



Confidential Information Memorandum – Hammer-IMS

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Executive Summary

Hammer-IMS at a glance

Belgium-based Hammer-IMS delivers proprietary inline measurement systems that set new standards in industrial quality and process control, offering a clear competitive edge in high-growth markets



Herk-de-Stad, 3540 BE
Spartanburg, US



Founded in 2016



Used in Insulation, Technical
Textiles and electrical storage



€5.6m cumulative funding &
€1.5m grants (non-dilutive)



€1.28m consolidated
FY24 revenue



40% of cumulative revenue
comes from repeat customers



13.5 FTE

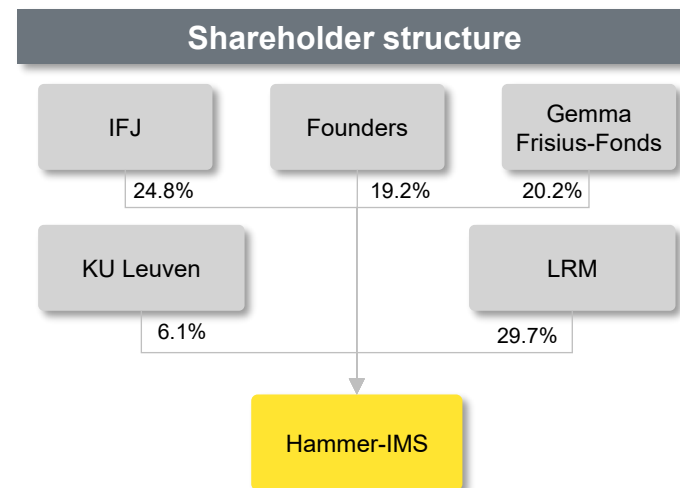
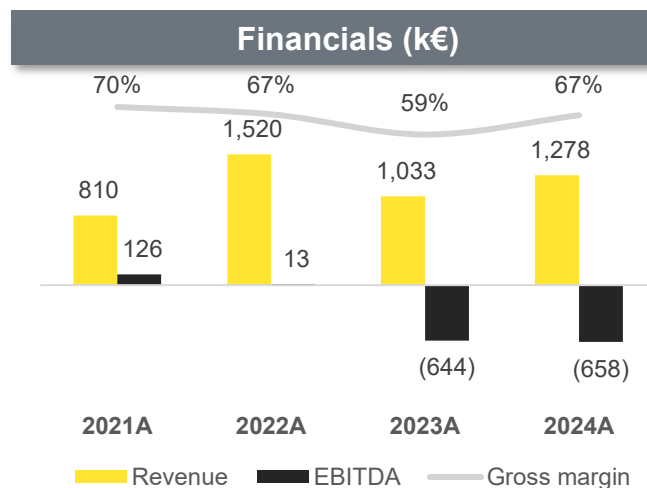
Founded by **prof. dr. ir. Patrick Reynaert**, **dr. ir. Tom Redant** and **dr. ir. Noël Deferm**, Hammer-IMS is the one-stop shop for advanced quality and process control solutions

Hammer-IMS specializes in advanced measurement solutions for thickness and basis weight, complemented by surface inspection systems that include powerful capabilities for anomaly detection and classification.

The company's innovations are based on three pillars:

1. their electromechanical base systems
2. their sensor and vision technology
3. their AI-enabled control software

Their cutting-edge M-Ray technology ensures non-nuclear, radiation-free solutions, delivering precision and safety in every application



Investment Highlights

A one-stop shop in a high-growth market with strategic footholds in Europe and the US, positioned to capture significant global demand

1

One-stop shop offering: established portfolio of systems and software with demonstrated success and recurring customer demand

2

Ready-to-scale foundation: validated products and commercial traction create a strong launchpad for growth in the hands of an industrial partner

3

Software excellence: performant & user-friendly software, containing multiple toolboxes with key algorithms within Hammer-IMS' activities

4

Hardware excellence: cutting-edge, durable hardware integrating advanced sensors and engineering know-how, ensuring accuracy and reliability



5

Technology & IP: strong proprietary systems with patents filed and a clear technology roadmap

6

Compatibility: different component compatibility, dynamic integration platform & production integration with customer process

7

Strong branding: strong marketing team, exposition and communication focus

8

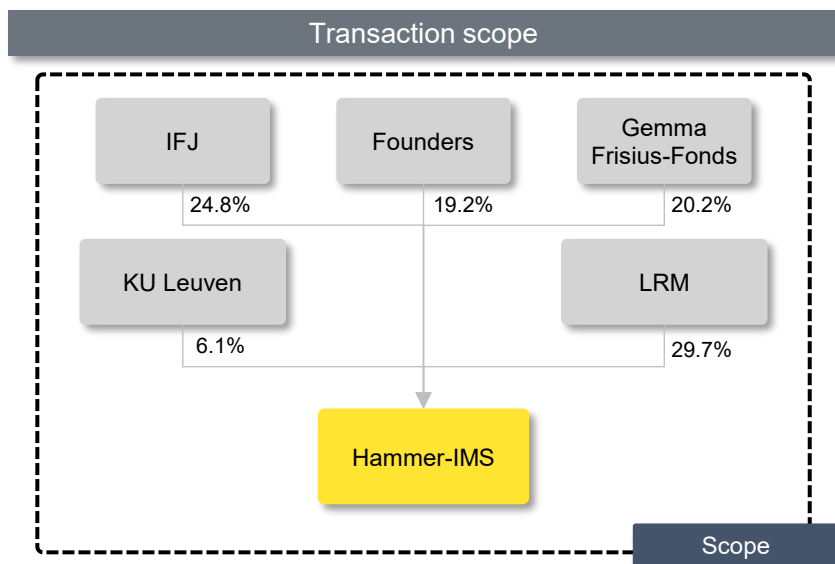
Strategic locations: central Belgian HQ offers strong access to European markets, while the USA entity is located near key players in the automotive value chain.

9

Team strength: young and ambitious team with strong technical and academic backgrounds.

Transaction details

Hammer-IMS is looking for a strategic partner to accompany them in their next growth phase



Transaction rationale

- **Hammer-IMS has developed proven industrial products (TRL9)**, with growing adoption and repeat orders across several manufacturing sectors. Alongside its TRL9 products, the company has **set out a two-year R&D roadmap, formalized through an R&D VLAIO project¹**.
- The company has reached an important stage where **scaling requires stronger commercial reach**, which is difficult to achieve independently without significant additional investment.
- The shareholders believe **integrating the sales structure into a larger industrial group** offers the best path to realizing the technology's full potential.
- Hence a **full sale (100% of the shares) is a logical next step**, as current investors have fulfilled their role in funding development and are now looking to **hand over the business for its next growth phase**.

