

ams

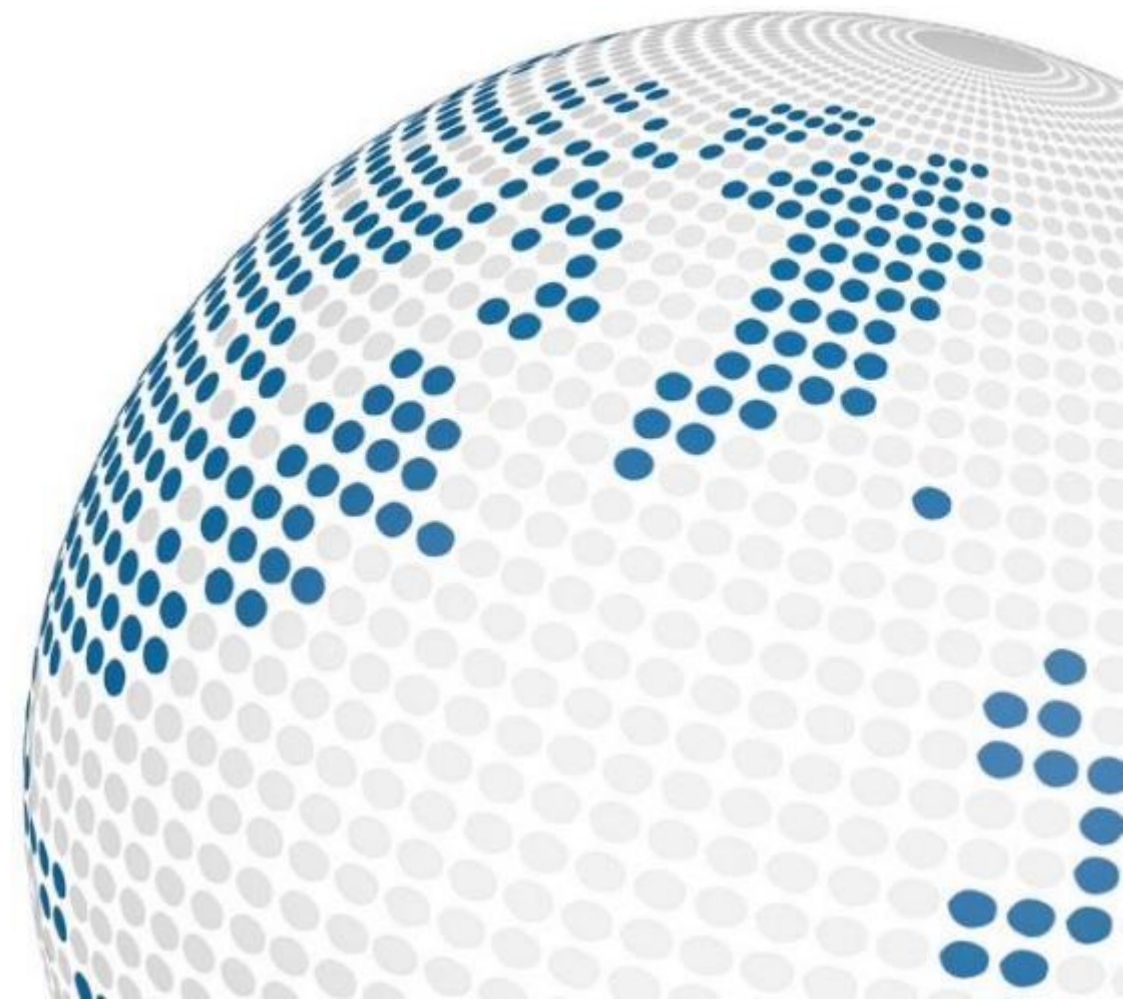
Second quarter and half year results 2019

Alexander Everke, CEO

Michael Wachslar-Markowitsch, CFO

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July 2019



ams at a glance

Sensing is life.



Our business

- Focused on high performance sensor solutions
- Sensor solutions, sensor ICs/sensor interfaces, related algorithms and software
- Small scale, low-power, highest sensitivity, tight integration
- Best-in-class solutions for leading OEMs



Our end markets

- Consumer (C) – H1 2019 75% of revenues
- Automotive, Industrial, Medical (AIM) – H1 2019 25% of revenues

By the numbers

- Around 9,000 employees worldwide
- Around 1,100 engineers
- 18 design centers, 3 manufacturing locations
- More than 35 years of design and manufacturing know-how
- Over 8,000 customers



Sensing enables life

Sensors – an integral part of the digital transformation



Building the global leader in sensor solutions

True leadership in three sensor areas

- Optical
- Imaging
- Audio

Best-in-class performance per sensor area and in sensor system solutions

- Miniaturization and integration
 - Sensor modules
 - 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 60/40 split C/AIM
- Build broader customer base in each application
- Establish strong distribution channel

