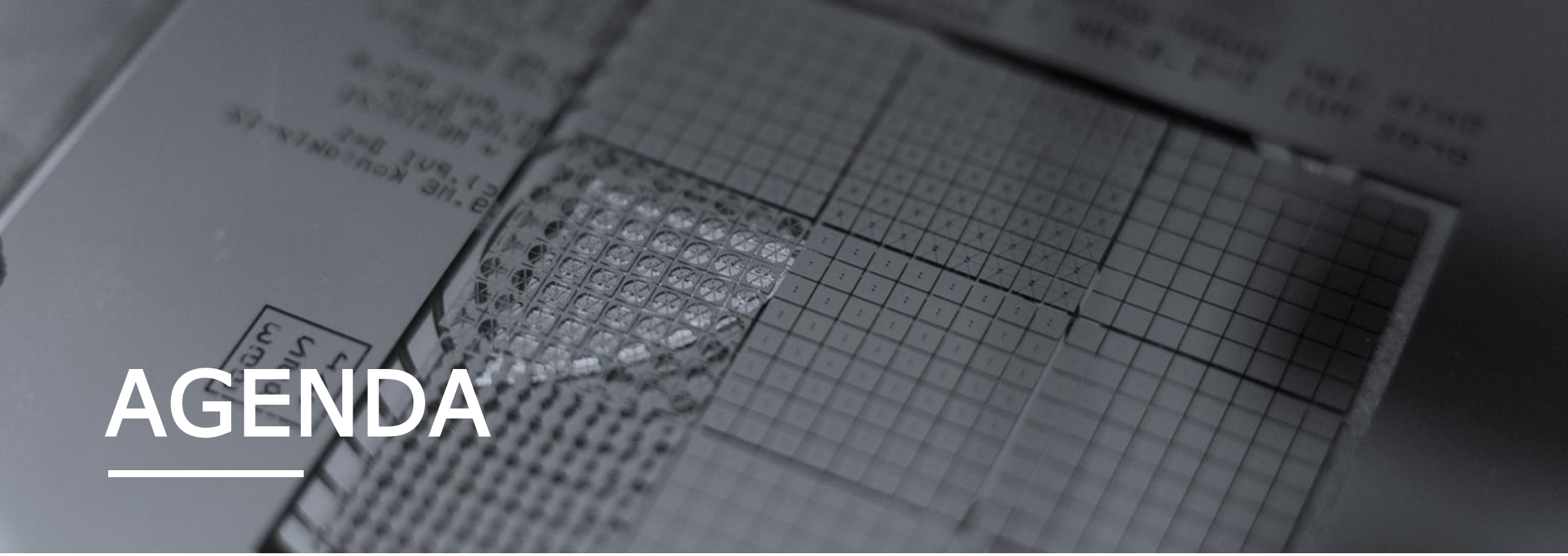
VIGO SYSTEM

2018 RESULTS PRESENTATION

April 2019



AGENDA

1. About VIGO
2. Implementation of VIGO 2020+ Strategy
3. Operating and financial results

Appendix 1 - selected financial data

Appendix 2 - key detector applications

VIGO SYSTEM

ABOUT VIGO

// About us

VIGO System S.A. is a global leader in the manufacture of uncooled infrared detectors.

Having developed globally unique technology, VIGO offers products of the highest parameters.

Our competitive advantage on global markets is:

- More than **30 years** of experience in producing detectors,
- Offering the best equipment at reasonable prices,
- Ability to design and produce detectors meeting the highest standards (NASA, military)
- Products tailored to individual client needs,
- More than **125 employees** (professor, 12 PhDs and >35 engineers),
- **3000 m²** of production and office space,

Detectors

Detection modules

Optoelectronic systems

ABOUT VIGO

1970s
Development of technology for the manufacture of uncooled infrared detectors

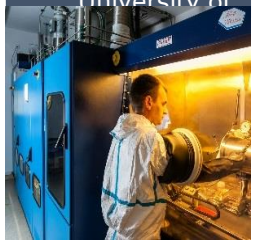
1987
VIGO's beginning

1993
Registration of VIGO System Sp. z o.o.

1996
The Photonics Circle of Excellence Award

2002
Transformation into joint-stock company

2003
Launch of MOCVD laboratory together with Military University of

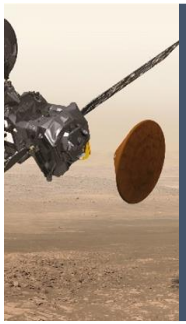


2007
HQ move to Ożarów Mazowiecki

2012
VIGO detectors in Mars Curiosity

2013
Expansion of production facility, EU grant

2014
Debut on Warsaw Stock Exchange's main market



2015
Launch of MBE laboratory together with Military University of Technology

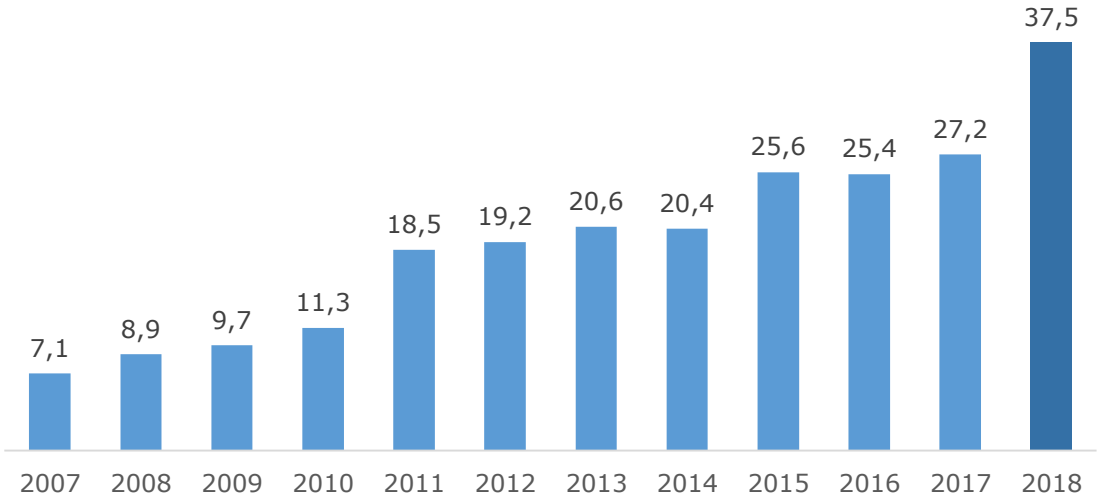
2016
VIGO detectors fly to Mars as part of ExoMars mission

