

<p>Buy</p> <p>EUR 14.00</p> <p>Price: EUR 9.81</p> <p>Upside: 42.8 %</p>	<p>Value Indicators: EUR</p> <p>DCF: 14.70</p> <p>FCF-Value Potential 17e: 13.10</p>	<p>Share data:</p> <p>Bloomberg: SIS GR</p> <p>Reuters: SISG</p> <p>ISIN: DE0007201907</p>	<p>Description:</p> <p>Sensor solutions along the value chain: from sensor chips to sensor systems.</p>
	<p>Market Snapshot: EUR m</p> <p>Market cap: 100.0</p> <p>No. of shares (m): 10.2</p> <p>EV: 132.2</p> <p>Freefloat MC: 58.7</p> <p>Ø Trad. Vol. (30d): 159.85 th</p>	<p>Shareholders:</p> <p>Freefloat: 58.7 %</p> <p>FS Technology Holding: 36.0 %</p> <p>Rolly van Rappard: 5.3 %</p>	<p>Risk Profile (WRe): 2016e</p> <p>Beta: 1.3</p> <p>Price / Book: 1.3 x</p> <p>Equity Ratio: 52 %</p> <p>Net Fin. Debt / EBITDA: 1.9 x</p> <p>Net Debt / EBITDA: 2.0 x</p>

Measurable profitability improvement

Customer-specific sensor solutions: First Sensor is a supplier of customer-specific sensor solutions. The company covers the essential steps along the value creation chain: from sensor chip to sensor to the complete sensor system. Accordingly, customers receive, as required, complete solutions or individual value creation steps from one single source. The sensors are based on various technologies. Among these are sensors for gauging speed, pressure, flow, light and radiation. Within the various applications, the company addresses customers from the **medical, industrial and mobility** markets.

Niche player: The focus on customer-specific applications, for which there are no standard solutions, is an important component of First Sensor's comfortable competitive situation in its niche as the market for customer-specific applications is generally not addressed by the large sensor suppliers. In contrast to First Sensor, the many smaller suppliers in the strongly-fragmented sensor market are not considered to be reliable suppliers by leading automobile manufacturers and industrial companies, which are highly dependent on the sensor solutions. The design-in of the sensors into the customers' products leads to high switching costs for the customer. First Sensor thus participates in the customer's growth over the product life-cycle of five to 10 years.

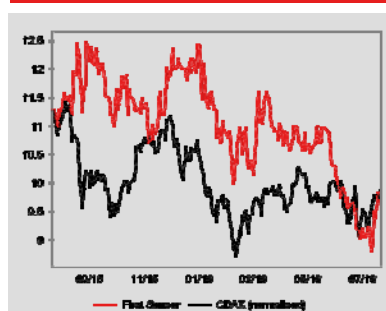
Sensorisation as a structural growth driver: Sensors are penetrating an increasing number of areas of application and are gaining in importance in numerous areas of life, for instance with issues like **Industry 4.0, e-health and autonomous driving**. Such trends accelerate the structural growth of the sensor market. This can also be clearly seen in the fact that the number of sensors built into B2B applications doubles every eight to nine years.

Double-digit revenue growth targeted: The structural growth of the markets addressed by First Sensor forms the basis for solid business development. In the medium term, management aims to grow stronger than the market. The associated double-digit growth rates reflect market share gains and potential for our forecasts.

Scope for margin improvement: Efficiency programmes, especially in purchasing and process optimisation, which were carried out over the last few years, should contribute to a further improvement in the EBIT margin. Economies of scale, the progressing integration of its subsidiaries and the implementation of a product platform strategy should also contribute. Potential for increasing margins is also underlined by comparison with the competition, which shows higher profitability. First Sensor is aiming for a 10% EBIT margin.

After 2015 was burdened by one-off expenses (shut-down of production facilities in Singapore, write-down on inventory), 2016 should show a far higher level of profitability with the cessation of these expenses as well as higher utilisation of the remaining capacities.

The price target of EUR 14 is confirmed. In light of the 30% upside potential, the rating remains Buy.



Rel. Performance vs CDAX:

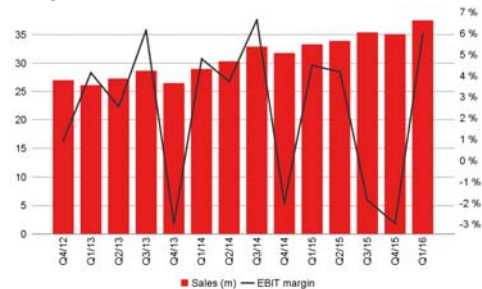
1 month:	0.2 %
6 months:	-14.0 %
Year to date:	-14.0 %
Trailing 12 months:	-0.2 %

Company events:

11.08.16	Q2
10.11.16	Q3

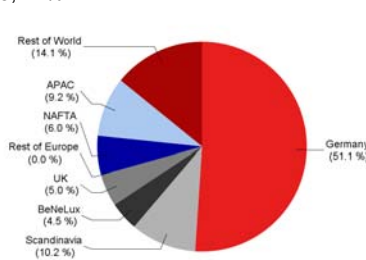
FY End: 31.12. in EUR m	CAGR (15-18e)	2012	2013	2014	2015	2016e	2017e	2018e
Sales	7.9 %	111.9	108.5	124.0	137.7	148.5	160.4	173.2
Change Sales yoy		71.7 %	-3.0 %	14.2 %	11.1 %	7.8 %	8.0 %	8.0 %
Gross profit margin		53.8 %	54.1 %	51.9 %	49.6 %	50.1 %	50.1 %	50.0 %
EBITDA	25.4 %	13.4	11.6	13.5	11.4	16.2	19.5	22.4
Margin		12.0 %	10.7 %	10.9 %	8.3 %	10.9 %	12.2 %	12.9 %
EBIT	120.4 %	3.6	2.7	4.1	1.2	7.0	10.2	13.0
Margin		3.2 %	2.5 %	3.3 %	0.9 %	4.7 %	6.4 %	7.5 %
EBIT adj.		7.7	7.3	4.1	1.2	9.2	12.3	15.0
Net income	-	0.5	-0.5	0.2	-1.7	4.2	6.5	8.4
EPS	-	0.05	-0.05	0.02	-0.17	0.42	0.64	0.83
DPS	-	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Dividend Yield		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.1 %
FCFPS		-0.14	1.00	0.73	-0.21	0.17	0.30	0.48
FCF / Market cap		-1.6 %	12.6 %	7.3 %	-1.9 %	1.8 %	3.1 %	5.2 %
EV / Sales		1.2 x	1.1 x	1.1 x	1.0 x	0.9 x	0.8 x	0.7 x
EV / EBITDA		9.6 x	9.9 x	9.7 x	12.7 x	8.2 x	6.6 x	5.3 x
EV / EBIT		36.3 x	41.9 x	32.1 x	118.5 x	18.9 x	12.6 x	9.1 x
EV / EBIT adj.		16.7 x	15.8 x	32.1 x	118.5 x	14.4 x	10.5 x	7.9 x
P / E		182.1 x	n.a.	501.9 x	n.a.	23.5 x	15.4 x	11.1 x
FCF Yield Potential		6.1 %	7.9 %	5.7 %	4.0 %	6.7 %	8.4 %	10.8 %
Net Debt		39.3	36.1	30.0	33.3	32.2	29.1	24.1
ROCE (NOPAT)		1.8 %	1.1 %	0.9 %	1.5 %	4.6 %	6.5 %	8.0 %
Guidance:		2016: revenue EUR 145-150m; EBIT margin 5-6%						

Sales development in EUR m



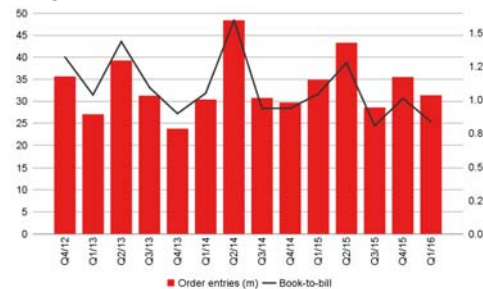
Source: Warburg Research

Sales by regions 2015; in %



Source: Warburg Research

Order entries in EUR m



Source: Company

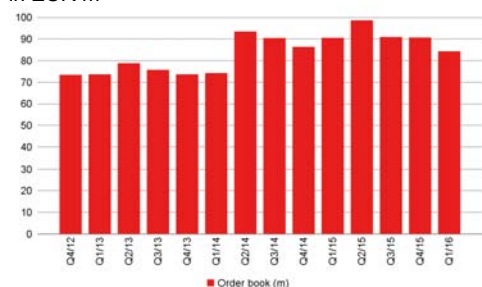
Company Background

- First Sensor develops and manufactures customer-specific high precision sensor solutions.
- The company develops sensor solutions along the entire value chain from sensor chips right up to complete systems.
- The products are manufactured in small and large series. In the area of customised solutions, First Sensor is among the leading suppliers worldwide.
- The sensors (e.g. optical sensors, pressure and fluid sensors, steering angle and position sensors) and sensor systems form the functionally necessary and therefore critical elements of diverse end products.
- Among the sectors supplied by First Sensor are medical, industrial and mobility. The business unit E²MS offers manufacturing services for internal and external customers.

Competitive Quality

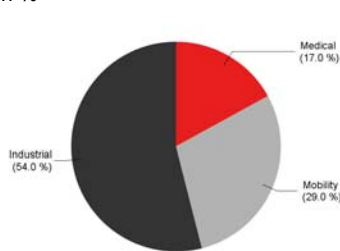
- Sensors and sensor systems, developed and produced by First Sensor in response to particular problems, allow customers to access new areas of application that would not have been possible with standard sensors.
- Large sensor producers focus on standard products and the achievement of economies of scale. First Sensor's niches are often unattractive for them while smaller players do not have access to the market.
- The sensor costs form only a negligible part of the cost of an end product, which strengthens First Sensor's negotiating position.
- Customers are highly dependent on sensor suppliers; which explains the customer demand for a financially solid supplier.
- An ability to efficiently organise production processes, the expertise built up over many years and the established relationships to key customers raise the barriers to market entry.

Order book in EUR m



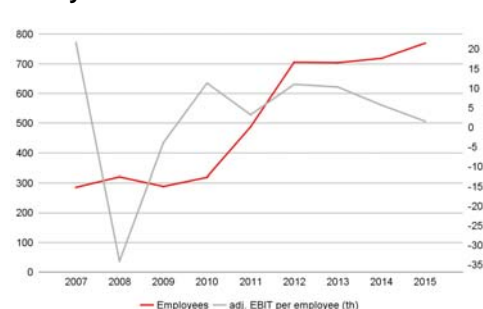
Source: Warburg Research

Sales by segments 2015; in %



Source: Warburg Research

Employees



Source: Warburg Research

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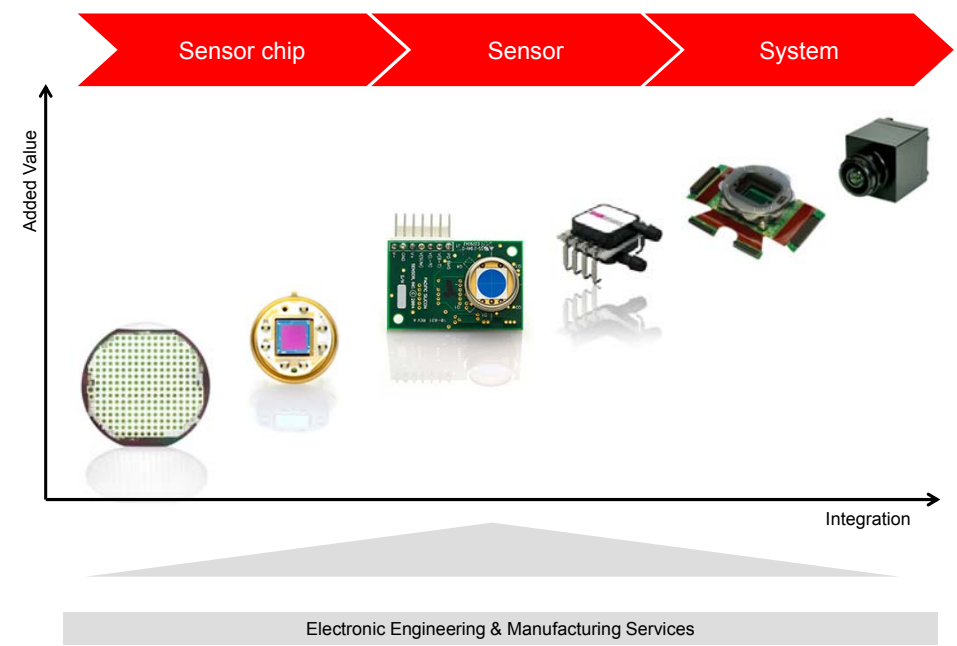
Focus on customer-specific sensor solutions

Investment case

First Sensor develops and produces customer-specific sensor solutions. In this market niche, First Sensor holds a leading position globally. As a specialist sensor and system supplier for well-known customers, the company’s offering covers the entire sensor value creation chain. This includes:

