

April 2023

# **Industry Insight: Vision Technology Sector Report**

## **Vision Technology M&A: Is the non-visible spectrum going to boom?**

# Introduction to the ARTHOS Vision Technology Sector Report

**We are pleased to present the ARTHOS Vision Technology Sector Report for April 2023. This report provides comments and analysis on current market trends, valuation developments, and M&A transactions in the non-visible light spectrum.**

Is the non-visible spectrum going to boom? Financial sponsors have started to invest in this market segment, especially through Headwell and Photonis Technologies. These investors are not just investing but also developing the market, and anyone who wants to participate needs to act soon. Timing for M&A transactions in the non-visible spectrum became critical.

ARTHOS is an international M&A advisory firm focusing on international technology transactions. Its managing partners have closed more than 200 M&A transactions over the past 20 years. In 2022 ARTHOS and its international AICA M&A alliance partners have advised on almost 55 technology M&A transactions.

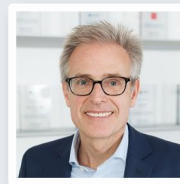
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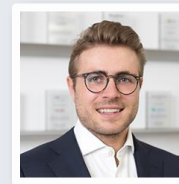
### ARTHOS TECHNOLOGY TEAM



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# Vision Technology M&A: Is the non-visible spectrum going to boom?



## Personal Note

In its latest Shortwave Infrared (SWIR) (SWIR) report, Yole states that the industrial segment will grow at a CAGR\* of 28% over the next five years, reaching \$395 million in 2028.

According to other market research institutes, the industrial X-ray and the hyperspectral imaging system (HIS) markets are projected to also outgrow Machine Vision systems in the visible light range with attractive two-digit CAGR growth rates. **Can these high growth rates really be expected?**

Applications for food and agriculture seem ideal for HIS technology. During the last years, miniature imaging spectrometers and all-in-one hyperspectral cameras have become available, and the integration of AI is creating further options. SWIR is used for the inspection of electronic boards, solar cells, identifying and sorting, surveillance, etc. Many people are talking about these exciting growth opportunities, and distributors are adding more and more related components to their product portfolios. However, when you ask them, they are disappointed as **demand in the non-visible light spectrum has not taken off so far**. In my view, there are two main reasons for this: First, many potential clients are struggling with the complexity of vision

systems in the non-visible spectrum, and second, prices are relatively high compared to vision systems in the visible spectrum.

**Is the market waiting or investing? The answer is that financial sponsors have started to invest.** In 2022, Arsenal Capital Partners acquired Headwell (US), which is well-known in the HIS space. perClass and Holographix were follow-up acquisitions in 2022. Furthermore, HLD associates, owner of Photonis Technologies, announced the acquisitions of Xenics (BEL), Telops (CAN), and Proxivision (GER) within the last six months, and more M&A transactions in the non-visible light spectrum are expected to follow. These investors are not only investing but also developing the market, and anyone who wants to participate needs to act soon – market opportunities with significant revenues become rare.

Driven by the capabilities of new technologies and expected lower cost levels, the vision industry continues to be an attractive environment for M&A and **timing for transactions is a critical factor**. If you are interested in more details, don't hesitate to call, even if you don't target a transaction soon!

\* CAGR: Compound annual growth rate

## Market trends



**SWIR market for industrial segment to grow at a CAGR of 28% until 2028**

(Yole Development 04/2023)



**Global MV market expected to grow with a CAGR of 12% until 2030** (GrandViewResearch 2022)



**The global HIS market is expected grow from \$17 billion in 2023 to \$34 billion in 2028**

















(MarketsandMarkets 2023)



**SWIR's imagers technology will be accelerated by game-changing new entrants Sony and STMicroelectronics**

(Yole Development 09/2022)

# Increased valuation multiples of vision technology companies across all sub-sectors

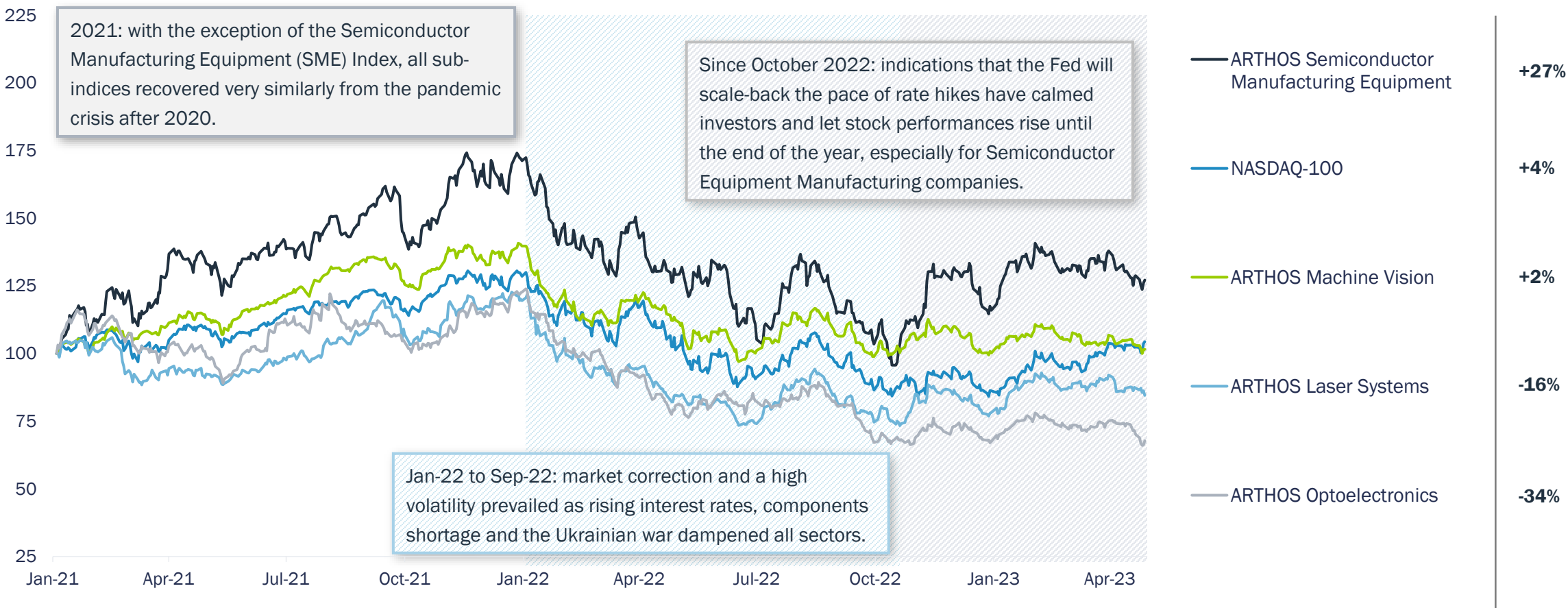
Vision technology sub-sectors	<div>■ NTM EV/Sales*</div> <div>■ NTM EV/EBITDA*</div>	5y. EPS p.a. growth	Important players
<b>Laser Systems</b> Laser System technology companies utilize laser components for applications in material processing, communications, sensing, medical, instrumentation & many other segments. Laser System companies are valued lower compared to its peers in other verticals but have the highest growth expectation according to analysts.	<div>■ 2.0x</div> <div>■ 11.1x</div>	13%	<div>  COHERENT                          KEYENCE                     </div> <div>  IPG LASER                          Novanta                     </div>
<b>Machine Vision</b> Machine Vision companies provide imaging-based automatic inspection and analysis for process control. Historically, mainly in industry but increasingly also in other markets. Machine Vision companies exhibit strong valuations combined with still high growth expectations.	<div>■ 2.2x</div> <div>■ 13.0x</div>	12%	<div>  COGNEX                          HEXAGON                     </div> <div>  TELEDYNE TECHNOLOGIES Everywhere you look                          TK GROUP                     </div>
<b>Semiconductor Manufacturing Equipment (SME)</b> SME companies included in this segment master high-end vision technologies, including metrology, nano inspection and/or lithography. In terms of valuations, SME companies are the champions with the highest multiples based on NTM EV/ EBITDA.	<div>■ 3.8x</div> <div>■ 14.2x</div>	9%	<div>  APPLIED MATERIALS                          ASML                     </div> <div>  KLA                          onto innovation                     </div>
<b>Optoelectronics</b> The Optoelectronics sub-sector includes optoelectronic components & systems companies offering components for vision applications. Valuation multiples and corresponding growth expectations vary a lot in this sub-sector resulting in lower median multiples. Note: the stronger the focus on vision, the higher are valuations.	<div>■ 1.4x</div> <div>■ 9.8x</div>	6%	<div>  ROHM SEMICONDUCTOR                          三安光电 Sanan Optoelectronics                     </div> <div>  HAMAMATSU                          amur                     </div>