2018
VIGO 2020+ - new development strategy

2019
New production facility - capacity of up to 100 000 detectors per year

ABOUT VIGO

// VIGO's revenue [PLNm]



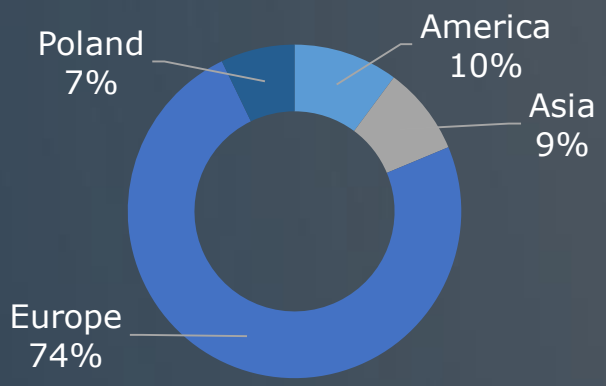
// Development so far

- Nearly 30 years of continuous technological development and market expansion.
- Supplier of the most technologically advanced components for the most demanding clients (NASA, ESA).

Quality, technology and credibility have allowed us to work for global corporations, including the producers of:

- industrial gas analysers (Emerson),
- smart munitions (Zodiac),
- pollution and gas leak detectors (Gasmet),
- railway automatics (Caterpillar).

// Geographic markets [2018, PLNm]



ABOUT VIGO

// VIGO's strong suites

- TECHNOLOGY. Independently developed and constantly improved technologies that result in optoelectronic equipment with parameters that are beyond our competitors' reach. Flexibility in action - each VIGO product may be adapted to the client's individual needs. Own research laboratories for constant improvements in technologies and products

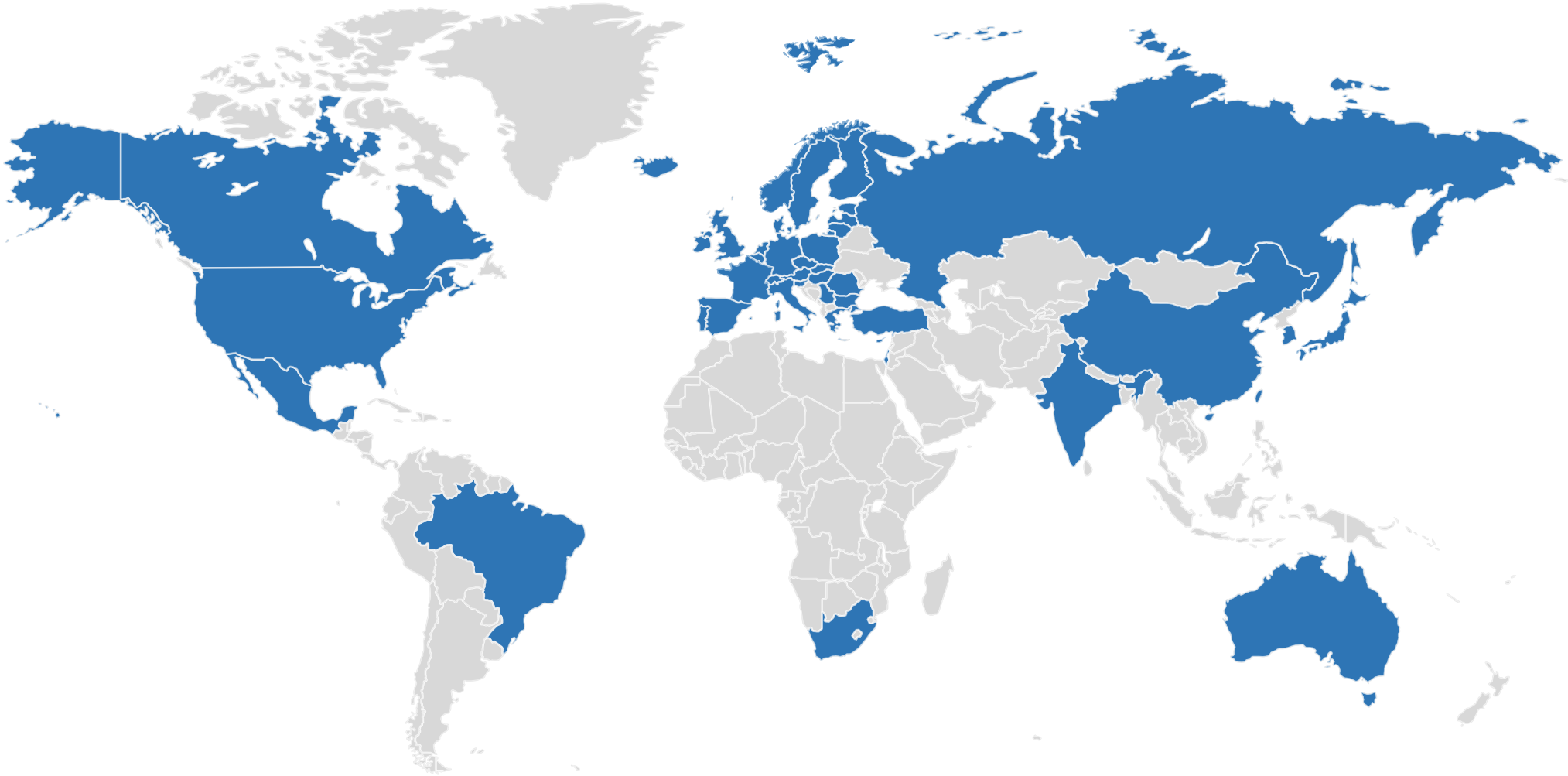
- PEOPLE. Well-educated and experienced personnel. Friendly work setting conducive of creativity in approaching customer problems and creating innovative solutions. Workplace that makes it possible to keep a work-life balance.