Technology platforms

Hammer-IMS's strong emphasis on both sensor and camera technology positions it well to capture a significant share of the market

Hammer-IMS focuses on **quality and process control** in continuous production environments, with a strong emphasis on inline measurement. The company deploys two complementary technology platforms; a **sensor-based platform** and a **camera-based platform**, to deliver real-time insights into material properties and surface quality.

Sensor-based

Measurement



Weight



Moisture



Thickness



Air permeability



Density

Sensor Types

M-Ray

Millimeter-wave
transmission

U-Ray

Ultrasonic pulse
echo

L-Ray

Opposed laser
sensors

C-Ray

Capacitive
thickness sensing

Camera-based

Inspection



Surface
defects



Thermal
anomalies



Pattern/stripe
detection

Camera Types

**Visible-light
cameras**

**Infrared
cameras**

Product range

Hammer-IMS has built solid market traction with its Marveloc systems and recently added the promising Edge-Vision-4.0 to its portfolio

	What	Technology Platform	Types
Marveloc	• Marveloc systems are Hammer-IMS's best-selling products, used across various industries. • They operate radiation-free and fit different production line sizes, from small to large. • Primarily designed to measure weight and thickness in continuous production environments.	• Sensor-based: • <i>M/U/L/C Ray</i> • <i>Third party sensors</i>	 Marveloc-CURTAIN-O  Marveloc-CURTAIN-C  Marveloc-CHARIOT  Marveloc-CURTAIN-C-SLIM
Edge-Vision-4.0	• Newest product line with strong strategic growth potential • Detects defects, fractures, and color variations using cameras and AI • Dark frame design ensures optimal imaging in industrial environments	• Camera-based • <i>Line scan cameras</i> • <i>Thermal cameras</i>	   Edge-Vision-4.0-CURTAIN

Software & Connectivity 4.0

Hammer-IMS runs on modern, custom-built C++ software that connects easily with existing systems, enabling use as an IoT-ready platform for Industry 4.0

1 Core Platform & Architecture

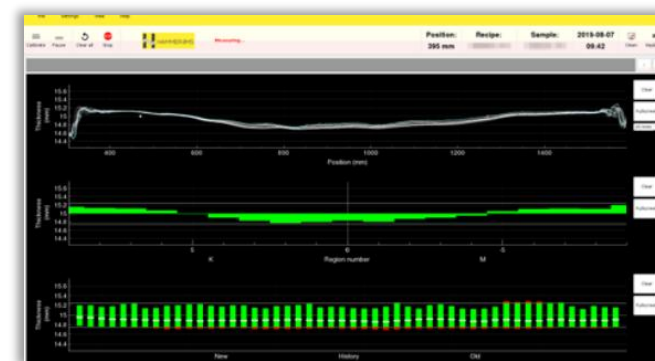
Connectivity 3.0 is the software behind all **Marveloc** and **Edge-Vision-4.0 systems**. It's **built in C++** and runs on a **custom Linux setup** (HammerOS). The platform is designed to use computing power efficiently and works on **both compact and high-performance PCs**.

2 Industrial Connectivity 4.0

Positioned as the **preferred industrial IoT platform**, Connectivity 4.0 **integrates seamlessly with modern automation systems**, supporting key protocols that **enable Industry 4.0**. It transforms measurement data into actionable insights, linking production, quality control, and enterprise systems in real time.

3 Independent & Future-Proof

Connectivity 4.0 functions equally well as a stand-alone solution, enabling manufacturers to modernize operations without replacing existing equipment. Its **flexible architecture and readiness for future standards** provide a smooth upgrade path from outdated software to a fully connected, **Industry 4.0 enabled environment**.



