



ams

Q2 2017 results



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ams at a glance



Our business

- Focus on high performance sensor solutions
- Sensor solutions, sensor ICs, interfaces, related software
- Small, low power, highest sensitivity, multi-sensor integration
- Best-in-class solutions for leading OEMs

Our end markets

- Consumer & Communications (C&C) – 51% of sales H1 2017
- Automotive, Industrial, Medical (AIM) – 49% of sales H1 2017

By the numbers

- 850+ engineers
- 21 design centers, 3 manufacturing locations
- 35 years of design and manufacturing know-how
- 5,800+ employees worldwide
- 8,000+ customers

ams strategy

Build the global leader in sensor solutions



True leadership in four sensor areas

- **Optical**
- **Imaging**
- **Environmental**
- **Audio**

Best-in-class performance per sensor area and in multi-sensor application solutions

- Smallest, lowest cost, high volume multi-sensor modules, driving monolithic integration
- Sensor algorithms and sensor fusion software
- Application software for differentiating end-user experiences

Diversified business with balanced application and customer portfolio

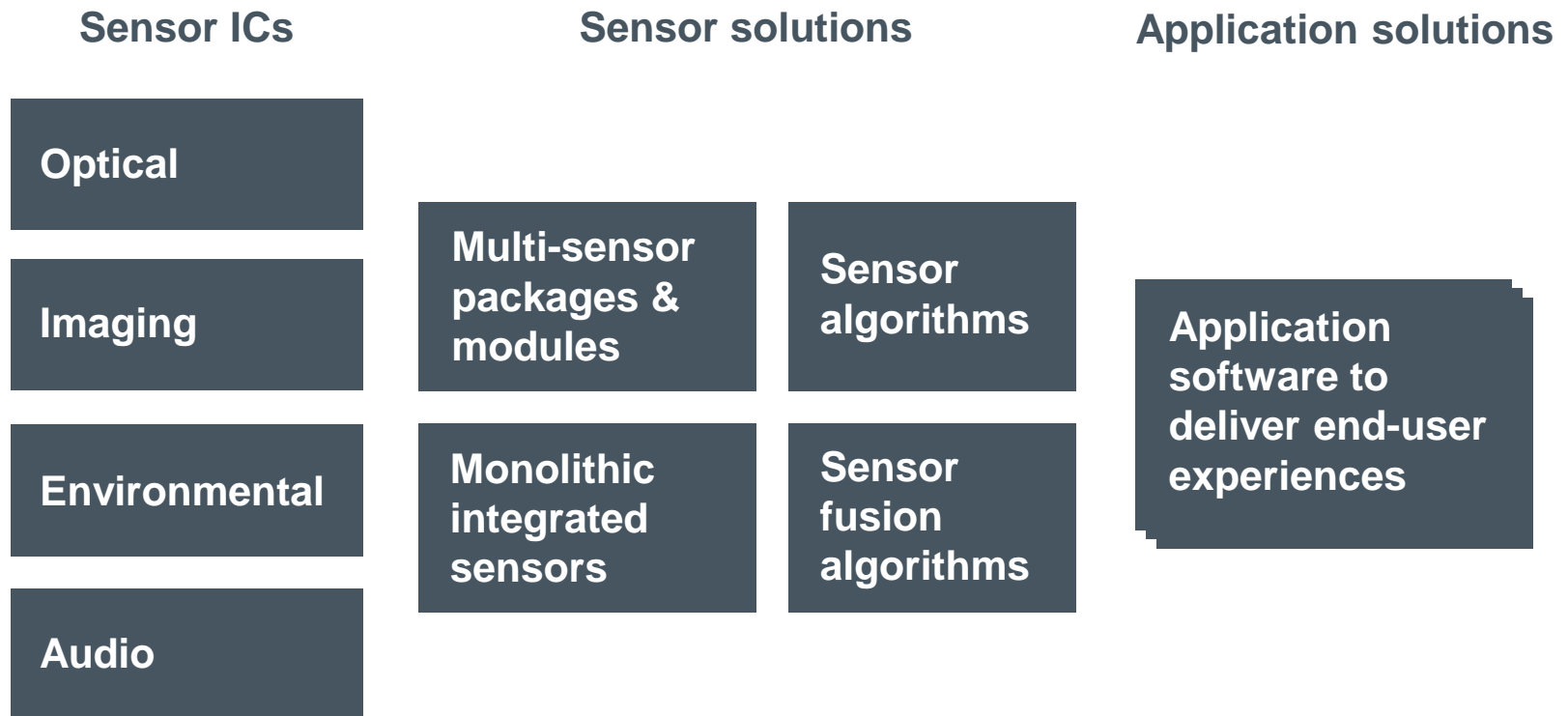
- Long-term target mix of at least 60/40 C&C / AIM split
- Broader customer base across applications

