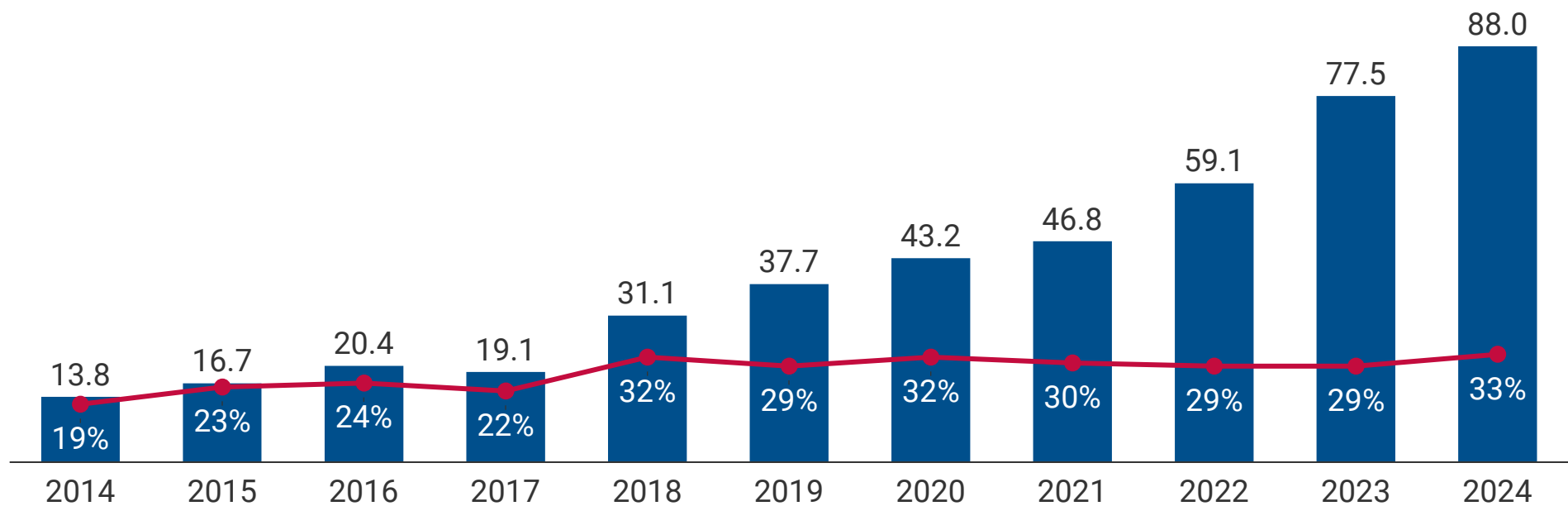
Revenue and segment split [in EUR mn]