Sources: Capital IQ (as of 30 April 2023)

\* NTM EV/Sales; NTM EV/EBITDA: Current enterprise value/next twelve months median estimates

# SME companies' valuations in pole position after turbulent year 2022

## Stock market performance by vision technology sub-sector indices since January 2021



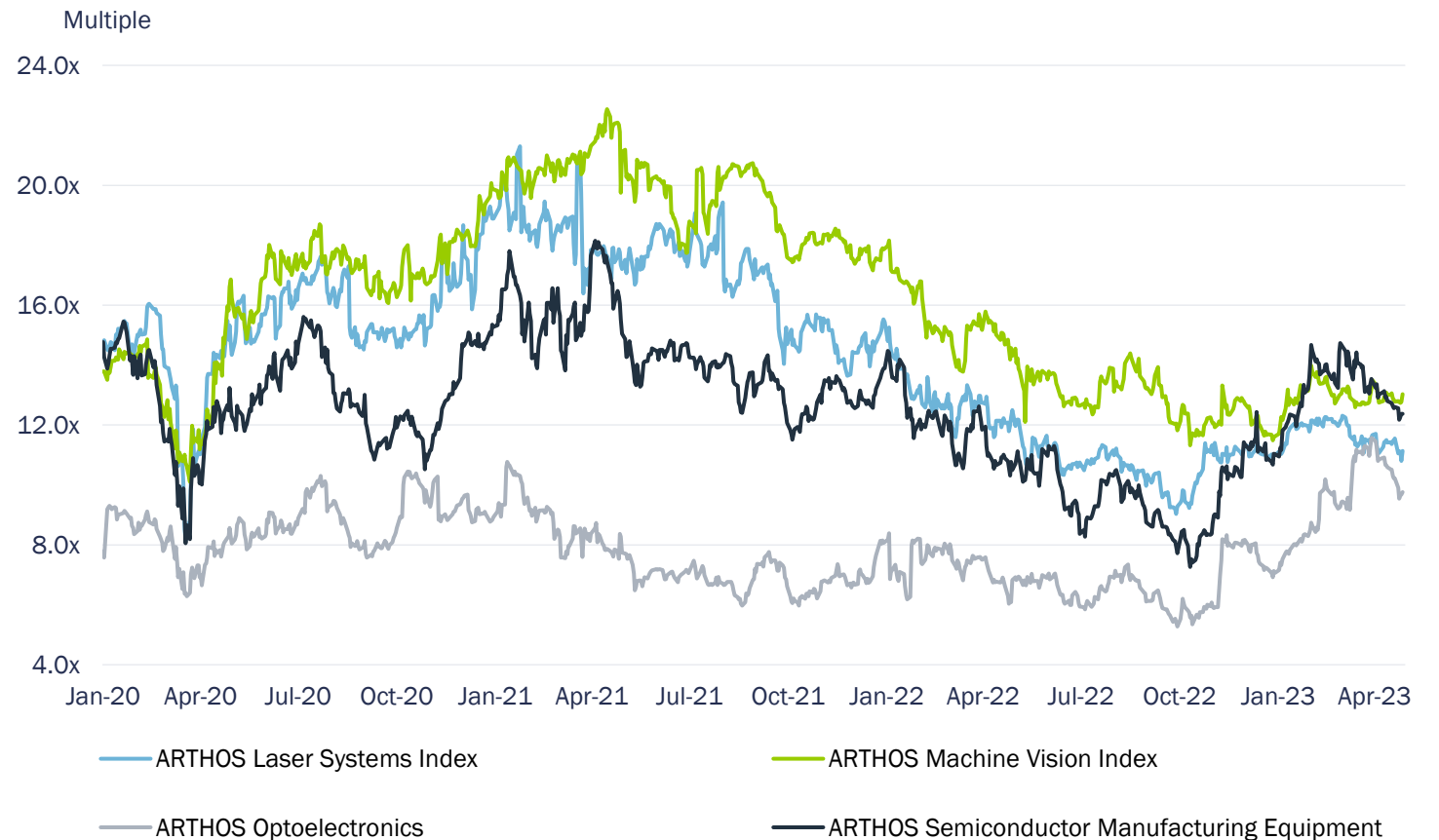
Sources: Capital IQ (as of 30 April 2023)  
The composition of ARTHOS vision indices is outlined in the appendix, p. 17ff.