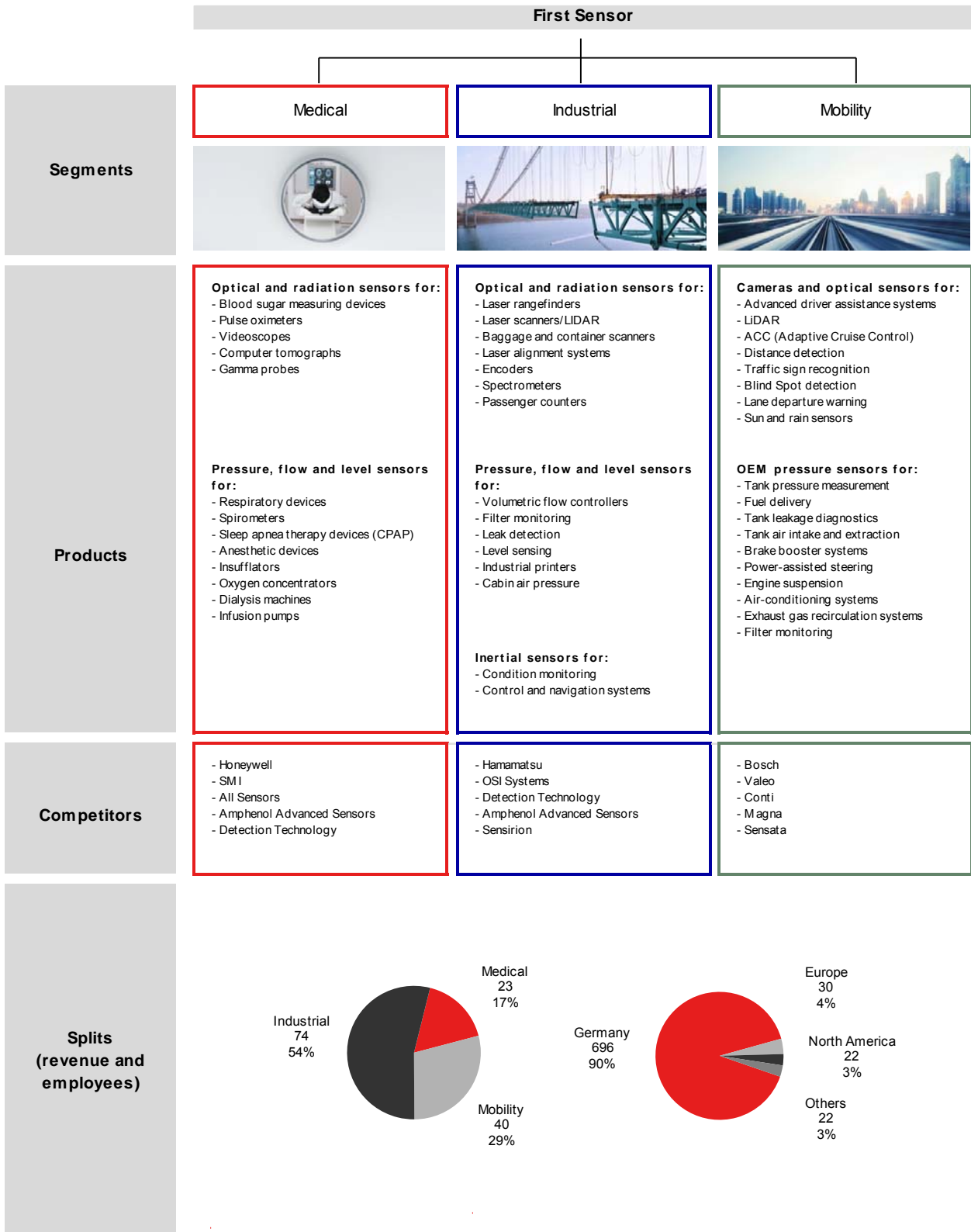
- **Development** of sensor solutions, building prototypes and the alignment of the sensor solution with the client’s product (“design-in”).
- **Production.** This ranges from the sensor chip to the sensor to the complete sensor system and includes, depending on the requirements of the customer, individual or all stages of the value chain.

Coverage of the important value creation stages



Source: First Sensor

Company overview



Sources: First Sensor, Warburg Research

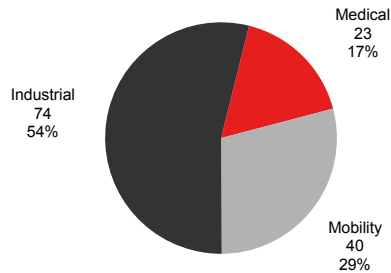
The organisation of the company into business units ensures close affinity with the market and customers. The business units are supported by two competence centres in which R&D and production are carried out.

The Competence Center Production comprises the manufacturing of its own products, which is carried out at the company's various production sites. In this way, First Sensor positions itself as an engineering and production services provider. The business opportunities offered by this market are fuelled by increasing complexity and cost intensity in packaging. As a consequence, an increasing number of companies decide to do without in-house production capacities for small or medium volume sizes. Accelerated by this outsourcing trend, the market segment offers **growth rates of 20% p.a.**

Implementation of a product platform

The organisation into business units also facilitates **better coordination of product development** and avoids parallel R&D. In the future, discussion will already take place at the development stage of a project about the extent to which the products can be used for customers in other business units. This approach is also **flanked by the implementation of modular product platforms**. These are based, according to First Sensor's product offering on the optoelectronic as well as the MEMS Technology (Micro Electro Mechanical Systems) and should lead to a more homogenous and thus a more strongly scalable product portfolio.

Revenue shares by business unit – 2015



Source: First Sensor (reported data); Warburg Research (estimates)

Aim: continuous sustainable value creation

With the implementation of the business units, the organisation of the sales teams was also optimised. In this way, First Sensor should gain better access to customers in the three industries and increase cross-selling (e.g. of optical as well as pressure and flow sensors and complete systems). Apart from that, the measures should enable the company to grow faster outside Germany. While the company still generates about 50% of revenue in the domestic market (see Financials chapter), the further expansion of sales in Europe, Asia and North America is being pursued.

With the help of the introduced measures, First Sensor is aiming for a continuous and sustained increase in value and growth in line with future trends.

Niche strategy...

With its **focus** on customer-specific sensor solutions and based on close customer relationships, First Sensor avoids competition with larger sensor producers. These frequently focus on standard sensors and mass unit sales. As a consequence, the aim of the strategy is to generate economies of scale.

As the production of sensor solutions is carried out in medium-sized series, the manageable contract sizes mean that First Sensor is **the single source** for most of its customers. The build-up of further sourcing partners for projects of this size is not economical for the majority.

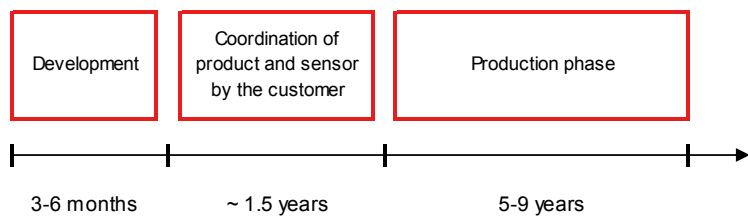
First Sensor uses the building-block principle to build up the solution and, with the cross-functional use of chips from various sectors and applications, achieves economies of scale in development.

...and high customer loyalty limits competition

Even if First Sensor customers include large market participants in various different industries and sectors, none of them account for a share of more than 10% of First Sensor revenue – thus there are no strong dependencies on the customer side. Furthermore, existing customers also show a high degree of loyalty. The reasons include:

- **Lead times and up-front investment:** The development of a sensor normally takes an average of three to six months. After that, the clients need a time period of about 18 months to synchronise the sensor with its product, to undertake calibration, to build prototypes and to finalise the product development (design-in)
- **Product life-cycle:** Once the sensor and the product have been successfully synchronised, the customer is committed to First Sensor for the duration of the product life-cycle of five to nine years.

Design-in leads to customer retention



Sources: First Sensor, Warburg Research

Megatrend: sensorisation

Growth exceeds market average

Structural growth

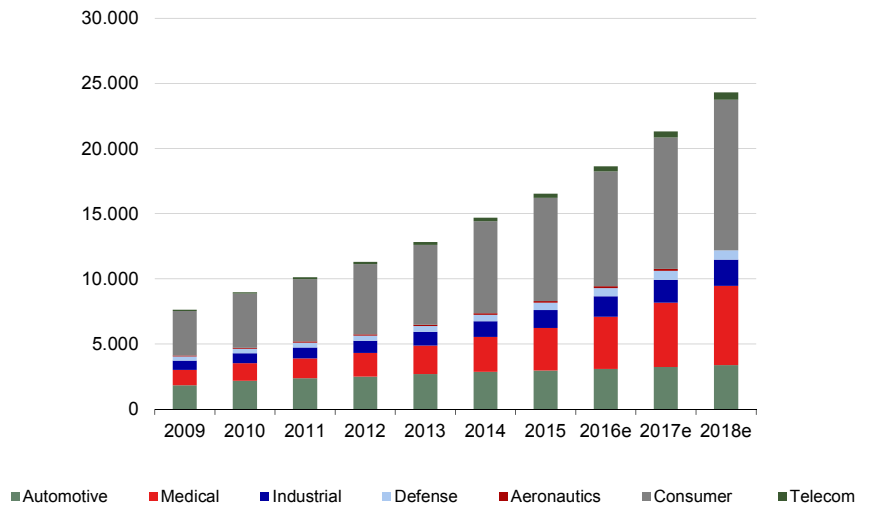
As sensors are increasingly penetrating many areas of life, the foundations are being laid for the structural growth of the sensor market.

The MEMS market is expected to grow by an average of ca. 14% p.a. until 2018. The largest customer market is formed by consumers. The number of sensors used worldwide in B2B applications is expected to more or less double every eight to nine years.

For the market addressed by First Sensor, which includes industry, medicine and mobility/automotive, a volume increase of USD 7,600m to USD 11,400m is expected. This corresponds to growth at a CAGR of 14%. The structural expansion of the market lays the basis for growth for First Sensor and, at the same time, reduces competition.

First Sensor is aiming to grow faster than the overall market in the medium term.

Sensor market growth



Sources: Yole Développement, Warburg Research

Industry 4.0

The term Industry 4.0 is a reference to the major industrial revolutions (mechanisation, industrialisation, digitalisation). The fourth revolution describes the digitalisation of production or the connection of software components with mechanical parts, which communicate via a data infrastructure like the internet. The production facilities of the future will thus be in the position to communicate with one another independently and with the products it is manufacturing, helped by processors, sensors and telecommunication. The smart machines check and organise themselves autonomously, **optimise processes** and react to malfunctions and disruptions. This means that mass production can be **individualised**. At the same time, the number of sensors and intelligent sensor systems required rises in such an environment as these serve the creation and filtration of data.

Driving assistance as a precursor to autonomous driving

Many applications for comfort and safety in the vehicle industry can only be realised with the use of intelligent sensor systems. Legal regulations are making driver assistance systems an obligatory component of cars, trucks and buses. For this application, First Sensor develops and produces robust digital HDR-CMOS cameras (see graphic p. 4). With software algorithms, the images can be analysed directly in the camera system and can be combined with other sensor signals like radar or LiDAR data.

In LiDAR systems (light detection and ranging), the surrounding area is scanned with a pulsed laser beam and from the distance of the individual points a three dimensional image of the surrounding environment is generated in real time. To measure the light pulse of various intensity, First Sensor offers highly sensitive avalanche photo diodes (APD). As the company produces all central components itself, long-term availability of the products for serial production and the after-sales market is secured.

Regarded as the next level up from driving assistance systems is the self-driving car, which autonomously steers, accelerates and brakes. By 2025, there should be about 54 million such cars on the road. With its technological competence, First Sensor is also promisingly positioned for this development.

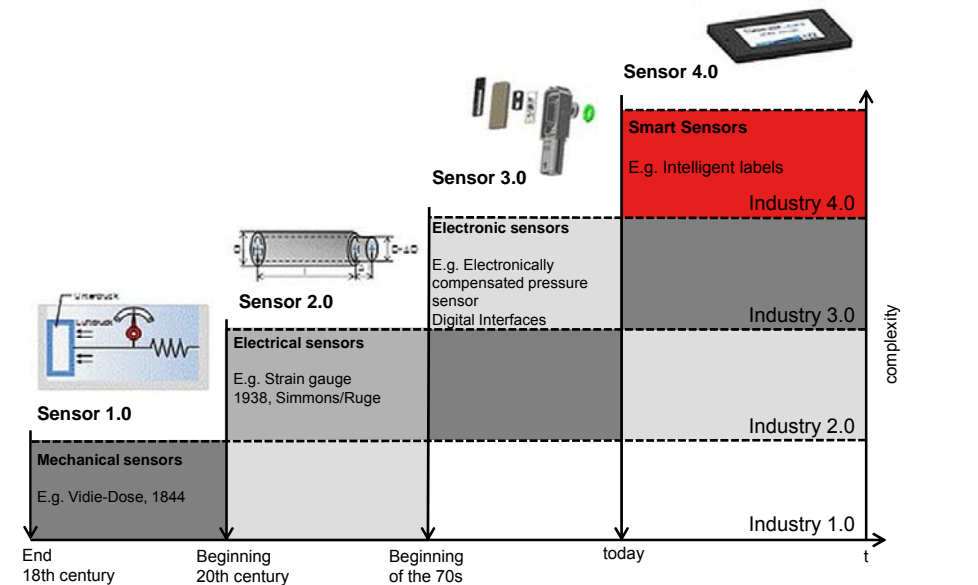
Sensor complexity is increasing

Trends like Industry 4.0 or autonomous driving lead to the increasing complexity of sensors. In the future, sensor systems will include further components besides the actual sensor. These include for instance:

- **Power supply**, which includes e.g. printed batteries or energy harvesting systems, which generate energy from the surrounding environment
- **Electronics for data processing and storage** (ASIC; memory),
- **Interfaces for communication**. This includes e.g. bus systems or the high frequency communication.

This development means at the same time, that the normally silicon-based technologies in the sensors can be expanded for further technologies such as non-silicon-based technologies and integration technologies.

Sensor and industrial development in parallel

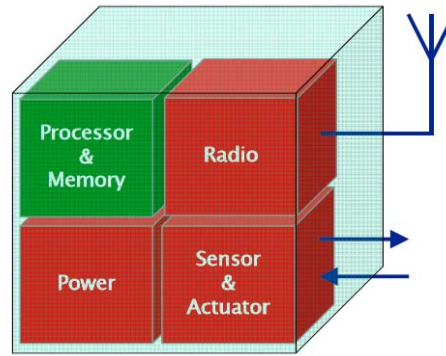


Source: AMA Fachverband

Increasing complexity should promote market concentration

In this context First Sensor is targeting a high level of flexibility. Capabilities like signal analysis and communication with the sensor environment are being planned into the sensors from the beginning. Subsequently, the products can be adapted to the target application at every stage of development.

Increasing complexity of sensors



Sources: First Sensor, Fraunhofer ENAS

Product-platform strategy should raise the scalability

Modular platform strategy should drive margins

Not least based on the acquisitions carried out in the past as well as customer-specific product development, the product range has developed in a heterogeneous fashion. The wide customer base built up by First Sensor has meanwhile enabled better scaling of development and production processes. In the future, during the initial phase of a project, the company will already consider how and to what extent the project is also relevant for customers in other market segments. This approach would be flanked by the implementation of a modular technology and product platform. The result is a more homogenous and a more strongly scalable product portfolio.