EBITDA [in EUR mn] and EBITDA margin

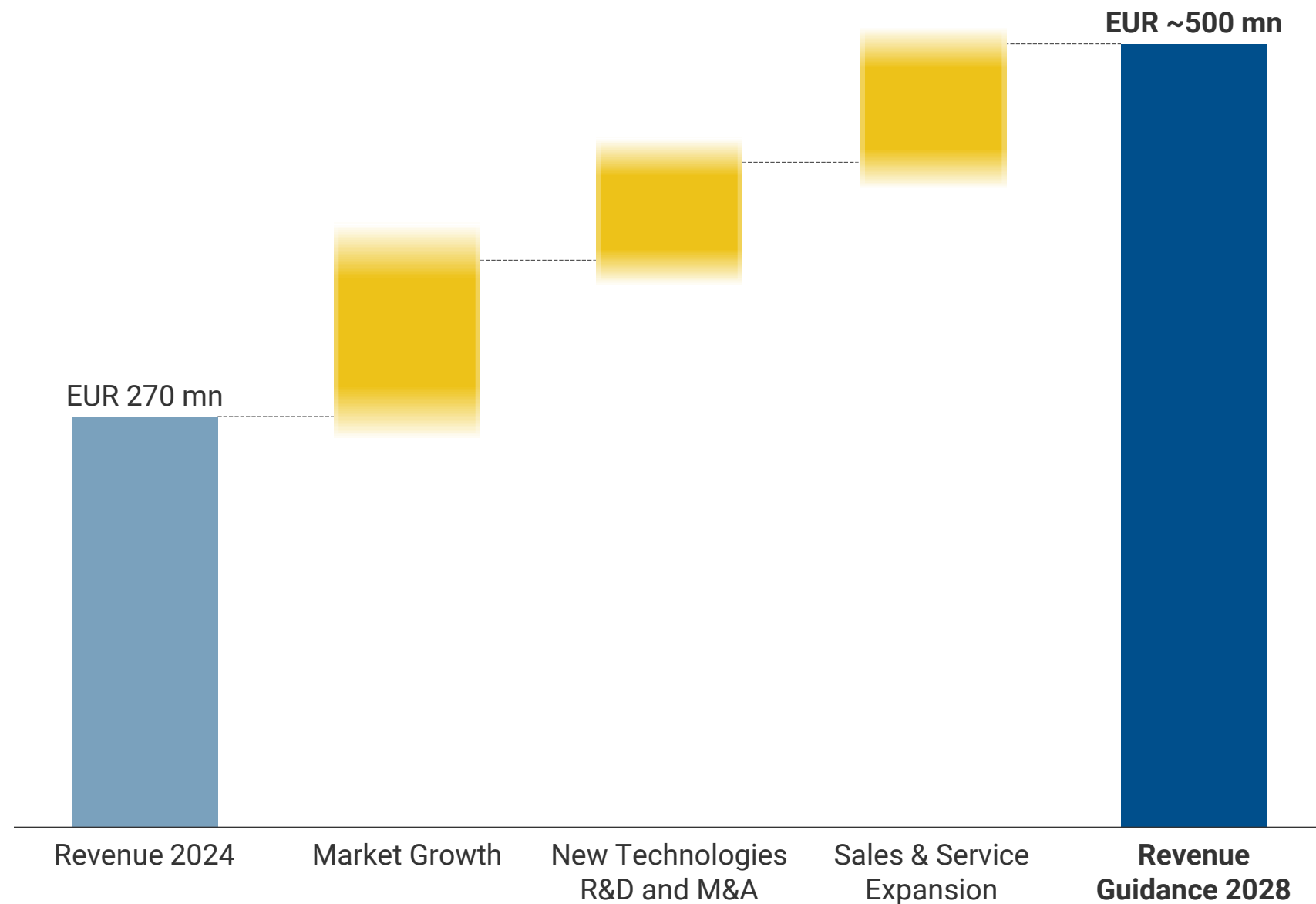


Gross profit [in EUR mn] and gross margin



BUILDING BLOCKS OF STRATEGY 2028

REVENUE BRIDGE 2024 TO 2028



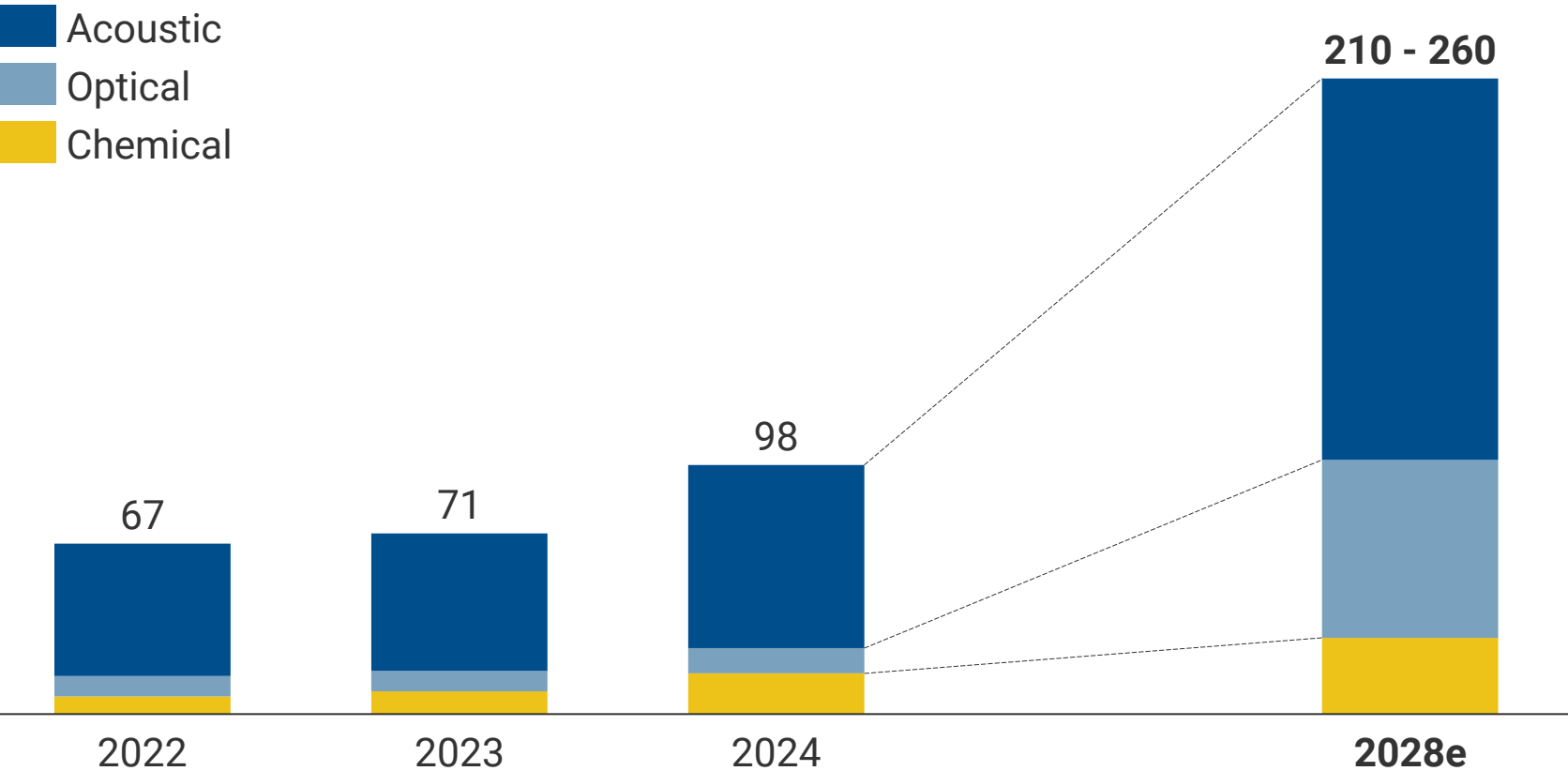
GROWTH DRIVERS 2024 TO 2028

- **MARKET GROWTH:**
Growth in our established markets is largely driven by the rising demand for metrology solutions
- **NEW TECHNOLOGIES AND APPLICATIONS:**
A significant part of revenue contribution is expected to come from technology innovation to open new markets for us
- **SALES & SERVICE EXPANSION:**
Building on our sales & service teams, we expect growth from existing and prospective customers. We come from a service revenue contribution of 15% and aim to grow to 20%