# NTM EV/EBITDA multiples of all sub-sectors are converging over the past two years

## NTM EV/EBITDA multiple development

- ➔ The next twelve months' EBITDA valuation multiples show great volatility since January 2020 across all vision sub-sectors.
- ➔ Except for the Optoelectronics sub-sector, NTM EV/EBITDA multiples experienced a high in April 2021.
- ➔ Throughout the year 2021, valuations have dropped in line with the overall stock market due to rising interest rates, the war in Ukraine, and the resulting depressed market sentiment.
- ➔ Starting in October 2022, NTM EV/EBITDA multiples of all sub-sectors recovered again responding to signs of inflation cooling and positive signals from the Fed's scaled-back interest rate policy.
- ➔ **While the valuation levels were still very different between the sectors in 2021, multiples converged towards to 10x-13x in 2022.**

## NTM EV/EBITDA\* multiple development since January 2020



Sources: Capital IQ (as of 30 April 2023)

\* NTM EV/EBITDA: Current enterprise value / next twelve months EBITDA estimates [median]

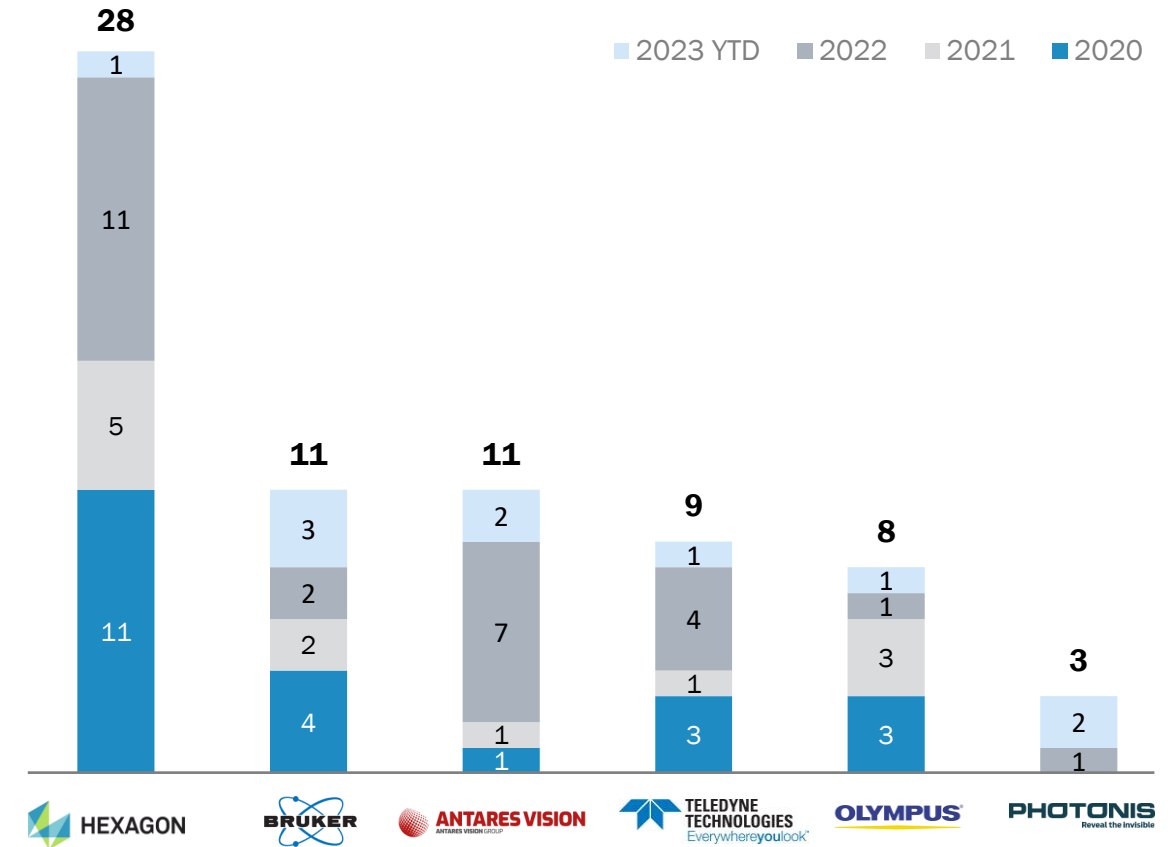
# Machine Vision sub-sector analysis: Hexagon is continuing to be the most active acquiror

## ARTHOS Machine Vision peers

*in € mn*

Company Name	EV	LTM Sales	Annual	EBITDA	NTM	
			Exp. 5Y		EV/Sales	EV/EBITDA
			EPS Growth	Margin		
AMETEK, Inc.	30,787	5,789	9%	30%	5.2x	17.4x
Antares Vision S.p.A.	524	224	NM	16%	2.1x	9.2x
Basler Aktiengesellschaft	622	272	16%	13%	2.4x	16.9x
Bruker Corporation	11,103	2,368	26%	22%	4.3x	20.1x
Carl Zeiss Meditec AG	11,029	1,963	6%	21%	5.1x	22.4x
Cognex Corporation	7,137	941	NM	29%	8.5x	34.0x
Datalogic S.p.A.	472	655	21%	10%	0.7x	5.9x
FARO Technologies, Inc.	413	324	30%	-2%	1.2x	20.5x
Hexagon AB (publ)	31,213	5,286	10%	34%	5.8x	14.4x
Jenoptik AG	2,143	981	12%	18%	2.0x	10.5x
Kapsch TrafficCom AG	345	529	NM	0%	0.6x	9.1x
Nynomic AG	209	106	NM	14%	1.8x	11.1x
Olympus Corporation	20,939	6,625	11%	29%	3.4x	11.4x
OMRON Corporation	10,025	6,066	2%	14%	1.8x	12.8x
OPT Machine Vision Tech Co., Ltd	2,185	157	20%	27%	10.3x	32.5x
Stemmer Imaging AG	257	155	25%	17%	1.5x	8.9x
Teledyne Inc.	20,527	5,081	7%	24%	3.9x	16.0x
TKH Group N.V.	2,186	1,817	NM	14%	1.1x	7.2x
Tomra Systems ASA	4,357	1,137	5%	15%	3.5x	17.1x
Varex Imaging Corporation	987	811	25%	14%	1.2x	8.3x
Viscom AG	127	106	NM	8%	1.1x	8.0x
Zebra Technologies Corporation	15,289	5,296	NM	20%	2.9x	13.1x
<b>Mean</b>			<b>15%</b>	<b>18%</b>	<b>3.2x</b>	<b>14.9x</b>
<b>Median</b>			<b>12%</b>	<b>16%</b>	<b>2.2x</b>	<b>13.0x</b>

## No. of acquisitions per year of most active buyers



Sources: Capital IQ (as of 30 April 2023)



