- MARKET INSIGHT. Numerous satisfied customers. Wide distribution network on key European, American and Asian markets. Very strong image on global markets.

- INNOVATIVENESS. Close cooperation with universities and R&D institutions, allowing to conduct advanced research in interdisciplinary teams and providing a pipeline of qualified employees.

ABOUT VIGO

// Market reach



ABOUT VIGO

VIGO SYSTEM

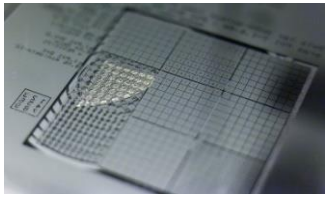
// Product portfolio

SERVICES

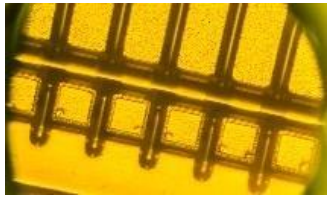
Epitaxial layer growth

Epitaxial layers

Processing

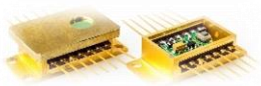


Detector lines



DETECTORS

Integrated cooled modules



Cooled detectors

Integrated uncooled modules

Uncooled detectors

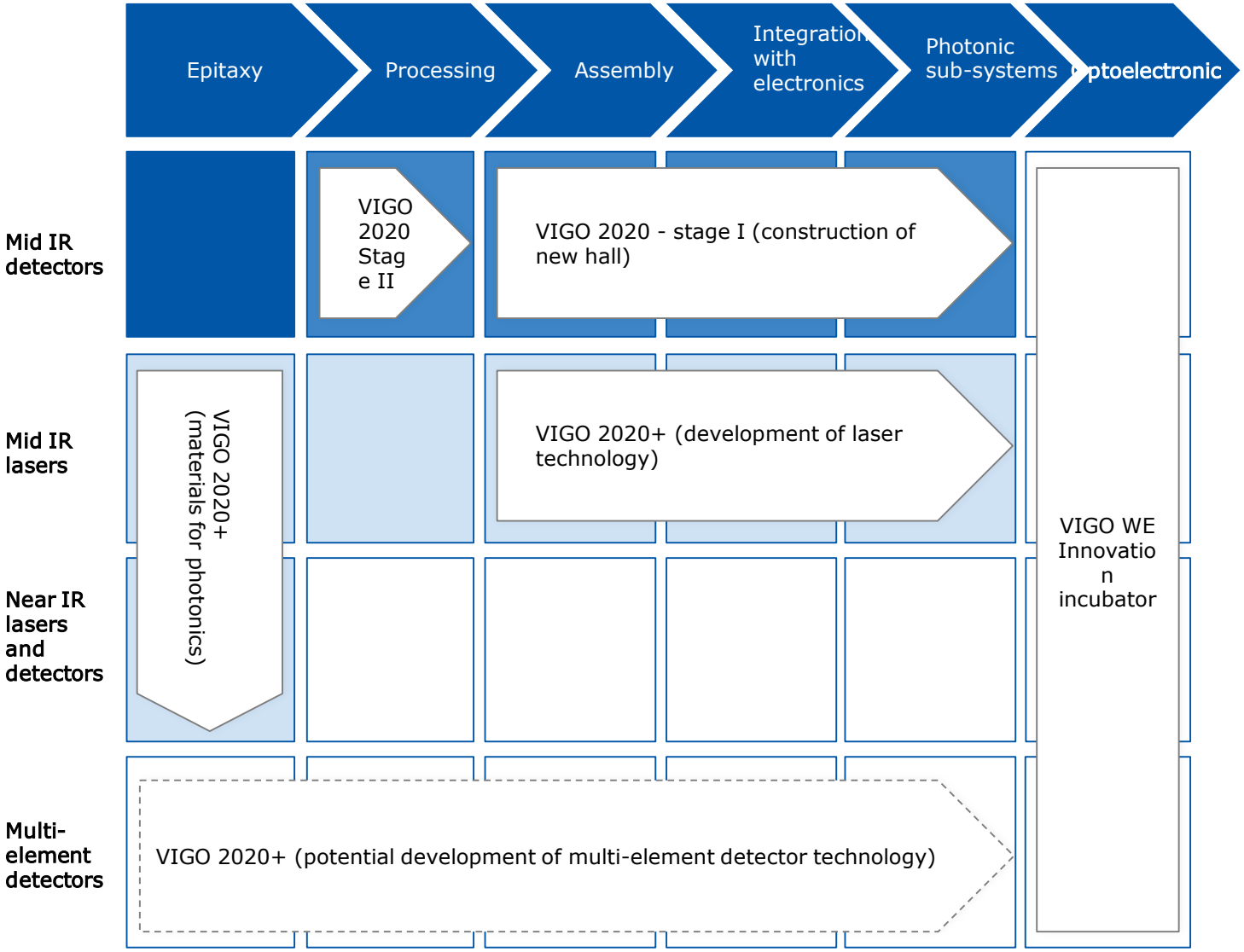
Detection chips

MODULES

Devices with integrated optics, digital output and software

DEVELOPMENT DIRECTIONS AFTER 2020

// Strategy update



// Strategy update

Assumptions:

- Development of Mid IR technology (new, tunable sources of radiation, decrease in prices, new materials)
- Rapid development of the MidIR sensor market, especially systems based on cascade lasers (QCL, 70% growth in VIGO's revenue in 2015-2017), and in the semiconductor industry (600% growth), creating strong basis for development of VIGO's core business
- Dynamically developing and huge Near IR market

New business areas:

- Semiconductor materials III-V for applications in photonics and electronics
- QCL laser market

VIGO 2020

// Stage I - Construction of new facility

Investment purpose:

- Increase production to 100 000 modules per year
- Enable flexible production planning and production customisation
- Reduce product prices thanks to operational scale

Material progress:

- Permit for use by 2018 year-end
- Slight delays in handovers to investor
- Launch of production planned for Q2 2019

2016
- Feasibility analysis ✓
- Financing secured ✓

2017
- Purchase of land ✓

2017
- Administrative decisions ✓
- Design ✓
- Preparatory works ✓

2018
- Construction of facility ✓

2019+
- Equipment
- Gradual increase in scale of production

VIGO 2020

// Stage II - Management of production quality

Investment purpose:

- Increase production repeatability
- Reduce production costs
- Meet the highest quality requirements (military, space, semiconductor industries)

Scope and financing:

- Modernisation of VIGO's existing technological hall and construction of cleanroom
- Additional production equipment
- Investment expenditures < PLN 24 million (EU grant, debt financing and own funds)
- Funding raised under Operational Programme Intelligent Res

H1 2019

- Design (in progress)
- Financing

H2 2019

- Completion of construction works
- Handover of cleanroom for use

2020

- Launch of production in new cleanroom

2020+

- Gradual increase in production and additional equipment for production line

VIGO 2020+

// Materials for photonics

Project objectives and rules

- Expansion of VIGO's activities to include production of semiconductor III-V materials for mass application in photonics and electronics
- Cooperation with Dr Włodzimierz Strupiński on introducing the technology at VIGO

Investment's material scope and financing

- Scope - purchase of new epitaxial system, measurement equipment, implementation works, modernisation of VIGO's hall
- Estimated expenditures - PLN 20 million, of which PLN 15 million in debt financing, PLN 5 million in own funds

2018
- Rules for joint project agreed ✓
- Financing ✓
- System order ✓

H1 2019
- Completion of modernisation of VIGO's hall (in progress)
- Delivery of new epitaxial system (production in progress)

H2 2019
- System start-up
- Technology implementation

2020
- Launch of production

2020 - 2024
- Duration of joint project

KEY EVENTS

// Sales activities

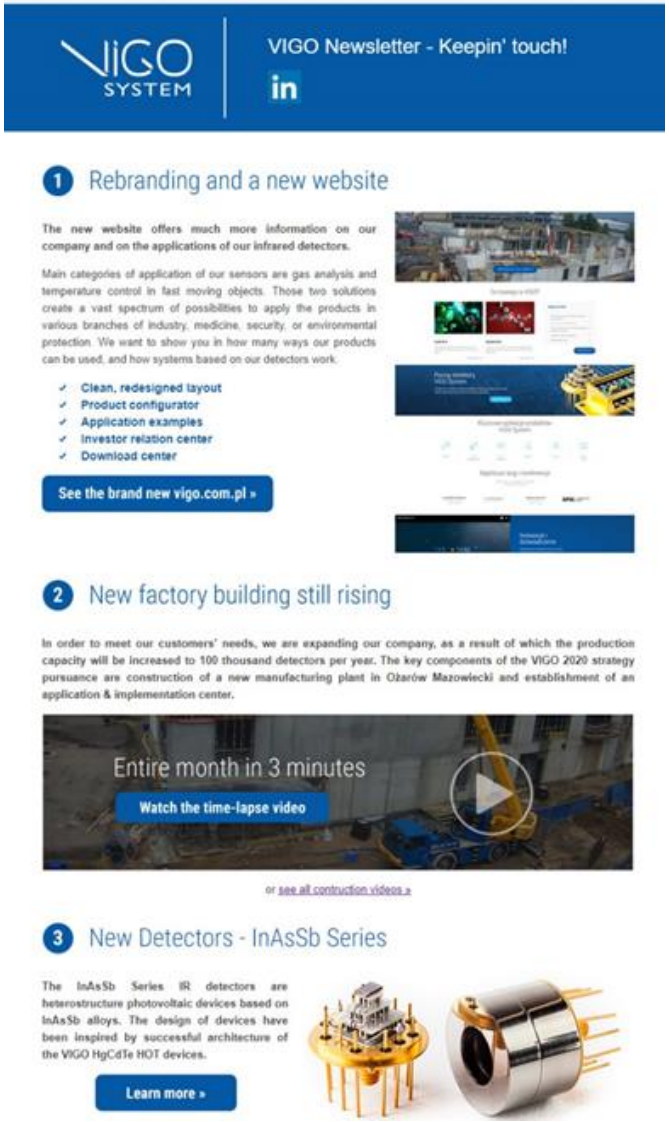
- **Increase of VIGO System's presence globally:**
  - **North America –** presentations at six industry fairs and conferences
  - **Asia –** presentations at five industry fairs and conferences
  - **Europe –** presentations at 11 industry fairs and conferences.
- **Increased cooperation with distributors:**
  - Change in distribution agreements.
  - Introduction of distributor evaluation criteria and presentation of budget and marketing assumptions for subsequent cooperation periods.
  - Organisation of a Distributors Meeting where distributors from around the world learn more about VIGO System products and technologies.
- **VIGO System's activities awarded:**
  - VIGO System nominated for the Crystal Brussels Sprout Prize.
  - Economic Award from the President of Poland.
  - Order of merit for inventions.