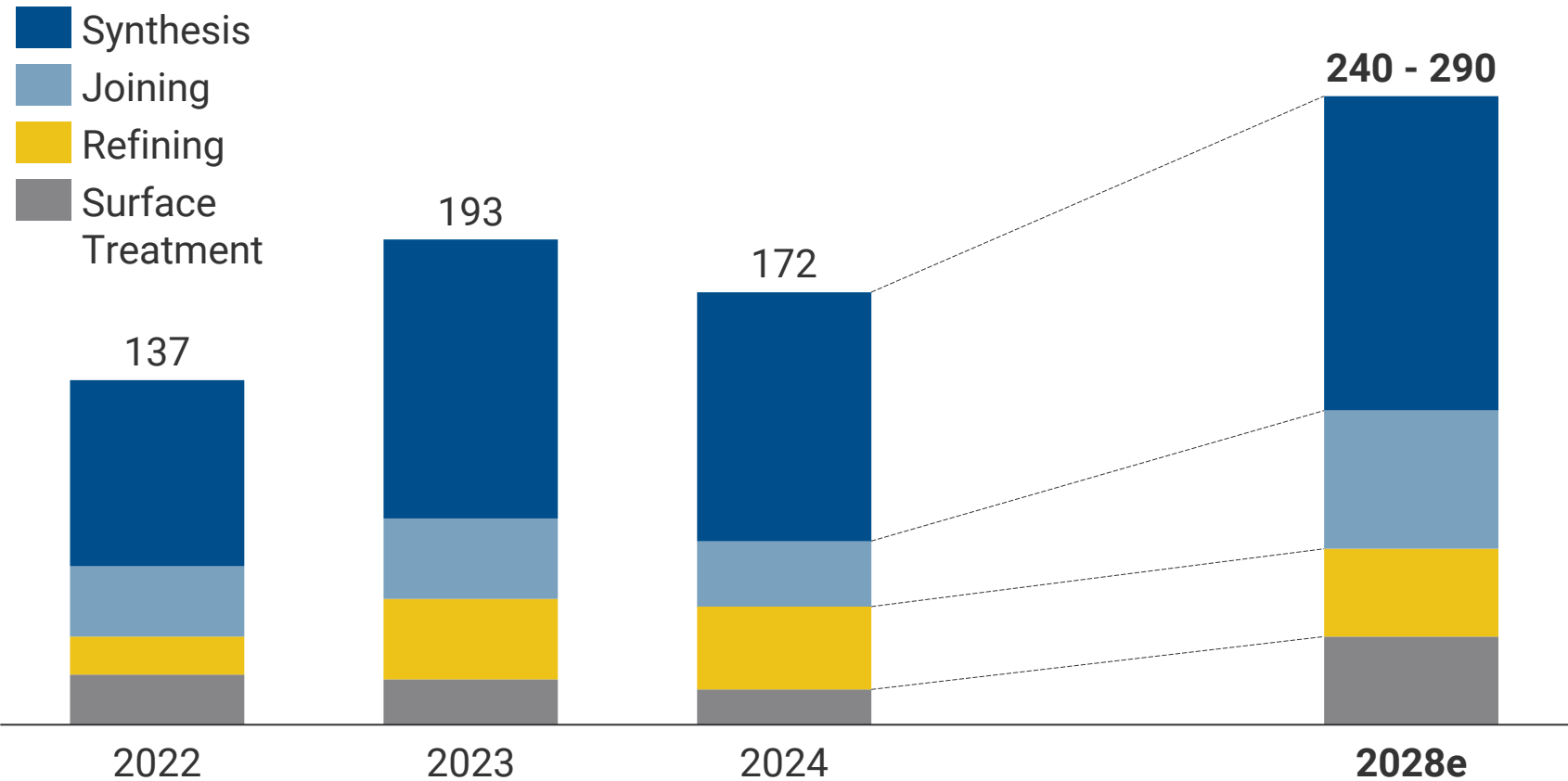
REVENUE GROWTH OPPORTUNITIES BY SEGMENTS

CLEAR GROWTH PATH WITH BALANCED REVENUE CONTRIBUTION AND SIGNIFICANT MID-TERM MARGIN IMPROVEMENT IN BOTH SEGMENTS, NEW REPORTING WILL START IN 2026

METROLOGY [in EUR mn]



MATERIAL SOLUTIONS [in EUR mn]



- STRONG REVENUE INCREASE IN METROLOGY WILL BALANCE OUT SEGMENT REVENUES
- POST-GROWTH MID-TERM GROSS MARGIN EXPECTED TO SUBSTANTIALLY INCREASE TO **50-55%**

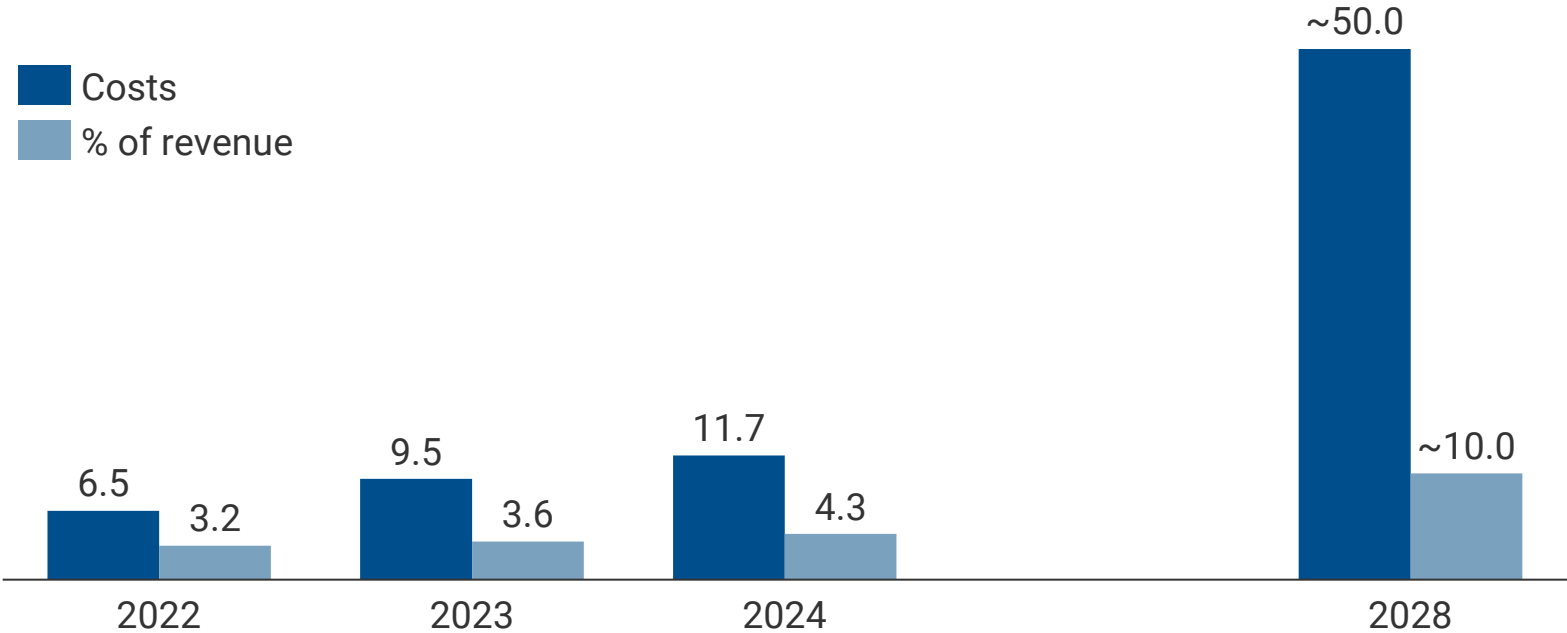
- DIVERSIFIED PRODUCT PORTFOLIO ENSURES LESS DEPENDENCE ON INDUSTRY CYCLES
- POST-GROWTH MID-TERM GROSS MARGIN EXPECTED TO INCREASE TO **28-33%**