To improve profitability, further corporate processes will also be standardised. These include procedures ranging from the offer to contract management to billing, or from the sourcing right up to the payment process. These targets will be supported by the implementation of uniform SAP-ERP software.

The positive effects of efficient corporate processes, coupled with economies of scale should be reflected in an improvement in margins.

Management is aiming for an EBIT margin of 10%, which is supported by our estimates.

Valuation

DCF model

The price target of EUR 14 is based on a DCF model.

DCF model														
Figures in EUR m	Detailed forecast period			Transitional period										Term. Value
	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	
Sales	148.5	160.4	173.2	184.5	194.9	204.5	213.2	221.2	228.3	234.8	240.5	245.7	250.6	
Sales change	7.8 %	8.0 %	8.0 %	6.5 %	5.7 %	4.9 %	4.3 %	3.7 %	3.2 %	2.8 %	2.5 %	2.1 %	2.0 %	2.0 %
EBIT	7.0	10.2	13.0	14.8	15.6	16.4	17.1	17.7	18.3	18.8	19.2	19.7	20.0	
EBIT-margin	4.7 %	6.4 %	7.5 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	
Tax rate (EBT)	30.5 %	30.5 %	30.5 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	
NOPAT	4.9	7.1	9.1	10.3	10.9	11.5	11.9	12.4	12.8	13.1	13.5	13.8	14.0	
Depreciation	9.2	9.3	9.4	10.1	9.7	8.2	8.5	8.8	9.1	9.4	9.6	9.8	10.0	
in % of Sales	6.2 %	5.8 %	5.4 %	5.5 %	5.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	
Changes in provisions	0.6	0.0	0.0	0.1	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	
Change in Liquidity from														
- Working Capital	3.3	3.2	3.4	2.7	2.7	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.3	
- Capex	9.0	9.5	9.5	11.1	8.8	9.2	9.6	10.0	10.3	10.6	10.8	11.1	11.3	
Capex in % of Sales	6.1 %	5.9 %	5.5 %	6.0 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC Model)	2.4	3.7	5.6	6.7	9.6	8.0	8.7	9.3	9.8	10.3	10.8	11.2	11.5	12
PV of FCF	2.4	3.5	4.9	5.5	7.4	5.8	5.9	5.9	5.8	5.8	5.6	5.5	5.3	114
share of PVs	5.87 %			31.96 %										62.17 %

Model parameter				Valuation (m)			
Derivation of WACC:		Derivation of Beta:		Present values 2028e		69	
Debt ratio	28.00 %	Financial Strength	1.25	Terminal Value	114		
Cost of debt (after tax)	2.1 %	Liquidity (share)	1.25	Financial liabilities	55		
Market return	7.00 %	Cyclicality	1.30	Pension liabilities	0		
Risk free rate	1.50 %	Transparency	1.30	Hybrid capital	0		
		Others	1.30	Minority interest	1		
				Market val. of investments	0		
				Liquidity	22	No. of shares (m)	10.2
WACC	6.74 %	Beta	1.28	Equity Value	149	Value per share (EUR)	14.66

Sensitivity Value per Share (EUR)

Beta	WACC	Terminal Growth							Beta	WACC	Delta EBIT-margin						
		1.25 %	1.50 %	1.75 %	2.00 %	2.25 %	2.50 %	2.75 %			-1.5 pp	-1.0 pp	-0.5 pp	+0.0 pp	+0.5 pp	+1.0 pp	+1.5 pp
1.53	7.7 %	10.38	10.68	10.99	11.34	11.71	12.13	12.58	1.53	7.7 %	7.68	8.90	10.12	11.34	12.56	13.78	14.99
1.41	7.2 %	11.64	12.00	12.40	12.84	13.32	13.85	14.44	1.41	7.2 %	8.84	10.17	11.50	12.84	14.17	15.51	16.84
1.34	7.0 %	12.35	12.76	13.21	13.70	14.25	14.85	15.53	1.34	7.0 %	9.50	10.90	12.30	13.70	15.10	16.50	17.90
1.28	6.7 %	13.13	13.59	14.10	14.66	15.28	15.98	16.76	1.28	6.7 %	10.24	11.71	13.18	14.66	16.13	17.60	19.08
1.22	6.5 %	13.98	14.50	15.08	15.72	16.44	17.24	18.16	1.22	6.5 %	11.06	12.61	14.17	15.72	17.28	18.83	20.39
1.15	6.2 %	14.92	15.51	16.17	16.91	17.74	18.68	19.76	1.15	6.2 %	11.97	13.62	15.27	16.91	18.56	20.20	21.85
1.03	5.7 %	17.12	17.90	18.78	19.77	20.91	22.23	23.76	1.03	5.7 %	14.18	16.04	17.91	19.77	21.64	23.50	25.37

- Economies of scale and synergies should contribute to margin improvements in the medium term.
- PPA-related amortisations are having a negative bottom line impact

The model is based on the following assumptions:

- **Revenue growth** 2015-2018e at a CAGR of 8% is the result of the structural growth of the markets addressed by First Sensor. This allows for higher unit sales and the penetration of new applications. The internationalisation of the business flanks growth. Going on these growth assumptions, which are still below management targets, the long-term growth rate of 2% is being approached.
- **Successive margin increases** especially as a result of economies of scale and higher utilisation of production capacities. The reduction of amortisation from purchase price allocation contributes to higher EBIT margins. These write-downs however have no valuation effect.
- A beta of 1.3 takes into account the cyclicity of the business model, the liquidity of the share and financial stability. Thus a debt ratio of 23% leads to weighted costs of capital of 6.7%.

Result: The DCF model leads to a price target of EUR 14.

Free cash flow value potential

Warburg Research's valuation tool "FCF Value Potential" reflects the ability of the company to generate sustainable free cash flows. It is based on the "FCF potential" – a FCF "ex growth" figure - which assumes unchanged working capital and pure maintenance capex. A value indication is derived by discounting the "FCF potential" of a given year with the weighted costs of capital. The fluctuating value indications over time add a timing element to the DCF model (our preferred valuation tool).

The FCF value for the year 2017 of EUR 13.50 supports the value derived from the DCF model.

Free cash flow value potential								
in EUR m	2012	2013	2014	2015	2016e	2017e	2018e	
Net Income before minorities	0.5	-0.5	0.4	-1.5	4.2	6.5	8.4	
+ Depreciation + Amortisation	9.8	8.8	9.5	10.2	9.2	9.3	9.4	
- Net Interest Income	-2.6	-3.8	-2.4	-2.4	-0.9	-0.9	-0.9	
- Maintenance Capex	5.1	3.2	4.8	5.2	5.5	5.8	6.0	
+ Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
= Free Cash Flow Potential	7.8	9.0	7.4	5.8	8.8	10.9	12.7	
Free Cash Flow Yield Potential	6.1 %	7.9 %	5.7 %	4.0 %	6.7 %	8.4 %	10.8 %	
WACC	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	
= Enterprise Value (EV)	129.0	115.0	130.9	144.0	132.3	129.2	118.0	
= Fair Enterprise Value	116.2	134.1	110.5	86.3	131.2	161.7	188.9	
- Net Debt (Cash)	33.0	33.0	33.0	33.0	31.3	28.2	23.2	
- Pension Liabilities	0.3	0.3	0.3	0.3	0.9	0.9	0.9	
- Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
- Market value of minorities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
+ Market value of investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
= Fair Market Capitalisation	82.9	100.7	77.1	53.0	99.1	132.6	164.7	
No. of shares (total) (m)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	
= Fair value per share (EUR)	8.17	9.92	7.60	5.22	9.76	13.06	16.22	
premium (-) / discount (+) in %					-0.9 %	32.6 %	75.8 %	
Sensitivity Fair value per Share (EUR)								
	9.74 %	4.64	5.85	4.25	2.60	5.78	8.15	10.49
	8.74 %	5.55	6.90	5.11	3.28	6.80	9.41	11.97
	7.74 %	6.69	8.21	6.19	4.12	8.09	11.00	13.82
WACC	6.74 %	8.17	9.92	7.60	5.22	9.76	13.06	16.22
	5.74 %	10.16	12.22	9.49	6.70	12.01	15.83	19.47
	4.74 %	13.00	15.49	12.19	8.81	15.21	19.78	24.08
	3.74 %	17.36	20.52	16.33	12.05	20.13	25.84	31.16

- The FCF value of recent years is distorted by the capital increases.
- FCF-Value-CAGR 2013-2018e: 10%

Peer group valuation

The peer group comparison draws upon small caps from the sensor sector. For reasons of comparison, the multiples of the direct competitors Hamamatsu Photonics and Sensata have been included. However, based on their clearly deviating market capitalisation and other business activities that are not comparable with First Sensor, they have not been included in the valuation. Among the other **unlisted competitors are Excelitas (revenue ca. USD 700m) Sensirion, Kavlico und die Sick AG.**

Large caps

Hamamatsu Photonics (J)

Employees: 4,400

Hamamatsu Photonics is a producer of optical sensors, electrical light sources and other optical components. The company was founded in 1948 and is represented worldwide. In the area of customer-specific sensors, Hamamatsu Photonics is First Sensor's competitor.

Sensata (USA)

Employees: 17,000

The company is a supplier of controls and diverse sensor solutions. These include air pressure, air stream, temperature, position and speed sensors. Among the industries addressed are automotive and industrial in particular. The sensors segment contributes more than two-thirds to the revenue. The company is a spin-off of Texas Instruments and is listed on the NYSE.

Small & mid caps sensor technology

ams (A)

Employees: 1,700

ams develops and manufactures analogue integrated circuits and application specific circuits (ASICs). Consumer & Communications account for ca. 65% of the revenue. Industrial, medical and automotive account for ca. 35% of the revenue. The contract production of microelectronic components (foundry) addresses those companies without their own production. With the takeover of CMOSIS, the image sensor area was strengthened. The company was founded in 1981 and the share is listed in Switzerland.

Detection Technology (FI)

Employees: 290

Detection Technology develops and manufactures x-ray sensors for application in medicine, security technology and industrial application. With this focus, the company is a competitor of the business units medical and industrial. Detection Technology aims to grow by at least 15% p.a.

Elmos (D)

Employees: 1,200

Elmos develops and produces semi conductors and micro systems. The focus of Elmos' business activity (about 75%) is on customer-specific system solutions for automobile applications (ASICs). Important customers are Tier 1 and Tier 2 automotive suppliers. As well as its own production in two locations in Dortmund and in Duisburg, MagnaChip is an outsourcing partner. Development and production of the micro systems is conducted by the subsidiary SMI in the USA.

Jenoptik (D)

Employees: 3,600

Jenoptik is focused on photonics. The company manufactures products which generate and control light (i.e. lasers and optics) and is active in significant sections of the value chain with its sensors and complete systems. Jenoptik is in a leading position in certain areas including precision optics, traffic surveillance, new laser technologies, production measurement and individual applications in military and civil automotive and aviation equipment.

Melexis (B)

Employees: 920

The Belgian company develops sensor circuits and programmable semi conductor circuits. The focus is on the automobile industry. Melexis was founded in 1988 and is closely associated with the X-FAB Group.

MTS Systems (USA)

Employees: 2,400

MTS Systems is a supplier of test and simulation systems as well as measurement and sensor technology. The company was founded in 1966. The product portfolio comprises sensors, hydraulic units and components, testing devices, transformers and valves as well as components and complete system solutions, with the corresponding software.

OSI Systems (USA)

Employees: 5,800

OSI Systems operates in the business fields of security, healthcare and optoelectronics. The products include e.g. luggage inspection, medical devices for patient monitoring or position sensors.

The following overview shows the consensus estimates that serve as basic data for the peer group comparison.

Basic data of the peer group analysis

Company	LC	Price in LC	MC in LC m	EV in LC m	EPS			Sales			EBITDA			EBIT adj		
					16e	17e	18e	16e	17e	18e	16e	17e	18e	16e	17e	18e
<i>Direct Competitors (Large Caps)</i>																
Hamamatsu Photonics KK	JPY	2,983.00	499,742.0	429,896.2	92.20	98.83	114.42	12,156.0	13,380.0	13,820.0	30,204.7	33,203.3	37,261.3	19,400.0	19,000.0	21,900.0
Sensata Technologies Holding NV	USD	36.25	6,183.0	9,362.6	2.86	3.19	3.23	3,216.6	3,347.1	3,437.5	796.1	852.2	981.5	696.0	742.7	n.a.
<i>Small & Mid Caps (sensor technology)</i>																
ams AG	CHF	33.35	2,448.2	2,257.5	154	2.17	2.72	654.0	754.0	852.9	178.7	229.9	271.5	123.8	171.8	212.5
Detection Technology Oy	EUR	4.81	62.3	97.4	0.40	0.47	0.56	52.8	58.1	66.3	8.7	10.3	12.2	7.1	8.5	10.4
Elmos Semiconductor AG	EUR	10.52	209.8	158.7	0.72	0.90	1.01	226.6	240.3	256.7	47.4	52.9	57.9	20.7	25.8	29.3
Jenoptik AG	EUR	14.79	846.6	888.2	0.89	0.97	1.06	696.9	739.5	781.9	94.1	101.4	108.3	64.8	71.3	77.5
Melexis NV	EUR	61.00	2,464.4	2,354.0	2.43	2.67	2.90	444.9	482.6	524.5	139.0	152.7	161.8	114.0	124.5	136.3
MTS Systems Corp	USD	46.13	768.2	726.2	2.73	3.05	3.67	603.0	711.6	798.0	70.7	105.4	119.4	59.4	85.0	122.0
OSI Systems Inc	USD	59.50	1,124.3	1,161.4	2.06	2.50	3.30	839.8	880.3	953.7	131.0	146.3	171.3	n.a.	n.a.	n.a.
First Sensor	EUR	9.85	100.1	131.6	0.42	0.64	0.83	148.5	160.4	173.2	16.2	19.5	22.4	9.2	12.3	15.0

Sources: Bloomberg, Warburg Research

The PER is distorted by amortisation on the purchase price allocation from the takeover of the Sensortech Group. The EV/sales multiple signals clear share price potential but this results primarily from the comparison group's higher margin levels. We attribute most significance to the EV/EBIT multiple based on the necessary investments in the industry and the resulting depreciations.