# Notable Vision M&A transactions in 2022/23 (1 of 4)

Date*	Buyer	Target	Comment	Country
Apr 2023			<ul style="list-style-type: none"> <li>Nikon Americas Inc. entered into an equity purchase agreement to acquire Avonix Imaging which engages in manufacturing, sales, and services relating to X-ray and CT Systems. (&gt;35 FTEs).</li> <li>With the acquisition, Nikon aims to provide solutions to various inspection/measurement needs in the area of X-ray and CT inspection. The deal is expected to close in Summer 2023.</li> </ul>	
Apr 2023			<ul style="list-style-type: none"> <li>Photonis announced the acquisition of ProxiVision, a manufacturer of high-grade optoelectronic components and detectors for UV, visible light, x-rays and particles (&gt;60 FTEs).</li> <li>With the acquisition, Photonis strengthens its positioning in ultra-violet and solar blind imaging devices with further expertise and manufacturing capabilities.</li> </ul>	
Apr 2023			<ul style="list-style-type: none"> <li>Photonis announced the acquisition of Telops, a specialist developer and manufacturer of high-performance hyperspectral imaging systems and infrared cameras (&gt;100 FTEs).</li> <li>Through the acquisition, Photonis extends its technology expertise by adding hyperspectral capabilities to the portfolio.</li> </ul>	
Mar 2023			<ul style="list-style-type: none"> <li>Union Park completed the acquisition of Smart Vision Works, a technology company providing AI and machine learning platforms for vision systems for agriculture and food industries (~40 FTEs).</li> <li>With this closed acquisition, Union park capital's portfolio company KPM Analytics has significantly expanded its vision inspection portfolio with new AI technologies.</li> </ul>	
Mar 2023			<ul style="list-style-type: none"> <li>Startup XXII, specialized on video analytics software enabled by AI, has raised € 22m in a series A funding round led by Fonds Innovation Défense (&gt;50 FTEs).</li> <li>The company plans to use the additional funding to enable the mass deployment of its technology and to expand its footprint in the US, Europe and the Middle East.</li> </ul>	
Feb 2023			<ul style="list-style-type: none"> <li>Antares Vision (BIT:AV) closed a binding agreement to acquire 30% of PYGSA, a designer and manufacturer of complete industrial vision systems.</li> <li>With the acquisition, Antares is expanding its presence in the Spanish and Portuguese markets and named PYGSA as exclusive distributor of Antares' solutions.</li> </ul>	

Sources: Capital IQ (as of 30 April 2023), Press releases

\* Transaction announcement



















## Notable Vision M&A transactions in 2022/23 (2 of 4)

Date*	Buyer	Target	Comment	Country
Feb 2023	 → 	<ul style="list-style-type: none"><li>➤ Excelitas completed the acquisition of Phoseon, a designer and manufacturer of industrial UV LED curing systems and UV LED illumination solutions (~120 FTEs).</li><li>➤ Excelitas adds further alternatives in UV lighting solutions across industrial curing, scientific illumination and non-contact UVC disinfection to its illumination technologies portfolio.</li></ul>		
Feb 2023	 → 	<ul style="list-style-type: none"><li>➤ Resideo Technologies Inc. (NYSE:REZI) announced that it has completed the acquisition of Teknique, a provider of Ambarella-based vision components and camera modules (&gt;50 FTEs).</li><li>➤ Founded in 2004 and based in New Zealand, the company is expected to expand the video product portfolio and accelerate providing actionable intelligence for customers.</li></ul>		
Jan 2023	 → 	<ul style="list-style-type: none"><li>➤ ZEISS announced the acquisition of LENSO, a specialist for 3D line-scan optical measurement systems in quality control, development, and production (&gt;30 FTEs).</li><li>➤ By acquiring LENSO, ZEISS expands its market presence in Poland and improves its Industrial Quality &amp; Research segment.</li></ul>		
Jan 2023	 → 	<ul style="list-style-type: none"><li>➤ Bruker (NasdaqGS:BRKR) closed the acquisition of ACQUIFER Imaging, a manufacturer of cell-based automated microscopy imaging systems and secure data storage hardware (EV € 7m).</li><li>➤ ACQUIFER adds high-performance on-premise processing, secure storage, and networking technology to Bruker's advanced fluorescence microscopy imaging products.</li></ul>		
Dec 2022	 → 	<ul style="list-style-type: none"><li>➤ Photonis announced the acquisition of Xenics, a manufacturer of line-scan and area-scan infrared imagers and cameras for research, automation, security, and medical applications (65 FTEs).</li><li>➤ The acquisition boosts the commercial, product development, as well as manufacturing competencies and further accelerates international growth.</li></ul>		
Dec 2022	 → 	<ul style="list-style-type: none"><li>➤ Cognex (NasdaqGS:CGNX) completed the acquisition of SAC, a manufacturer of software, hardware and imaging sensor systems used for inline surface inspection and image processing.</li><li>➤ SAC expands Cognex's footprint across industries that manufacture at high speed with minimal tolerance for safety-critical failures, such as automotive and consumer electronics.</li></ul>		

Sources: Capital IQ (as of 30 April 2023), Press releases

\* Transaction announcement

















## Notable Vision M&A transactions in 2022/23 (3 of 4)

Date*	Buyer	Target	Comment	Country
Dec 2022	 <b>MicroVision</b>	→ 	<ul style="list-style-type: none"> <li>MicroVision (NasdaqGM:MVIS) completed the acquisition of assets from Ibeo Automotive Systems GmbH, including ADAS software and the time-of-flight laser sensor from Ibeo (EV: € 15m).</li> <li>Ibeo's software will be integrated into MicroVision's perception solution, accelerating the path to a "one box solution" required by automotive OEMs for a roofline-integrated product.</li> </ul>	
Nov 2022	 <b>VisiConsult</b> X-ray Systems & Solutions	→ 	<ul style="list-style-type: none"> <li>VisiConsult X-ray closed the acquisition of a 51% majority stake in diondo, a specialist in the manufacturing of CT systems for non-destructive material testing (&gt;20 FTEs).</li> <li>Through its VCxray business unit, VisiConsult adds the diondo product line to its product portfolio, and diondo becomes the center of excellence for CT technology within VisiConsult.</li> </ul>	
Nov 2022	 <b>OUSTER</b>	→ 	<ul style="list-style-type: none"> <li>Ouster (NYSE:OUST) completed the acquisition of the time-of-flight Lidar sensor developer and manufacturer Velodyne (EV € 33m; EV/Revenue 0.8x).</li> <li>Merger is expected to reduce operating costs of both companies and synergy effects of at least \$ 75m are expected in the first nine months after the transaction.</li> </ul>	
Nov 2022	 <b>SAFRAN</b> <b>MBDA</b> MISSILE SYSTEMS	→ 	<ul style="list-style-type: none"> <li>Safran (ENXTPA:SAF) and MBDA have completed the acquisition of a 63% majority stake in CILAS, a French company producing lasers for military and civil applications (~264 FTEs).</li> <li>Acquisition was carried out through a joint company created for this purpose called HMS Laser, equally owned by Safran and MBDA.</li> </ul>	
Nov 2022	 <b>AMETEK</b>	→ 	<ul style="list-style-type: none"> <li>Ametek (NYSE:AME) closed the acquisition of Navitar, a provider of optical imaging systems, cameras, components, and software for life sciences and industrial automation (EV € 172m).</li> <li>Navitar's optical components and solutions complement the existing optics portfolio of Ametek while also providing the ability to accelerate growth and market access.</li> </ul>	
Oct 2022	 <b>synaptics</b>	→ 	<ul style="list-style-type: none"> <li>Synaptics (NasdaqGS:SYNA) completed the acquisition of emza, a designer and manufacturer of ultra-low powered AI visual sensors for mass-market use in vision-based edge devices (~20 FTEs).</li> <li>Extends Synaptics' position in Edge AI and allows to serve the PC market with a solution for human presence detection applications and look-away detect and on-looker detect features.</li> </ul>	