- POST-GROWTH MID-TERM CONSOLIDATED GROUP GROSS MARGIN EXPECTED TO INCREASE FROM 32.6% (FY 2024) TO **38-43%**
- POST-GROWTH MID-TERM CONSOLIDATED GROUP EBITDA MARGIN EXPECTED TO INCREASE FROM 17.7% (FY 2024) TO **20-25%**

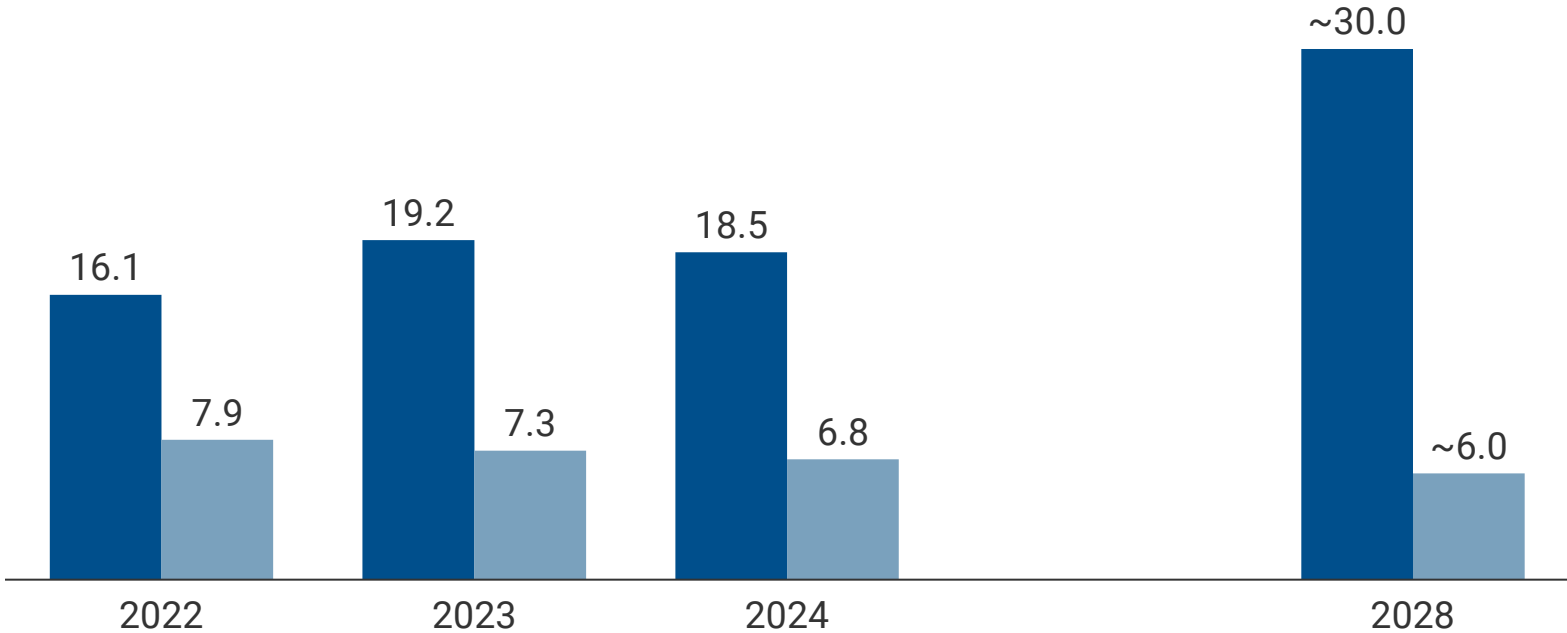
ESTIMATED DEVELOPMENT OF OVERHEAD COSTS

SLIGHT INCREASE IN TOTAL OVERHEAD MARGIN MAINLY DRIVEN BY R&D

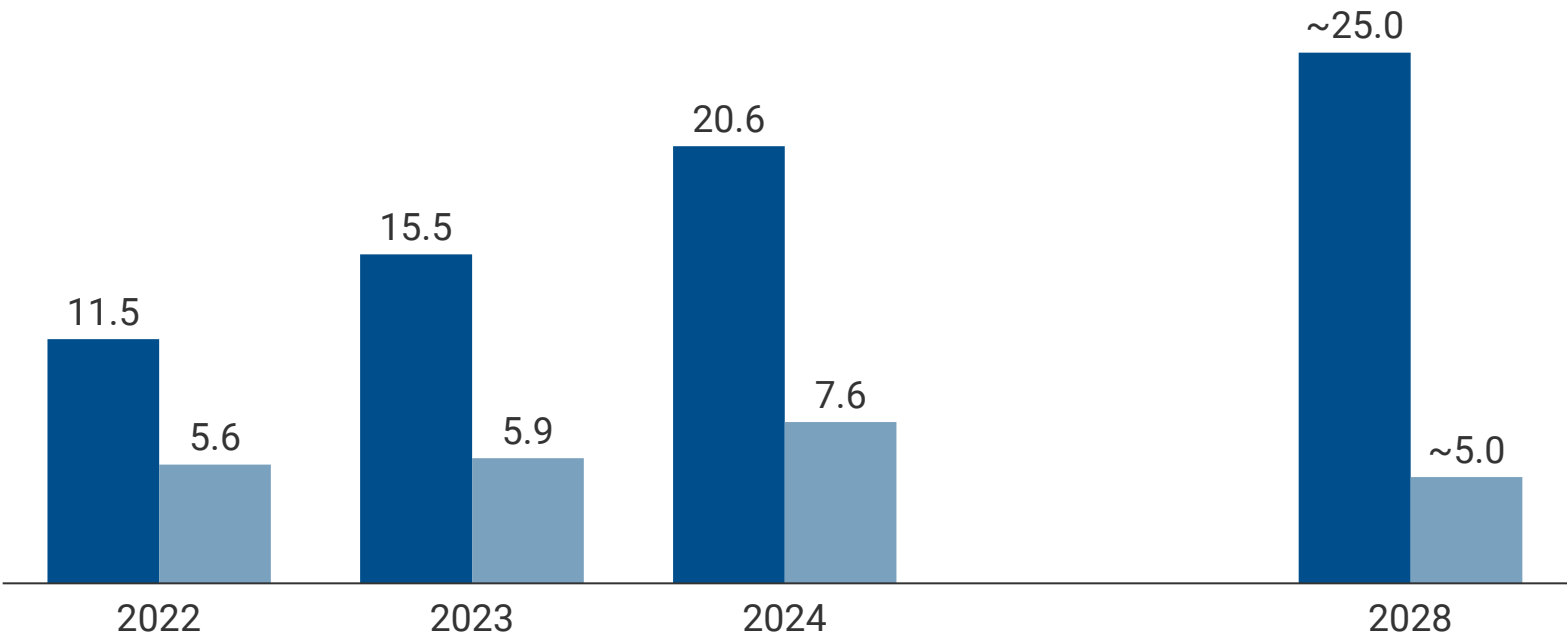
R&D costs [in EUR mn and % of revenue]