Based on the amortisation arising from purchase price allocation, we have taken the First Sensor EBIT adjusted for this effect. This level signals a value of EUR 11.70 for the year 2018 and signals share price potential going forward.

Peer Group comparison

Company	LC	Price in LC	MC in LC m	EV in LC m	P / E			EV / Sales			EV / EBITDA			EV / EBIT adj		
					16e	17e	18e	16e	17e	18e	16e	17e	18e	16e	17e	18e
<i>Direct Competitors (Large Caps)</i>																
Hamamatsu Photonics KK	JPY	2,983.00	499,742.0	429,896.2	32.4 x	30.2 x	26.1 x	3.5 x	3.3 x	3.1 x	14.2 x	12.9 x	11.5 x	22.2 x	22.6 x	19.6 x
Sensata Technologies Holding NV	USD	36.25	6,183.0	9,362.6	12.7 x	11.4 x	11.2 x	2.9 x	2.8 x	2.7 x	11.8 x	11.0 x	9.5 x	13.5 x	12.6 x	n.a.
Average					22.5 x	20.8 x	18.6 x	3.2 x	3.0 x	2.9 x	13.0 x	12.0 x	10.5 x	17.8 x	17.6 x	19.6 x
<i>Small & Mid Caps (sensor technology)</i>																
ams AG	CHF	33.35	2,448.2	2,257.5	21.7 x	15.4 x	12.3 x	3.5 x	3.0 x	2.6 x	12.6 x	9.8 x	8.3 x	18.2 x	13.1 x	10.6 x
Detection Technology Oy	EUR	4.81	62.3	97.4	12.2 x	10.2 x	8.7 x	1.8 x	1.7 x	1.5 x	11.2 x	9.4 x	8.0 x	13.8 x	11.4 x	9.4 x
Elmos Semiconductor AG	EUR	10.52	209.8	158.7	14.6 x	11.6 x	10.4 x	0.7 x	0.7 x	0.6 x	3.3 x	3.0 x	2.7 x	7.7 x	6.2 x	5.4 x
Jenoptik AG	EUR	14.79	846.6	888.2	16.7 x	15.3 x	13.9 x	1.3 x	1.2 x	1.1 x	9.4 x	8.8 x	8.2 x	13.7 x	12.5 x	11.5 x
Melexis NV	EUR	61.00	2,464.4	2,354.0	25.1 x	22.9 x	21.0 x	5.3 x	4.9 x	4.5 x	16.9 x	15.4 x	14.5 x	20.6 x	18.9 x	17.3 x
MTS Systems Corp	USD	46.13	768.2	726.2	16.9 x	15.1 x	12.6 x	1.2 x	1.0 x	0.9 x	10.3 x	6.9 x	6.1 x	12.2 x	8.5 x	6.0 x
OSI Systems Inc	USD	59.50	1,124.3	1,161.4	28.8 x	23.8 x	18.0 x	1.4 x	1.3 x	1.2 x	8.9 x	7.9 x	6.8 x	n.a.	n.a.	n.a.
Median					16.9 x	15.3 x	12.6 x	1.4 x	1.3 x	1.2 x	10.3 x	8.8 x	8.0 x	13.7 x	11.9 x	10.0 x
Average (all)					20.1 x	17.3 x	14.9 x	2.4 x	2.2 x	2.0 x	11.0 x	9.5 x	8.4 x	15.2 x	13.2 x	11.4 x
Median (all)					16.9 x	15.3 x	12.6 x	1.4 x	1.3 x	1.2 x	10.3 x	8.8 x	8.0 x	13.7 x	11.9 x	10.0 x
First Sensor	EUR	9.85	100.1	131.6	23.5 x	15.4 x	11.9 x	0.9 x	0.8 x	0.8 x	8.1 x	6.7 x	5.9 x	14.3 x	10.7 x	8.8 x
Valuation difference to Median (all)					-28%	0%	6%	56%	61%	60%	26%	30%	37%	-4%	12%	14%
Fair value per share based on Median (all)					7.10	9.81	10.45	17.10	17.72	17.65	13.27	13.75	14.58	9.34	11.38	11.69

Sources: Bloomberg, Warburg Research

Company & products









Extensive technological competence

Preferred partner based on extensive technological competence

First Sensor develops, produces and markets customer-specific sensor solutions and with this, covers the entire value chain from sensor components right up to complete sensor systems. The sensor solutions are based, depending on the application, on various different technologies. These include:

- **Optical sensor technology:** These sensors identify and measure radiation of various wavelengths like alpha, beta, gamma and x-rays as well as UV and infrared radiation.
- **Pressure and flow sensor technology.**
- **MEMS sensor technology** (Micro-Electro-Mechanical System). This technology is used, for example, with pressure, tilt angle and positioning sensors.
- **AIM technology** (Airgap Insulation of Microstructures). This technology is used, among other applications, for positioning or acceleration sensors.

Examples of products

	Product	Description	Application Example		Product	Description	Application Example
	Optical Sensors / Detectors	With optical sensors, lights of various wavelengths (ultraviolet, visible radiation, infrared and ionising radiation) are converted into an electric signal for the transfer of information.	Microscopy, camera technology, automotive electronics		Radiation Sensors	The company provides detectors that measure alpha, beta and gamma radiation.	Nuclear medicine: oncology, radiology, solar and rainfall sensors.
	Pressure Sensors	Pressure sensors represent the largest group in the product range. The primary users come from medicine and those industries involved with liquids such as oil, fuel and corrosive substances.	Ventilation and anaesthesia machines hydraulic/pneumatic control systems, oil/tank pressure		Flow Sensors	Mass and volumetric flow measurement	Water analysis, flow rate measurement, fuel flow measurement
	Liquid Level Sensors	Classic products for level monitoring within storage mediums based on hydrostatic or optical measuring.	Level monitoring		Special Sensors	Miniature force sensors, oxygen sensors, air bubble sensors and humidity sensors.	
	Camera	Various Types of cameras (analog, digital)	mobile surveillance, automation		Inertial sensors	The capacitive inclinometers and accelerometers are based on singlecrystal silicon sensor elements and utilize state-of-the-art micromachining technology to achieve large signal-to-noise ratios and excellent stability over temperature.	geoengineering, condition monitoring, navigation applications

Sources: First Sensor; Warburg Research

Furthermore, with its own development and production, First Sensor covers the following stages of the sensor technology value creation chain in the narrower sense. These include

- **Assembly and packaging technology.** This is a sub-discipline of microsystem technology. Packaging technology allows for the connection of micro-electronic and non-electronic micro-components to a complete system.
- **Customer-specific hybrid circuits.** These are circuits, in which various electronic component parts are combined to form a unit, making it easier to build it into the end product.

Examples of areas of application

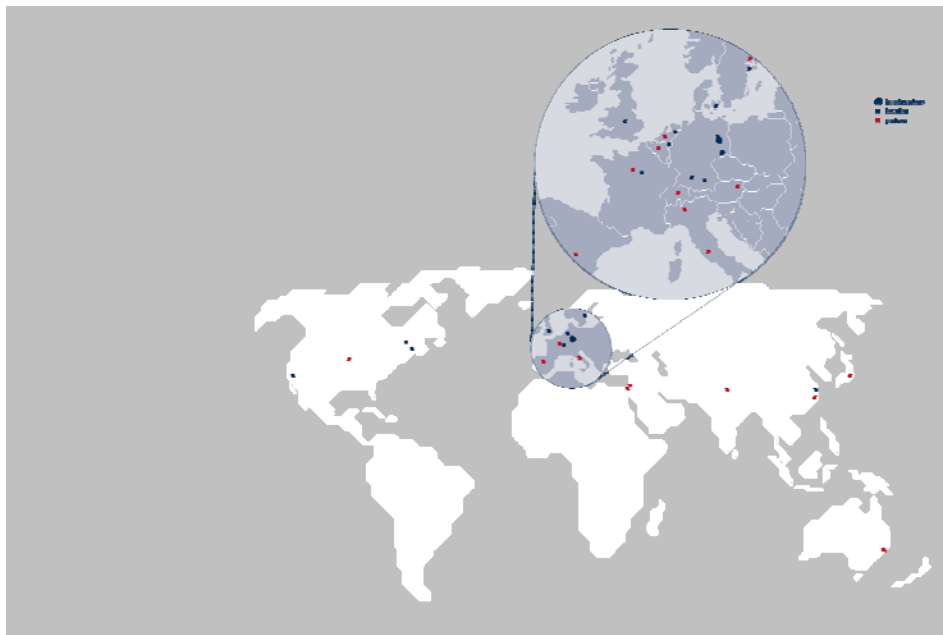
Medical	Industrial	Mobility
<p>Diagnostics:</p> <ul style="list-style-type: none"> - Blood sugar measuring devices - Pulse oximeters - Computer tomographs - Gamma probes - Endoscopy 	<p>Industrial process control:</p> <ul style="list-style-type: none"> - Liquid level measurement - Laser alignment systems - Filter control - Leak detection - Pressure detection 	<p>Passenger cars:</p> <ul style="list-style-type: none"> - Speed control - Tank leak detection - Measurement of tank pressure - Measurement of temperature - Fuel delivery modules - Sun and rain detection - Automatic start-stop systems
<p>Respiration and pneumology:</p> <ul style="list-style-type: none"> - Respiratory equipment - Anaesthesia devices - Sleep diagnostic devices - Sleep apnea therapy devices - Spirometers - Oxygen concentrators 	<p>Radiation and security:</p> <ul style="list-style-type: none"> - Container scanners - Baggage scanners - Radiation detectors 	<p>Smart Cars:</p> <ul style="list-style-type: none"> - Adaptive cruise control (ACC) - Parking sensors - Lane departure warning - Pedestrian recognition - Traffic sign recognition - Collision avoidance systems - Blind spot detection
<p>Dialysis and infusion:</p> <ul style="list-style-type: none"> - Dialysis machines - Infusion pumps 	<p>Smart Building:</p> <ul style="list-style-type: none"> - Filter monitoring - Room pressure - Condition monitoring - Volumetric flow controllers 	<p>Utility and special vehicles:</p> <ul style="list-style-type: none"> - Pressure sensors - Distance detection - Tank leak detection - Advanced driver assistance systems
	<p>Length measurement:</p> <ul style="list-style-type: none"> - Laser range finders - Laser scanners/ LIDAR - Laser alignment systems - Encoders 	
	<p>Aerospace:</p> <ul style="list-style-type: none"> - Laser alignment systems - Cabin air pressure - Navigation 	

Source: First Sensor

Production facilities with a high level of vertical integration

First Sensor's production sites in Germany are located in Berlin, Dresden, Oberdischingen (near Ulm) and Puchheim (near Munich). There are further sites in the US (Westlake Village, CA), in the Netherlands and in Canada (Montreal). The production locations differ in terms of technology (e.g. optical electronics vs. MEMS), in terms of positioning along the value chain and the lot sizes produced at each site.

Global presence



Source First Sensor

- **Sensorchips** are developed and manufactured at the headquarters in Berlin-Oberschönweide.
- A **sensor module or a finished sensor** comes at the next level of the value chain. The components are connected with other electronic components and circuits to a controlling device using integrated circuit packaging technology or hybrid technology, also known as microsystem technology. These steps of the process are carried out mainly in Berlin-Weißensee, at the two sites in Dresden as well as in Oberdischingen.
- In a **sensor system**, sensors in combination with actuators or other sensors, take over controlling tasks. The system processes complex data, filters and interprets this and enters a bidirectional communicative connection with its surroundings. In future, these sensor systems will be produced across all sites.

There are no significant dependencies on individual suppliers based on the distinct depth of value creation. The extent of First Sensor's production often goes **right back to the fundamental processes**.

Sales and customers

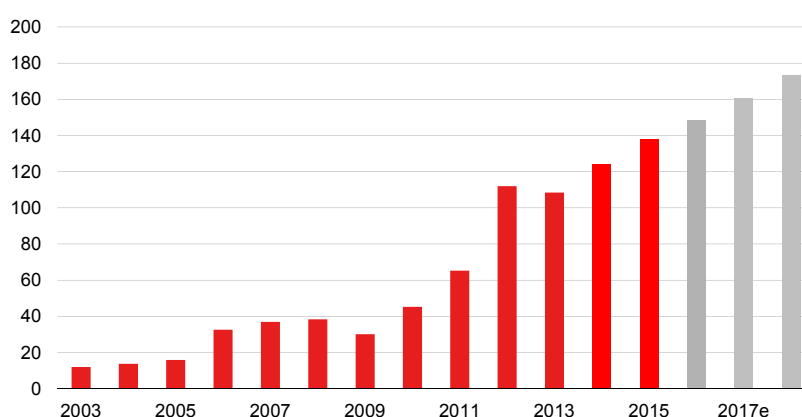
With sales branches and co-operation agreements, customer proximity is ensured. First Sensor sales are normally carried out directly with OEMs, using First Sensor's solutions and services for their own products. These products can be interim products as well as end products. **Tier 1 suppliers** are also part of First Sensor's customer base. Furthermore, cooperation agreements have been reached with local distribution partners. **Sales cooperations** contribute to advancing the internationalisation of business activities and to expanding the product range.

Company history

The historical origins of First Sensor go back to Silicon Sensor GmbH, founded in 1991. The company evolved from the former East German publicly-owned company "Werk für Fernsehelektronik" (factory for television electronics).

- In 1999 the IPO of First Sensor took place and Pacific Silicon Sensor was founded in the USA.
- In 2000, Lewicki microelectronic GmbH was acquired. This facilitated the expansion of the offering in customer-specific packaging solutions (with series sizes of up to 50k units) and thus expanded the value creation.

