

E-Mobility

“Pure Play”

Investor/Analyst Presentation

Roadshow: H1 2018 – Group Interim Report

V+LTABOX®



Executive Summary: Highlights H1/2018

↗ € 18.1 million ^{↗ 71 %}

Revenues (previous year: € 10.6 m)

↗ 144 employees ^{↗ 85 %}

(June 30, 2017: 78)

On the way to a new level

↗ € 1.7 million ^{↗ 758 %}

EBITDA (previous year: € 0.2 m)

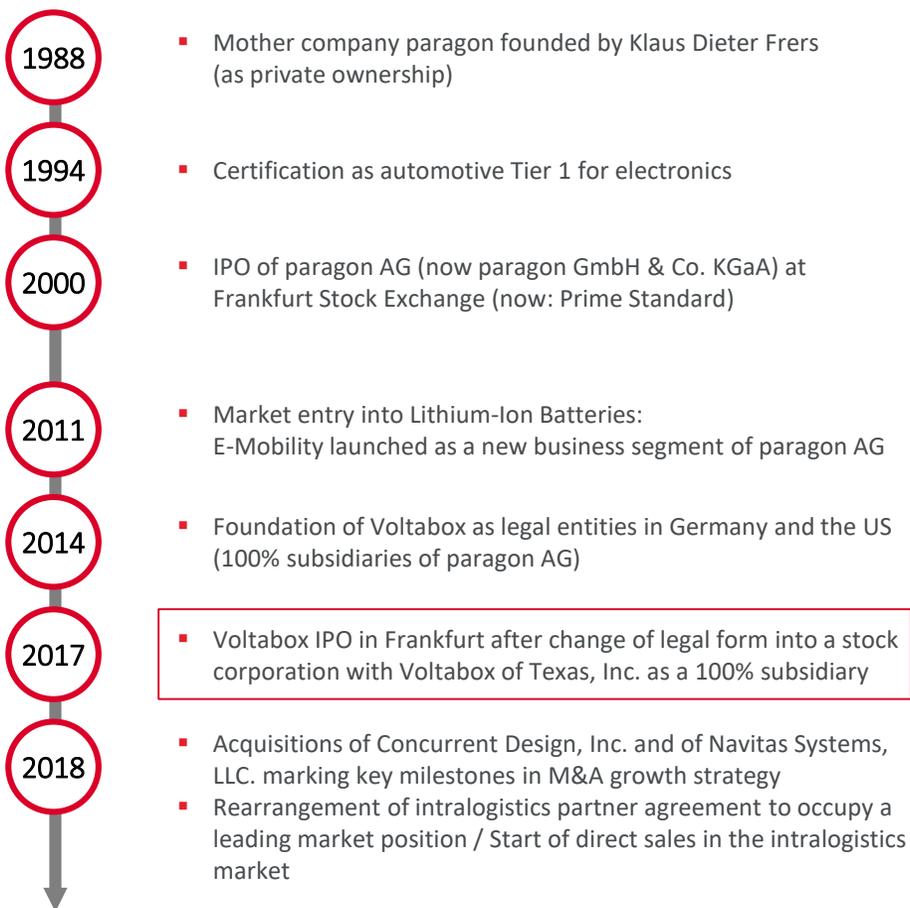
↗ € 0.1 million

EBIT (previous year: € -0.7 m)

Agenda

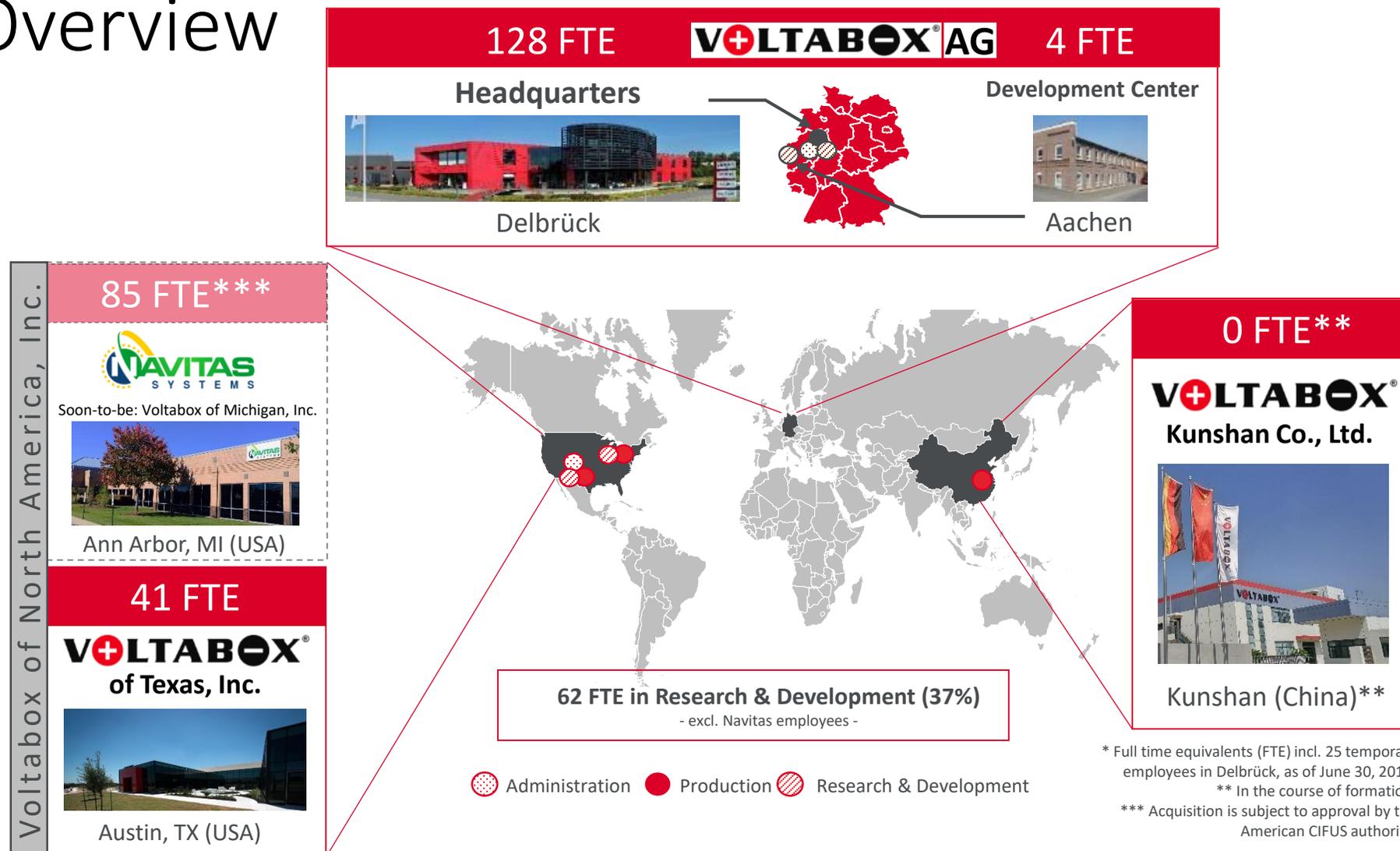
- Introduction of Voltabox
- Business Overview
- Financials