Connectivity 4.0 intuitive interface



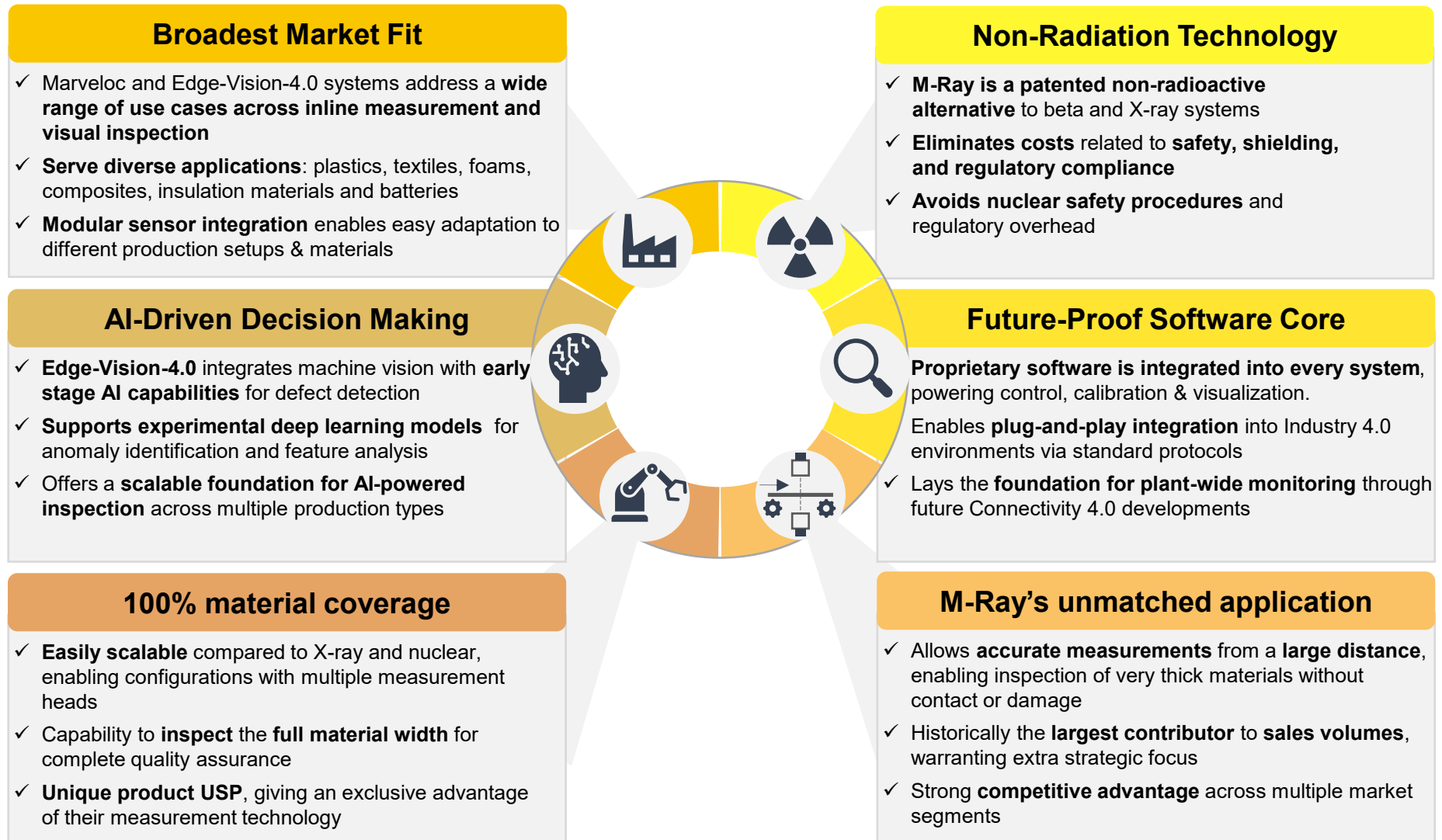
Mobile HMI unit



Fixed HMI unit

USPs

With their strong & patented technology portfolio, Hammer-IMS has positioned itself to be able to scale across different geographies and markets



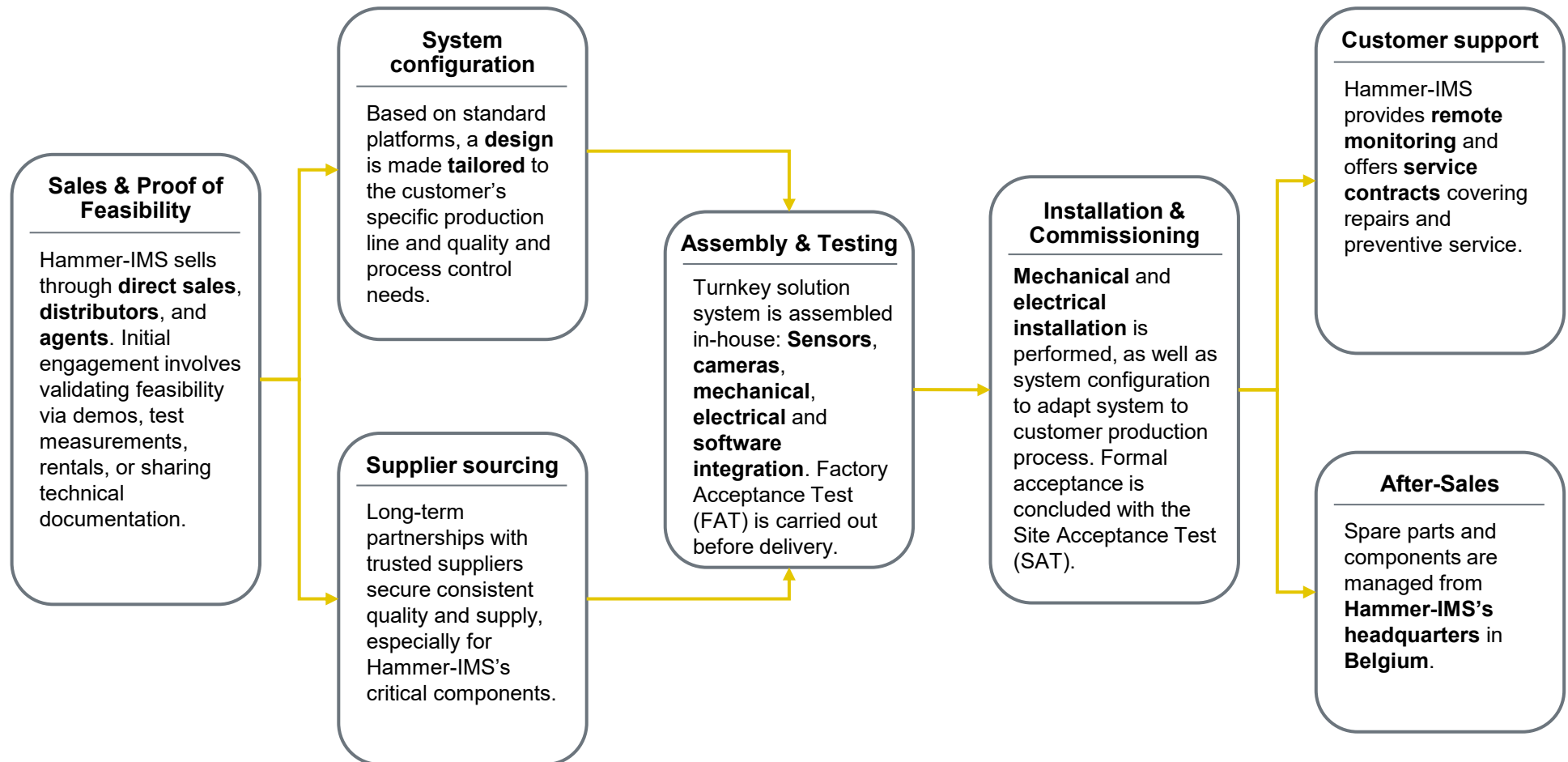
Intellectual property

This IP subset is directly integrated into their current set of TRL-9 products and therefore directly creates commercial value within the company

Patents	• 3 granted patents for non-destructive inline sensing; active in Europe (Unitary), USA and Japan • Hammer-IMS has filed a Belgian patent on a new moisture-measuring concept based on millimeter-wave technology • Jul-25 Belgian patent filing on a new technique for measuring surface roughness based on an optical technique • Current process of patent filing for ultrasound technology
Core Software (Connectivity 3.0)	• Closed-source C++ platform for control & calibration • Support for in-house developed sensors, third-party sensors & cameras
PLC Control Libraries	• Developed for Beckhoff & Siemens PLC systems • Includes proprietary PID controllers for process automation
Measuring Heads (U-Ray & M-Ray)	• In-house hardware: PCBs, firmware, and microcontrollers • Versions tailored for specific use cases (e.g. Tokyo, Rio, Helsinki and Oslo)
Calibration Systems	• Custom calibration routines with software & hardware • Supports Marveloc and Edge-Vision-4.0 systems
Design IP Database	• Modular mechanical & electrical system concepts • Includes mounting, optics, and vibration reduction designs
Add-On & Expansion IP	• Library of configurable hardware & software extensions • Enables system upgrades for multiple verticals