Acquisition contributes to revenue growth



Source: First Sensor (historical data), Warburg Research (estimates)

- In 2005 First Sensor increased the Packaging capacities to series of up to five million units with the acquisition of Microelectronic Packaging Dresden GmbH.
- In 2006, Silicon Micro Sensors GmbH was founded with its headquarters in Dresden.
- In 2009, two capital increases took place to finance future growth. Both were subscribed to a considerable extent by Daniel Hopp, who is no longer involved with the company today.
- In 2010 First Sensor expanded the competence to the area of MEMS technology with the acquisition of First Sensor Technology GmbH, Berlin.
- In 2011, know-how in the area of positioning and acceleration sensors was strengthened with the acquisition of MEMSfab GmbH.
- In mid-2011, the company changed its name to First Sensor AG (previously: Silicon Sensor International AG), to underline the positioning achieved as a supplier of sensor solutions from sensor component right up to the complete system.
- In October 2011, the Sensortech Group was taken over. This came along with a doubling of revenues. The seller was AUGUSTA Technologie AG.
- Since 2014/2015 the company has been focusing on the three business units, medical, industrial and mobility and is advancing the integration of the companies taken over in the past. Acquisitions of complementary technologies are regularly examined in the context of the buy-and-build strategy.

Management

Management board

Dr. Mathias Gollwitzer, **CFO**



Dr. Gollwitzer has been CFO since August 2015. He is responsible for the areas of Finance, Controlling, Purchasing, Personnel, IT, Process Development, Investor Relations and Legal.

Dr. Gollwitzer began his professional career in 1992 at Deutsche Aerospace AG in Munich and at Telefunken Systemtechnik GmbH in Ulm, before switching to today's Daimler AG in 2002. Here, he served from 2008 to 2012 as CFO of Mercedes-Benz France SAS in Paris. Most recently, Dr. Gollwitzer was Head of Group Controlling and the transformation programme of EnBW Energie Baden-Württemberg AG.

On June 16, 2016, CEO Dr. Martin U. Schefter did not extend his expiring contract. The reason for this decision was differences of opinion as regards the long-term strategic orientation of the company. CFO Dr. Mathias Gollwitzer takes over his executive managerial tasks until a successor is appointed.

Supervisory board

Prof. Dr. Alfred Gossner is Chairman of the Supervisory Board. He is also CFO of the Fraunhofer company in Munich, where he has been CEO since 2002. Previously, he was a member of the board of Allianz Versicherung AG. He completed his studies in economics, econometrics and politics in the Ludwig-Maximilians-University Munich and the University of Lancaster.

Further members of the supervisory board are the deputy chairman **Götz Gollan**, Chairman of the Privatbank Berlin von 1929 AG and **Marc de Jong**, CEO of the LM Group Golding A/S.

Shareholders

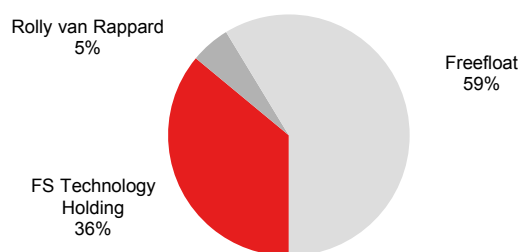
The First Sensor shares are mainly held by the following groups of shareholders:

- **FS Technology Holding S.à r.l.** is the largest shareholder (36% of the shares). Behind the FS Technology Holding is the Private Equity Fonds Parcom Deutschland I of the Deutschen Private Equity GmbH.

Deutsche Private Equity GmbH was founded in 2007 in Munich by Volker Hichert and Marc Thiery. The DPE manages fund assets of more than EUR 600m. This capital is invested in “mittelstand” companies from Germany, Austria and Switzerland.

- Among the large shareholders within the freefloat is the Midlin Fund with 5%. Rolly van Rappard is the co-founder and chairman of CVC Capital Partners.

Shareholder structure



Source: First Sensor

Financials

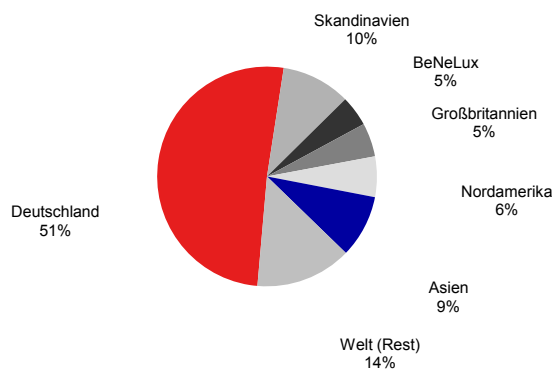
Market share gains and margin expansion in focus

In November 2015, First Sensor published its medium-term targets. By 2020, the company is aiming for **stronger growth than the overall sensor market**. In our view, the margin expansion should primarily be a result of economies of scale.

Increasing market penetration

With a revenue share of ca. 50%, Germany is the focus of the business activity. Europe, outside Germany, is the second most important region for unit sales. Against this background, internationalisation of business activities offers growth opportunities for First Sensor. Currently, the growth strategy is aiming to increase the penetration of the markets already being addressed.

Regional revenue split 2015



Source: Warburg Research (estimates)

After the takeover of the Sensortechnics Group in 2013, particular attention was paid to the substitution of the distribution business with proprietary sensors. After returning to growth in 2014, the revenue increase should progress in 2016 with the successful implementation of projects won in the past.

Cross-selling potential: customers often only avail of parts of the offering

Cross-selling provides positive impetus

In First Sensor's various value creation stages (sensor components, sensor modules, sensor systems) various customers are being served. This creates cross-selling potential. Furthermore, First Sensor can expand value creation more strongly with existing customers. Cross-selling thus offers the opportunity to grow stronger than the overall market addressed by the company. Stronger utilisation of the sensor factory, with the higher number of units, should at the same time positively impact margin development.

Good medium-term revenue visibility

First Sensor's revenue development is essentially dependent on customer call-off behaviour and is thus correspondingly subject to fluctuation. In the medium term, there is solid visibility given that development takes place two to three years before production while the subsequent production stretches over a time period of ca. five to nine years. Current sales activity is thus already laying the basis for projects which will only become revenue effective in about three years.

P&L development

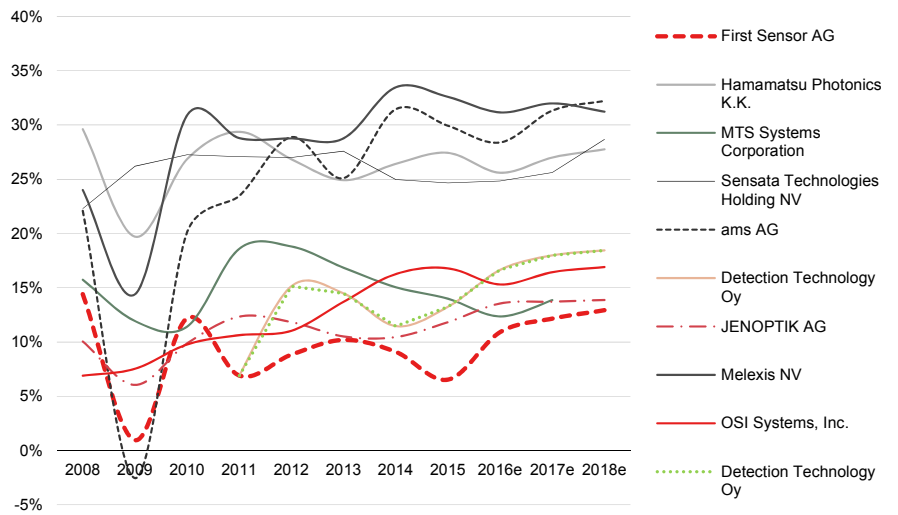
in EUR m	2012	2013	2014	2015	2016e	2017e	2018e
Sales	111.9	108.5	124.0	137.7	148.5	160.4	173.2
yoY	717%	-3.0%	14.2%	11%	7.8%	8.0%	8.0%
Increase / decrease in inventory	12	-0.8	0.8	-12	0.7	0.7	0.7
Own work capitalised	2.1	13	0.8	10	10	10	10
Total sales	115.3	109.0	125.6	137.6	150.2	162.1	174.9
Material Expenses	55.0	50.3	61.2	69.3	75.7	81.9	88.3
Ratio	49.7%	46.3%	49.3%	50.3%	51.0%	51.0%	51.0%
Gross profit	60.3	58.7	64.4	68.3	74.5	80.3	86.6
Personnel expenses	36.3	36.6	39.4	41.9	44.0	45.0	47.0
Other operating income	3.9	3.4	3.5	2.8	4.3	4.3	4.5
Other operating expenses	14.5	14.0	15.0	17.8	18.6	20.0	21.7
EBITDA	13.4	11.6	13.5	11.4	16.2	19.5	22.4
Margin	2.0%	1.7%	1.9%	8.3%	10.9%	2.2%	2.9%
Depreciation of fixed assets	5.9	5.6	5.5	5.8	5.8	6.0	6.2
Amortisation of intangible fixed assets	3.9	3.3	4.0	4.4	3.4	3.3	3.2
EBIT	3.6	2.7	4.1	1.2	7.0	10.2	13.0
Margin	3.2%	2.5%	3.3%	0.9%	4.7%	6.4%	7.5%
EBIT adjusted	7.7	7.3	4.1	1.2	9.2	12.3	15.0
Margin	6.9%	6.7%	3.3%	0.9%	6.2%	7.7%	8.7%
Financial result	-2.6	-3.8	-2.4	-2.4	-0.9	-0.9	-0.9
Taxes total	0.5	-0.6	1.3	0.4	1.9	2.8	3.7
Net income	0.5	-0.5	0.2	-1.7	4.2	6.5	8.4

Source: First Sensor (reported data), Warburg Research (estimates)

Higher margins in line with economies of scale

In the medium term, First Sensor aims to expand the margins with above market-average growth. The comparison with similar companies makes clear that there is still potential to increase margins.

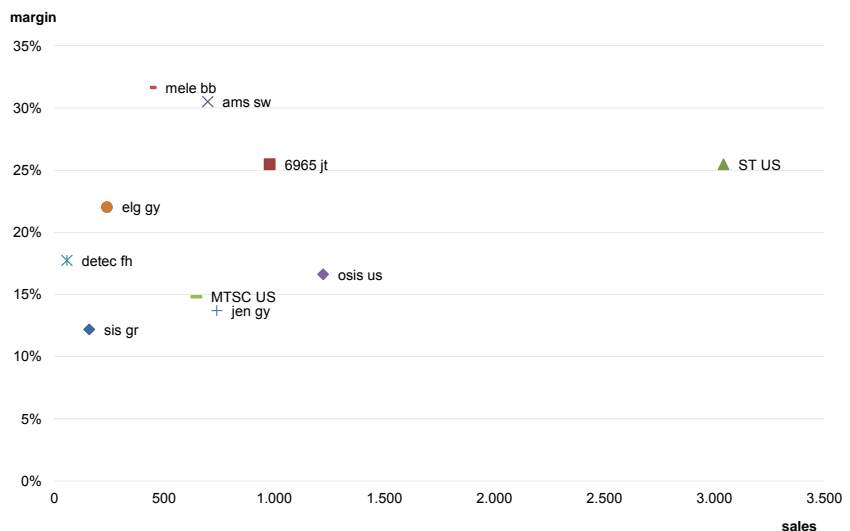
Comparison of EBITDA margins



Source: FactSet

However a comparison of the revenue volume and EBIDA margins of similar companies also shows that the profitability of the business models of comparable companies is also characterised by economies of scale.

Higher revenue levels go hand-in-hand with higher margins



Sources: Bloomberg, Warburg Research

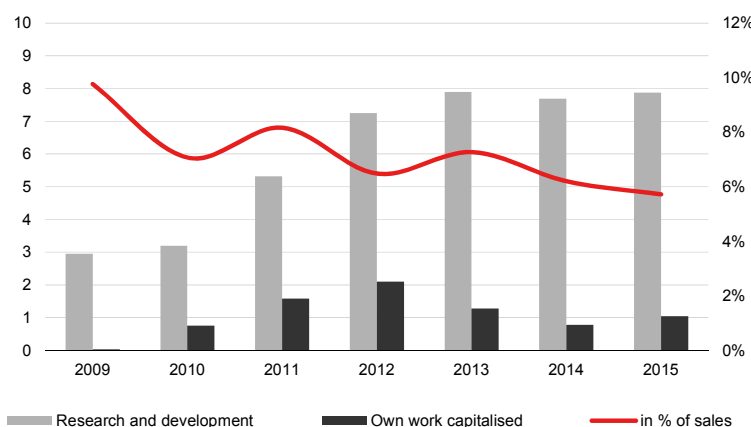
Product platforms as the next integration step

Positive margin drivers

A rising revenue level at First Sensor should lead to positive margin momentum.

- **Process- and cost optimisation:** In the past years, initiated **cost savings and efficiency enhancement programmes** have contributed to margin improvement. Important processes, e.g. in purchasing and quality management are harmonised and optimised and, in this way, companies taken over in the past are being fully integrated.
- **Greater value creation:** For new product generations, First Sensor will focus more strongly on offering its customers the sensor as a complete **sensor system**. With greater value creation, the company should manage to expand margins.
- **Product platforms:** First Sensor's margin expansion should in future be more strongly flanked by the implementation of modular product platforms. The implementation of the business units Industrial, Medical and Mobility should also contribute to the reduction of parallel production development which took place in the past. This also provides for an increase in the repeated use or application of single developments.

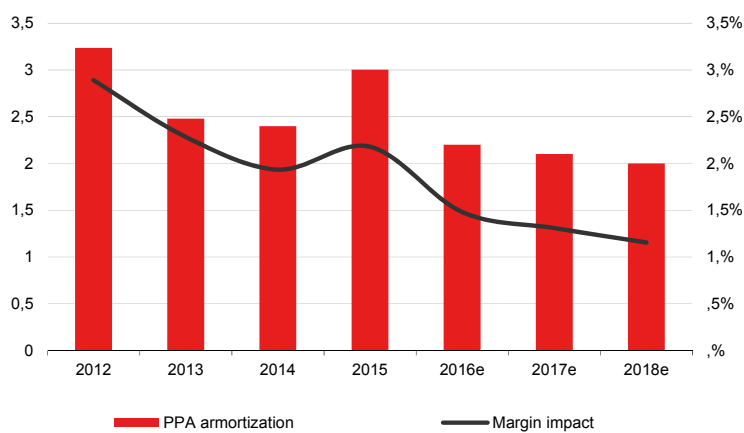
Research and development



Source: First Sensor (historical figures)

Currently, EBIT is burdened by purchase price allocation (PPA) amortisation in connection with the Sensortechnics Group. The decline in PPA amortisation in the next years should have an effect on the profitability of First Sensor while EPS growth should pique investor interest.