Financial model enabling long-term growth

- Focus on profitable growth
- Build strong margin profile across end markets

ams strategic pillars: focus for growth

Driving clear leadership in three sensing areas



Optical sensing

- 3D sensing incl. VCSEL illumination (front- + world-facing)
- Light analysis/proximity
- Behind-OLED sensing
- Long distance 1D ToF
- Bio- and spectral sensing
- New optical technologies



Image sensing

- High performance imaging
- Global shutter sensors
- Medical imaging
- Micro cameras



Audio sensing

- MEMS microphone ICs
- ANC noise cancelling

Other lines



Other sensing

- Position sensors (automotive/industrial)

3D sensing leader: success across markets



Leading player across 3D sensing technologies

- Unmatched portfolio of technologies, products and IP
 - Broad range of solutions for all 3D systems
 - Highly differentiated VCSEL/VCSEL array illumination
 - Leading portfolio in hardware and software IP
- Serving customer needs in structured light (SL), time-of-flight (ToF), active stereo vision (ASV) as coexisting technologies

**Growth in Android,
world-facing
traction, application
areas expanding**



Industry-leading solution expertise, successful in all technologies and front-/world-facing

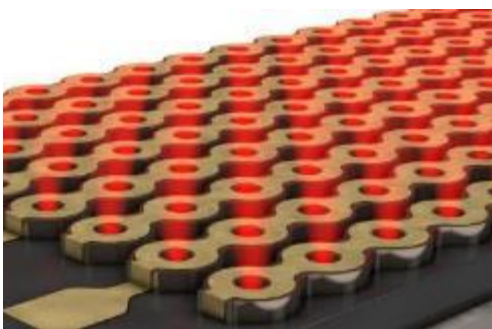
- Leader in end-to-end system know-how for SL, ToF, ASV and front-facing/world-facing 3D
- Illumination focus and VCSEL leadership drives success in all 3D technologies
- Full ToF + ASV coverage across applications, partnerships with QCOM, Face++, MEGVII

Leadership position in 3D sensing, SmartSens partnership for NIR image sensors

- Key player in consumer: high volume 3D for top consumer OEMs, strong Android position and growth, Android world-facing ToF illumination in volume, clear leader in mobile ASV
- SmartSens partnering: combined solutions with high QE near-infrared global shutter sensors
- Strong Automotive traction: 3D LIDAR win + engagements, in-cabin multiple developments
- Well positioned for non-smartphone consumer (POS), engaging in early industrial



3D sensing: 3D LIDAR / in-cabin, VCSEL leader



Automotive solid-state 3D LIDAR win, more LIDAR and in-cabin traction

- Major solid-state LIDAR illumination win with Tier 1 supplier ZF and technology partner IBEO
- High performance true solid-state scanning: combines advantages of non-scanning/flash and mechanical/MEMS scanning
- Line-by-line addressable high power high count VCSEL array: unmatched combination of ams VCSEL array and automotive VCSEL driver, eye-safety ensured
- LIDAR VCSEL engagements with more Tier 1 suppliers across regions
- In-cabin optical 2D/3D sensing: driver monitoring/identification, 3D ToF illuminator development for Tier 1 supplier, very good market traction given solution capability

Superior VCSEL technology: high differentiation, ongoing market success and wins

- Broad portfolio for illumination in all 3D technologies: ToF + SL illumination, ASV + SL pattern/dot projection, 1D ToF proximity
- Best-in-class high power VCSELs/high count VCSEL arrays: Smallest pitch (high resolution, lower system cost), leading power efficiency (up to >60% (lab) vs. typical 45-50% quantum efficiency), best beam quality (very narrow beam divergence), true high power (from mW to W to 100+W)
- External supply chain expanded 2019, upcoming internal line supports differentiation

3D sensing: SmartSens partnership, LD 1D ToF



SmartSens partnership for high performance NIR sensors and combined 2D/3D solutions

- Partnering with leading image sensor vendor SmartSens for illumination and Near Infrared (NIR) image sensing for 2D/3D
- Latest NIR image sensor with state-of-the-art quantum efficiency (QE) of up to 40%, ams illumination expertise and core IP in global shutter technology, enabling ASV and SL
- ASV reference design for consumer 3D applications: depth maps for payment, face recognition and AR/VR, faster time to market, competitive system cost
- Significant automotive opportunity in 2D/3D in-cabin optical sensing: driver monitoring/identification, accelerating time to market for combined solution
- Emerging industrial market: early engagement with large OEM for ASV for household device
- First revenues from partnership expected 2020

Long distance 1D ToF solution: high quality long range measurement, first design win

- Compact high performance VCSEL ToF solution for distance measurement/object detection
- Accurate measurements up to around 2.5 meters
- First Android win for laser detect autofocus (LDAF) for smartphone backside camera
- High interest from smartphone OEMs and also IoT

Optical sensing



Worldwide leader in light sensing solutions

- Clear #1 in optical sensing
- Leading in sensors, illumination solutions and high performance optical systems
- High quality optical sensing at Top 15 smartphone OEMs
- Upcoming growth markets in automotive + industrial

Leadership in 3D and new optical technologies for large new markets and applications



Broad portfolio: 3D sensing incl. VCSEL, display management/proximity, other applications