KEY EVENTS

// Marketing

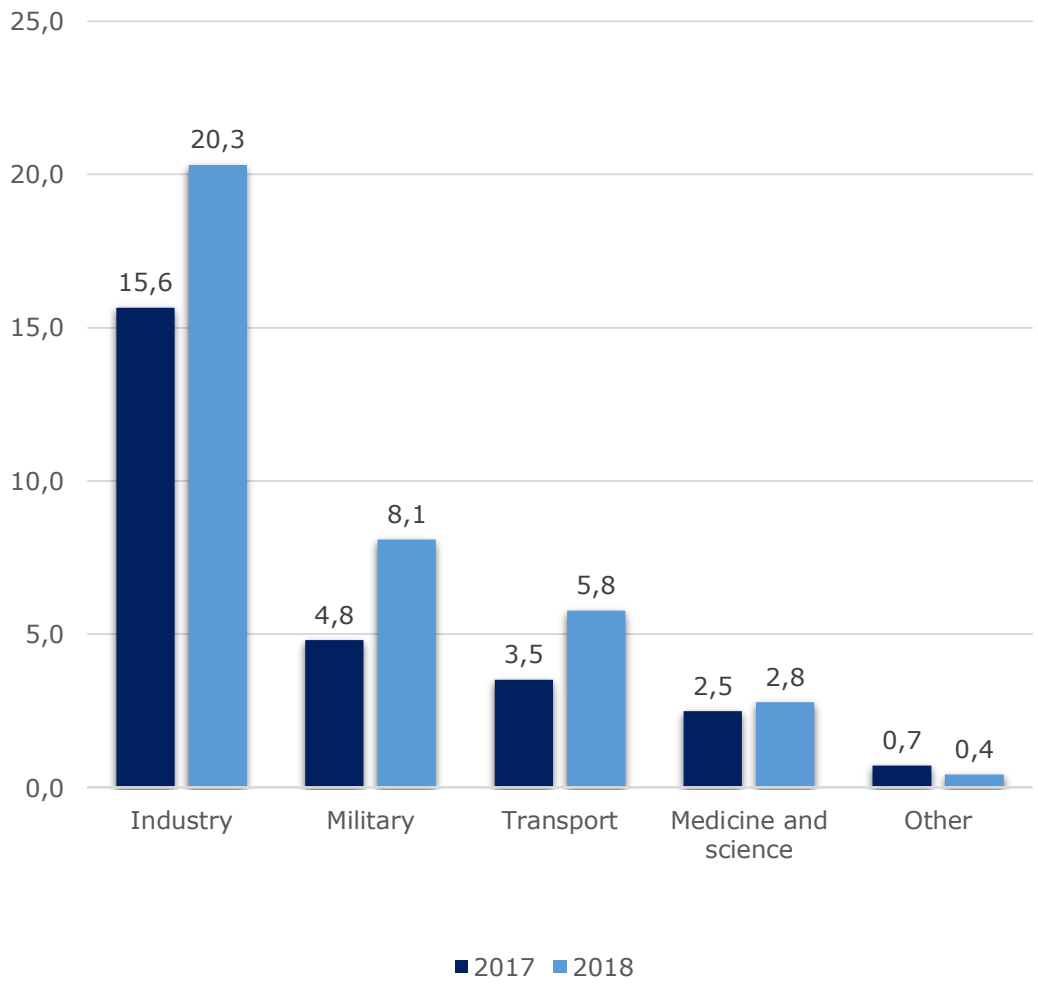
Ramped up marketing efforts across all areas

- promotion during fairs and conferences
- new corporate website
- development of mailing database and launch of newsletter for existing and potential clients
- VIGO News, a quarterly publication containing information on the company's plans, technologies and products
- increased reach in social media (LinkedIn)



FINANCIAL RESULTS

// Revenue by application [PLNm]

