

Vision Technology Stock Market Performance

Company Name	EV € mn	Sales € mn	Share price	Local curr.	Δ 52W High	2019E EV/EBITDA
ARTHOS Vision Technology Peers						
ams AG	4.827,6	1.556,3	47,6	EUR	(18,8%)	9,0x
Ametek Inc.	20.552,0	4.430,4	89,9	USD	(2,6%)	16,4x
Basler AG	415,9	148,3	41,1	EUR	(27,1%)	15,2x
Bruker Corp.	6.404,7	1.732,8	43,5	USD	(15,3%)	17,4x
Cognex Corp.	7.082,1	701,3	48,2	USD	(18,5%)	39,7x
Datalogic S.p.A.	815,0	628,6	13,9	EUR	(57,0%)	8,3x
FARO Techn.	712,4	351,2	52,4	USD	(20,5%)	26,6x
Kapsch Traffic Com	481,7	737,8	31,2	EUR	(16,4%)	6,5x
FLIR Systems Inc.	7.040,1	1.590,7	53,2	USD	(15,1%)	16,3x
Hamamatsu	4.583,8	1.179,9	3.980,0	JPY	(12,7%)	14,3x
Hexagon AB	18.393,5	3.881,6	473,3	SEK	(12,2%)	14,1x
Isra Vision AG	828,1	160,3	38,3	EUR	(19,0%)	14,9x
Jenoptik AG	1.435,5	833,0	23,7	EUR	(35,6%)	10,7x
Keyence Corp.	61.249,1	4.774,2	66.310,0	JPY	(10,2%)	21,9x
Nanometrics Inc.	596,4	253,4	31,8	USD	(17,5%)	13,4x
Novanta Inc.	2.904,7	553,0	85,4	USD	(11,3%)	25,6x
Nynomic AG	96,7	60,6	16,0	JPY	(99,5%)	10,2x
Olympus Corp.	16.164,3	6.483,4	1.441,0	GBP	13235,3%	13,9x
Oxford Instr.	847,2	387,1	13,0	USD	(29,1%)	12,0x
Renishaw plc	3.008,3	641,0	37,7	GBP	(23,6%)	23,9x
Rudolph Techn.	575,4	215,8	25,7	USD	(13,3%)	15,5x
Stemmer Imaging	116,4	105,6	24,4	USD	(55,6%)	9,4x
Teledyne Techn.	11.289,5	2.637,2	318,8	EUR	8,1%	20,7x
TKH Group N.V.	2.444,8	1.656,1	46,5	EUR	(16,4%)	10,8x
Mean					529,0%	16,1x
Median					(17,0%)	14,6x

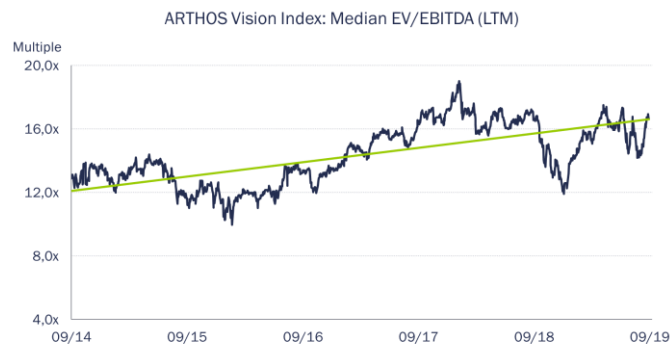
Peer Group includes companies with business focus on Vision Technology; Closing share price as of September 22, 2019; Sales as of published last twelve months.

ARTHOS Vision Technology Index Performance



ARTHOS Vision Technology Index includes the companies listed above

Historic Vision Multiple Analysis



Median development of historic EV/EBITDA Multiple of the ARTHOS Vision Technology Peer Group

Personal Note



Capital markets in general are fluctuating strongly over the last months, but valuations of vision companies are keeping their attractive levels. This is not only true for publicly listed companies as you can see in the statistics below, but also for private companies which were sold during the last months. Some important transactions are described in more detail on the next page.

However, today I like to motivate you to look at the new Sony TOF family which was presented at the Vision Show 2018 in Stuttgart and, in the meanwhile, integrated into new TOF cameras. TOF sensors are also available from ams, Infineon, Melexis, Renesas, STM, just to name a few important vendors and are so far dominantly used for gesture recognition in cell phones, cars and game consoles. Those solutions so far did not meet the requirements of machine vision applications, but the new TOF sensor generations from many vendors do. When CMOS Technology was introduced it took years until the technology became dominant also for industry applications. With TOF 3D technology this will happen much faster. Bin-picking is my favourite application for driving this.

Why do I mention this in the ARTHOS M&A newsletter? I am sure that vendors of TOF cameras and solutions will experience enormous growth very soon. In case you don't want to miss this opportunity and don't have own development capacities to develop TOF cameras now, consider acquiring a vision company with strong development resources and furthermore don't miss getting professional M&A support on board to acquire successfully.