- 3D sensing expert: leading portfolio and system know-how, major consumer customers
- High performance VCSELs for 3D/optical sensing: strong in consumer, automotive momentum
- Innovative behind-OLED light/proximity sensing: major market success, fast adoption
- TrueColor display management, color ALS/proximity, ultra-small proximity for wireless earbuds



Technology leadership in new applications and markets

- 3D sensing: consumer adoption enabling strong automotive and early industrial traction
- Biosensing: high quality blood pressure and other health data capture
- Optical technologies create new uses and sensing applications in all end markets

Optical sensing: Rapid behind-OLED adoption



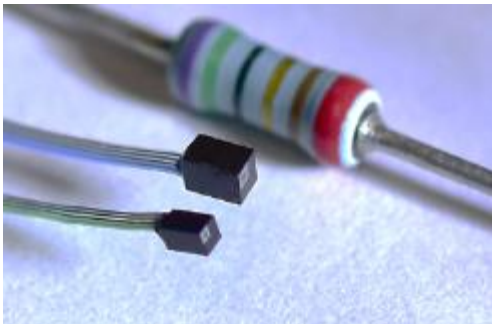
Behind-OLED light and proximity sensing solution

- Display management innovation: optical sensor unit behind the OLED display
- Enables industry trend for maximum screen-to-body ratio and bezel-less phone designs
- Complex unmatched sensing technology: very low light levels through OLED + proximity lighting emitted through display
- Very attractive growth opportunity, positioning as key feature for high end smartphone displays
- Strong market success at higher content, fast penetration of leading smartphone OEMs
- Development roadmap for under-display technologies including 3D

**Fast success:
shipping high
volumes across
key 2019 platforms,
more wins**



Image sensing



True leader in advanced image sensing for industrial + medical

- **Industrial** – Leading provider of global shutter technology for advanced industrial applications
- High value global shutter CMOS imaging solutions for high speed machine vision, inspection, factory automation
- **Medical** – Global leader in medical imaging sensor solutions
- High performance, cost-optimized systems for computed tomography (CT) and digital X-ray, expanding market position in Asia
- Clearer images at lower radiation dose for better diagnostics in 3D-CT and digital X-ray
- NanEye micro camera technology: versatile highly miniaturized camera solutions ($\leq 1\text{mm}^2$)

NanEye micro cameras and SmartSens NIR partnership drive new opportunities

Strongly positioned and attractive opportunities in growth markets and new applications

- Very good traction for NanEye micro cameras
 - world's smallest endoscopy cameras, growth market in disposable medical endoscopes
 - new consumer and industrial applications leverage near-invisible footprint
- SmartSens partnership for high performance high QE NIR sensors
 - combined global shutter IP and application expertise for faster time-to-market
 - full end market coverage: consumer first, automotive and industrial applications visible

Audio sensing



ANC (active noise cancellation)

- Best-in-class high performance noise reduction (>40dB)
- Clear leader with strong portfolio for wired/wireless accessories
 - significantly better audio experience
 - very low power, very small form factor
- Innovative solution for high quality ANC in loose-fitting true wireless earbuds, strong consumer OEM interest
- Augmented hearing: selective noise cancelling by-pass, e.g. for speech
- Single wire power/communication interface for mobile audio charging POW:COM
- Increasing customer traction in growing volume market

**Innovative ANC for
loose-fitting
wireless earbuds:
strong interest**

MEMS microphone interface ICs

- Market leader in expanding high volume market
- Broad portfolio for low noise and tight integration
- Home assistant/IoT market adds demand: up to 8 microphones per device
- Strong customer partnership focused on attractive segments

Hybrid volume manufacturing model



Internal: Differentiated manufacturing
Outsourced/external: Standard process manufacturing

Internal front-end wafer manufacturing, Austria

- 8" CMOS/specialty analog to 180nm, 190+k wafers p.a.
- Optical filter production

**Significantly
improved manu-
facturing efficiency
in Singapore**



Internal optical manufacturing/backend + upcoming VCSEL manufacturing, Singapore

- Leader in high-performance optical system technologies
- Advanced optical assembly/backend, WLO/optical filter production
- Major improvements in production efficiency and operations
- Internal VCSEL capacity: 6" 2,000 wspm line for high performance products, expected front-end ramp from around year-end 2019



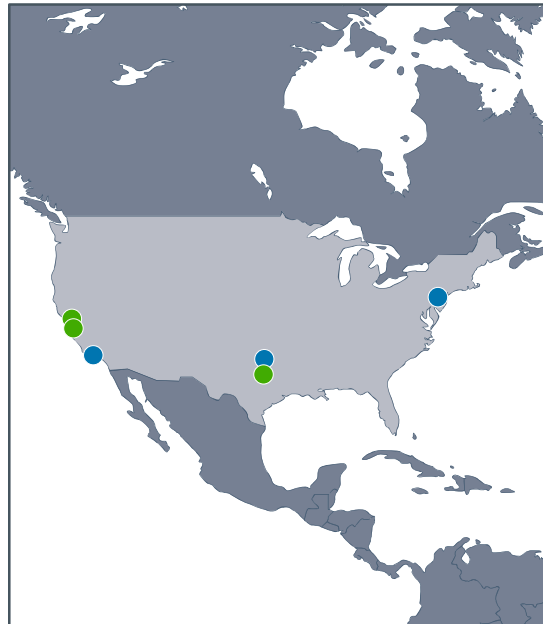
External manufacturing partnerships for scalability and flexibility