Clear financial target model

- Revenue growth target (CAGR) 2016-2019 of more than 40%
- EBIT margin target (adj.) of 30% from 2019

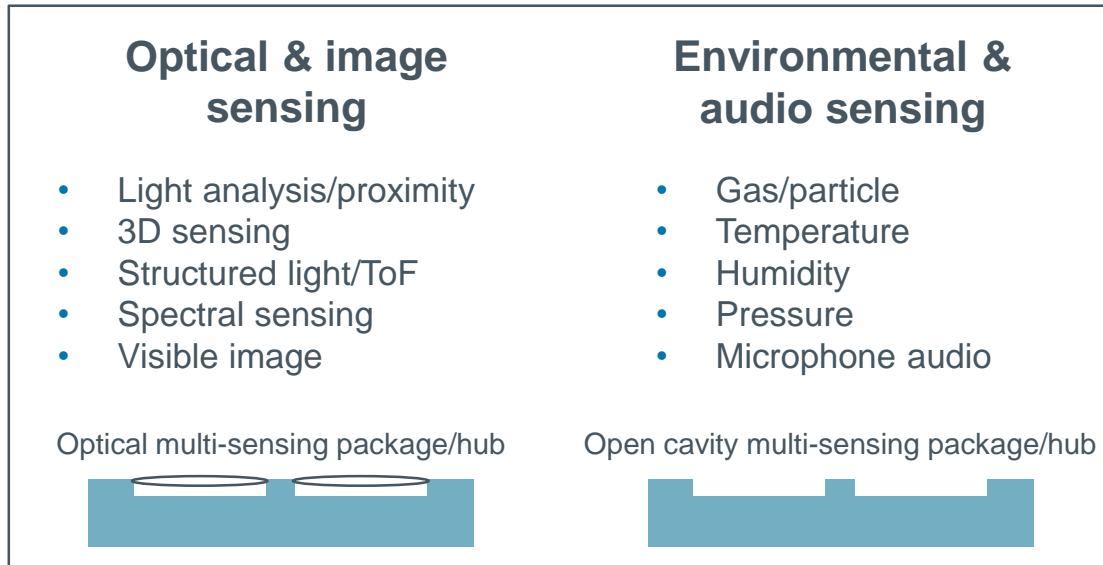
ams strategic value chain

Delivering best-in-class sensor solutions and applications



Multi-sensor solutions and sensor fusion

ams focus



Motion sensing

- Accelerometer
- Gyroscope
- Magnetometer
- IMU (Inertial Measurement Unit)

Closed package multi-sensing hub



Strategic impact on value chain

- Hardware and software content needed for full solutions
- Major players can offer one-stop capabilities/higher integration

ams optical sensing solutions

Illumination	Optical path and package	Optical sensor
<ul style="list-style-type: none"> • VCSEL lasers • VCSEL laser arrays • IR LEDs / LEDs 	<ul style="list-style-type: none"> • Directing light to/from illumination/sensor and in/out of package • Optical features, e.g. lenses, embossing • Small scale high volume optical packages 	<ul style="list-style-type: none"> • Multi-frequency spectral sensors • Multi-diode structures • SPAD diodes • IR sensors • Multi-sensor modules