Current Relevant M&A and Market News

- May 13, 2019:** ZF acquired SIMI Reality Motion Systems GmbH
- May 26, 2019:** TE Connectivity made a public offer to acquire First Sensor AG (optical and opto-electronic sensor solutions). On Sept. 2nd ~72% accepted the offer of 28.25€ per share. The transaction is expected to close in mid-2020.
- May 31, 2019:** Konica Minolta Inc. acquired Eines Systems S.L. (Spanish manufacturer of visual quality inspection systems).
- June 18, 2019:** IK Investment Partners acquired LAP GmbH Laser Applikationen, a provider of laser positioning systems.
- June 24, 2019:** INGENERIC GmbH (sub. of Trumpf) acquired Aixtooling GmbH (tool manufacturer for precision optics).
- June 25, 2019:** Apple Inc. acquired Drive.ai Inc. (developer of AI software for autonomous vehicles).
- July 01, 2019:** Leica Geosystems Technology A/S (sub. of Hexagon AB) acquired Melown Technologies SE (computer vision and advanced visualization technology services).
- July 01, 2019:** Xilinx Inc. acquired Ngcodec Inc. (provider of video encoder technology).
- July 11, 2019:** Macnica Inc. (Japan) acquired ATD Electronique S.A.S (distributor of image sensors and optics).
- July 23, 2019:** Bucher Emhart Glass SA acquired Symplex Vision Systems GmbH (machinery for camera-based inspection and monitoring technology for the glass industry).
- July 29, 2019:** Trax Technology Solutions Pte Ltd. acquired CVDM Solutions SAS, doing business as Planorama (development of image recognition solutions for manufacturers and retailers).
- Sept. 6, 2019:** Lorne Trottier, co-founder of Matrox acquired the Matrox group of companies, including Matrox Imaging, Matrox Graphics, and Matrox Video.

Notable Recent M&A Transactions



May 31, 2019: Repligen acquired C Technologies for ~240 m€, resulting in a purchase price of ~10x EV/Revenue and ~22x EV/EBIT. C Technologies develops and markets a portfolio of spectroscopy products used primarily in biopharmaceutical manufacturing. Their product-line is considered a standard for measuring protein concentration in biopharmaceutical manufacturing.



July 11, 2019: Stemmer Imaging acquired the Spanish group Infaimon S.L., a distributor of SW and hardware for machine vision and robotics which is also very active in Latin America. Stemmer continues its international expansion strategy and is also underscoring the strategic importance of state-of-the-art bin picking solutions.



July 31, 2019: Novanta Inc. acquired ARGES GmbH for ~69 m€. ARGES develops and manufactures intelligent subsystems for positioning and deflecting laser beams in medical and industrial materials processing applications. The company provides scan heads and scan modules, application-specific solutions and complete subsystems.



August 12, 2019 ISRA Vision AG acquired Photonfocus AG, a specialist for high-speed sensor modules incl. 3D and hyperspectral solutions for ~ 1x revenue. ISRA is thereby expanding its strategic portfolio with a focus on embedded sensor solutions and smart factory automation incl. robot guided solutions.



August 13, 2019: Nynomic AG acquired the business operations of LemnaTec GmbH. With the acquisition of LemnaTec, a world-leading specialist for HW and SW systems in the field of digital plant phenotyping and high-throughput screening



Sept. 26, 2019: Nynomic acquired Sensotherm GmbH, a specialist for infrared measurement technology. Sensotherm has ~30 employees and nearly 4m€ revenue.



Sept. 12, 2019: TKH Group NV acquired SVS-Vistek GmbH, a provider of machine vision camera solutions for inspection, measurement and manufacturing process control of flat panel displays, electronics, and other applications. SVS Vistek fits into TKH's vision segment and will operationally be integrated into the Lakesight group.

Sept. 27, 2019: AMETEK announced that it has signed a definitive agreement to acquire Gatan, a leading manufacturer of instrumentation and software used to enhance and extend the operation and performance of electron microscopes, from Roper Technologies, Inc. in an all-cash transaction valued at \$925 m\$.

Vision Technology Companies' Benchmarking (last twelve months)

	Gross Margin 50,2%	EBITDA Margin 18,3%	R&D Margin 9,9%
ams AG	30,4%	18,4%	16,8%
Ametek	34,4%	27,1%	n.a.
Basler	45,9%	16,9%	8,0%
Bruker	48,0%	18,1%	9,2%
Cognex	73,8%	28,6%	14,6%
Datalogic	48,4%	1,5%	10,0%
FARO Techn.	56,1%	4,4%	9,8%
Kapsch TrafficCom	58,1%	8,7%	n.a.
FLIR Systems	50,9%	22,8%	10,3%
Hamamatsu	50,8%	25,9%	8,9%
Hexagon	62,2%	27,9%	11,1%
Isra Vision	56,9%	26,3%	13,5%
Jenoptik	35,5%	14,6%	5,9%
Keyence	82,2%	54,0%	n.a.
Nanometrics	54,0%	14,8%	18,2%
Novanta	42,3%	18,3%	8,6%
Nynomic	28,5%	18,5%	n.a.
Olympus	63,9%	18,7%	0,0%
Oxford Instr.	53,1%	16,1%	7,6%
Renishaw	49,5%	21,0%	n.a.
Rudolph Techn.	52,1%	16,2%	20,5%
Stemmer Imaging	16,4%	7,1%	n.a.
Teledyne Techn.	39,1%	19,3%	n.a.
TKH Group	45,5%	11,4%	n.a.