- High volume wafer suppliers (TSMC, UMC), standard and semi-custom packaging
- Outsourced VCSEL supply chain: Volume manufacturing partners include HLJ and others, expanded to serve expected 2019 VCSEL volume needs

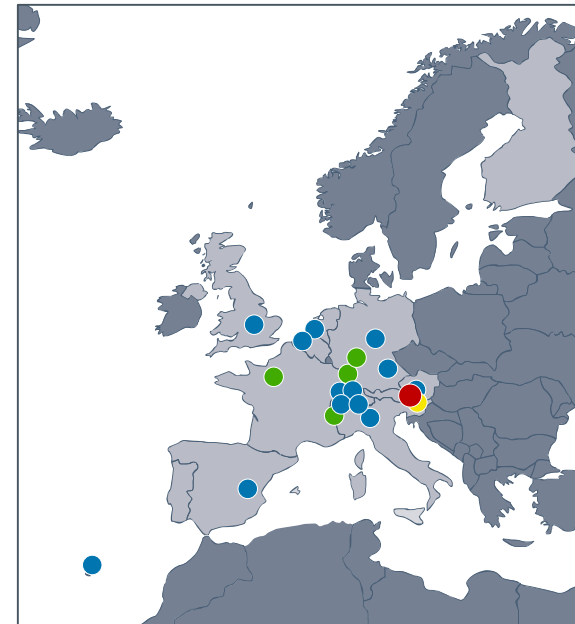
In-house test, Philippines/Singapore/Austria

Global network

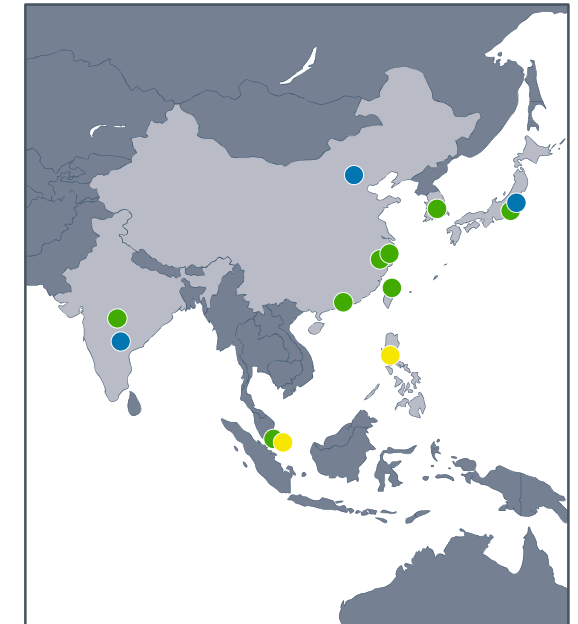
- Headquarters
- Design centers
- Manufacturing/Test
- Sales/customer support locations



Americas



Europe



Asia

- **18 design centers**
Austria, Belgium, China, Germany (2), Italy, India, Japan, Netherlands, Portugal, Spain, Switzerland (3), UK, USA (3)
- **Manufacturing locations**
Austria, Singapore
- **Test center**
Philippines, Singapore, Austria

Key figures

USDm



			H1 2019	H1 2018	Q2 2019	Q2 2018
Total revenues			801.2 +22%	655.2	415.2 +72%	241.6
Gross margin	(adjusted) ¹⁾		35%	28%	37%	15%
	(IFRS reported)		32%	24%	35%	9%
Result from operations (EBIT)	(adjusted) ¹⁾		73.2	24.2	49.9	-46.5
	(IFRS reported)		17.5	-30.3	21.9	-72.8
Net result	(adjusted) ³⁾		15.8 +306%	-7.7	25.1 +125%	-99.0
EPS (basic/diluted)	(adjusted) ³⁾	CHF ²⁾	0.20 / 0.19	-0.10 / -0.10	0.31 / 0.28	-1.24 / -1.19
		USD ²⁾	0.20 / 0.19	-0.10 / -0.10	0.31 / 0.28	-1.19 / -1.15

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

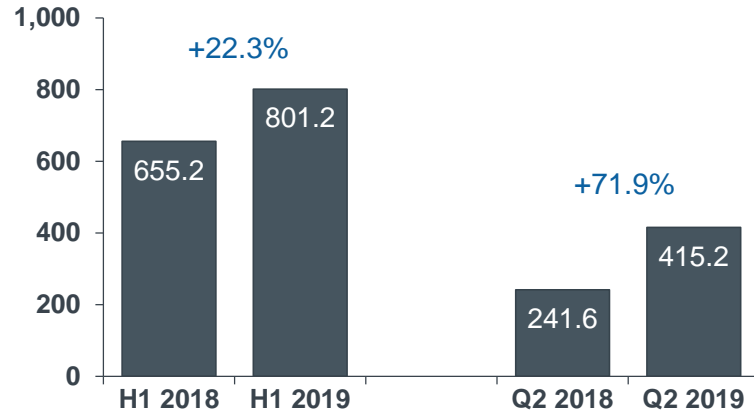
²⁾ Earnings per share in CHF were converted using the average currency exchange rate for the respective periods