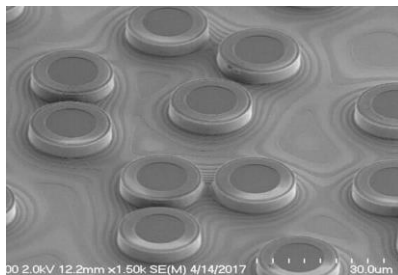
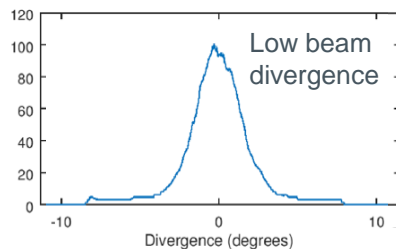
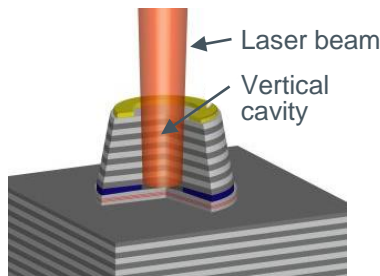
Princeton Optronics acquisition

Heptagon acquisition

ams existing business

**Full value chain coverage:
design and performance advantage for industry-leading solutions**

Princeton Optronics – major strategic advantage



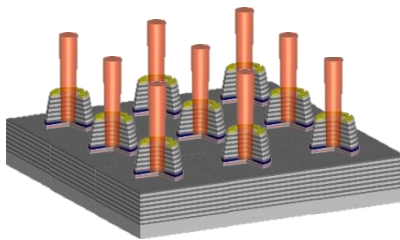
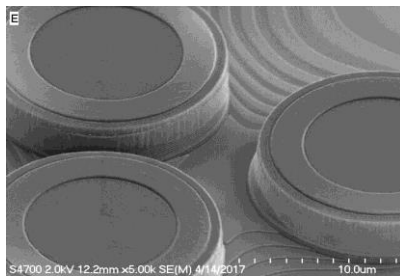
Leader in high power VCSEL technology

- High performance VCSELs (Vertical Cavity Surface-Emitting Lasers) for mobile, consumer, automotive, and industrial applications
- Early player in high power, accumulating know-how and IP ahead of telecom-focused players – from mWs to multiple Ws
- Strong technology portfolio for single lasers and arrays
- Benchmark power efficiency and narrow beam divergence: high beam quality for 3D optical, better long distance performance
- Smallest pitch arrays enable higher resolution in future 3D systems
- Outsourced supply chain: Asian epi/wafer foundry partners, packaging partners including Heptagon
- Joint Google Tango involvement with Heptagon, shipping illumination

Optical/3D sensing offers significant VCSEL growth opportunities

- Strong expected consumer growth from 3D sensing adoption, spectral sensing adds new opportunities
- Significant longer-term opportunity in automotive 3D LIDAR

Princeton Optronics – key to higher differentiation



Princeton enables full value chain coverage

- Adding illumination source creates differentiated end-to-end optical sensing platform
- Unique VCSEL-to-sensor capability under one roof offers performance and design advantages for multiple optical technologies

Full optical value chain coverage and internal VCSEL capacity to drive differentiation

Internal VCSEL manufacturing drives further differentiation

- Clearly identified, differentiating technology and cost advantages
- Leveraging Princeton technology through ams manufacturing expertise
- Accelerating next generation technologies currently under development

ams VCSEL manufacturing capacity investment

- New highly differentiated 150mm manufacturing line at ams site in Singapore
- Two-stage project to prepare for expected volume opportunities, project start planned in near future
- Expected total expense of around EUR 100m over approx. 24 months

Unique position in 3D sensing

3D sensing: Significant new growth market for high value sensing

- Applications include AR/VR, gesture, face recognition, biometrics, improved 2D/video capture, body measurement, autonomous driving
- 3D availability in consumer devices will breed new applications and apps, similar to accelerometer and gyroscope addition
- Non-consumer to follow later: Industrial IoT (internet of things), Automotive
- 3 key technologies: Structured light, ToF (time-of-flight), stereo cameras
- Structured light: IR illumination of object, accuracy of illumination key to quality of sensing
- ToF: SPAD (avalanche diodes) or iTOF (phase difference) sensing, dedicated illumination
- Stereo cameras: specific illumination needed for high quality sensing