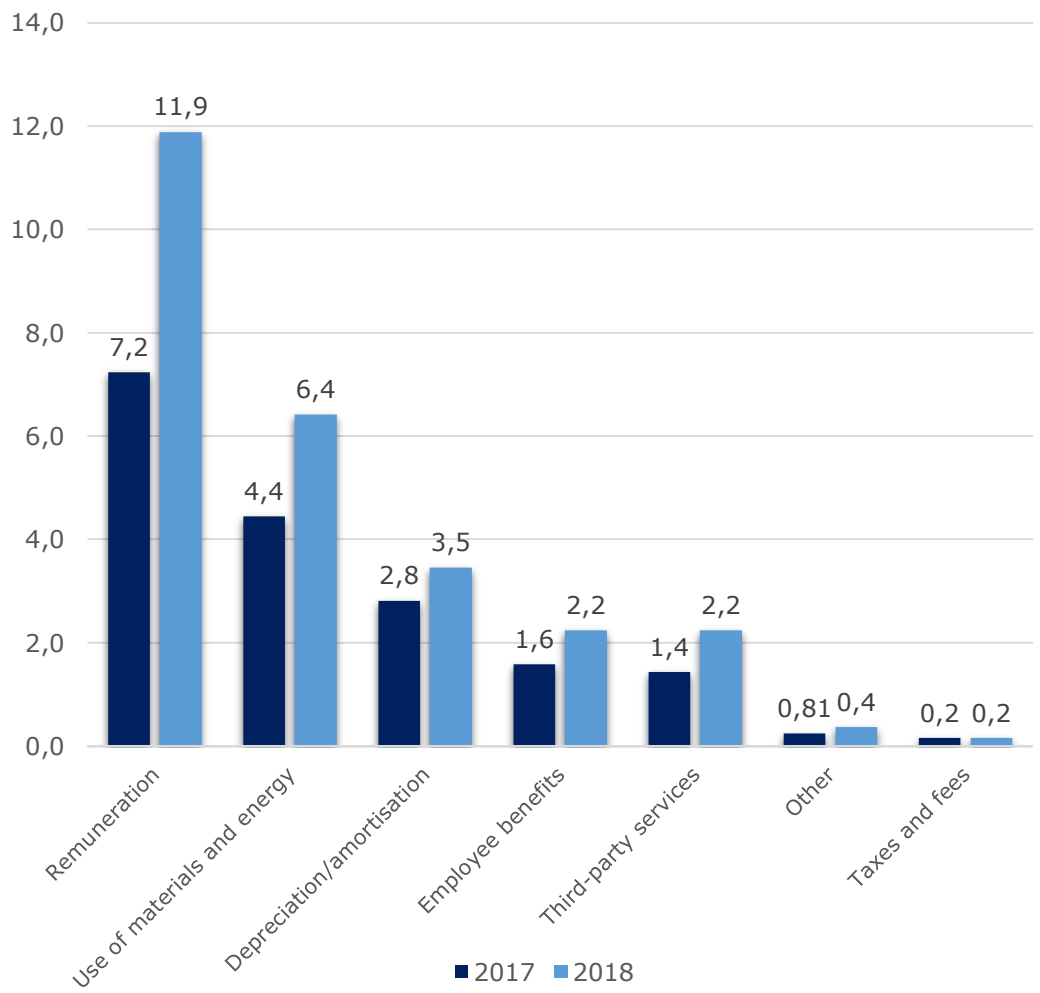


// Commentary

- Significant sales growth in in the **industrial segment** (industrial gas analysers, laser operation control, applications in semiconductor industry, paintwork thickness measurements) - up by nearly 30% (in line with a four-year trend)
- Sales growth in the **military technology** segment by 69% y/y - orders from Safran (formerly Zodiac) and PCO S.A.
- Sales growth in the **railway safety** segment by 64% y/y - mainly to Caterpillar companies, small additional revenue from the Chinese market
- In terms of geography, strong growth in sales to **European** customers (+50% y/y), **Polish** customers (+33% y/y) and **Asian** customers (+47% y/y). The Company noted a decline in sales on the American market (-16% y/y).

FINANCIAL RESULTS

// Operating costs [PLNm]

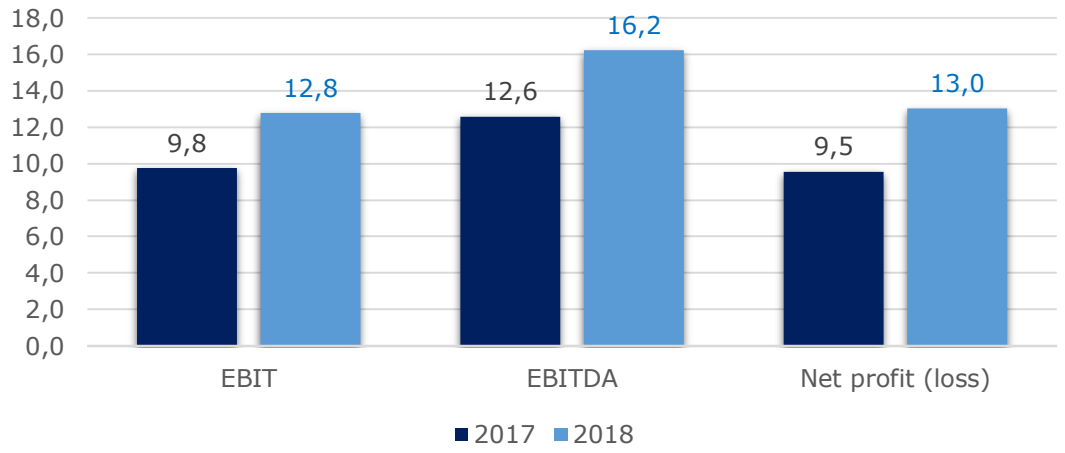


// Commentary

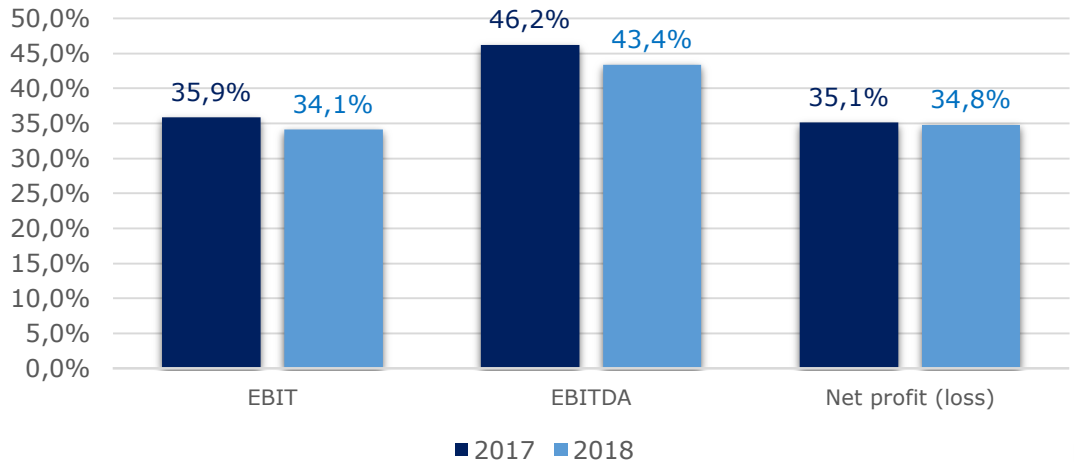
- Growth in **remuneration costs** caused by
  - higher headcount - training production crews for work at the new facility,
  - investments in the quality, logistics, sales and IT teams
  - organisational changes (promotions to mid-tier management positions) and raises
  - one-off bonuses for the Management Board for years 2015-2017 and provisions for future bonuses
- Increase in **materials and energy costs** in connection with higher production volumes and significant growth in energy costs
- Increase in **depreciation** due to completion of certain R&D projects and purchase of new equipment

FINANCIAL RESULTS

// Financial results [PLNm]



// Margins [%]