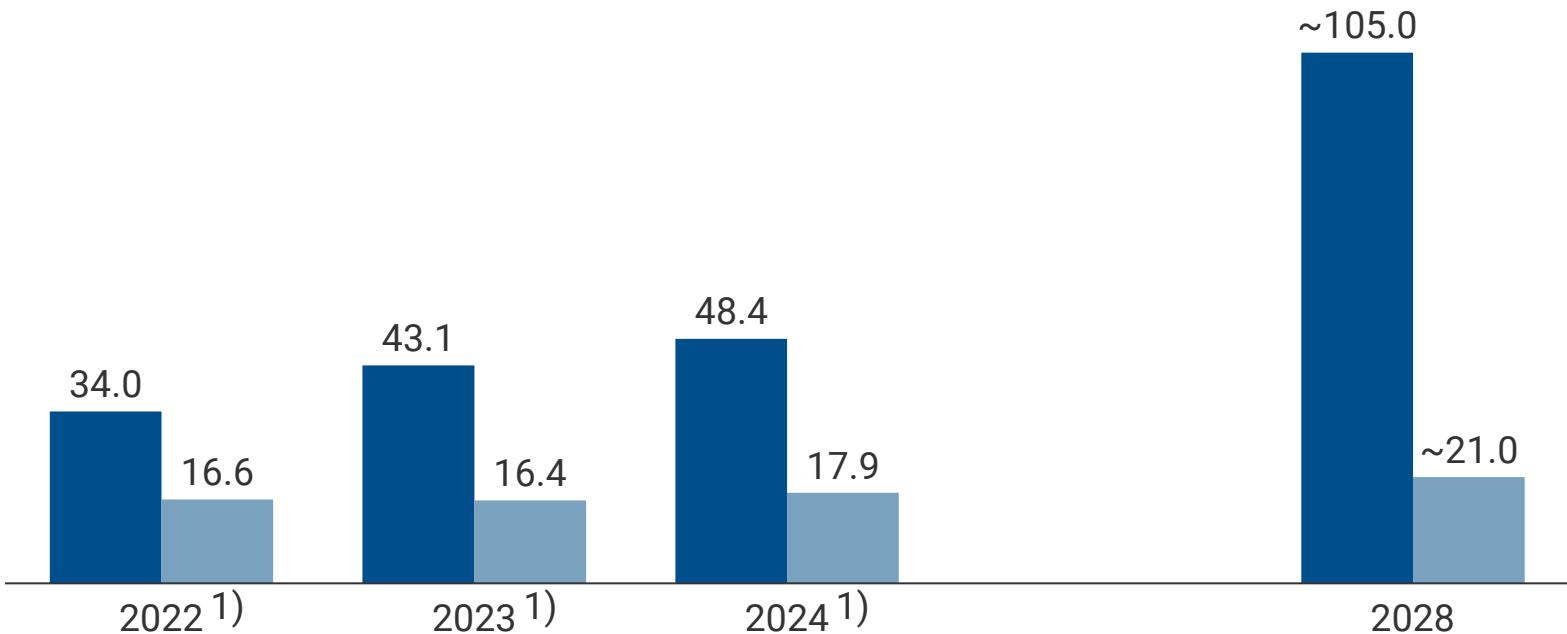
Distribution costs [in EUR mn and % of revenue]



Administrative costs [in EUR mn and % of revenue]



Total overhead costs [in EUR mn and % of revenue]



(1) Sum of historical R&D, administrative, and distribution costs does not add up to 100% due to additional line items not presented here.

CAPEX

TOTAL CAPEX INCLUDES TARGETED INVESTMENTS IN PRODUCTION EXPANSIONS AND R&D, PLUS SOME CATCH-UP EFFECTS FROM DEFERRED INVESTMENTS

Completed recent CAPEX projects (investment phase concluded)