³⁾ Net result and earnings per share excluding valuation effect of the option element of the issued USD convertible bond

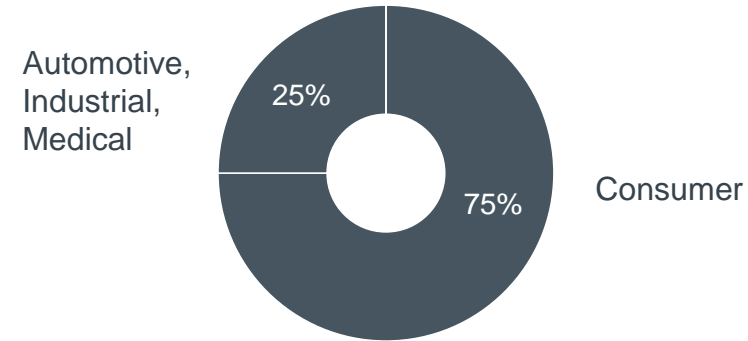
Financial results

USDm

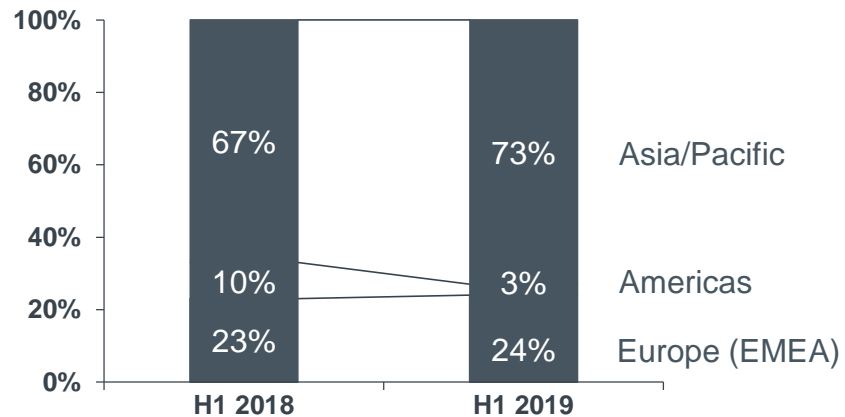
Total revenues



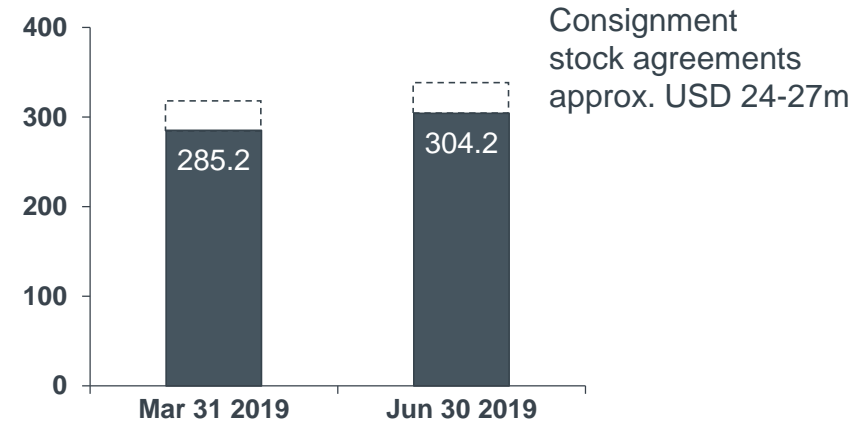
Total revenues by market H1 2019



Total revenues by region



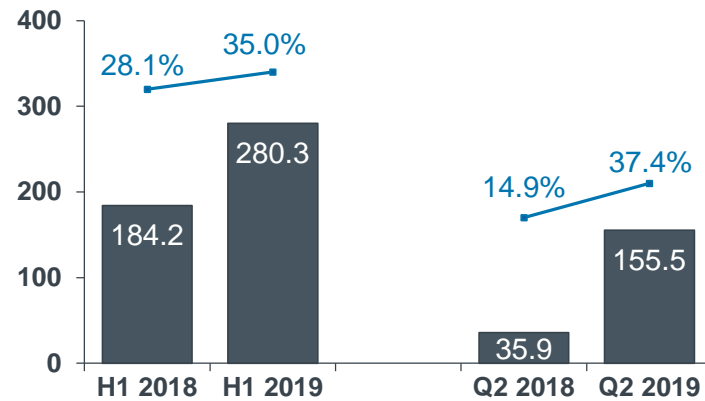
Total backlog



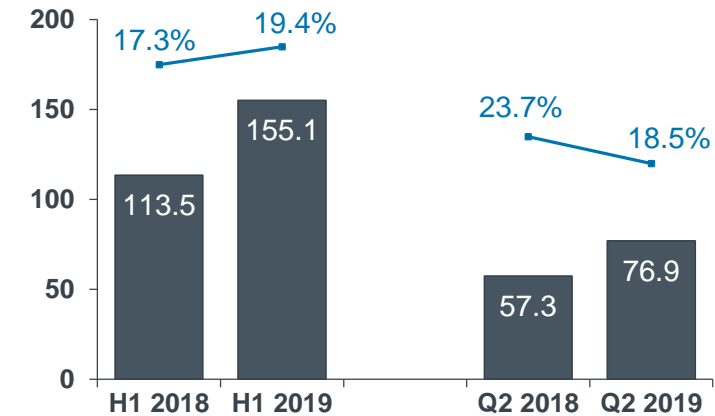
Financial results

USDm, % of revenues

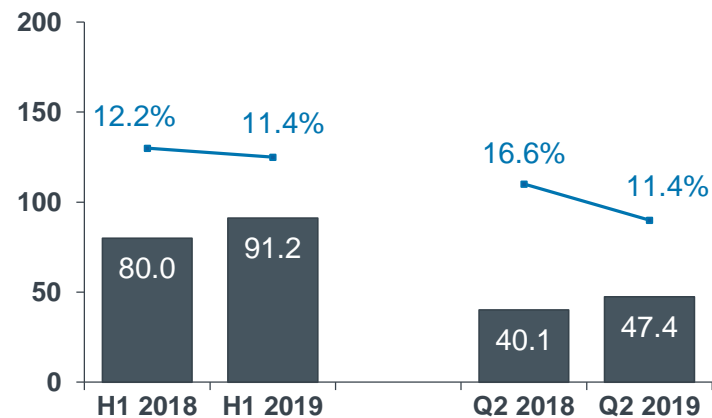
Gross profit, gross margin (adj.) ¹⁾



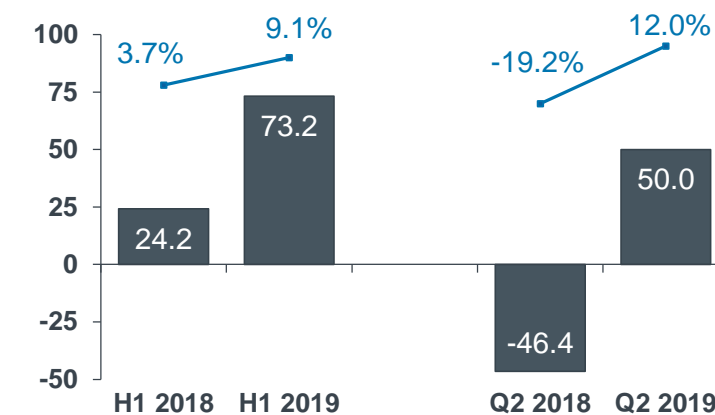
R&D



SG&A



EBIT, EBIT margin (adj.) ¹⁾



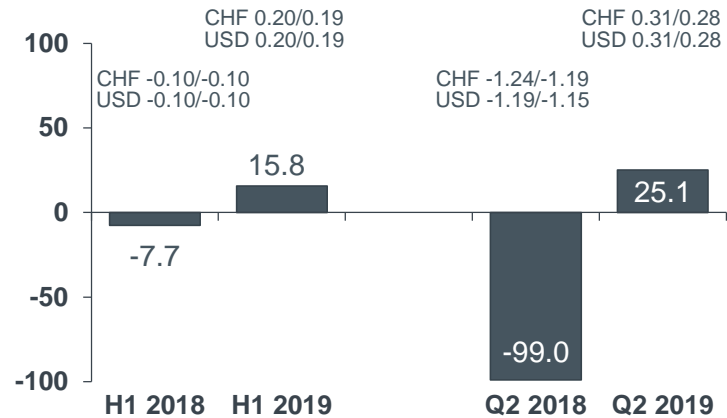
¹⁾ Excl. acquisition-related and share-based compensation costs