Business model

Hammer-IMS focuses on design and assembly of products, while purchasing standard components



Sales Channels

Hammer-IMS operates through a strong network of local and global representatives, with offices in Europe and North America to support growth in the promising US market



HQ & SO: Herk-de-Stad, **Belgium**
SO: Spartanburg, SC, **USA**



Supported by **local and global** representatives



Presence of **ambassadors** in the machine-building market that are members in **supportive ecosystems**

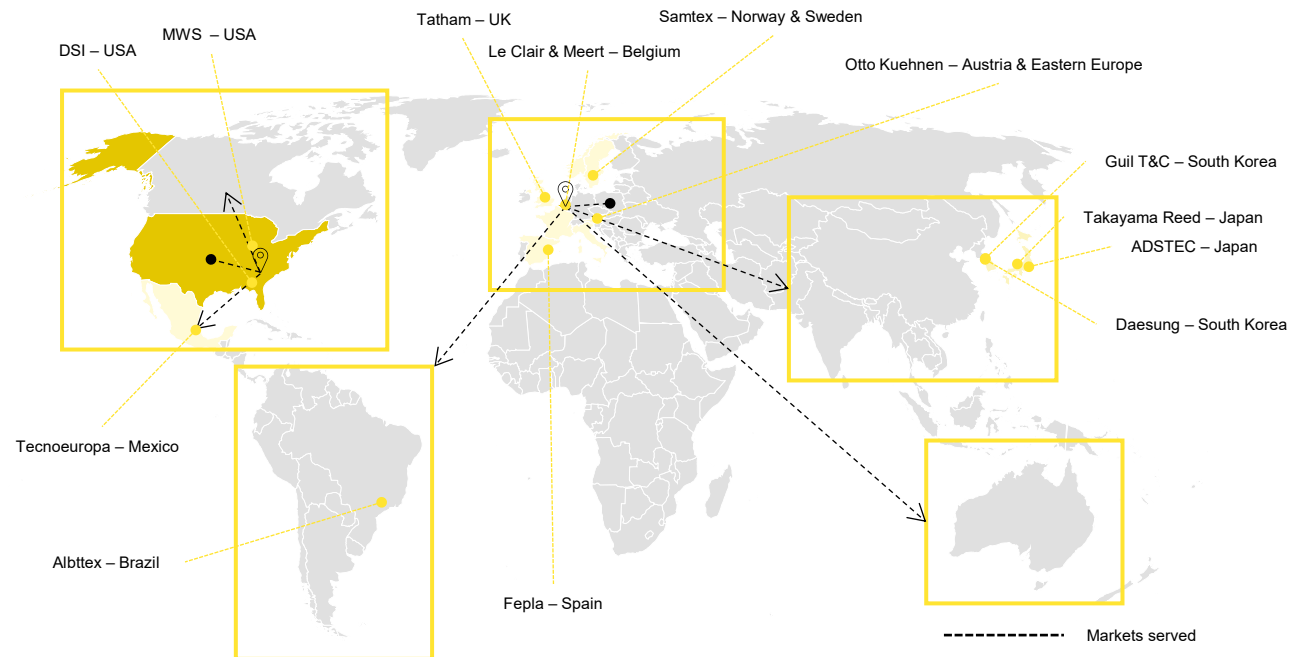


Partnered with ADSTEC technologies to set up sales channels & deepen understanding market dynamics



The USA office was officially opened and became **operational in 2023**

Sales Offices



Ambassadors

- ✓ Dilo Group
- ✓ Groz-Beckert
- ✓ Matthys
- ✓ Kuhne

Memberships

- ✓ Agoria
- ✓ Centexbel
- ✓ Symatex
- ✓ INDIA
- ✓ OpExchange
- ✓ The European-American Chamber of Commerce

Commercial Turnover (€k)

Region	2022	2023	2024
Europe	1.506	790	1.155
United States	0	170	326
South Korea & Japan	0	73	80

Customer base

Hammer-IMS products have proven their value across multiple industries, with new applications and markets continuing to emerge

Active across a range of **flat product manufacturing sectors**, with growing demand in **high-growth segments such as composite materials**.

Expanding the footprint from **Europe** to **US** (office started in 2023) and **Asia**

Trusted by blue-chip clients such as **Owens Corning**, **Heimbach and Balta**, with a customer base ranging from niche producers to multinationals.

Initial installations often lead to **repeat orders** as customers **expand usage across additional lines or facilities**.