Sources: Capital IQ (as of 30 April 2023), Press releases

\* Transaction announcement

## Notable Vision M&A transactions in 2022/23 (4 of 4)

Date*	Buyer	Target	Comment	Country
Oct 2022		→ 	<ul style="list-style-type: none"> <li>➤ RDI Technologies completed the acquisition of Fastec, a designer and manufacturer of high-speed imaging systems for sorting applications in manufacturing as well as food and beverage.</li> <li>➤ Acquisition of Fastec adds new customers, talents as well as intellectual property and strengthens high-speed expertise.</li> </ul>	
Aug 2022		→ 	<ul style="list-style-type: none"> <li>➤ Nordson (NasdaqGS:NDSN) closed the acquisition of CyberOptics, a manufacturer of laser line 3D sensing technology solutions (EV: € 376m, EV/ Revenue: 3.5x, EV/ EBITDA: 18.2x).</li> <li>➤ The acquisition enhances Nordson's test and inspection platform providing differentiated technology.</li> </ul>	
Jul 2022		→ 	<ul style="list-style-type: none"> <li>➤ Headwall Photonics completed the acquisition of Holographix, a manufacturer for replicated optics for OEMs in the semiconductor, aerospace &amp; defense, and metrology markets (&gt;30 FTEs).</li> <li>➤ With the acquisition, Headwall expands its product portfolio with nano-replication capabilities.</li> </ul>	
Jul 2022		→ 	<ul style="list-style-type: none"> <li>➤ Headwall Photonics closed the acquisition of perClass, a developer for hyperspectral imaging software and industrial machine learning solutions (&lt;10 FTEs).</li> <li>➤ perClass gives Headwall access to software expertise and accelerates their Machine Vision strategy.</li> </ul>	
Mar 2022		→ 	<ul style="list-style-type: none"> <li>➤ Zebra (NasdaqGS:ZBRA) completed the acquisition of Matrox Imaging, a manufacturer of advanced Machine Vision components and systems (EV: € 797m, EV/ Revenue: 8.7x).</li> <li>➤ After last year's acquisitions of Adaptive Vision and Fetch, this acquisition further expands Zebra's offering in the fast-growing automation and vision technology solution space.</li> </ul>	
Jan 2022		→ 	<ul style="list-style-type: none"> <li>➤ Private equity firm Arsenal closed the acquisition of Headwall Photonics, a manufacturer of master holographic gratings, spectrographs, and spectrometers for OEM customers (~60 FTEs).</li> <li>➤ The recapitalization was completed in partnership with the existing management and ownership, resulting in Arsenal becoming the majority owner.</li> </ul>	

Sources: Capital IQ (as of 30 April 2023), Press releases

\* Transaction announcement

# ARTHOS – International Tech M&A advisory

# ARTHOS – International tech M&A advisory firm with a focus on technology transactions



## Partner-led and global

ARTHOS Corporate Finance is an independent, owner-managed M&A advisory firm based in Munich and part of a global alliance of 40 M&A advisory firms with 200 managing partners. All our projects are managed by an experienced managing partner who has successfully closed more than 100 company disposals, acquisitions or fund raisings. The majority of ARTHOS transactions have a volume of between 10 and 100 million euros.



## M&A 360°

With our 360° approach we can advise our customers in a targeted and comprehensive manner – from the initial planning through the detailed preparation to the efficient execution of a transaction. That is why we see ourselves not only as deal makers, but rather as competent M&A experts, experienced process managers and financial advisers for our client's long-term goals.



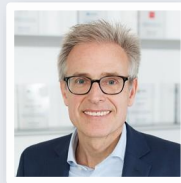
## Technology

Our focus on digital media, information technology and high-tech industries provides several powerful advantages to our customers: we know the M&A terms and conditions, business models and decision-makers within these industry sectors. With this knowledge, we are able to implement sustainable, creative solutions. This is why our M&A projects achieve above average results.

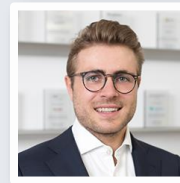
### ARTHOS TECHNOLOGY TEAM



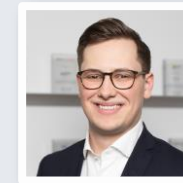
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**Arno Pätzold**  
Managing Partner



**Moritz Böck**  
Analyst



**Christian Thiel**  
Analyst

# ARTHOS – 20-year track record in international technology M&A transactions



**KETEK**  
Munich, Germany

has sold assets to



Worldwide leading 3D-wideband  
Silicon Photomultiplier Technology

**MaxxVision**

Stuttgart, Germany

has been acquired by



Selling to a strategic investor targeting  
buy and build in Vision Technology

**tacterion**

Munich, Germany

has received growth capital from



Gütersloh, Germany

Creating the leading tactile sensor company  
to enable the tactile internet of the future



UNLEASHING THE POWER OF THE EDGE  
Amaro, Italy

has acquired



Taufkirchen, Germany

Accelerating Eurotech's growth strategy  
in the Edge Computing market in AIoT



Munich, Germany

has been acquired by



the innovative family  
Tettmang, Germany

Accelerating market presence  
in Structured Light Technology



St. Paul, MN, USA

has acquired



Stevenage, UK

Extending ISS' software-based detection  
solutions portfolio with ALPR technology