3D sensing and optical path drive substantial growth and content opportunities

ams: Leading expertise across 3D sensing technologies

- Optical path as key differentiator, hand-in-hand with packaging for optimum performance
- Tailored VCSEL illumination and optical sensors enable unmatched end-to-end platform
- Unique know-how to create mass-produceable devices for very high volume applications
- Structured light: high quality random dot illumination and sensing / ToF: covering ToF technologies with high performance solutions / stereo cameras: dedicated illumination

Optical and image sensing



Worldwide leader in light sensing solutions

- Clear #1 in optical sensing
- Leadership in sensors, optical path, illumination
- Optical path crucial for new sensor applications
- Power-efficient VCSEL technology (single and array) for optical sensing
- True Color spectral sensing for advanced display management
- Color ALS, ultra-small proximity modules
- 3D sensing expertise addresses emerging applications
- Structured light and time-of-flight (ToF) technologies
- Spectral sensing for biosensing, color identification, medical uses
- Color and spectral sensing for Industrial IoT, smart LED lighting

High value image sensing

- High-performance global shutter CMOS image sensors for Industrial
- NanEye miniature camera technology for Medical and Industrial
- Future combination of imaging and spectral sensing

**Optical path
and full value chain
coverage as key
differentiators**

Audio sensing



ANC (active noise cancellation)

- High performance analog noise reduction
- Low power budget + footprint advantages
- Significantly better receive-path audio quality
- In-phone and in-ear/headphone topologies
- Incus acquisition broadens offering for digital architectures
- ams innovation: ACI interface transmits power, data and audio over 3.5mm jack microphone line
- Low-power ACI enables new battery-less ANC ear/headphone designs and additional functions such as sensing
- Positive market feedback opens new content opportunities

**Innovative ACI
accessory interface
creates new
opportunities**

MEMS microphone interface ICs

- Continuing market leadership in high volume market
- Leading position in low noise solutions and tight integration
- Strong customer partnership focused on high quality segments

Environmental (including gas) sensing



Technology leader in environmental/gas sensing

- End-to-end solution provider
- Unique CMOS-based portfolio for low power, high volume, small form factor
- Key environmental sensing areas
 - MOX gas
 - Infrared gas / presence detection
 - Relative humidity, pressure, temperature
- Broad range of emerging applications in mobile, home/building automation, Industrial IoT and other AIM markets

Emerging market in HABA and Industrial IoT, roadmap for consumer



Uniquely positioned for multi-sensor modules and monolithic multi-sensor integration

- Combination of related environmental sensor modalities in modules (e.g. gas + relative humidity)
- Integration roadmap to realize low-cost, low-power, smallest size consumer solutions
- Sensor algorithms and application software as value drivers

Scalable manufacturing model

In-house capacity + manufacturing partnerships



Internal wafer manufacturing, Austria

- 200mm capacity, 180-190k wafers p.a.
- CMOS / specialty analog down to 180nm
- High volume optical filter deposition line
- Further optical filter capacity added

Further capacity expansion in Singapore + new VCSEL manufacturing investment



Internal optical packaging + future VCSEL manufacturing, Singapore

- Technology leader in high end optical packaging
- Major capacity expansion completed
- Revenue pipeline into 2018 drives further strong capacity expansion
- New investment for internal VCSEL manufacturing capacity
- Two-stage project to start in near future, around EUR 100m investment



Manufacturing partnerships for scalability and flexibility

- High volume technology partners TSMC, UMC, GF
- Flexible response to end market volatility