>40% of cumulative revenue comes from repeat customers

Industries



Nonwoven



Textile



Synthetic Foam



Wall Coverings



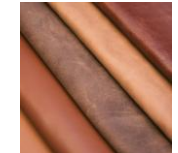
Plastic Cast Film



Steel



Electrical energy storage



Leathers



Glass/Carbon Fiber based Composite



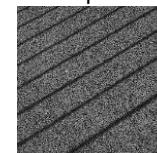
Glass/Mineral wool



Geosynthetics



Insulation board



Bitumen waterproofing membranes



Abrasives



Plastic sheet

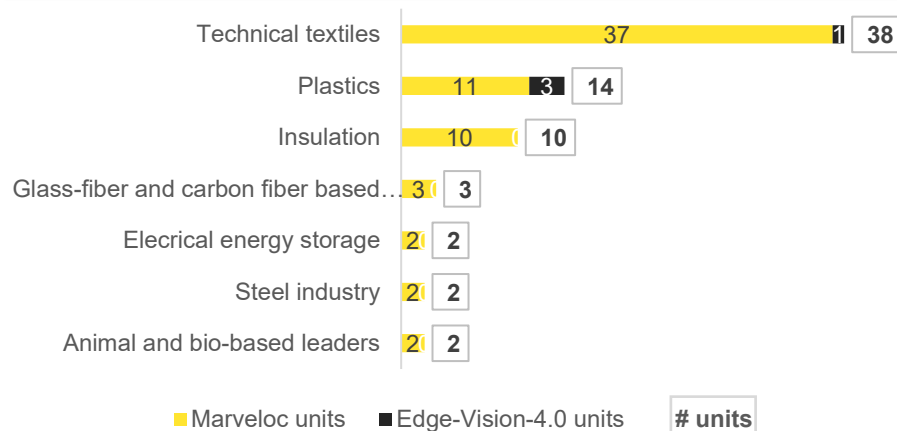


Rubber

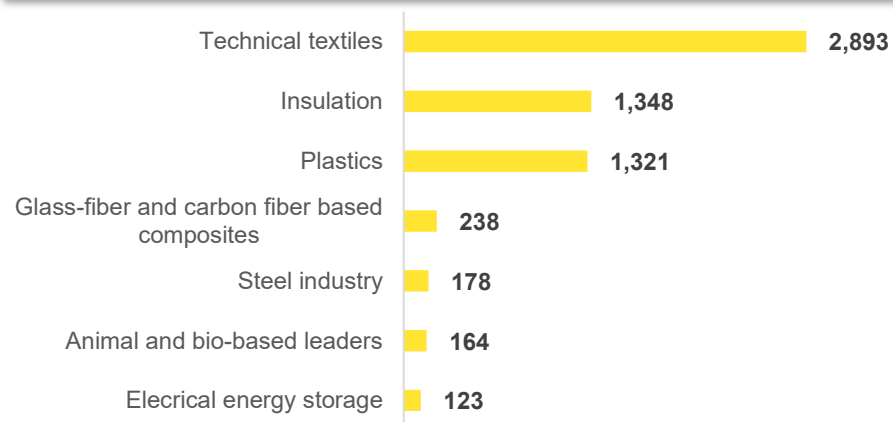
Units and Sales visualization since 2016

A wide range of markets demonstrates the relevance of Hammer-IMS's technologies and solutions, while their international track record showcases global demand for their products

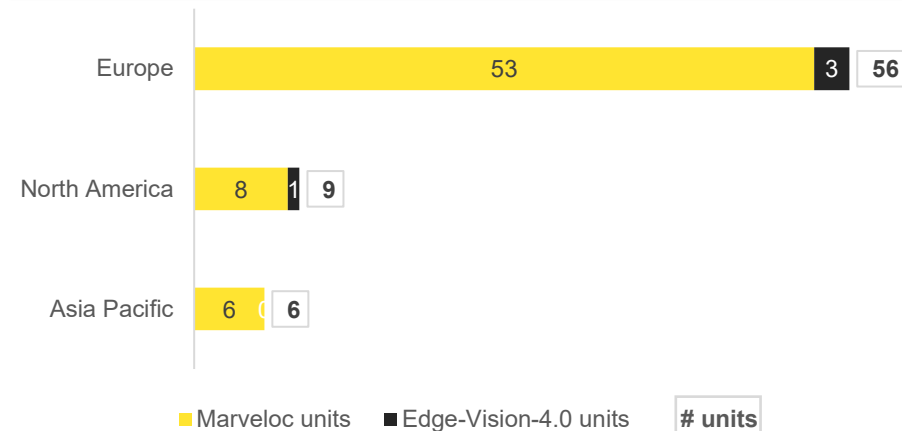
units sold per market



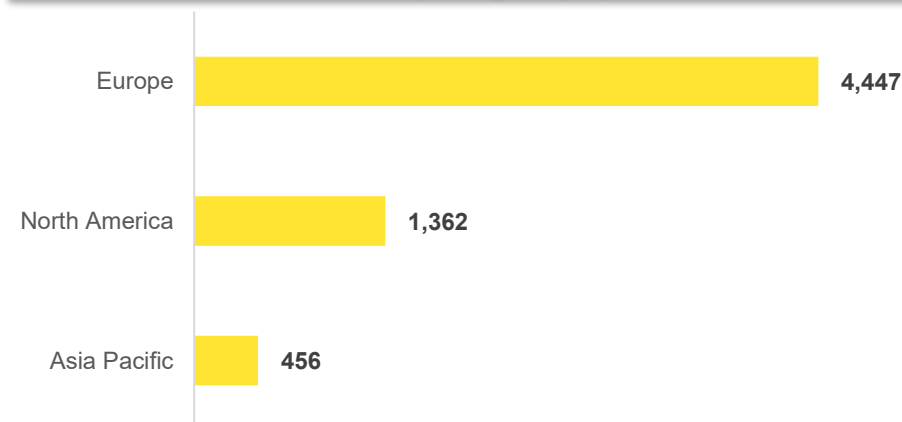
Sales per market (€k)



units sold per region



Sales per region (€k)



Strategic focus

Hammer-IMS focuses on three strategic pillars to further build out the company: strong core markets, targeted growth segments and a clear technology roadmap



Focus On Strong Core Markets

- Consolidate position in **insulation and nonwoven textiles**
- **Leverage existing references** for repeat business and **Standardize proven setups** for efficiency and scale
- Market share growth **driven by future development of a Marveloc-CHARIOT system** using M-Ray or U-Ray technology.



Penetration Into Growth Markets

- Targeting **electrical energy storage** and **composite** applications through a focused technology roadmap for li-ion battery and fuel cell markets.
- Recognized by the European Commission's **Seal of Excellence**, validating focus on EV battery and energy storage markets
- **Go-to-market strategies in place** for China, USA, and the Middle East via local partners and agents