Amortisation of purchase price allocation



Source: First Sensor (reported data), Warburg Research (estimates)

Most recent figures reflect advancing integration

Recently, First Sensor published the figures for the first quarter.

First Sensor – Q1 2016								
in EUR m	Q 1/16	Q 1/16e	Δ WRe	Q 1/15	yoy	2016e	2015	yoy
Sales	37.5	36.0	4.3%	33.3	12.7%	148.5	137.7	7.8%
EBITDA	4.5	4.3	5.0%	3.9	15.9%	16.2	11.4	42.5%
<i>margin</i>	<i>12.0%</i>	<i>11.9%</i>		<i>11.7%</i>		<i>10.9%</i>	<i>8.3%</i>	
EBIT	2.2	2.0	12.2%	1.5	50.0%	7.0	12	475.9%
<i>margin</i>	<i>6.0%</i>	<i>5.6%</i>		<i>4.5%</i>		<i>4.7%</i>	<i>0.9%</i>	
Net income	1.7	1.5	16.1%	1.0	71.5%	4.2	-1.7	-
<i>margin</i>	<i>4.6%</i>	<i>4.2%</i>		<i>3.1%</i>		<i>2.9%</i>	<i>-12%</i>	
Medical	7.2	6.5	10.8%	5.2	37.2%	25.7	23.4	10.0%
Mobility	13.4	11.5	16.5%	9.4	43.0%	43.4	39.8	9.0%
Industrial	16.9	18.0	-6.1%	18.7	-9.8%	77.8	74.1	5.0%
Order entries	31.4			34.9	-10.1%		42.3	-
Book-to-bill	0.8			1.0	-20.3%		1.0	
Order book	84.4			90.6	-6.9%		90.7	-

Source: First Sensor (reported data), Warburg Research (estimates)

Medical and Mobility drive revenue growth: First Sensor published solid Q1 figures. Despite somewhat weaker revenue in the **Industrial** segment, revenue rose significantly in the other two segments. Broadly stable personnel expenses helped enhance the benefits of scale, which is reflected in an improvement in the EBIT margin. The EBIT margin improvement also clarifies the effectiveness of the efficiency enhancement measures while minimum acceptance quantities for customers have reduced First Sensor's process costs.

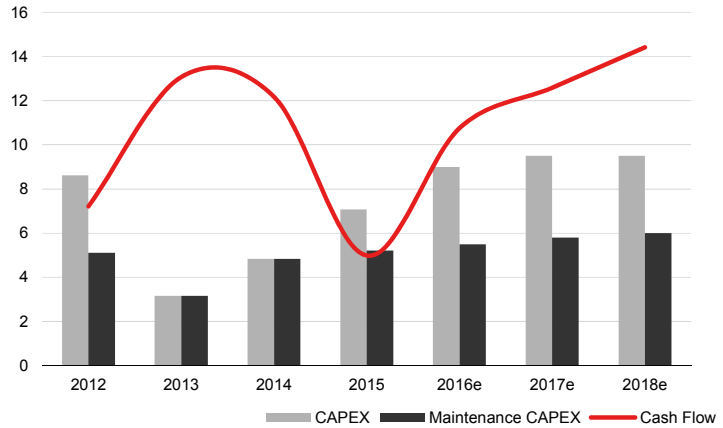
Operative earnings reflected in positive cash flow: With the support of the strong operative development, the operative cash flow improved from EUR -1m in last year's Q1 to EUR 3.4m this year. This led to an increase in the free cash flow from EUR -2.7m last year to EUR 2.5m. Thus for the third quarter in a row, First Sensor recorded a positive cash flow. As the investment budget of the company is about EUR 8m for the fiscal year, the next quarters should reflect a normalised investment level.

Ahead of the guidance: First Sensor is currently ahead of the guidance run-rate for the full year as the upper end of the revenue target implies a growth rate of 9%. Management remains nevertheless cautious, as it cannot be fully foreseen if the strong start to the year in the Mobility segment will continue. Based on the mixed track record, management is determined to fulfil expectations.

Capex: capacity expansion and new technologies

With the focus on customer-specific sensor solutions, which are associated with small to medium production volumes, the company is not reliant on the very latest technology. This has advantages for investment as First Sensor can acquire production facilities that are no longer being used by chip and sensor companies, which are focused on mass production and economies of scale. Compared to the most modern technology, this reduces the investment volume by up to 80%.

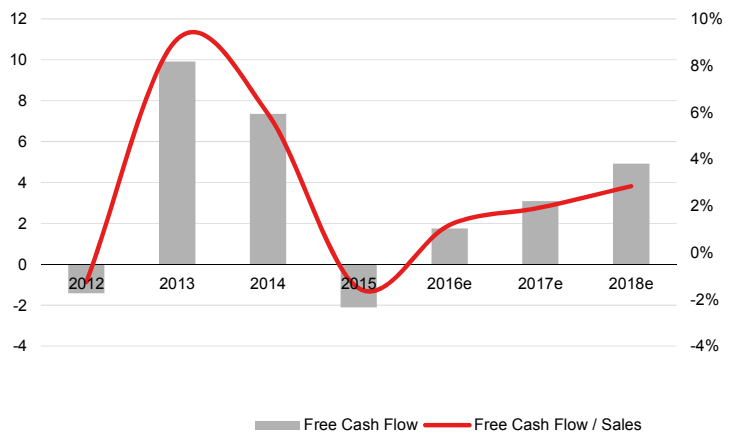
Investment should increase again



Sources: First Sensor (reported figures), Warburg Research (estimates)

After the takeover of the Sensortech Group, First Sensor accelerated the changeover to six-inch production and made production processes more efficient. In 2013, capex was reduced mainly because of the debt refinancing and the last purchase price component for Sensortech. In 2015, the focus was on the expansion of capacities at the Dresden site. Additionally, there was investment in connection with the introduction of SAP. For 2016 and 2017, we expect capex to rise to the same extent as the write-offs. This will be used for the expansion of production, among other things.

A large part of the cash flow is to be used for investment



Sources: First Sensor (reported figures), Warburg Research (estimates)

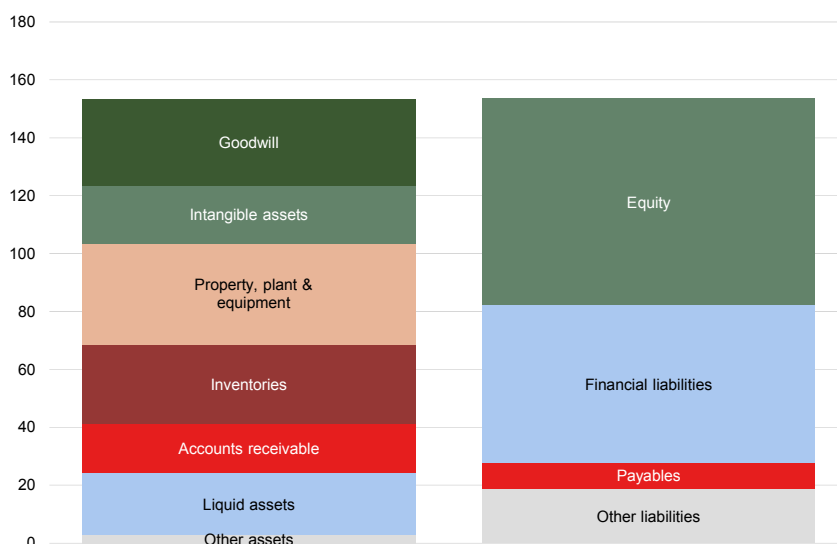
Long-term financing forms a solid base

A solid balance sheet is an important precondition to be considered a reliable partner by industrial customers or car manufacturers. Recently, First Sensor improved the maturity structure of its **debt** by placing bonds totalling EUR 28m. The maturities are five years (EUR 25m) and seven years (EUR 3m). The interest, which is fixed as well as variable, is currently less than 3%.

The significance of the **equity ratio** of some 50% is limited by the high share of intangible assets. These rose in the course of the takeover of the Sensortech Group and goodwill accounts for more than half. At EUR 26.4m, about 89% of the goodwill is attributable to the former Sensortech Group. Intangible assets from the purchase price allocation (client relationships, brands etc.) comprise some EUR 13m, or the majority of the remaining intangible assets. Some EUR 4m are related to capitalised own work in connection with product developments.

Property, plant and equipment, which accounts for a 23%-share of the balance sheet total, reflects the plant intensity of First Sensor's business activities.

Balance sheet 2015

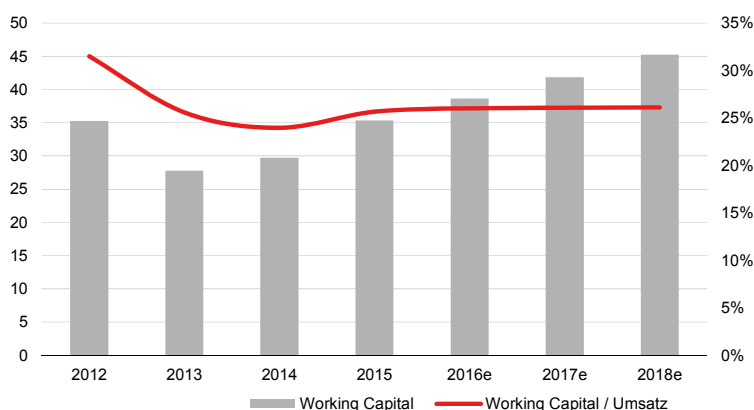


Source: Warburg Research (estimates)

Focus on returns

Working Capital accounts for a significant part of the balance sheet total. We are assuming that in future, management will put a stronger focus on working capital management. This can be seen in the valuation adjustments, for instance, which were carried out ahead of the Q3 2015 figures. A write-off of EUR 1.4m was conducted. This also reflects the realignment of the product portfolio to higher-margin own sensors and to products based on technological platforms. Looking forward, we have assumed slight improvements in the working capital ratio – this should provide positive impetus for the development of the free cash flow.

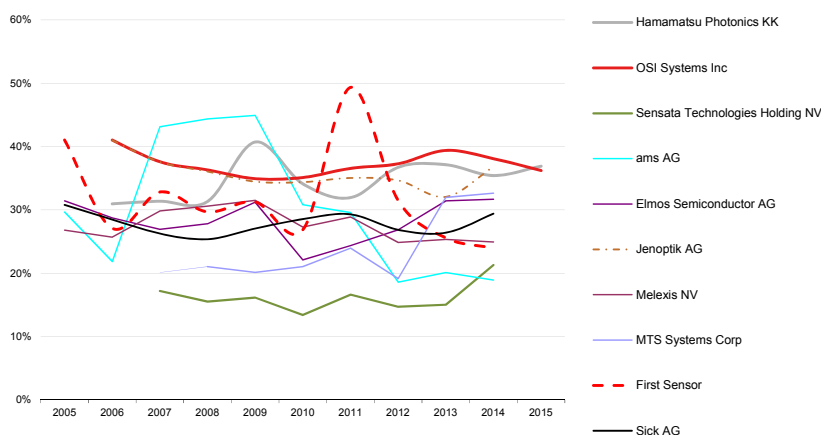
Working capital is characterised by inventories



Source: First Sensor (reported figures), Warburg Research (estimates)

Comparison with the competition indicates however, that working capital also plays a significant role for comparable companies. In this comparison, First Sensor is around the middle of the field.

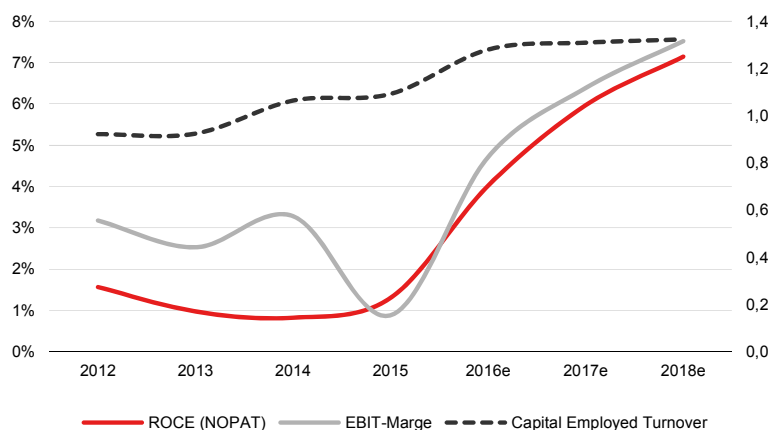
Working capital compared to the competition



Sources: Warburg Research, Bloomberg

The combination of higher operative margins and more efficient use of capital should contribute to an improvement in First Sensor's ROCE. Historically, the capital costs have not been earned.

Capital costs are currently not earned



Source: Warburg Research

Conclusion

- The investment case is based on First Sensor's good **competitive positioning**, which is primarily a result of the niche strategy and close client relationships.
- **Growth** in the sensor technology market which paves the way for rising revenues. Cross-selling and existing pipelines offer the potential to grow faster than the overall market and leave scope for our estimates and the valuation.
- An optimisation of processes, **margin increase** (more efficient use of existing production capacities, implementation of a product platform strategy) and a higher capital efficiency harbour further value potential.
- The DCF model leads to a **fair value of EUR 14**. Against this background, the rating remains unchanged at **Buy**.