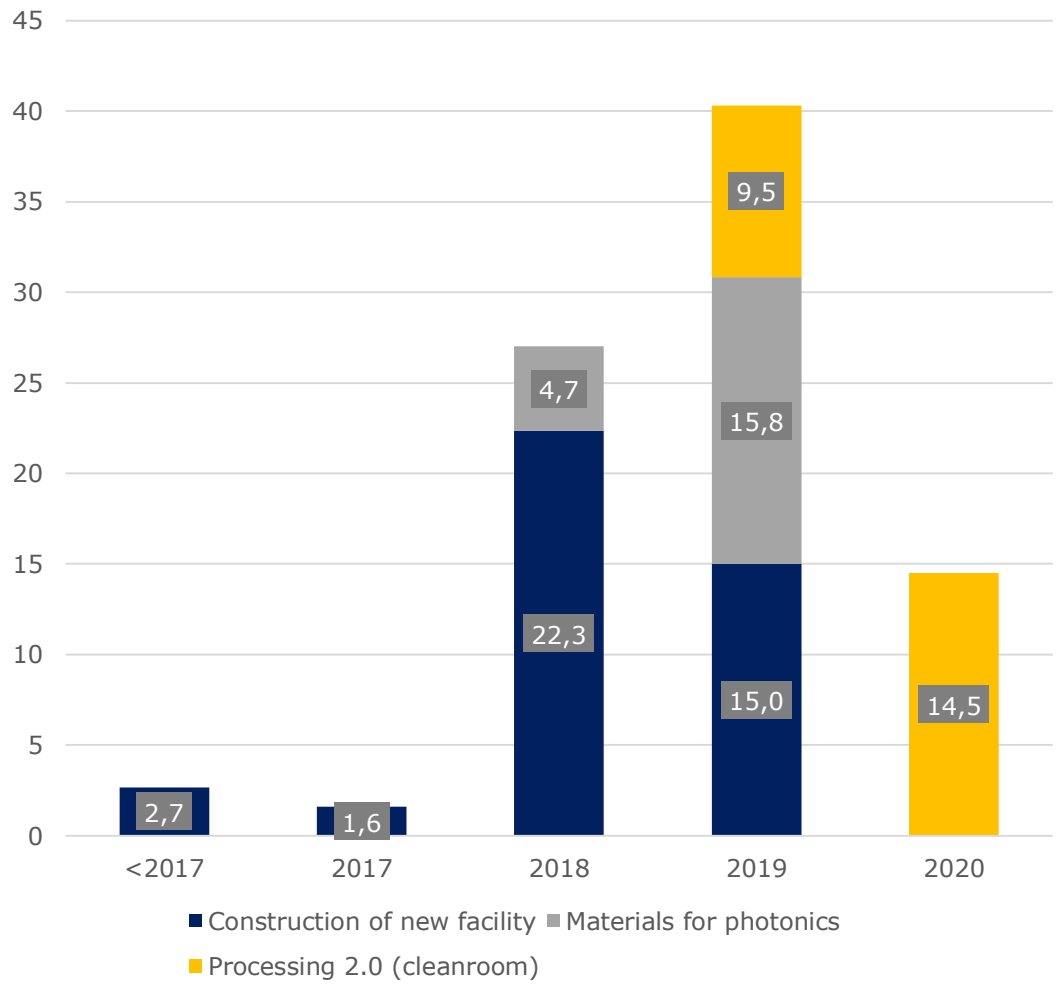


// Commentary

- Significant growth in operating profit (+30% y/y), EBITDA (+29% y/y) and net profit (+36% y/y).
- The revenue growth was accompanied by a slight decline in profitability: gross margin -3.6pp, EBIT margin -1.8pp, EBITDA margin -2.8pp, net profit margin -0.3pp.
- The decline in gross margin in Q4 2018 was caused by higher headcount, payment of additional remuneration to employees and inclusion of certain R&D costs in current result.

FINANCIAL RESULTS

// Investment expenditures [PLNm]



// Commentary

- Investment expenditures within the key investment programmes in 2018 reached PLN 27 million. A further PLN 4.3 million was spent on R&D works and PLN 0.5 million on VIGO Ventures.
- The plan for 2019 sees PLN 40 million in expenditures for the key investment programmes, PLN 6.4 million on R&D and PLN 2-3 million on VIGO Ventures projects.
  - Construction of new facility - expenditures in 2019 - 100% funded by credit, partial repayment using EU funding (technological bonus)
  - Materials for photonics - 80% credit, 20% own funds
  - Processing 2.0 - 60% funded by credit, partial repayment using EU funding (technological bonus)
- The project to build a new cleanroom (Processing 2.0) will be continued in 2020.

PERSPECTIVES

// 2019 - assumptions

- Clear break through the PLN 40 million revenue mark in 2019
  - Military technologies - order from Zodiac Aerotechnics from October 2018 moved to H2 2019, potential for further orders from Zodiac in 2020 and subsequent years, retention of orders from PCO at 2018 level, new clients from Europe
  - Railway safety - significant growth in orders from key customer (Caterpillar), probably larger orders from the Chinese markets
  - Industry - maintain growth dynamic over 20% y/y (mainly semiconductor industry, gas sensing, temperature measurements, paintwork thickness measurements)
- Cost growth expected in 2019:
  - Increased headcount (epitaxy III-V team, quality, sales, logistics, R&D teams - on the condition that funding is kept) to approx. 140 people, growth in costs to approx. PLN 13.5 million
  - Higher depreciation (new building, completed development works) - by approx. PLN 2 million

PERSPECTIVES

// 2019 - Summary

- **Launch of new facility**:
  - Complete transfer of production onto a new level
  - Strict oversight of quality, costs and order delivery time
  - New automated positions
- Launch of **production of semiconductor materials for photonics**
- Launch of construction of new **Cleanroom**
- Launch of development programmes dedicated to **megatrends in sensor technology** as basis for long-term growth
- **Educating and promoting VIGO System technologies**: application notes, technical blog, VIGO News, newsletters, online marketing