Stockholm, Sweden

has acquired



Villingen-Schwenningen, Germany

Expansion in industry 4.0 conveyor systems  
for production process optimization



Munich, Germany

has acquired

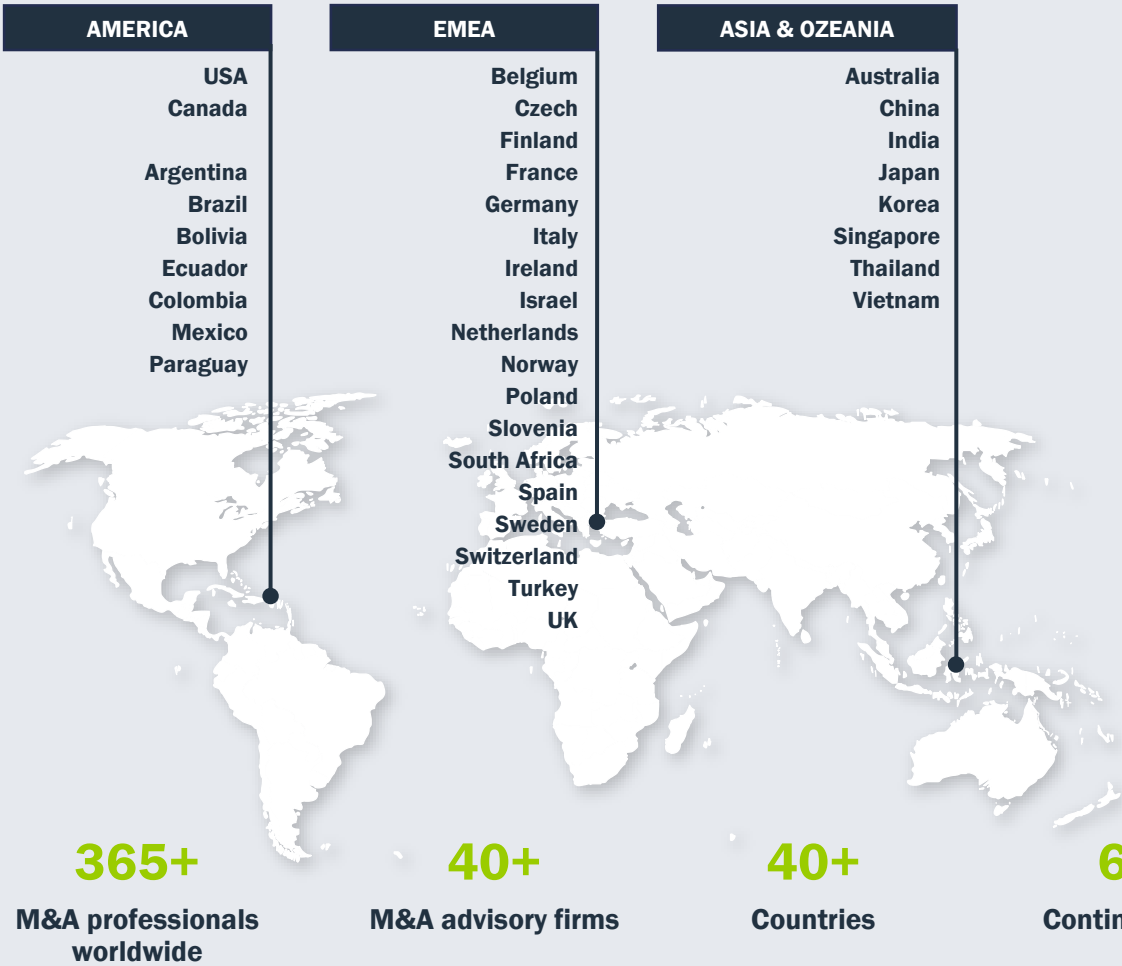


Copenhagen, Denmark

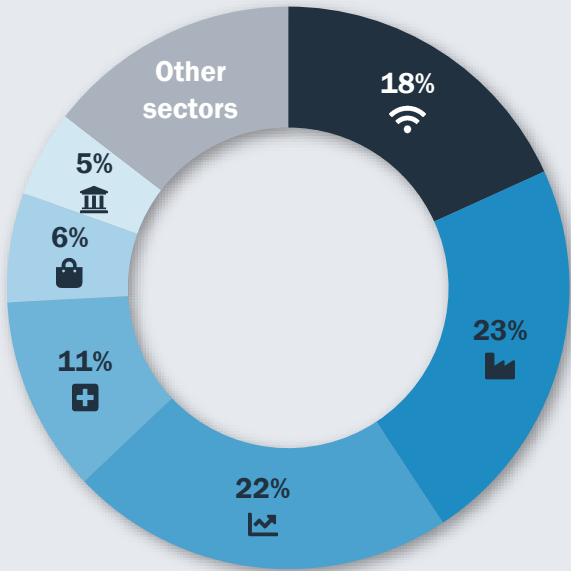
Energy-efficient integrated  
audio amplifier solutions

# ARTHOS worldwide – Partner within the global AICA alliance

## Global reach – international cooperation



## Transactions by sector in 2022



- Technology
- Industrials
- Business Services
- Healthcare
- Consumer Products
- Financial Services

## Contact us for technology M&A advice



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## Appendix: Public comps by sub-sector

# Public comps – Laser Systems

Currency in EUR

Company Name	HQ	Employees	Share Price €	Market Cap € mn	EV € mn	Cash € mn	NTM		Exp. 5Y EPS Growth	Margin		NTM Multiples	
							Sales	EBITDA		Gross	EBITDA	EV/Sales	EV/EBITDA
Bystronic AG	Switzerland	3,609	656.3	1,357	1,010	346	995	88.4	NM	54%	15%	1.0x	11.4x
Coherent Corp.	United States	23,658	30.9	4,299	10,096	855	4,996	1,318.0	16%	37%	22%	2.0x	7.7x
EL.En. S.p.A.	Italy	2,105	11.7	935	876	165	719	93.3	NM	36%	13%	1.2x	9.4x
Gooch & Housego PLC	United Kingdom	903	5.9	147	169	7	157	21.6	NM	31%	11%	1.1x	7.8x
Hamamatsu Photonics K.K.	Japan	5,491	47.8	7,401	6,672	870	1,607	504.5	5%	55%	34%	4.2x	13.2x
Han's Laser Technology Group	China	18,335	3.4	3,602	3,029	1,264	2,217	246.1	17%	33%	7%	1.4x	12.3x
IPG Photonics Corporation	United States	6,230	104.2	4,928	3,896	984	1,292	359.5	9%	38%	21%	3.0x	10.8x
Jenoptik AG	Germany	4,435	28.9	1,653	2,143	58	1,056	203.4	12%	35%	18%	2.0x	10.5x
Keyence Corporation	Japan	8,961	406.7	98,639	92,379	6,678	927	168.0	8%	82%	55%	14.2x	25.0x
LPKF Laser & Electronics SE	Germany	700	9.8	241	235	8	135	16.3	130%	66%	2%	1.7x	14.4x
Lumentum Holdings Inc.	United States	6,815	43.7	2,995	3,640	1,572	1,541	429.6	13%	45%	21%	2.4x	8.5x
Lumibird SA	France	1,000	13.7	306	359	62	212	38.9	NM	100%	11%	1.7x	9.2x
MKS Instruments, Inc.	United States	10,450	76.0	5,067	8,925	811	3,374	657.4	(5%)	43%	22%	2.6x	13.6x
NKT A/S	Denmark	3,963	47.5	2,037	1,974	259	2,418	214.3	28%	32%	6%	0.8x	9.2x
nLIGHT, Inc.	United States	1,100	7.9	364	280	101	210	NM	30%	21%	(15%)	1.3x	NM
Novanta Inc.	United States	3,000	138.5	4,958	5,311	94	820	183.5	13%	44%	19%	6.5x	28.9x
Wuhan Raycus Fiber Laser	China	3,540	3.4	1,925	1,919	69	538	82.4	NM	17%	4%	3.6x	23.3x
<b>Mean</b>									<b>23%</b>	<b>45%</b>	<b>16%</b>	<b>3.0x</b>	<b>13.5x</b>
<b>Median</b>									<b>13%</b>	<b>38%</b>	<b>15%</b>	<b>2.0x</b>	<b>11.1x</b>