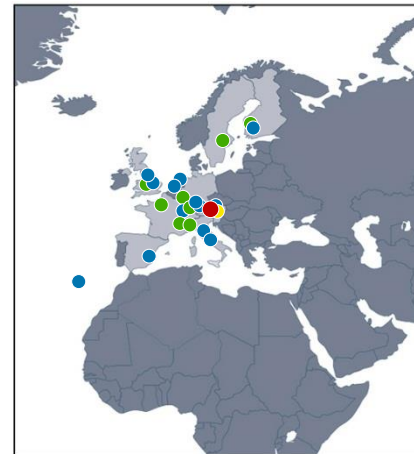
In-house test, Austria / Philippines

Global network – design, manufacturing, support

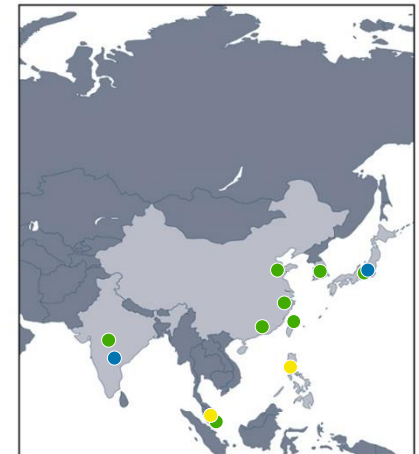
- Headquarters
- Design centers
- Manufacturing/Test
- Sales/customer support locations



Americas



Europe



Asia

- **21 design centers**
Austria, Switzerland (2), Italy (2), Spain, Germany (4), Belgium, UK (2), Netherlands, Portugal, Finland, USA (3), India, Japan
- **Manufacturing**
Austria, Singapore
- **High volume test center**
Philippines

Key figures

EURm

		H1 2017	H1 2016	Q2 2017	Q2 2016
Total revenues		330.8 +22.7%	269.6	181.5 +37.1%	132.4
Gross margin	(adjusted) ¹⁾ (IFRS reported)	44% 37%	56% 54%	41% 35%	57% 53%
Result from operations (EBIT)	(adjusted) ¹⁾ (IFRS reported)	5.4 -35.3	52.6 36.4	1.3 -21.5	24.4 16.7
Net result		-34.0 -202.4%	33.2	-17.8 -190.7%	19.6
EPS (basic/diluted)²⁾	CHF EUR	-0.47 / -0.45 -0.43 / -0.42	0.53 / 0.52 0.49 / 0.47	-0.23 / -0.22 -0.21 / -0.21	0.32 / 0.31 0.29 / 0.28

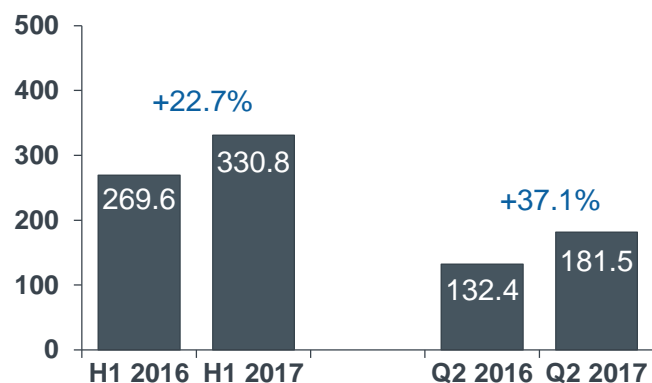
1) excl. acquisition-related costs and share based compensation costs

2) Earnings per share in CHF were converted using the average currency exchange rate for the respective periods