Financial results

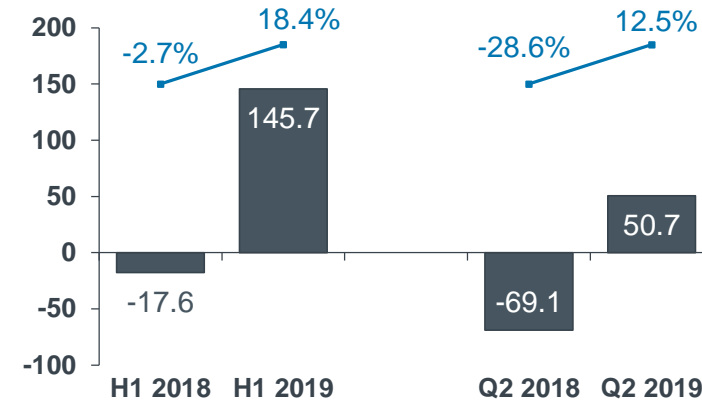
USDm, % of revenues



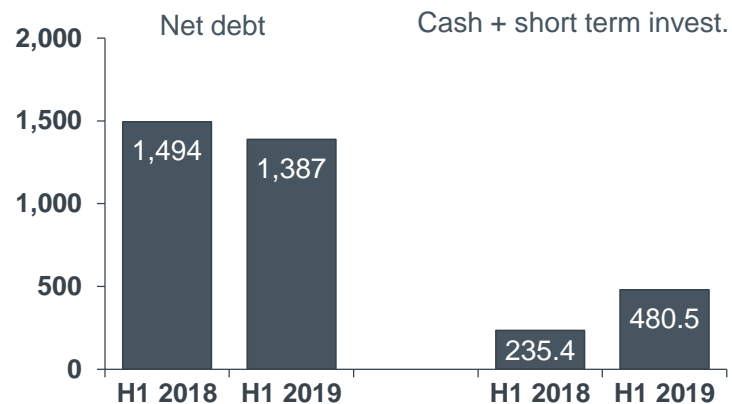
Net result, EPS (basic/diluted) (adj.) ¹⁾