DCF model

Figures in EUR m	Detailed forecast period			Transitional period										Term. Value
	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	
Sales	148.5	160.4	173.2	184.5	194.9	204.5	213.2	221.2	228.3	234.8	240.5	245.7	250.6	
Sales change	7.8 %	8.0 %	8.0 %	6.5 %	5.7 %	4.9 %	4.3 %	3.7 %	3.2 %	2.8 %	2.5 %	2.1 %	2.0 %	2.0 %
EBIT	7.0	10.2	13.0	14.8	15.6	16.4	17.1	17.7	18.3	18.8	19.2	19.7	20.0	
EBIT-margin	4.7 %	6.4 %	7.5 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	
Tax rate (EBT)	30.5 %	30.5 %	30.5 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	
NOPAT	4.9	7.1	9.1	10.3	10.9	11.5	11.9	12.4	12.8	13.1	13.5	13.8	14.0	
Depreciation	9.2	9.3	9.4	10.1	9.7	8.2	8.5	8.8	9.1	9.4	9.6	9.8	10.0	
in % of Sales	6.2 %	5.8 %	5.4 %	5.5 %	5.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	
Changes in provisions	0.6	0.0	0.0	0.1	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	
Change in Liquidity from														
- Working Capital	3.3	3.2	3.4	2.7	2.7	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.3	
- Capex	9.0	9.5	9.5	11.1	8.8	9.2	9.6	10.0	10.3	10.6	10.8	11.1	11.3	
Capex in % of Sales	6.1 %	5.9 %	5.5 %	6.0 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	4.5 %	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC Model)	2.4	3.7	5.6	6.7	9.6	8.0	8.7	9.3	9.8	10.3	10.8	11.2	11.5	12
PV of FCF	2.4	3.5	4.9	5.5	7.4	5.8	5.9	5.9	5.8	5.8	5.6	5.5	5.3	114
share of PVs	5.87 %			31.96 %										62.17 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	28.00 %	Financial Strength	1.25
Cost of debt (after tax)	2.1 %	Liquidity (share)	1.25
Market return	7.00 %	Cyclicality	1.30
Risk free rate	1.50 %	Transparency	1.30
		Others	1.30
WACC	6.74 %	Beta	1.28

Valuation (m)

Present values 2028e	69		
Terminal Value	114		
Financial liabilities	55		
Pension liabilities	0		
Hybrid capital	0		
Minority interest	1		
Market val. of investments	0		
Liquidity	22	No. of shares (m)	10.2
Equity Value	149	Value per share (EUR)	14.66

Sensitivity Value per Share (EUR)

Beta	WACC	Terminal Growth							Beta	WACC	Delta EBIT-margin						
		1.25 %	1.50 %	1.75 %	2.00 %	2.25 %	2.50 %	2.75 %			-1.5 pp	-1.0 pp	-0.5 pp	+0.0 pp	+0.5 pp	+1.0 pp	+1.5 pp
1.53	7.7 %	10.38	10.68	10.99	11.34	11.71	12.13	12.58	1.53	7.7 %	7.68	8.90	10.12	11.34	12.56	13.78	14.99
1.41	7.2 %	11.64	12.00	12.40	12.84	13.32	13.85	14.44	1.41	7.2 %	8.84	10.17	11.50	12.84	14.17	15.51	16.84
1.34	7.0 %	12.35	12.76	13.21	13.70	14.25	14.85	15.53	1.34	7.0 %	9.50	10.90	12.30	13.70	15.10	16.50	17.90
1.28	6.7 %	13.13	13.59	14.10	14.66	15.28	15.98	16.76	1.28	6.7 %	10.24	11.71	13.18	14.66	16.13	17.60	19.08
1.22	6.5 %	13.98	14.50	15.08	15.72	16.44	17.24	18.16	1.22	6.5 %	11.06	12.61	14.17	15.72	17.28	18.83	20.39
1.15	6.2 %	14.92	15.51	16.17	16.91	17.74	18.68	19.76	1.15	6.2 %	11.97	13.62	15.27	16.91	18.56	20.20	21.85
1.03	5.7 %	17.12	17.90	18.78	19.77	20.91	22.23	23.76	1.03	5.7 %	14.18	16.04	17.91	19.77	21.64	23.50	25.37

- Economies of scale and synergies should contribute to margin improvements in the medium term.
- PPA-related amortisations are having a negative bottom line impact

Free Cash Flow Value Potential

Warburg Research's valuation tool "FCF Value Potential" reflects the ability of the company to generate sustainable free cash flows. It is based on the "FCF potential" - a FCF "ex growth" figure - which assumes unchanged working capital and pure maintenance capex. A value indication is derived via the perpetuity of a given year's "FCF potential" with consideration of the weighted costs of capital. The fluctuating value indications over time add a timing element to the DCF model (our preferred valuation tool).

in EUR m	2012	2013	2014	2015	2016e	2017e	2018e	
Net Income before minorities	0.5	-0.5	0.4	-1.5	4.2	6.5	8.4	
+ Depreciation + Amortisation	9.8	8.8	9.5	10.2	9.2	9.3	9.4	
- Net Interest Income	-2.6	-3.8	-2.4	-2.4	-0.9	-0.9	-0.9	
- Maintenance Capex	5.1	3.2	4.8	5.2	5.5	5.8	6.0	
+ Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
= Free Cash Flow Potential	7.8	9.0	7.4	5.8	8.8	10.9	12.7	
Free Cash Flow Yield Potential	6.1 %	7.9 %	5.7 %	4.0 %	6.7 %	8.4 %	10.8 %	
WACC	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	
= Enterprise Value (EV)	129.0	115.0	130.9	144.0	132.3	129.2	118.0	
= Fair Enterprise Value	116.2	134.1	110.5	86.3	131.2	161.7	188.9	
- Net Debt (Cash)	33.0	33.0	33.0	33.0	31.3	28.2	23.2	
- Pension Liabilities	0.3	0.3	0.3	0.3	0.9	0.9	0.9	
- Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
- Market value of minorities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
+ Market value of investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
= Fair Market Capitalisation	82.9	100.7	77.1	53.0	99.1	132.6	164.7	
No. of shares (total) (m)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	
= Fair value per share (EUR)	8.17	9.92	7.60	5.22	9.76	13.06	16.22	
premium (-) / discount (+) in %					-0.9 %	32.6 %	75.8 %	
Sensitivity Fair value per Share (EUR)								
	9.74 %	4.64	5.85	4.25	2.60	5.78	8.15	10.49
	8.74 %	5.55	6.90	5.11	3.28	6.80	9.41	11.97
	7.74 %	6.69	8.21	6.19	4.12	8.09	11.00	13.82
WACC	6.74 %	8.17	9.92	7.60	5.22	9.76	13.06	16.22
	5.74 %	10.16	12.22	9.49	6.70	12.01	15.83	19.47
	4.74 %	13.00	15.49	12.19	8.81	15.21	19.78	24.08
	3.74 %	17.36	20.52	16.33	12.05	20.13	25.84	31.16

- The FCF value of recent years is distorted by the capital increases.
- FCF-Value-CAGR 2013-2018e: 10%

Valuation							
	2012	2013	2014	2015	2016e	2017e	2018e
Price / Book	1.3 x	1.1 x	1.4 x	1.6 x	1.3 x	1.2 x	1.0 x
Book value per share ex intangibles	1.14	1.43	1.91	2.03	2.59	3.35	4.30
EV / Sales	1.2 x	1.1 x	1.1 x	1.0 x	0.9 x	0.8 x	0.7 x
EV / EBITDA	9.6 x	9.9 x	9.7 x	12.7 x	8.2 x	6.6 x	5.3 x
EV / EBIT	36.3 x	41.9 x	32.1 x	118.5 x	18.9 x	12.6 x	9.1 x
EV / EBIT adj.*	16.7 x	15.8 x	32.1 x	118.5 x	14.4 x	10.5 x	7.9 x
P / FCF	n.a.	8.0 x	13.7 x	n.a.	57.1 x	32.4 x	19.1 x
P / E	182.1 x	n.a.	501.9 x	n.a.	23.5 x	15.4 x	11.1 x
P / E adj.*	19.4 x	19.4 x	501.9 x	83.9 x	15.6 x	11.6 x	9.0 x
Dividend Yield	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.1 %
Free Cash Flow Yield Potential	6.1 %	7.9 %	5.7 %	4.0 %	6.7 %	8.4 %	10.8 %

*Adjustments made for: PPA amortisations

Company Specific Items							
	2012	2013	2014	2015	2016e	2017e	2018e
Employees	0.0	0.0	0.0	0.0	0.0	0.0	0.0
adj. EBIT per employee	0.0	0.0	0.0	0.0	n.a.	n.a.	n.a.
Order book	73.4	73.7	86.4	90.7	0.0	0.0	0.0
Order entries	117.8	121.4	n.a.	n.a.	n.a.	n.a.	n.a.
Book-to-bill	1.1	1.1	n.a.	n.a.	n.a.	n.a.	n.a.

Consolidated profit & loss

In EUR m	2012	2013	2014	2015	2016e	2017e	2018e
Sales	111.9	108.5	124.0	137.7	148.5	160.4	173.2
Change Sales yoy	71.7 %	-3.0 %	14.2 %	11.1 %	7.8 %	8.0 %	8.0 %
Increase / decrease in inventory	1.2	-0.8	0.8	-1.2	0.7	0.7	0.7
Own work capitalised	2.1	1.3	0.8	1.0	1.0	1.0	1.0
Total Sales	115.3	109.0	125.6	137.6	150.2	162.1	174.9
Material Expenses	55.0	50.3	61.2	69.3	75.7	81.8	88.3
Gross profit	60.3	58.7	64.4	68.3	74.5	80.3	86.6
<i>Gross profit margin</i>	<i>53.8 %</i>	<i>54.1 %</i>	<i>51.9 %</i>	<i>49.6 %</i>	<i>50.1 %</i>	<i>50.1 %</i>	<i>50.0 %</i>
Personnel expenses	36.3	36.6	39.4	41.9	44.0	45.0	47.0
Other operating income	3.9	3.4	3.5	2.8	4.3	4.3	4.5
Other operating expenses	14.5	14.0	15.0	17.8	18.6	20.0	21.7
Unfrequent items	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBITDA	13.4	11.6	13.5	11.4	16.2	19.5	22.4
<i>Margin</i>	<i>12.0 %</i>	<i>10.7 %</i>	<i>10.9 %</i>	<i>8.3 %</i>	<i>10.9 %</i>	<i>12.2 %</i>	<i>12.9 %</i>
Depreciation of fixed assets	5.9	5.6	5.5	5.8	5.8	6.0	6.2
EBITA	7.5	6.0	8.1	5.6	10.4	13.5	16.2
Amortisation of intangible assets	3.9	3.3	4.0	4.4	3.4	3.3	3.2
Goodwill amortization	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBIT	3.6	2.7	4.1	1.2	7.0	10.2	13.0
<i>Margin</i>	<i>3.2 %</i>	<i>2.5 %</i>	<i>3.3 %</i>	<i>0.9 %</i>	<i>4.7 %</i>	<i>6.4 %</i>	<i>7.5 %</i>
EBIT adj.	7.7	7.3	4.1	1.2	9.2	12.3	15.0
Interest income	0.1	0.0	0.0	0.0	0.1	0.1	0.1
Interest expenses	2.7	3.9	2.4	2.2	1.5	1.5	1.5
Other financial income (loss)	0.0	0.0	0.0	-0.2	0.5	0.5	0.5
EBT	0.9	-1.1	1.7	-1.2	6.1	9.3	12.1
<i>Margin</i>	<i>0.8 %</i>	<i>-1.0 %</i>	<i>1.4 %</i>	<i>-0.9 %</i>	<i>4.1 %</i>	<i>5.8 %</i>	<i>7.0 %</i>
Total taxes	0.5	-0.6	1.3	0.4	1.9	2.8	3.7
Net income from continuing operations	0.5	-0.5	0.4	-1.5	4.2	6.5	8.4
Income from discontinued operations (net of tax)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net income before minorities	0.5	-0.5	0.4	-1.5	4.2	6.5	8.4
Minority interest	0.0	0.1	0.2	0.2	0.0	0.0	0.0
Net income	0.5	-0.5	0.2	-1.7	4.2	6.5	8.4
<i>Margin</i>	<i>0.4 %</i>	<i>-0.5 %</i>	<i>0.1 %</i>	<i>-1.2 %</i>	<i>2.9 %</i>	<i>4.0 %</i>	<i>4.9 %</i>
Number of shares, average	9.8	9.9	10.0	10.2	10.2	10.2	10.2
EPS	0.05	-0.05	0.02	-0.17	0.42	0.64	0.83
EPS adj.	0.47	0.41	0.02	0.13	0.63	0.85	1.03

*Adjustments made for: PPA amortisations

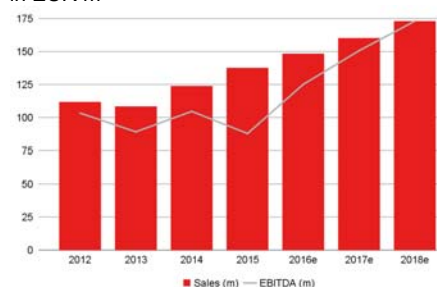
Guidance: 2016: revenue EUR 145-150m; EBIT margin 5-6%

Financial Ratios

	2012	2013	2014	2015	2016e	2017e	2018e
Total Operating Costs / Sales	91.0 %	89.8 %	90.4 %	91.6 %	90.2 %	88.9 %	88.0 %
Operating Leverage	1.7 x	7.5 x	3.4 x	-6.3 x	60.9 x	5.8 x	3.4 x
EBITDA / Interest expenses	4.9 x	3.0 x	5.6 x	5.2 x	10.8 x	13.0 x	14.9 x
Tax rate (EBT)	47.9 %	57.5 %	76.3 %	-30.3 %	30.5 %	30.5 %	30.5 %
Dividend Payout Ratio	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	12.1 %
Sales per Employee	158,718	154,179	172,459	178,886	n.a.	n.a.	n.a.