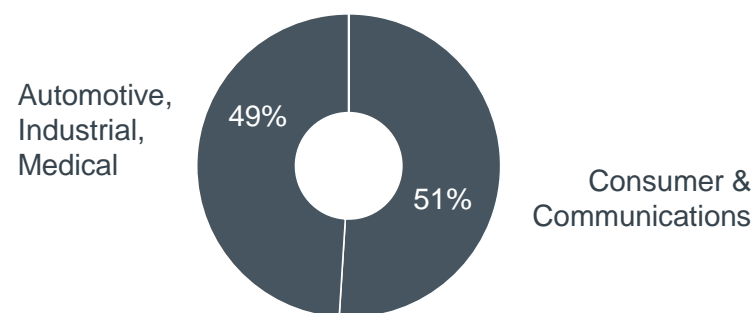
Financial results

EURm

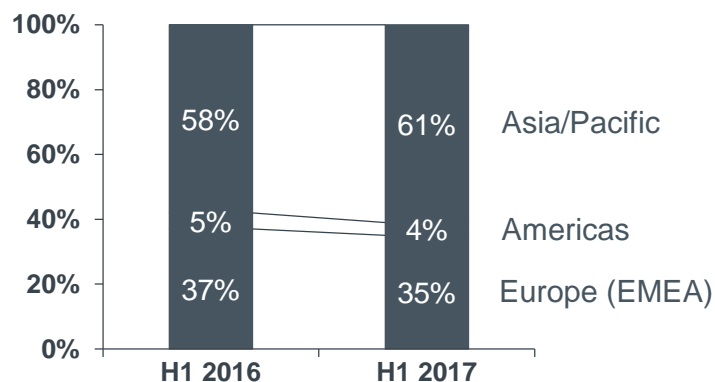
Total revenues



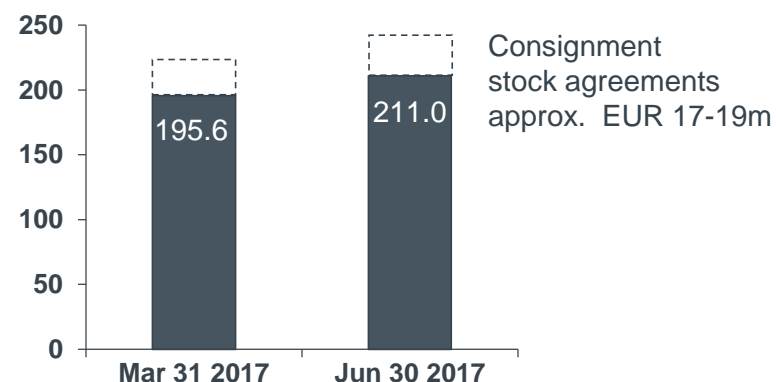
Total revenues by market H1 2017



Total revenues by region



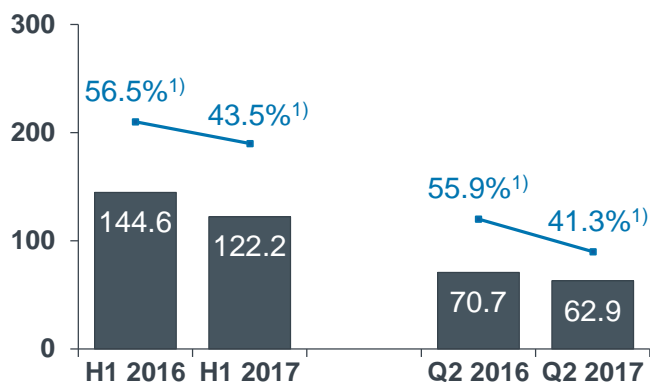
Total backlog



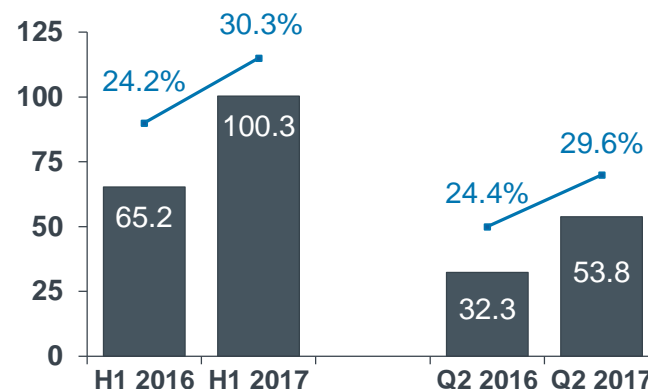
Financial results

EURm, % of revenues

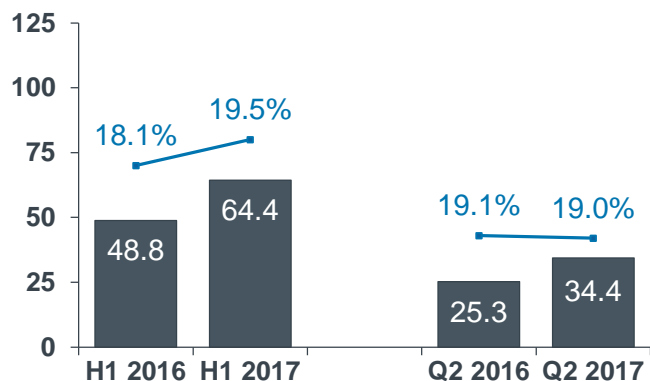
Gross profit (IFRS), gross margin (adj.)