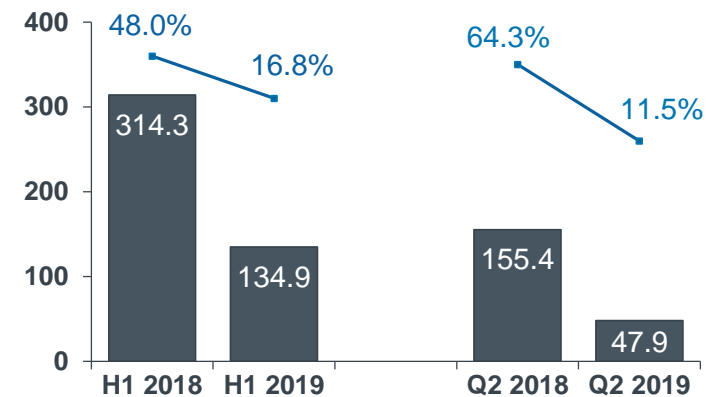
Operating cash flow



Net debt, cash + short term investments



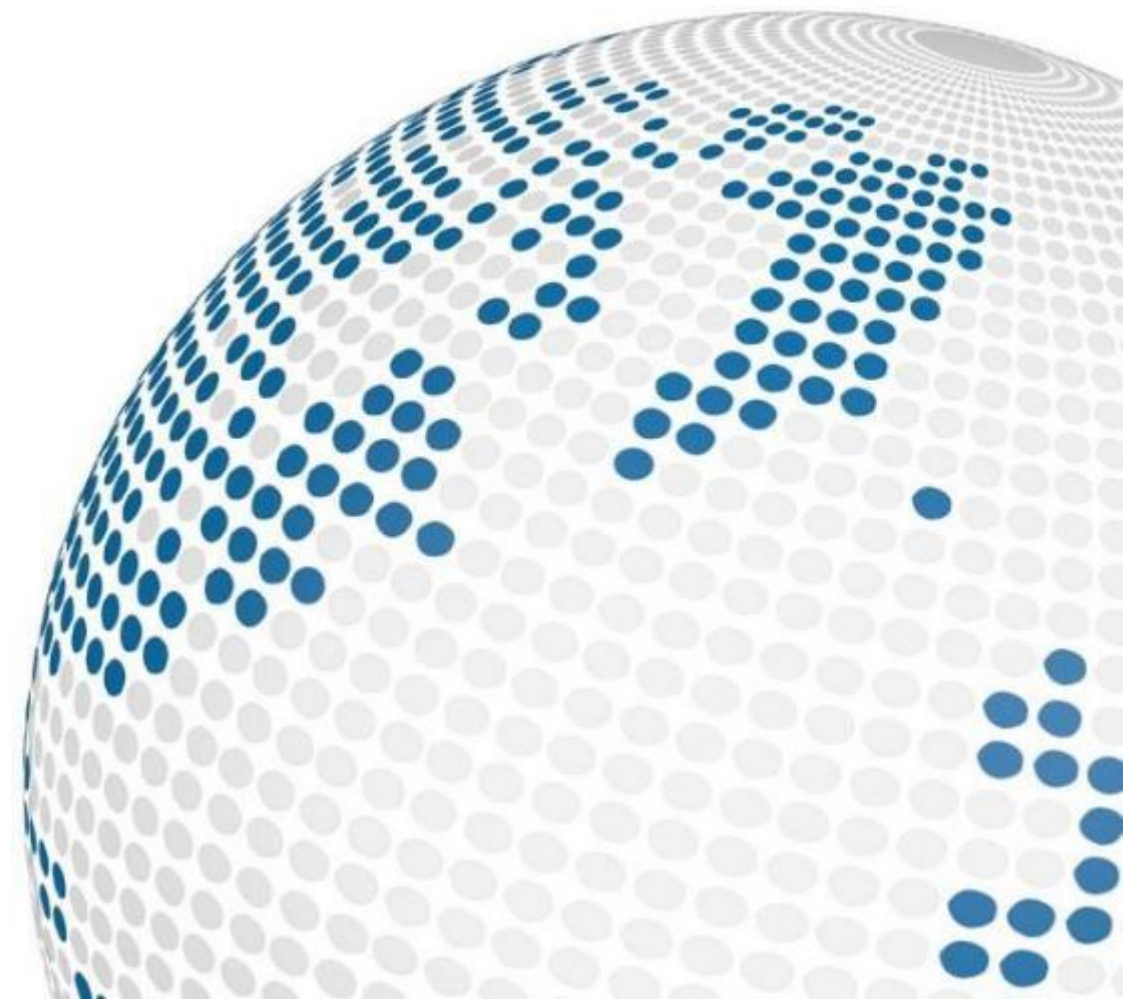
Capital expenditures



¹⁾ Net result and earnings per share excluding valuation effect of the option element of the issued USD convertible bond

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Shaping the world with sensor solutions



Profit and loss statement

USDm



(IFRS)	H1 2019	H1 2018	Q2 2019	Q2 2018
Total revenues	801.4	655.2	415.2	241.6
• Products	772.1	632.2	402.7	229.4
• Foundry	29.1	23.0	12.6	12.2
Gross profit	257.7	158.0	144.1	22.9
• Gross margin (adjusted ¹⁾)	35.0%	28.1%	37.4%	14.9%
• Gross margin (IFRS reported)	32.2%	24.1%	34.7%	9.5%
Research and development	-155.1	-113.5	-76.9	-57.4
Selling, general and administrative	-91.2	-80.0	-47.4	-40.1
Other operating income/expenses	6.1	5.5	2.1	1.9
Result from operations (EBIT)	17.5	-30.3	21.9	-72.8
• EBIT margin (adjusted ¹⁾)	9.1%	3.7%	12.0%	-19.2%
• EBIT margin (IFRS reported)	2.2%	-4.6%	5.3%	-30.1%
Net financing costs	2.3	71.3	5.1	41.9
Result before tax	19.7	41.1	26.9	-30.8
Income tax result	-3.9	-3.7	-1.8	-2.3
Net result (adjusted ²⁾)	15.8	-7.7	25.1	-99.0
Net result (IFRS reported)	15.8	37.4	25.2	-33.1

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

²⁾ Net result excluding valuation effect of the option element of the issued convertible bond

Balance sheet

USDm

Assets (IFRS)	Jun 30, 2019	Dec 31, 2018	Liabilities and equity	Jun 30, 2019	Dec 31, 2018
Cash and short term invest.	480.5	702.1	Interest-bearing debt	299.9	247.1
Trade receivables	179.6	135.9	Trade liabilities	152.5	197.5