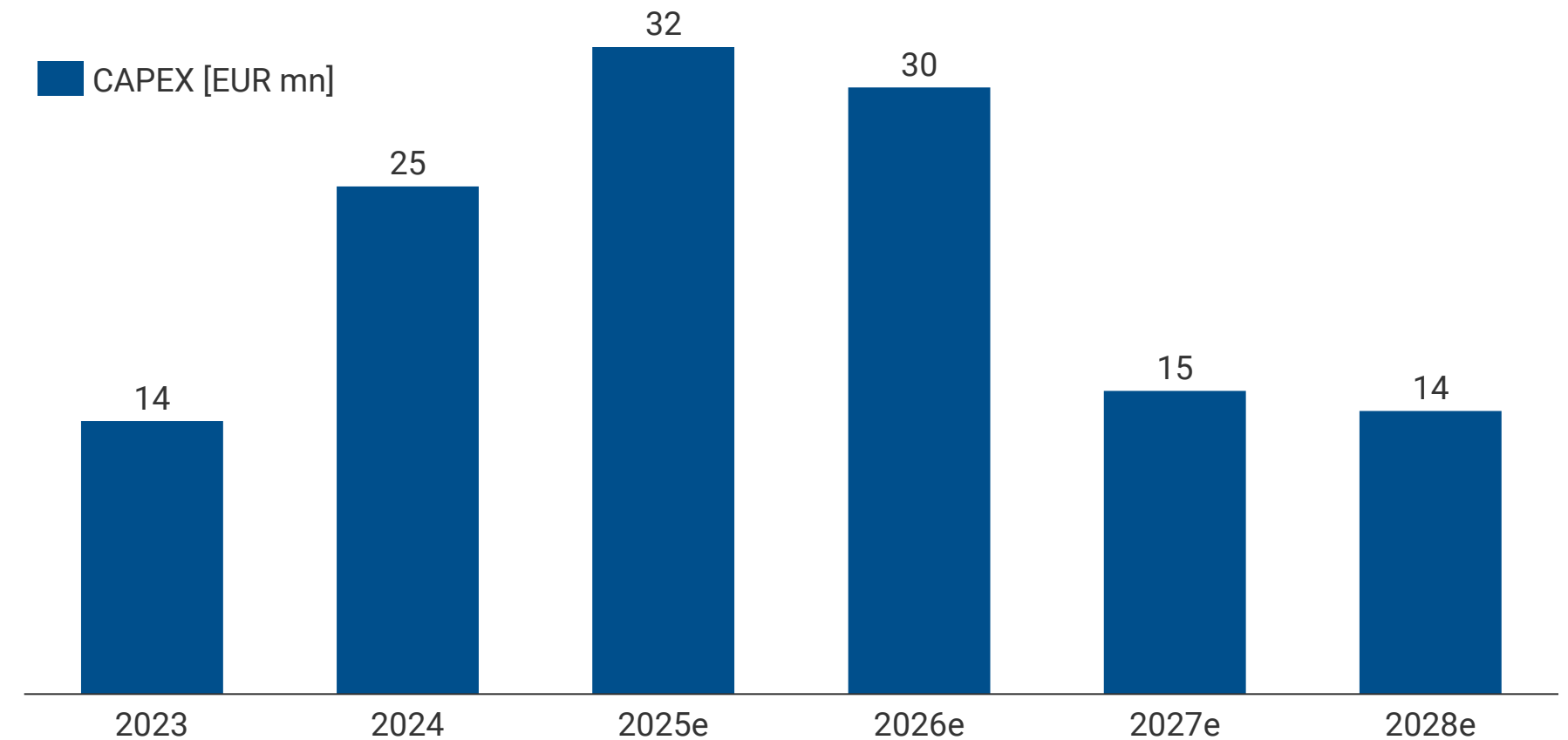
- Construction of two new production halls at HQ in Wettenberg, Germany
- New production facility for vessels in Italy
- Setup of the Technology Hub facilities at HQ in Wettenberg
- Extension of demo systems

Current CAPEX projects (in investment phase)

- Extension of office capacity at HQ in Wettenberg (2025)
- Capacity increase for contract manufacturing (2025)
- Development of SiC 8" crystal growing process (2025)
- New, state-of-the-art training center for apprentices at HQ in Wettenberg (2025)
- New production hall in Jena (2025-2026)
- Demo systems (2025-2026)

Projected CAPEX projects (no investments yet)

- Expansion of production facilities in France
- Expansion of production facilities in North America
- Demo systems