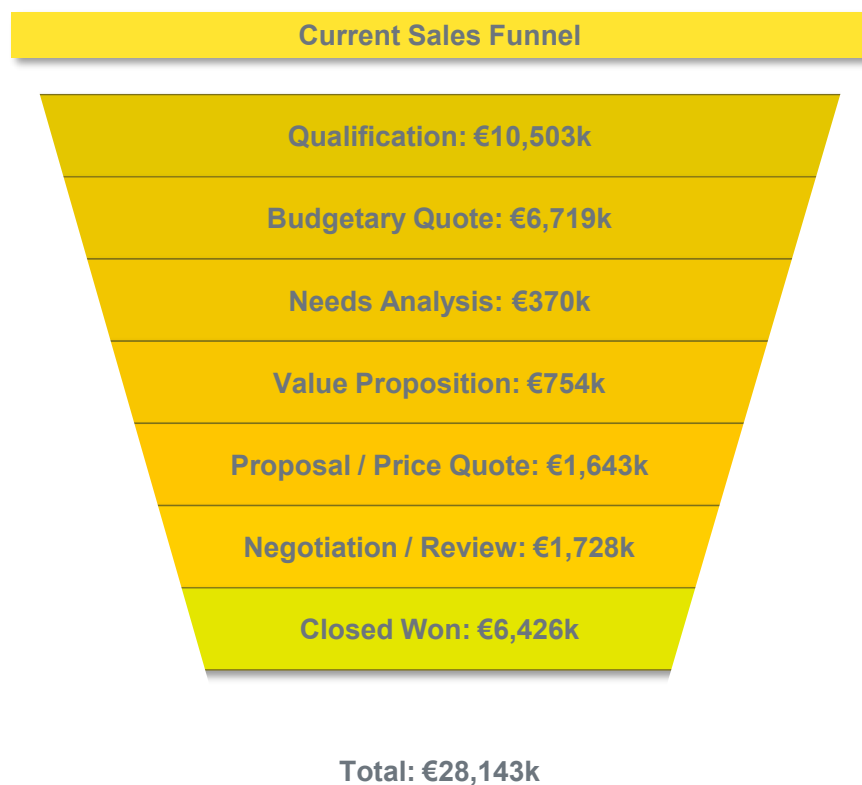


Bring New Technology Roadmap To Maturity

- Add **AI-powered neural networks** to improve anomaly detection and use generative AI to retrain and enhance models
- Launch multiple AI-based applications to strengthen market position and IP
- Focus on advancing TRL-level innovations to full commercial readiness and scaling them into target markets

Sales and Business Development (Jun-25)

Hammer-IMS's increasing sales funnel has been driven by participation at fairs and a strong sales effort



Comments
The total sales funnel has reached €28.1m, driven by participation at fairs, as well as a strong sales effort. The current situation for 2025 is as follows: - A total of 91 cases have been won - As for Jun-25, 11 orders over the last 12 months (~0.9 per month) - 28 cases with >=20% probability Following steps are needed to increase its sales funnel 1. Continue participating at fairs Hammer-IMS will pursue its investments in fairs to increase visibility abroad 2. Business Development: products 4 commercial deals closed and 6 concrete potential deals closing in the near future for Vision 3. Business Development: markets Focus on US, Korea and Japan, with a recent commercial deal for a Japanese player

New Technology Roadmap

Beyond its existing products, Hammer-IMS is developing a broad portfolio of new technologies and solutions with significant market potential

	Description	Part of demonstration	TRL Level
Marveloc-CURTAIN with M2-Ray	Wideband millimeter wave prototype for very thick, irregular heavy products such as wood pulp materials and mineral or glass wool.	Yes, located in HQ	TRL 4
Marveloc-CIRCLE with M2-Ray	Pipe thickness measurement using M2-ray wideband millimeter wave sensor.	Yes, located in HQ	TRL 4
Marveloc-CHARIOT with C-Ray	Capacitive traveling-head system for measuring plastic film thickness.	Yes, located in HQ	TRL 5
Augmented reality projection	Software feature overlaying graphs on production line camera footage.	Yes, located in HQ	TRL 4
Air permeability sensor concept	In-house air permeability sensor, measuring via suction or blowing, integrated into Marveloc-CURTAIN-C systems for textiles and nonwovens.	Yes, located in HQ	TRL 7
Marveloc-COMPANION with C-Ray	Robot-arm mounted hybrid capacitive-laser based measuring head for thickness measurement of molded vessels	No	TRL 1
Connectivity	Transform Connectivity 4.0 into a standalone industrial IoT platform for process optimization, maintenance, and quality control, Industry 4.0–enabled.	No	TRL 4
Marveloc-CURTAIN-C-SLIM with U-Ray	Small spot-precision version of the U-Ray system to be able to control the basis-weight for vessel winding activities	Yes, located in HQ	TRL 3
Edge-Vision-4.0-CURTAIN for surface topology	Visualizing length-wise thickness variations or surface anomalies in the textiles, plastics and nonwoven industries	No	TRL 4
Marveloc-CHARIOT with U-Ray	Traveling head solution for thickness/basis-weight measurement of plastic films, (carbon-containing) nonwovens, and battery films	Yes, located in HQ	TRL 3

Location

Hammer-IMS operates through its manufacturing facility in Herk-de-Stad, Belgium, as well as a second sales office in Spartanburg, USA



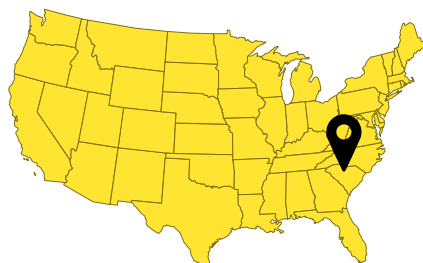
Belgium

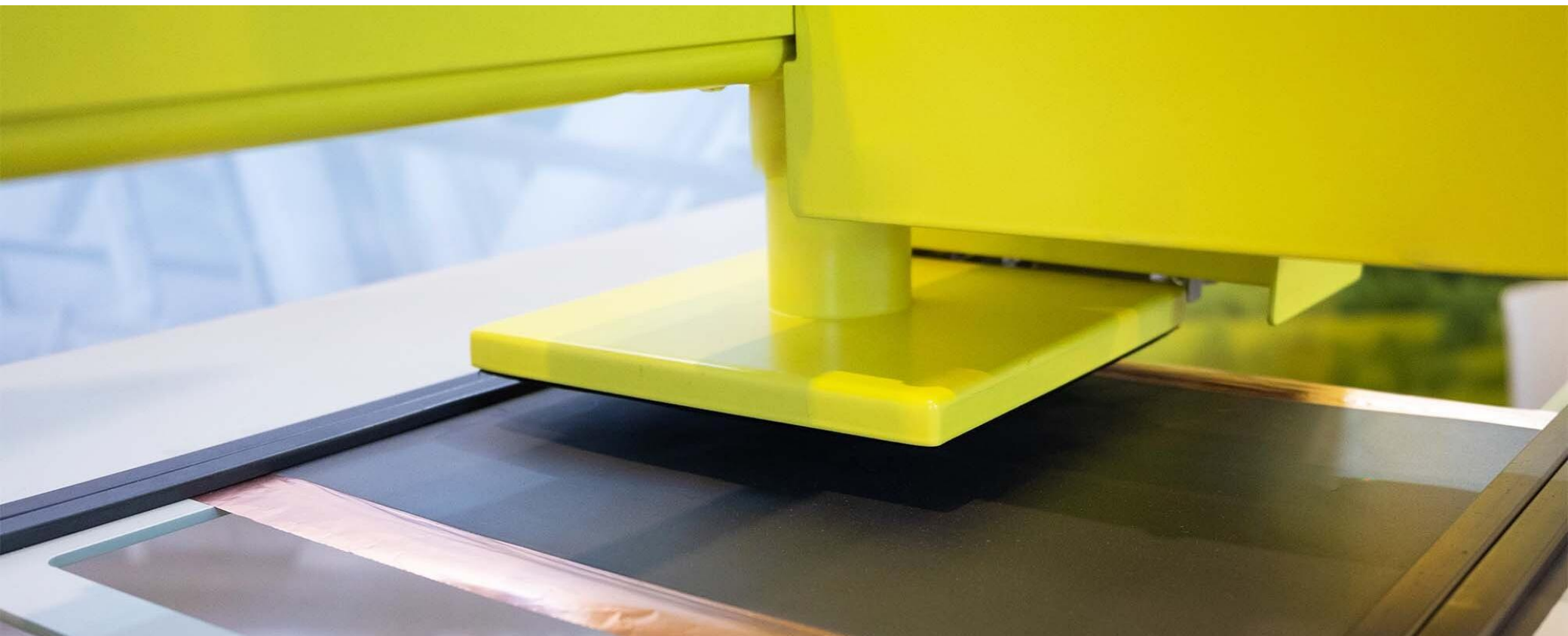
- HQ, supporting worldwide customers
- Offices and production facility are rented
- Strategic location in the middle of Europe with many stakeholders nearby