Inventories	318.3	348.1	Tax liabilities	17.4	18.5
Other current assets	46.4	42.7	Provisions	89.6	90.6
Assets held for sale	114.3	0.0	Other liabilities	70.0	62.4
			Liabil. associated w. assets held for sale	0.6	0.0
Total current assets	1,139.1	1,228.8	Total current liabilities	630.1	616.1
Fixed assets	1,329.9	1,355.1	Interest-bearing debt	1,567.9	1,795.9
Intangible assets	1,342.0	1,372.0	Employee benefits	47.0	45.3
Investments in associates	3.3	3.3	Deferred tax liabilities	71.6	73.8
Deferred tax asset	18.4	18.3	Other liabilities	97.5	41.8
Other non-current assets	8.5	8.2			
Long-term financial assets	36.8	40.0			
Total non-current assets	2,738.8	2,797.0	Total non-current liabilities	1,784.1	1,956.7
			Shareholders' equity	1,463.7	1,453.0
Total assets	3,877.9	4,025.8	Total liabil. and equity	3,877.9	4,025.8

Cash flow statement

USDm

(IFRS)	H1 2019	H1 2018	Q2 2019	Q2 2018
Result before tax	19.7	41.1	26.9	-30.8
Depreciation	152.6	111.5	76.9	57.4
Cash flow from operations	145.7	-17.6	50.7	-69.1
Capital expenditures	-134.9	-314.3	-47.9	-155.4
Cash flow from investing activities	-140.6	-343.4	-46.2	-156.9
Proceeds from borrowings	14.2	56.5	0.2	56.5
Proceeds from issue of convertible bond	0.0	687.1	0.0	0.0
Repayment of debt	-108.8	-339.9	-68.9	-0.6
Repayment of convertible bond	-75.4	0.0	-75.4	0.0
Dividends paid	0.0	-30.9	0.0	-30.9
Cash flow from financing activities	-222.4	238.9	-156.5	5.4
Change in cash and cash equivalents (incl. effects of changes in foreign exchange rates)	-221.6	-124.3	-159.0	-218.1
Cash and cash equivalents at end of period	480.5	235.4	480.5	235.4