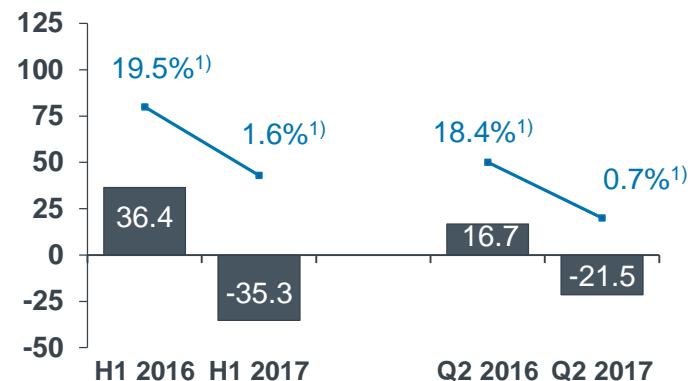
R&D



SG&A



EBIT (IFRS), EBIT margin (adj.)

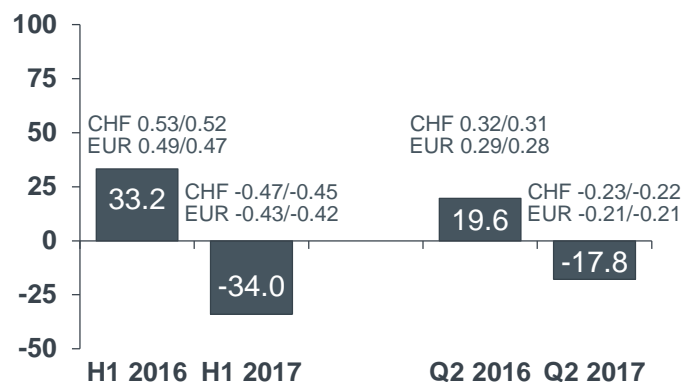


¹⁾ excl. acquisition-related and share based compensation costs

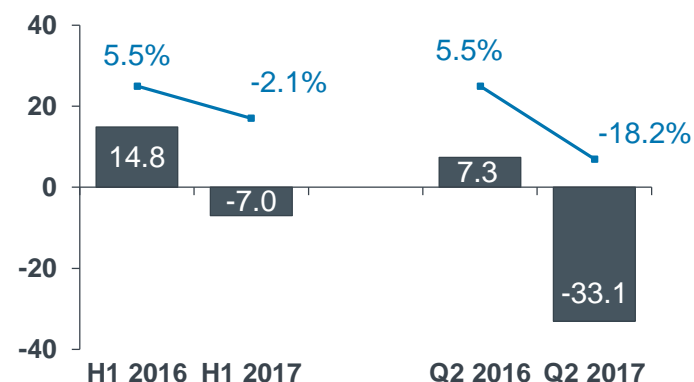
Financial results

EURm, % of revenues

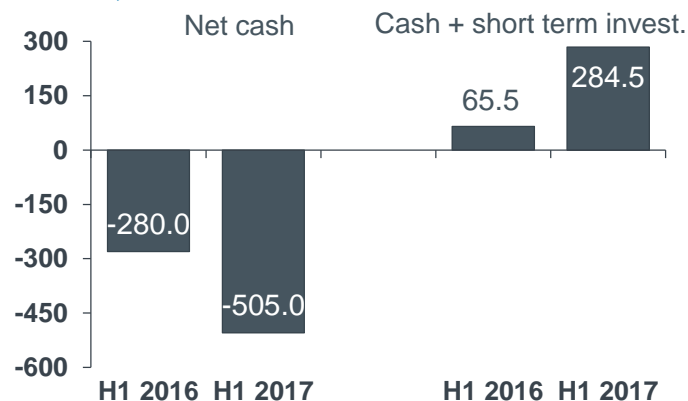
Net result, EPS (basic/diluted)



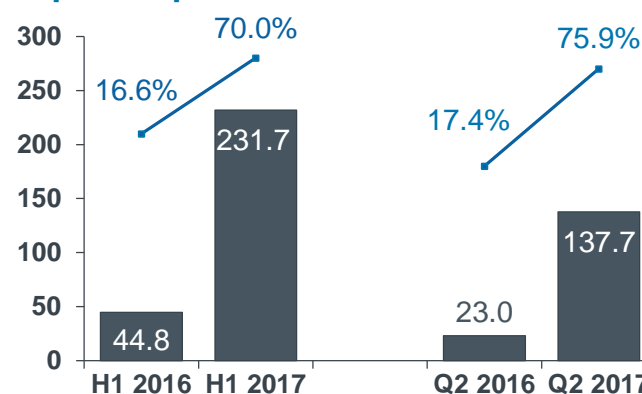
Operating cash flow



Net cash, cash + short term investments



Capital expenditures





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Sensing is life.