USA

- Sales office, supporting North American customers
- Strategic location in the USA near production facilities in focus markets





The Market

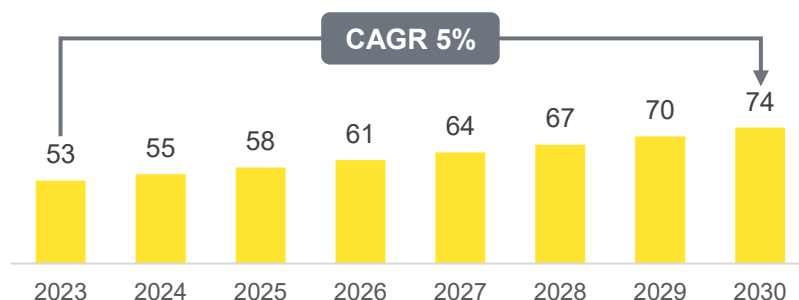
Core Markets: Technical Textiles & Insulation

Hammer-IMS has established a good reputation in consolidated markets

Technical Textiles Market

Covering both the **nonwoven and converting markets**, the sector combines established **disposable products with growing durable applications**, and an increasing focus on sustainability.

Market driven by rising healthcare demand, sustainability regulations, and growth in automotive and construction sectors



autoneum



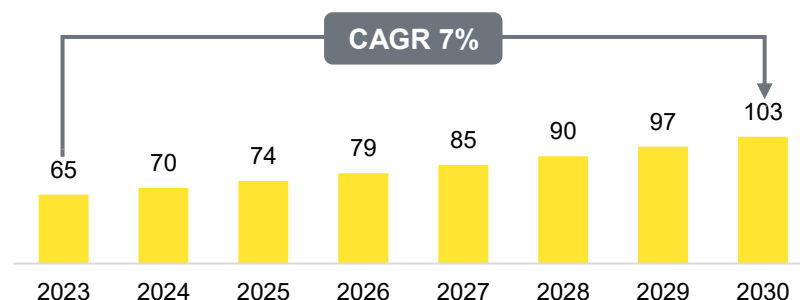
heimbach

GROZ-BECKERT®

Insulation Market

Fragmented market with ongoing development of eco-friendly and **high-performance materials**.

Market driven by energy efficiency rules, green building policies, infrastructure growth & industrial safety needs



Growth Markets: Electrical energy storage

The company is poised to profit from the three growth markets, being battery, fuel cell and hydrogen storage

Overview

Market size (\$bn)

Key sectors

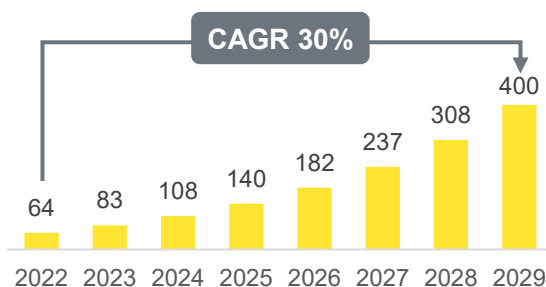
Potential clients

Li-ion battery Market

Rapidly growing **battery** production driven by EVs and clean energy in Europe & US

Market driven by regulatory support, supply chain localization, & demand for high-quality battery films

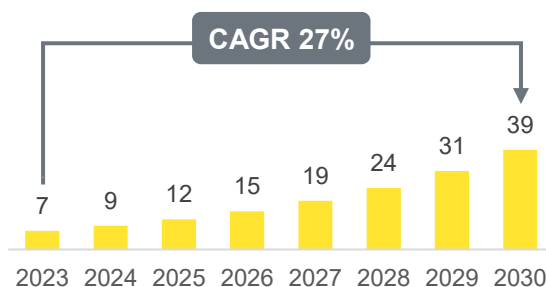
Potential mid-term commercialization



Fuel cells Market

Fuel cells convert **hydrogen into electricity** with zero on-site emissions.

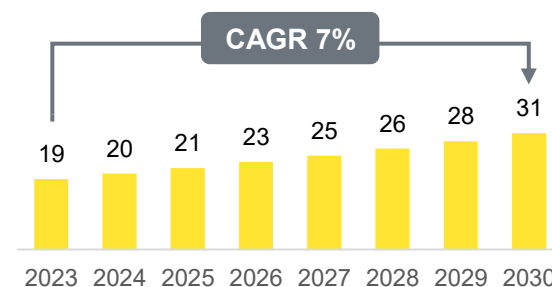
Market driven by net-zero targets, hydrogen strategies, & emission-free transport mandates