## Abbreviations:

HQ: Headquarter; NTM: Next twelve months; EPS: Earnings per share; NTM multiples - EV/Estimates: EV as of 30 April 2023 divided by NTM estimates (mean of analysts)

EV: Enterprise Value = share price \* outstanding shares + total debt + preferred stock + minority interest – cash & short-term investments

Sources: Capital IQ (as of 30 April 2023)

# Public comps – Machine Vision

Currency in EUR

Company Name	HQ	Employees	Share Price €	Market Cap € mn	EV € mn	Cash € mn	NTM		Exp. 5Y EPS Growth	Margin		NTM Multiples	
							Sales	EBITDA		Gross	EBITDA	EV/Sales	EV/EBITDA
AMETEK, Inc.	United States	19,600	125.0	28,780	30,787	323	5,904	1,765.1	9%	35%	30%	5.2x	17.4x
Antares Vision S.p.A.	Italy	1,180	6.7	460	524	88	255	56.7	NM	79%	16%	2.1x	9.2x
Basler Aktiengesellschaft	Germany	1,542	19.5	582	622	29	261	36.9	16%	49%	13%	2.4x	16.9x
Bruker Corporation	United States	8,525	71.7	10,523	11,103	618	2,563	553.7	26%	52%	22%	4.3x	20.1x
Carl Zeiss Meditec AG	Germany	4,224	121.8	10,894	11,029	8	2,158	493.0	6%	59%	21%	5.1x	22.4x
Cognex Corporation	United States	2,441	43.2	7,464	7,137	374	844	210.1	NM	72%	29%	8.5x	34.0x
Datalogic S.p.A.	Italy	3,069	7.5	427	472	107	644	79.8	21%	42%	10%	0.7x	5.9x
FARO Technologies, Inc.	United States	1,490	21.2	429	413	35	340	20.1	30%	51%	(2%)	1.2x	20.5x
Hexagon AB (publ)	Sweden	24,195	10.3	27,765	31,213	611	5,399	2,167.9	10%	66%	34%	5.8x	14.4x
Jenoptik AG	Germany	4,435	28.9	1,653	2,143	58	927	168	12%	35%	18%	2.0x	10.5x
Kapsch TrafficCom AG	Austria	4,195	12.4	161	345	NM	536	38.0	NM	58%	(0%)	0.6x	9.1x
Nynomic AG	Germany	502	32.8	194	209	22	115	18.9	NM	26%	14%	1.8x	11.1x
Olympus Corporation	Japan	31,557	15.8	19,754	20,939	1,372	6,217	1,835.5	11%	67%	29%	3.4x	11.4x
OMRON Corporation	Japan	29,020	52.9	10,405	10,025	729	5,571	780.2	2%	45%	14%	1.8x	12.8x
OPT Machine Vision Tech Co., Ltd.	China	2,098	19.6	2,387	2,185	207	212	67.2	20%	66%	27%	10.3x	32.5x
Stemmer Imaging AG	Germany	327	44.5	289	257	42	173	29.0	25%	38%	17%	1.5x	8.9x
Teledyne Technologies Inc.	United States	14,700	375.5	17,665	20,527	612	5,265	1,280.6	7%	43%	24%	3.9x	16.0x
TKH Group N.V.	Netherlands	6,198	43.8	1,797	2,186	185	1,908	303.1	NM	47%	14%	1.1x	7.2x
Tomra Systems ASA	Norway	5,000	13.9	4,091	4,357	63	1,236	255.1	5%	58%	15%	3.5x	17.1x
Varex Imaging Corporation	United States	2,300	16.1	644	987	92	806	119.2	25%	33%	14%	1.2x	8.3x
Viscom AG	Germany	563	10.7	95	127	4	115	15.9	NM	64%	8%	1.1x	8.0x
Zebra Technologies Corporation	United States	10,500	261.0	13,414	15,289	122	5,200	1,171.0	NM	45%	20%	2.9x	13.1x
<b>Mean</b>									<b>15%</b>	<b>51%</b>	<b>18%</b>	<b>3.2x</b>	<b>14.9x</b>
<b>Median</b>									<b>12%</b>	<b>50%</b>	<b>16%</b>	<b>2.2x</b>	<b>13.0x</b>

## Abbreviations:

HQ: Headquarter; NTM: Next twelve months; EPS: Earnings per share; NTM multiples - EV/Estimates: EV as of 30 April 2023 divided by NTM estimates (mean of analysts)

EV: Enterprise Value = share price \* outstanding shares + total debt + preferred stock + minority interest – cash & short-term investments

Sources: Capital IQ (as of 30 April 2023)