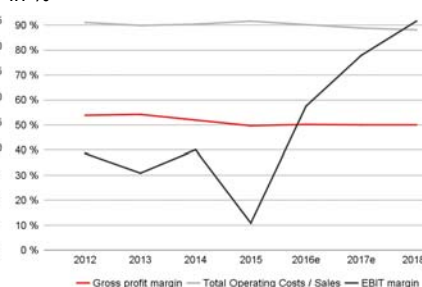
Sales, EBITDA

in EUR m

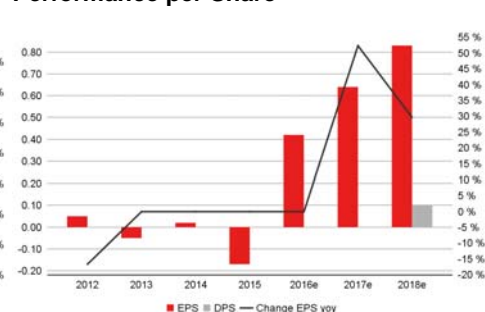


Operating Performance

in %



Performance per Share



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

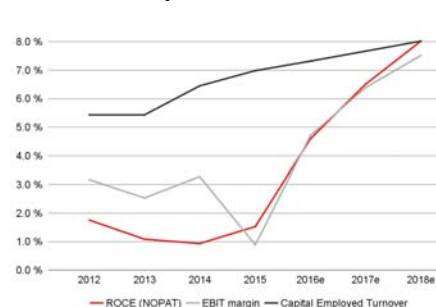
Consolidated balance sheet

In EUR m	2012	2013	2014	2015	2016e	2017e	2018e
Assets							
Goodwill and other intangible assets	58.6	55.6	52.4	50.0	48.6	47.3	46.1
thereof other intangible assets	25.6	21.9	19.1	16.2	14.8	13.5	12.3
thereof Goodwill	29.8	29.8	29.8	29.8	29.8	29.8	29.8
Property, plant and equipment	40.0	37.5	36.4	35.0	36.2	37.7	39.0
Financial assets	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other long-term assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fixed assets	98.7	93.2	88.8	85.1	84.9	85.1	85.2
Inventories	31.2	29.8	29.9	27.1	29.7	32.1	34.6
Accounts receivable	12.8	6.6	8.6	17.0	18.3	19.8	21.4
Liquid assets	12.2	11.4	14.5	21.5	8.3	11.4	16.4
Other short-term assets	3.8	4.1	3.1	2.8	2.8	2.8	2.8
Current assets	60.0	51.8	56.1	68.4	59.1	66.1	75.1
Total Assets	158.6	144.9	144.9	153.5	144.0	151.2	160.3
Liabilities and shareholders' equity							
Subscribed capital	49.7	49.9	50.7	50.8	50.8	50.8	50.8
Capital reserve	15.7	16.0	16.4	16.5	16.5	16.5	16.5
Retained earnings	0.7	1.0	1.0	1.0	5.2	11.7	20.2
Other equity components	3.7	3.0	3.6	2.3	2.3	2.3	2.3
Shareholders' equity	69.8	69.8	71.6	70.7	74.9	81.4	89.8
Minority interest	0.1	0.2	0.4	0.6	0.6	0.6	0.6
Total equity	69.9	70.0	72.0	71.3	75.5	82.0	90.4
Provisions	2.8	2.4	3.2	3.9	4.5	4.5	4.5
thereof provisions for pensions and similar obligations	0.3	0.3	0.3	0.3	0.9	0.9	0.9
Financial liabilities (total)	51.2	47.1	44.3	54.5	39.6	39.6	39.6
thereof short-term financial liabilities	12.2	4.2	3.1	8.0	4.6	4.6	4.6
Accounts payable	7.7	7.7	8.2	7.6	8.2	8.9	9.6
Other liabilities	27.0	17.7	17.2	16.1	16.1	16.1	16.1
Liabilities	88.7	74.9	72.9	82.2	68.5	69.2	69.9
Total liabilities and shareholders' equity	158.6	144.9	144.9	153.5	144.0	151.2	160.3

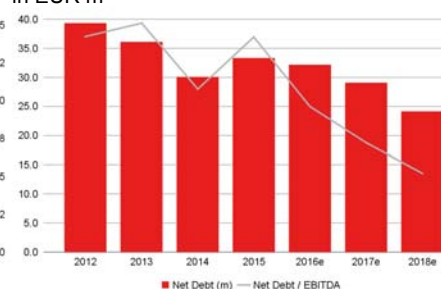
Financial Ratios

	2012	2013	2014	2015	2016e	2017e	2018e
Efficiency of Capital Employment							
Operating Assets Turnover	1.5 x	1.7 x	1.9 x	2.0 x	2.0 x	2.0 x	2.1 x
Capital Employed Turnover	1.0 x	1.0 x	1.2 x	1.3 x	1.4 x	1.4 x	1.5 x
ROA	0.5 %	-0.6 %	0.2 %	-2.0 %	5.0 %	7.6 %	9.9 %
Return on Capital							
ROCE (NOPAT)	1.8 %	1.1 %	0.9 %	1.5 %	4.6 %	6.5 %	8.0 %
ROE	0.7 %	-0.7 %	0.2 %	-2.4 %	5.8 %	8.3 %	9.8 %
Adj. ROE	6.7 %	5.8 %	0.2 %	1.8 %	8.8 %	11.0 %	12.2 %
Balance sheet quality							
Net Debt	39.3	36.1	30.0	33.3	32.2	29.1	24.1
Net Financial Debt	39.0	35.8	29.7	33.0	31.3	28.2	23.2
Net Gearing	56.2 %	51.6 %	41.7 %	46.7 %	42.6 %	35.4 %	26.7 %
Net Fin. Debt / EBITDA	291.4 %	309.4 %	219.4 %	290.2 %	192.9 %	144.1 %	103.6 %
Book Value / Share	7.1	7.0	7.1	7.0	7.4	8.0	8.8
Book value per share ex intangibles	1.1	1.4	1.9	2.0	2.6	3.4	4.3

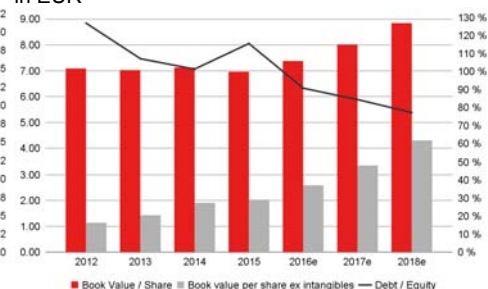
ROCE Development



Net debt in EUR m



Book Value per Share in EUR



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

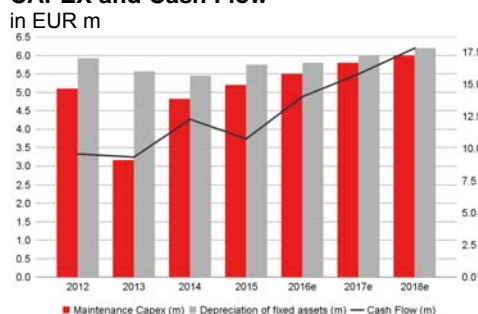
Consolidated cash flow statement

In EUR m	2012	2013	2014	2015	2016e	2017e	2018e
Net income	0.5	-0.5	0.4	-1.5	4.2	6.5	8.4
Depreciation of fixed assets	5.9	5.6	5.5	5.8	5.8	6.0	6.2
Amortisation of goodwill	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	3.9	3.3	4.0	4.4	3.4	3.3	3.2
Increase/decrease in long-term provisions	-0.3	0.0	0.0	0.0	0.6	0.0	0.0
Other non-cash income and expenses	-0.5	1.0	2.4	2.1	0.0	0.0	0.0
Cash Flow	9.6	9.3	12.3	10.7	14.0	15.8	17.8
Increase / decrease in inventory	-0.5	0.0	0.0	0.0	-2.6	-2.4	-2.5
Increase / decrease in accounts receivable	0.0	7.4	-1.6	-6.3	-1.3	-1.5	-1.6
Increase / decrease in accounts payable	-1.9	-3.7	1.6	0.5	0.6	0.7	0.7
Increase / decrease in other working capital positions	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Increase / decrease in working capital (total)	-2.3	3.8	-0.1	-5.8	-3.3	-3.2	-3.4
Net cash provided by operating activities	7.2	13.1	12.2	5.0	10.8	12.6	14.4
Investments in intangible assets	-2.8	-1.4	-1.1	-2.0	-2.0	-2.0	-2.0
Investments in property, plant and equipment	-5.8	-1.7	-3.7	-5.1	-7.0	-7.5	-7.5
Payments for acquisitions	-4.5	-4.8	0.0	0.0	0.0	0.0	0.0
Financial investments	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
Income from asset disposals	0.4	0.8	0.2	0.3	0.0	0.0	0.0
Net cash provided by investing activities	-12.8	-7.1	-4.6	-6.7	-9.0	-9.5	-9.5
Change in financial liabilities	4.1	-4.1	-2.9	10.3	-14.9	0.0	0.0
Dividends paid	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchase of own shares	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital measures	0.6	0.2	0.9	0.2	0.0	0.0	0.0
Other	0.0	-2.9	-2.4	-1.8	0.0	0.0	0.0
Net cash provided by financing activities	4.7	-6.7	-4.4	8.7	-14.9	0.0	0.0
Change in liquid funds	-0.9	-0.8	3.1	7.0	-13.2	3.1	4.9
Effects of exchange-rate changes on cash	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Cash and cash equivalent at end of period	12.0	11.4	14.5	21.5	8.3	11.4	16.4

Financial Ratios

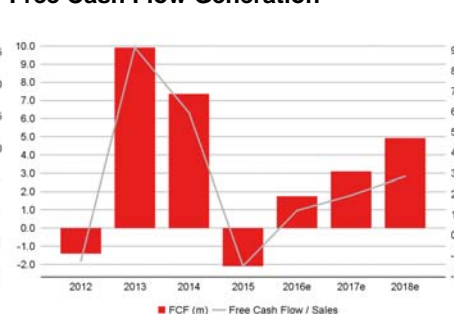
	2012	2013	2014	2015	2016e	2017e	2018e
Cash Flow							
FCF	-1.4	9.9	7.4	-2.1	1.8	3.1	4.9
Free Cash Flow / Sales	-1.3 %	9.1 %	5.9 %	-1.5 %	1.2 %	1.9 %	2.8 %
Free Cash Flow Potential	7.8	9.0	7.4	5.8	8.8	10.9	12.7
Free Cash Flow / Net Profit	-307.6 %	-1910.2 %	4205.7 %	122.4 %	41.4 %	47.6 %	58.5 %
Interest Received / Avg. Cash	0.7 %	0.3 %	0.2 %	0.1 %	0.7 %	1.0 %	0.7 %
Interest Paid / Avg. Debt	5.6 %	7.9 %	5.3 %	4.5 %	3.2 %	3.8 %	3.8 %
Management of Funds							
Investment ratio	7.7 %	2.9 %	3.9 %	5.1 %	6.1 %	5.9 %	5.5 %
Maint. Capex / Sales	4.6 %	2.9 %	3.9 %	3.8 %	3.7 %	3.6 %	3.5 %
Capex / Dep	87.7 %	35.8 %	50.9 %	69.7 %	97.8 %	102.2 %	101.1 %
Avg. Working Capital / Sales	30.1 %	29.0 %	23.2 %	23.6 %	24.9 %	25.1 %	25.1 %
Trade Debtors / Trade Creditors	167.2 %	85.3 %	104.9 %	223.4 %	223.2 %	222.5 %	222.9 %
Inventory Turnover	1.8 x	1.7 x	2.0 x	2.6 x	2.6 x	2.5 x	2.6 x
Receivables collection period (days)	42	22	25	45	45	45	45
Payables payment period (days)	51	56	49	40	40	40	40
Cash conversion cycle (Days)	173	167	138	114	116	116	116

CAPEX and Cash Flow



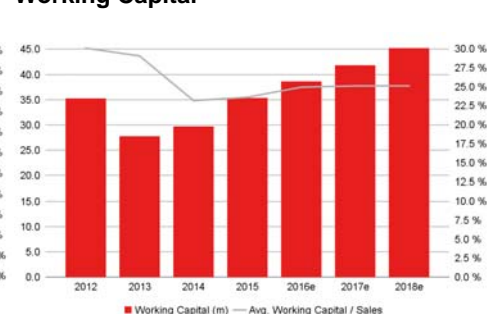
Source: Warburg Research

Free Cash Flow Generation



Source: Warburg Research

Working Capital



Source: Warburg Research

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Company	Disclosure	Link to the historical price targets and rating changes (last 12 months)
First Sensor	5, 6	http://www.mmwarburg.com/disclaimer/disclaimer_en/DE0007201907.htm

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Investment recommendation: expected direction of the share price development of the financial instrument up to the given price target in the opinion of the analyst who covers this financial instrument.

-B-	Buy:	The price of the analysed financial instrument is expected to rise over the next 12 months.
-H-	Hold:	The price of the analysed financial instrument is expected to remain mostly flat over the next 12 months.
-S-	Sell:	The price of the analysed financial instrument is expected to fall over the next 12 months.
“-“	Rating suspended:	The available information currently does not permit an evaluation of the company.

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING

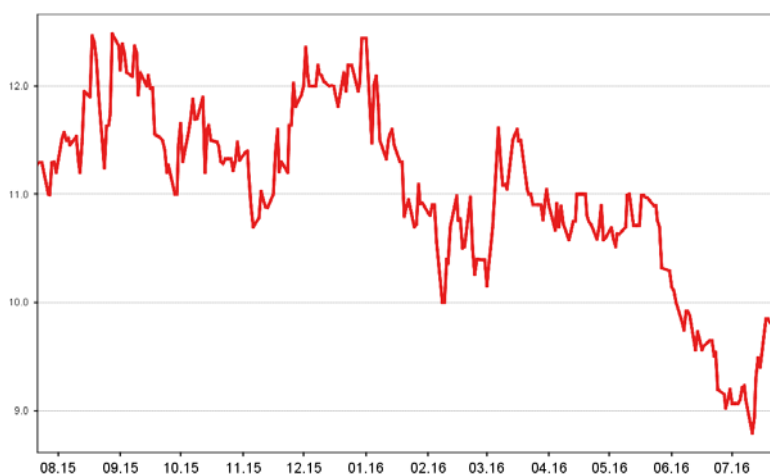
Rating	Number of stocks	% of Universe
Buy	120	64
Hold	61	32
Sell	5	3
Rating suspended	2	1
Total	188	100

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING ...

... taking into account only those companies which were provided with major investment services in the last twelve months.

Rating	Number of stocks	% of Universe
Buy	24	73
Hold	7	21
Sell	1	3
Rating suspended	1	3
Total	33	100

PRICE AND RATING HISTORY FIRST SENSOR AS OF 21.07.2016



Markings in the chart show rating changes by Warburg Research GmbH in the last 12 months. Every marking details the date and closing price on the day of the rating change.

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