Profit and loss statement

EURm

(IFRS)	H1 2017	H1 2016	Q2 2017	Q2 2016
Total revenues	330.8	269.6	181.5	132.4
• Products	303.9	248.0	167.1	120.5
• Foundry	26.9	21.6	14.4	11.9
Gross profit	122.2	144.6	62.9	70.7
• Gross margin (adjusted ¹⁾)	43.5%	56.5%	41.3%	55.9%
• Gross margin (IFRS reported)	36.9%	53.6%	34.7%	53.4%
Research and development	-100.3	-65.2	-53.8	-32.3
Selling, general and administrative	-64.4	-48.8	-34.4	-25.3
Other operating income/expenses	7.2	4.3	3.7	2.1
Result from operations (EBIT)	-35.3	36.4	-21.5	16.7
• EBIT margin (adjusted ¹⁾)	1.6%	19.5%	0.7%	18.4%
• EBIT margin (IFRS reported)	-10.7%	13.5%	-11.9%	12.6%
Net financing costs	3.6	-1.2	6.2	4.2
Result before tax	-31.7	35.2	-15.3	20.8
Income tax result	-2.3	-2.0	-2.5	-1.2
Net result	-34.0	33.2	-17.8	19.6

¹⁾ excl. acquisition-related and share-based compensation costs

Balance sheet

EURm

Assets (IFRS)	Jun 30, 2017	Dec 31, 2016	Liabilities and equity	Jun 30, 2017	Dec 31, 2016
Cash and short term invest.	292.4	215.8	Interest-bearing debt	121.3	108.0
Trade receivables	96.9	97.2	Trade liabilities	184.3	68.2
Inventories	142.3	92.9	Tax liabilities	32.9	36.8
Other current assets	77.7	33.4	Provisions	42.2	20.1
			Other liabilities	465.8	31.4
Total current assets	609.4	439.3	Total current liabilities	846.4	264.5
Fixed assets	701.2	319.3	Interest-bearing debt	668.2	364.1
Intangible assets	1,136.8	603.4	Employee benefits	43.1	37.0
Investments in associates	2.0	2.3	Provisions	0.0	0.0
Deferred tax asset	35.4	35.4	Deferred tax liabilities	67.1	54.0
Other non-current assets	40.1	23.4	Other liabilities	44.7	36.0
Total non-current assets	1,915.6	983.7	Total non-current liabilities	823.2	490.9
			Shareholders' equity	855.3	667.6
Total assets	2,524.9	1,423.0	Total liabil. and equity	2,524.9	1,423.0

Cash flow statement

EURm

(IFRS)	H1 2017	H1 2016	Q2 2017	Q2 2016
Income before tax	-31.7	35.2	-15.3	20.8
Depreciation	64.4	30.5	34.9	15.4
Cash flow from operations	-7.0	14.8	-33.1	7.3
Capital expenditures	-231.7	-44.8	-137.7	-23.0
Cash flow from investing activities	-142.2	-76.9	-132.0	-60.5
Proceeds from borrowings	348.4	75.3	247.4	29.5
Repayment of borrowings	-28.6	-5.0	-26.1	-0.4
Dividends paid	-25.0	-34.6	-25.0	-34.6
Changes resulting from capital increase	0.0	0.0	0.0	0.0
Cash flow from financing activities	272.3	-9.1	167.6	-38.4
Change in cash and cash equivalents (incl. effects of changes in foreign exchange rates)	123.1	-73.9	2.5	-89.4
Cash and cash equivalents at end of period	253.1	29.7	253.1	29.7