WE EXPECT CAPEX TO NORMALIZE BY 2028 AT ONLY RECURRING INVESTMENTS FOR MAINTENANCE

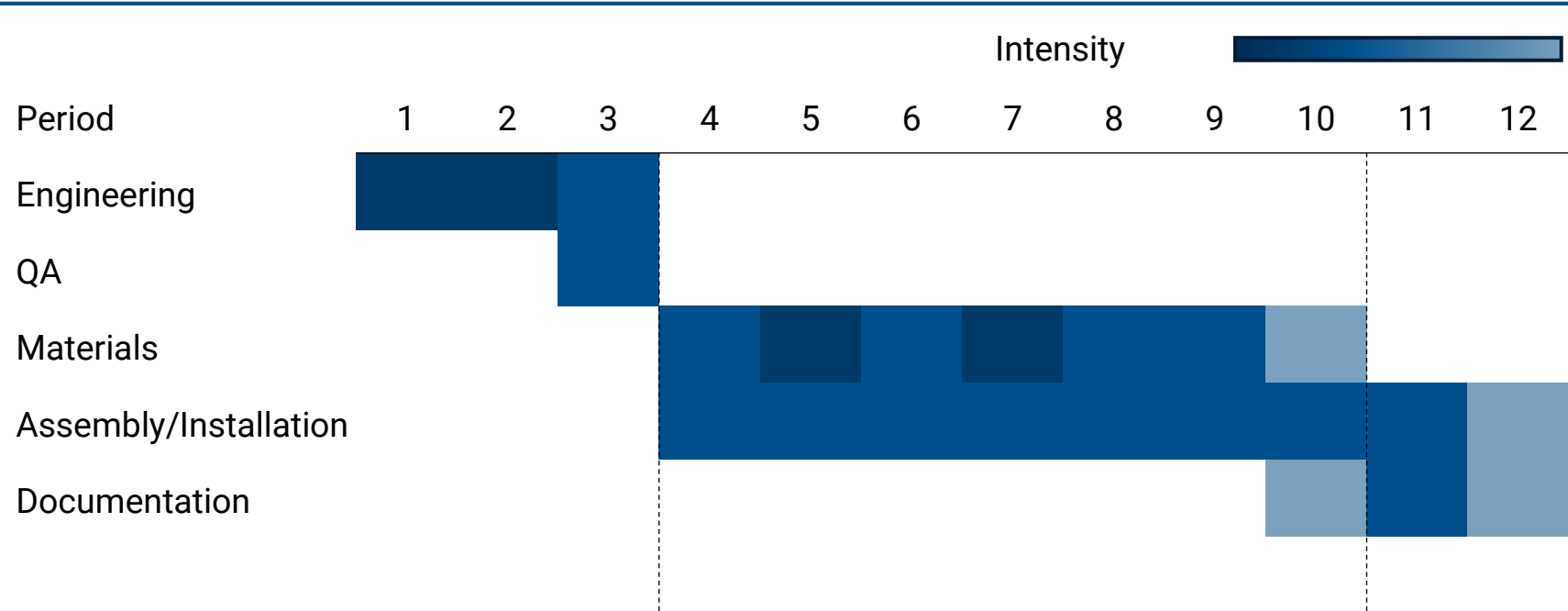
CASH FLOW

TYPICAL PROJECT IN MATERIAL SOLUTIONS

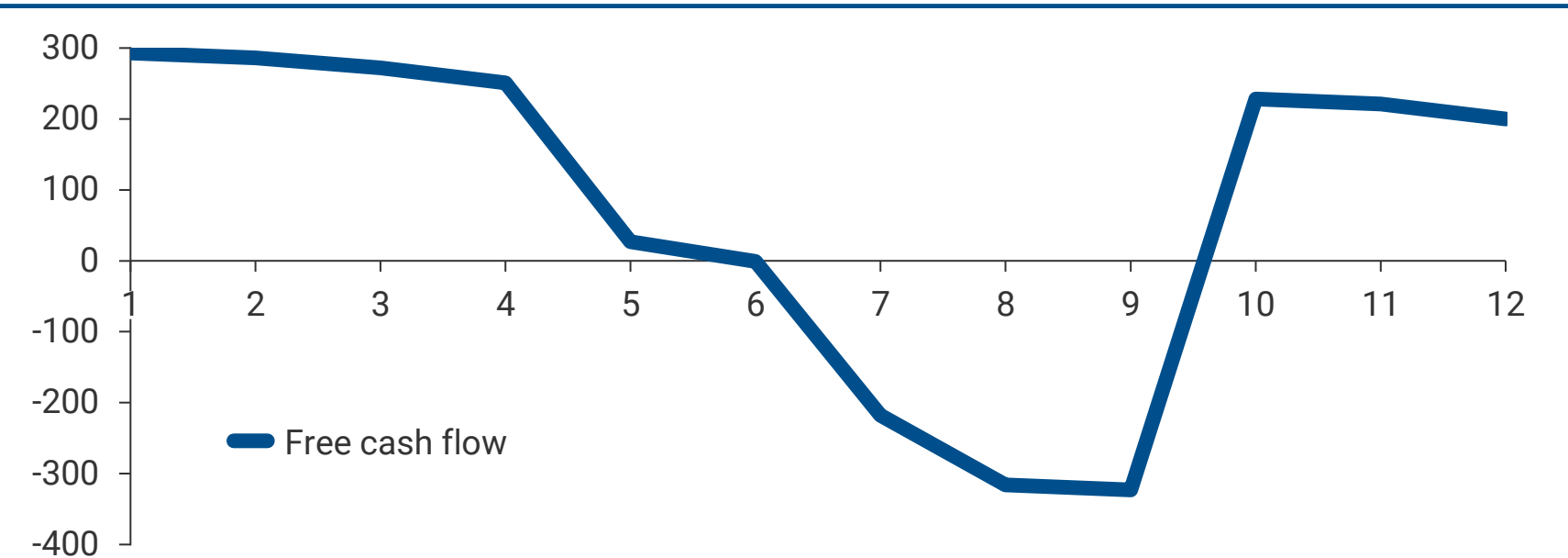
Key facts

- Cash flow: positive at order intake, negative during manufacturing, positive at completion
- Large projects secured by tailored prepayment provisions to ensure cash neutrality
- Cash flow mainly driven by order-specific material procurement
- Typical project duration of 12-18 months

Cash intensity over project period



Cumulative free cash flow over project period [EUR k]