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Thank you for your attention

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APPENDIX 1 - SELECTED FINANCIAL DATA

Statement of comprehensive income (PLN 000s)	For the period: 2018	2017
Revenue from sale of products, goods and materials, including:	**37 416**	**27 180**
Cost of products, goods and materials sold, including:	**16 936**	**11 317**
Gross profit (loss) on sales	**20 481**	**15 863**
Selling costs	2 151	1 622
General administrative expenses	7 684	5 466
Other operating revenue	2 776	2 306
Other operating costs	653	1 330
Operating profit (loss)	**12 768**	**9 751**
Finance income	332	66
Finance costs	60	177
Profit (loss) before tax	**13 040**	**9 640**
Income tax	19	98
Net profit (loss)	**13 021**	**9 542**

APPENDIX 1 - SELECTED FINANCIAL DATA

Statement of financial position (PLN 000s)	31.12.2018	31.12.2017
ASSETS		
Non-current assets	**67 417**	**38 024**
Property, plant and equipment	45 031	19 881
Intangible assets	6 755	6 329
Expenditures on development projects	14 368	11 052
Investments in jointly-controlled entities	1 262	762
Deferred revenue, prepayments	1	-
Current assets	**22 796**	**18 398**
Inventory	4 142	3 449
Trade receivables	5 585	2 365
Other receivables	3 564	1 021
Deferred revenue, prepayments	160	211
Cash and cash equivalents	9 345	11 352
TOTAL ASSETS	**90 213**	**56 422**

APPENDIX 1 - SELECTED FINANCIAL DATA

Statement of financial position (PLN 000s)	31.12.2018	31.12.2017
EQUITY AND LIABILITIES		
Equity	**54 221**	**41 203**
Share capital	729	729
Share premium	8 865	8 865
Revaluation reserve	-15	-18
Other capitals	31 620	22 085
Present-period financial result	13 021	9 542
Non-current liabilities	**17 885**	**6 566**
Credit facilities and loans	5 474	-
Deferred revenue	12 026	6 461
Provision for pension benefits and similar	120	105
Other provisions	265	-
Current liabilities	**18 107**	**8 653**
Credit facilities and loans	7 847	-
Other financial liabilities	12	-
Trade and other payables	6 993	862
Other liabilities	718	531
Deferred revenue	1 314	6 571
Provision for pension benefits and similar	421	361
Other provisions	802	328
TOTAL EQUITY AND LIABILITIES	**90 213**	**56 422**

APPENDIX 1 - SELECTED FINANCIAL DATA

Statement of cash flows (PLN 000s)	For the period: 2018	2017
Net profit / loss		
Total adjustments	**-3 947**	**2 784**
Depreciation/amortisation	3 459	2 815
Gains (loss) on exchange differences	-241	317
Interest and shares of profit (dividends)	0	3
Gain (loss) on investing activities	-521	534
Change in provisions	817	-465
Change in inventories	-693	-654
Change in receivables	-5 763	911
Change in liabilities, except loans and credit facilities	544	326
Change in prepayments	-113	51
Change in deferred revenue	-1 477	-1 051
Other adjustments	42	-3
Income tax	-19	-98
Net cash flows from operating activities	9 074	12 326
Inflows	1 899	4 024
Expenditures	-26 474	-9 062
Net cash flows from investing activities	-24 575	-5 038
Inflows	**13 335**	**-**
Credit facilities and loans	13 335	-
Expenditures	-82	-6 420
Dividends and other payments to owners	-	-6 007
Repayment of credit facilities and loans	-	-410
Interest	-82	-3
Net cash flows from financing activities	13 253	-6 420
Total net cash flows	**- 2 247**	**870**
Balance sheet change in cash, including	**-2 008**	**553**
- change in cash from exchange differences	-240	317
Cash at the beginning of period	**11 580**	**10 709**
Cash at the end of period	**9 333**	**11 580**

APPENDIX 2 - KEY DETECTOR APPLICATIONS

// Railway safety

- **SAFETY** – sensors installed between the tracks for monitoring the temperature of both external and internal wheel bearings and brakes. The system provides information on absolute, relative and differential temperature values for suspension elements in real time.
- **TRAIN FIRE DETECTION** – systems installed at gates over electric traction for detecting wagon fires.

// Environment

- **EMISSION MONITORING** – monitoring the level and composition of industrial gases and gases from power plants, incineration plants, wastewater treatment facilities, watercraft and vehicles.
- **AIR QUALITY MONITORING** – detection of harmful substances in trace amounts.

APPENDIX 2 - KEY DETECTOR APPLICATIONS

// Industry

- Methane detection in shale gas deposits
- Detection of gas pipeline leaks
- Optimisation of fuel mixtures for engines
- Detection of aerosol leaks
- Control of paintwork thickness
- Control of industrial processes (e.g. metals processing)

// Science and medicine

- **DENTISTRY** – touch-free detection of decay at very early stage.
- **BREATH ANALYSIS** - detection of illness markers in exhaled air
- **SUPPORT FOR LASER SURGERY** – commanding surgical lasers

APPENDIX 2 - KEY DETECTOR APPLICATIONS

// Defence industry

- **SMART MUNITIONS** – deep-penetrating munitions designed to destroy armoured vehicles. Each missile head contains an infrared detector capable of detecting tanks or other military vehicles, significantly improving strike rates.
- **EARLY LASER WARNING SYSTEMS**– designed to detect lasers from sights or laser lighting to protect military vehicle crews.

// Security

- **EXPLOSIVES AND SMUGGLING DETECTION** - infrared detectors in combination with dedicated lasers and optics can be used to detect explosives, drugs and other smuggled items (e.g. cigarettes).
- **FORENSICS** – detection of improvised explosive devices, provision of quick and precise information on the type of materials used.