Hydrogen storage Market

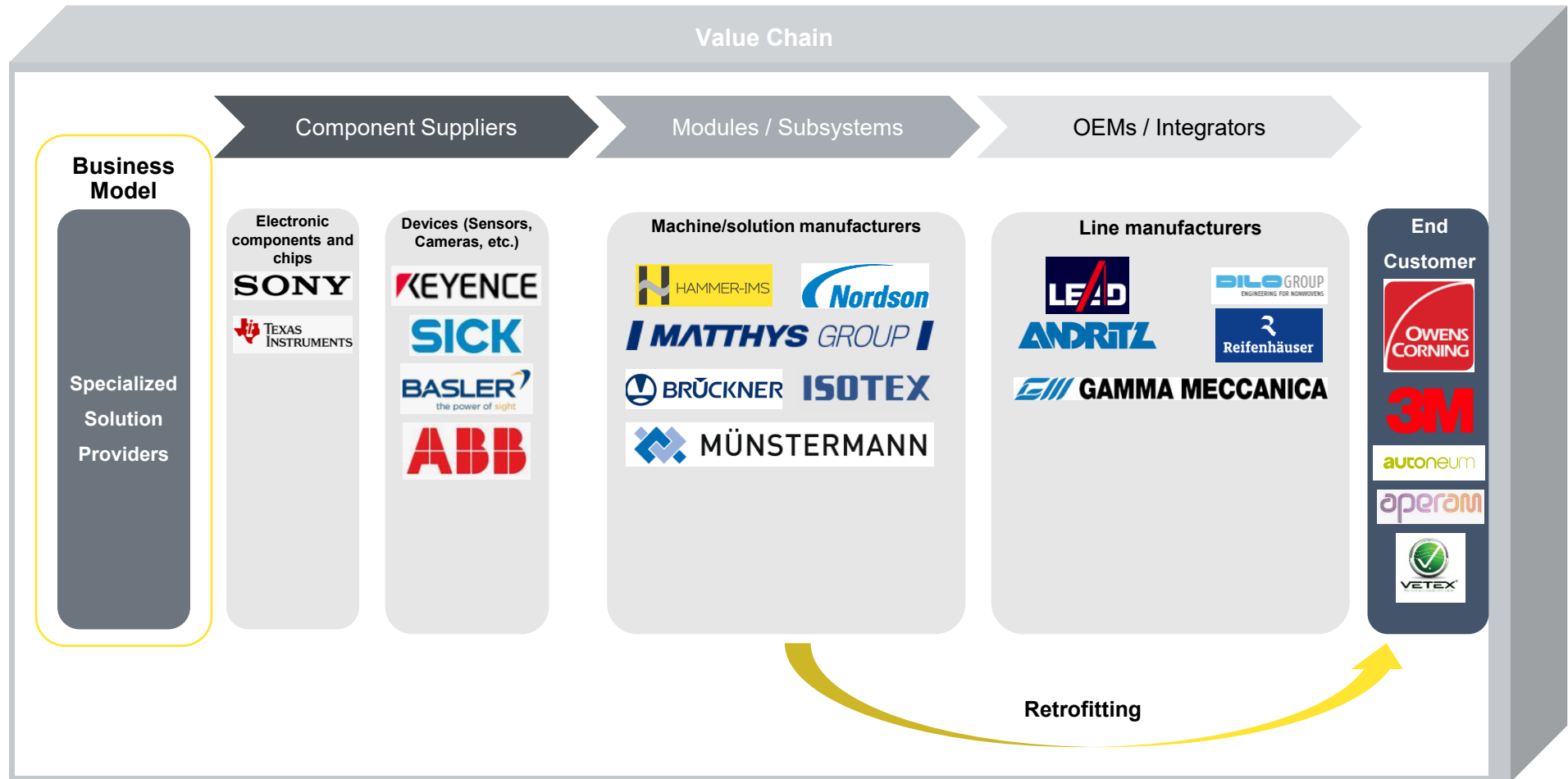
Development & construction of cost-effective & energy-saving **hydrogen stations**

Market driven by increased R&D spending, energy efficiency demand & environmentally friendly power sources shift



Industry Value Chain positioning

Due to its central position in the value chain, Hammer-IMS is able to serve a very wide range of clients, while keeping freedom of sourcing the best components to cater the best solution for their customers.



Competitive landscape

Hammer-IMS's competitive edge in the energy storage market (battery, fuel cell, and hydrogen storage)

	Beta-rays	X-Rays	Ultrasound	Laser/Infrared	Camera	M-Ray or alike	3D Radar	3D Capacitive	Eddy-currents	Integration
ThermoFisher Scientific	X	X	X							X
Electronic Systems	X	X								X
Mahlo	X	X		X						X
Scantech		X		X	X					X
NDC/Nordson	X	X		X						X
Keyence, Sick				X	X					
Fraunhofer (non-commercial)								X		
Meareg			X							X
MeSys			X	X						X
Micro Epsilon				X						X
Zeiss GOM, Faro and Nikon Metrology				X						X
Optical Control Systems, BMS Vision, ISRA Surface Vision, Protechna, Uster Technologies and Dr. Schenk					X					X
Stemmer-Imaging, Robovision, and Avera					X					X
iNOEX							X			X
Hammer-IMS			X	X	X	X	X	X		X

Limited Market Competition



Disadvantage of **77k Euros / device** compared to sustainable grammage measuring technologies



Lack an integrated solution, are therefore seen as technology providers for building own integrated solutions



Radioactive measurement methods involve **significant indirect costs** such as **safety training, shielding, staffing challenges and scheduling limits**, making them **financially less attractive** despite being technically viable.

Competitors



Meareg is relatively small with a less advanced offering and MeSys does not provide a complete one-stop solution for the market



These companies **currently do not offer sustainable solutions** for grammage measurement, which may **limit their ability to position themselves as a comprehensive one-stop shop**.



Big market; their systems **can be integrated** at various places in the production line, but it is **only a single piece in the complex puzzle of QC requirements**



iNOEX's-2PiLabs radar-based technology **can't compete with capacitive technology** in terms of **resolution** when applied to a thin hydrogen vessel (2.4 mm)

M-RAY Sensor Technology

M Ray is Hammer-IMS's leading product with proprietary technology delivering unique and superior measurement performance

- Consists of a **transmitter** and **receiver**
- Transmitted **M-Rays (>10 GHz millimeter waves)** pass through the material under test
- A **reflector** bounces the signal back to the receiver
- A **proprietary algorithm** determines, among other parameters, the **time taken for the waves to return**, using **speed-of-light variations** in different media
- Requires **perfectly synchronized transmitter** and receiver plus **advanced calibration algorithms**
- **High dynamic range** in time-domain measurements enables exceptionally **large measurement gaps (>30 cm)**
- **Purely electronic design** ensures a **long operational lifetime**
- **Scalable** to systems with **multiple sensors**
- **Flexible architecture** supports alternative implementation based on **RSSI for moisture measurement**