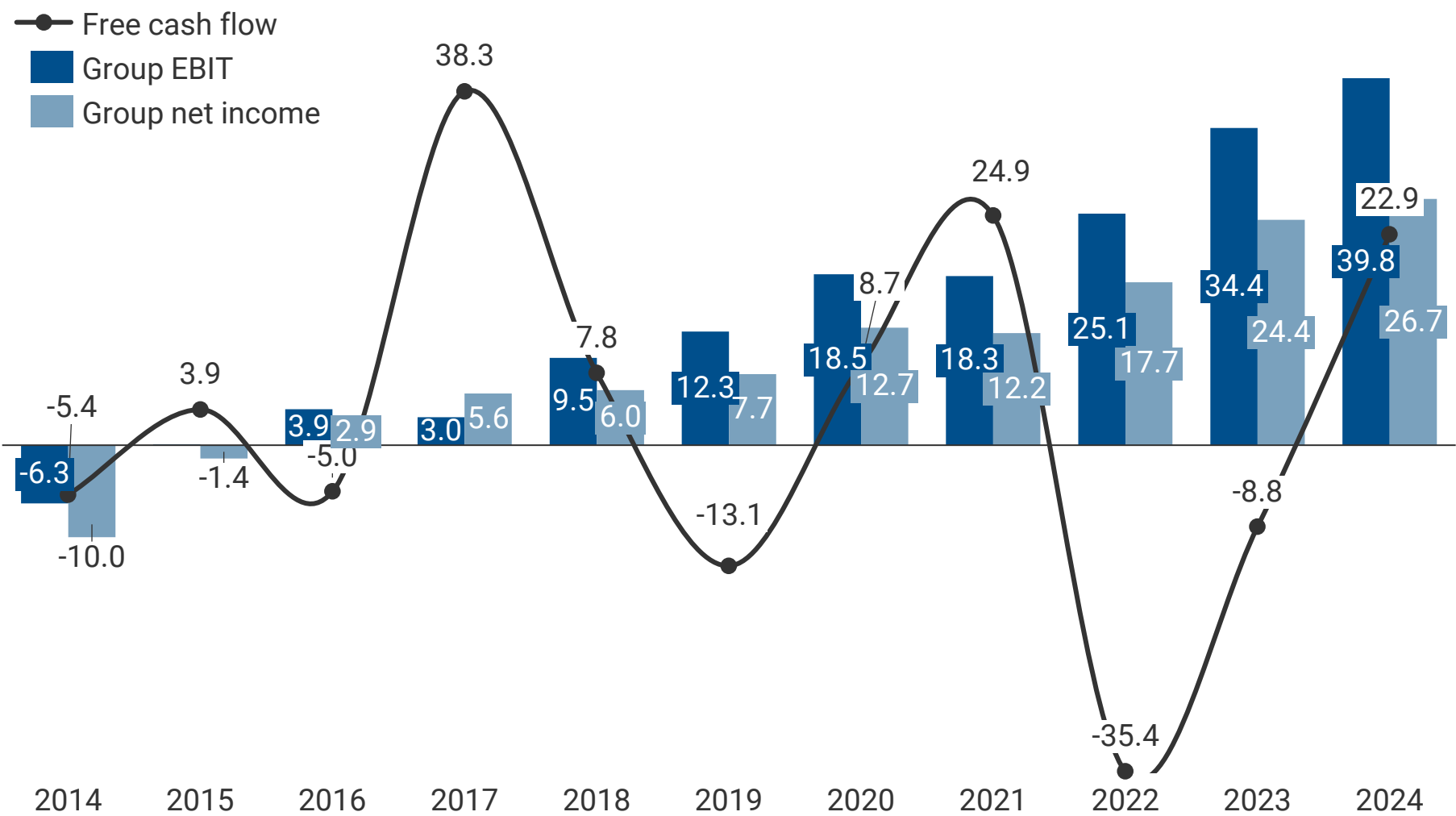
CASH FLOW

FROM CYCLICAL AND VOLATILE CASH FLOW TO METROLOGY-DRIVEN STABILITY

Historical and future development

- **Historically:** Free cash flow highly fluctuating
- **Material Solutions:** largely financed through advance payments (typical 30/60/10 structures)
- **Metrology:** negative at order intake (no prepayments), cash in at delivery, higher working capital, faster turning, higher margins
- **In future:** more balanced profile with increasing share of Metrology business against Material Solutions with prepayments and financing flexibility for large projects

Historical free cash flow [in EUR mn]



WE EXPECT A HIGH ALIGNMENT BETWEEN FREE CASH FLOW AND EBIT IN METROLOGY

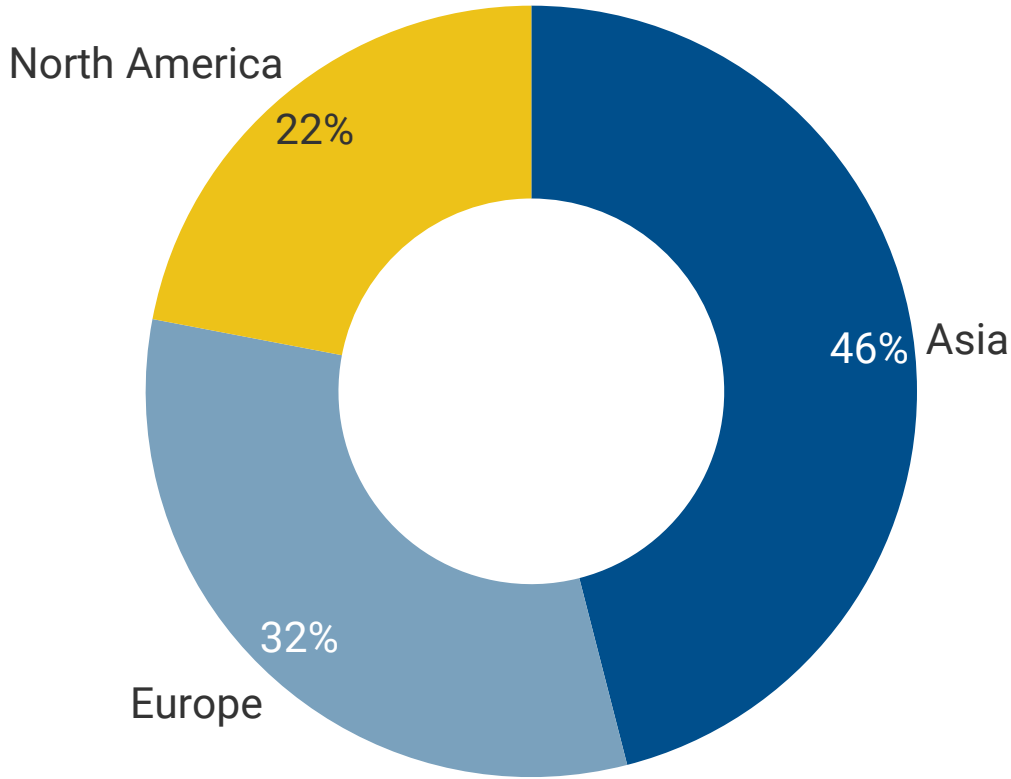
U.S. TARIFFS AND OUR STRATEGIC COURSE

STABLE ORDERS TODAY, BUT INCREASING REQUIREMENTS FOR LOCAL SOURCING AND PRODUCTION

Situation to date

- Strong Metrology position: limited impact from U.S. tariffs to date
- No visible reluctance from U.S. customers; order intake stable Q1–Q2
- Semiconductor equipment suppliers largely unaffected so far
- Growing pressure for U.S. domestic production, local sourcing and on-site assembly

Order intake in H1 2025



REGIONAL EXPOSURE BALANCED – LIMITED TARIFF IMPACT TO DATE

SUMMARY

STRONG FINANCIAL DEVELOPMENT ACROSS TWO BALANCED SEGMENTS



TOPLINE ACCELERATION

- Clear **building blocks to EUR 500m sales** by 2028
- Expansion in **structural growth markets** (semiconductor, energy, aerospace, automotive)
- **Strong demand drivers:** high-purity materials & advanced quality assurance



PROFITABILITY UPLIFT

- Mid-term gross margin **improvement from 33% to 38–43%**
- EBITDA margin expansion to **20–25%**
- **Operational leverage** from scalable business model



SOLID FINANCIAL FOUNDATION

- ~10% of sales reinvested in **innovation & R&D**
- **CapEx-light profile** post current investment cycle
- **Solid balance sheet** supports growth & flexibility



ROBUST CASH GENERATION

- **High-margin, fast-cycle** projects in Metrology drive cash flow
- **Customer prepayments reduce funding** needs in Material Solutions
- Balanced portfolio ensures **predictable cash conversion**

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