# Public comps – Semiconductor Manufacturing Equipment (SME)

Currency in EUR

Company Name	HQ	Employees	Share Price €	Market Cap € mn	EV € mn	Cash € mn	NTM		Exp. 5Y EPS Growth	Margin		NTM Multiples	
							Sales	EBITDA		Gross	EBITDA	EV/Sales	EV/EBITDA
Advanced Process Corp.	South Korea	496	13.7	206	130	167	311	33.0	NM	29%	20%	0.4x	3.9x
AIXTRON SE	Germany	895	25.6	2,880	2,790	91	617	177.5	18%	42%	22%	4.5x	15.7x
Applied Materials, Inc.	United States	33,000	102.4	86,554	88,431	3,728	21,449	6,247.6	8%	46%	32%	4.1x	14.2x
ASML Holding N.V.	Netherlands	30,861	573.5	226,297	223,617	6,653	26,428	9,242.7	26%	51%	35%	8.5x	24.2x
Camtek Ltd.	Israel	446	23.9	1,064	883	374	262	66.1	9%	50%	27%	3.4x	13.4x
Circuit Fabology Microelectronics	China	361	9.9	1,192	1,153	41	146	36.2	NM	44%	24%	7.9x	31.9x
Disco Corporation	Japan	4,258	102.6	11,109	10,026	1,129	1,729	688.6	4%	65%	42%	5.8x	14.6x
EO Technics Co., Ltd.	South Korea	636	58.9	713	611	126	304	70.6	NM	34%	23%	2.0x	8.7x
FormFactor, Inc.	United States	2,105	24.7	1,909	1,739	223	622	80.9	20%	41%	15%	2.8x	21.5x
KLA Corporation	United States	14,140	350.2	48,053	50,926	2,660	8,150	3,344.4	7%	60%	43%	6.2x	15.2x
Lam Research Corporation	United States	18,700	474.9	63,794	63,464	4,991	12,319	3,820.6	3%	45%	33%	5.2x	16.6x
Lasertec Corporation	Japan	662	122.5	11,046	10,926	193	1,447	574.6	41%	55%	40%	7.5x	19.0x
MKS Instruments, Inc.	United States	10,450	76.0	5,067	8,925	851	3,374	657.4	(5%)	44%	25%	2.6x	13.6x
NEXTIN, Inc.	South Korea	81	43.7	435	396	44	96	51.7	NM	68%	51%	4.1x	7.7x
Nordson Corporation	United States	7,200	196.0	11,223	12,151	112	2,408	728.6	30%	55%	29%	5.0x	16.7x
Onto Innovation Inc.	United States	1,636	73.4	3,584	3,108	513	734	195.3	NM	54%	30%	4.2x	15.9x
Photronics, Inc.	United States	1,828	13.1	819	748	345	787	288.5	NM	37%	36%	1.0x	2.6x
PVA TePla AG	Germany	613	19.4	479	438	46	242	37.3	34%	29%	14%	1.8x	11.7x
SÜSS MicroTec SE	Germany	1,252	23.7	452	410	62	341	50.3	20%	36%	13%	1.2x	8.2x
Tokyo Electron Limited	Japan	15,634	103.1	48,299	45,720	2,749	12,131	2,885.0	6%	45%	31%	3.8x	15.8x
Tokyo Seimitsu Co., Ltd.	Japan	2,354	33.3	1,349	1,088	306	886	201.9	3%	42%	25%	1.2x	5.4x
TOWA Corporation	Japan	1,817	13.5	338	352	92	370	70.1	NM	35%	23%	1.0x	5.0x
Veeco Instruments Inc.	United States	1,221	16.7	862	871	283	592	85.7	NM	41%	13%	1.5x	10.2x
<b>Mean</b>									<b>15%</b>	<b>45%</b>	<b>28%</b>	<b>3.7x</b>	<b>13.5x</b>
<b>Median</b>									<b>9%</b>	<b>44%</b>	<b>27%</b>	<b>3.8x</b>	<b>14.2x</b>

## Abbreviations:

HQ: Headquarter; NTM: Next twelve months; EPS: Earnings per share; NTM multiples - EV/Estimates: EV as of 30 April 2023 divided by NTM estimates (mean of analysts)

EV: Enterprise Value = share price \* outstanding shares + total debt + preferred stock + minority interest – cash & short-term investments

Sources: Capital IQ (as of 30 April 2023)

# Public comps – Optoelectronics

Currency in EUR

Company Name	HQ	Employees	Share Price €	Market Cap € mn	EV € mn	Cash € mn	NTM		Exp. 5Y EPS Growth	Margin		NTM Multiples	
							Sales	EBITDA		Gross	EBITDA	EV/Sales	EV/EBITDA
ams-OSRAM AG	Austria	22,461	6.2	1,632	3,563	1,108	4,037	798.9	39%	30%	17%	0.9x	4.5x
Everlight Electronics Co., Ltd.	Taiwan	4,312	1.2	522	269	300	583	99.9	NM	28%	14%	0.5x	2.7x
Focuslight Technologies Inc	China	733	14.4	1,292	1,093	213	103	29.1	NM	52%	21%	10.6x	37.6x
GalaxyCore Inc.	China	1,251	2.1	5,194	5,869	553	1,112	231.1	0%	31%	11%	5.1x	24.7x
Hamamatsu Photonics K.K.	Japan	5,491	47.8	7,401	6,672	870	1,607	504.5	5%	55%	34%	4.2x	13.2x
Himax Technologies, Inc.	Taiwan	2,181	6.0	1,049	1,230	215	951	125.9	NM	41%	23%	1.3x	9.8x
Jiangxi Lianchuang Opto-Electronic	China	6,125	4.6	2,109	2,185	195	496	66.6	NM	17%	3%	4.4x	32.8x
LG Innotek Co., Ltd.	South Korea	9,846	179.1	4,239	5,219	430	14,256	1,317.4	(3%)	12%	11%	0.4x	4.0x
Lumentum Holdings Inc.	United States	6,815	43.7	2,995	3,640	1,572	1,541	429.6	13%	45%	21%	2.4x	8.5x
OFILM Group Co., Ltd.	China	17,973	0.6	2,037	2,776	472	2,572	189.9	NM	(1%)	(11%)	1.1x	14.6x
Radiant Opto-Electronics	Taiwan	733	3.3	1,548	717	1,188	1,503	214.8	NM	20%	15%	0.5x	3.3x
ROHM Co., Ltd.	Japan	23,401	67.8	6,651	4,751	2,315	3,465	1,070.5	11%	38%	27%	1.4x	4.4x
Samsung Electro-Mechanics	South Korea	11,949	97.4	7,362	7,228	1,248	6,295	1,299.7	(1%)	24%	21%	1.1x	5.6x
Sanan Optoelectronics Co.,Ltd	China	18,636	2.3	11,538	11,389	1,095	2,494	1,018.4	18%	17%	36%	4.6x	11.2x
SMART Global Holdings, Inc.	United States	3,600	14.0	686	1,172	356	1,417	161.9	(9%)	25%	11%	0.8x	7.2x
Sunny Optical Technology	China	26,610	9.5	10,387	8,907	2,459	4,793	710.7	6%	20%	13%	1.9x	12.5x
Universal Display Corporation	United States	444	120.9	5,724	5,230	541	521	232.2	15%	78%	50%	10.0x	22.5x
<b>Mean</b>									<b>8%</b>	<b>31%</b>	<b>19%</b>	<b>3.0x</b>	<b>12.9x</b>
<b>Median</b>									<b>6%</b>	<b>28%</b>	<b>17%</b>	<b>1.4x</b>	<b>9.8x</b>

## Abbreviations:

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Sources: Capital IQ (as of 30 April 2023)