Corporate Development



Location Overview

- With 169 FTE*, technology hubs and state-of-the-art production facilities, Voltabox is well positioned to grow its business on a global scale.



Management Team

Management Board



Jürgen Pampel, CEO

- Former Head of Electromobility business unit at paragon
- Various leadership positions at paragon since 2004
- Design Engineering graduate



Andres Klasing, CFO

- Joined Voltabox in 2017
- Former Head of Accounting & Controlling at paragon since 2016
- Various finance positions for Bertelsmann group
- Business administration (VWA) / Engineer (FH) graduate

Supervisory Board



Klaus D. Frers, Chairman

- Founder / majority owner & CEO of Automotive Tier 1 paragon GmbH & Co. KGaA
- Former CEO of Voltabox
- Received numerous awards for entrepreneurial activities
- Leadership positions at AEG-Telefunken and Nixdorf Computer
- Mechanical Engineering graduate



Prof. Dr. Martin Winter, (Deputy Chairman)

- Professor at the Institute of Physical Chemistry at the University of Münster
- One of the most renowned German scientists in the energy-storage field with a focus on Lithium-Ion batteries



Hermann Börnemeier

- Shareholding director of Treu-Union Treuhandgesellschaft mbH, a tax consultancy
- Long-term advisor to the parent company paragon GmbH & Co. KGaA

Agenda

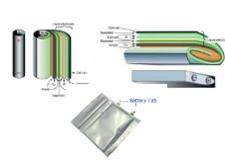
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E-Mobility Pure Play

Structural representation of a battery system



- Separator
- Anode
- Cathode
- Electrolyte
- Cell Housing
- Insulation Strips



- Cylindrical cells
 - Prismatical cells
 - Pouch cells
- in different Li-Ion chemistries
- LFP
 - NMC
 - LTO
 - (NCA)



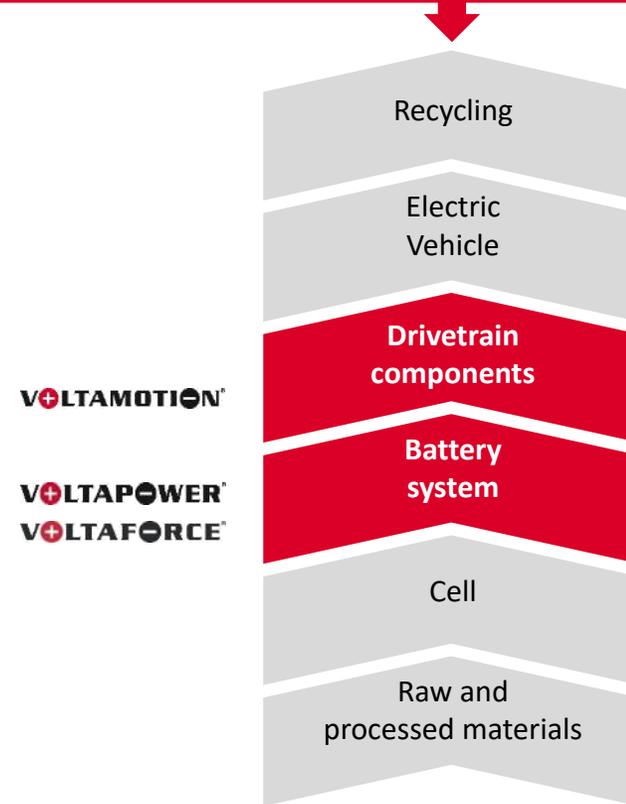
- Module cases with integrated
- Cooling Devices
- BMS Slave Circuit Board
- Sensors
- Wiring Loom
- Lids
- Sealings
- Rupture Discs

in various low and high voltage versions



- Robust housing with integrated fixing points
- Master ECU
- Data interfaces
- Power switchers
- DC/DC converters
- Compensators
- Fuses / Resistors
- Climate systems
- (Chargers, cable rewinds)

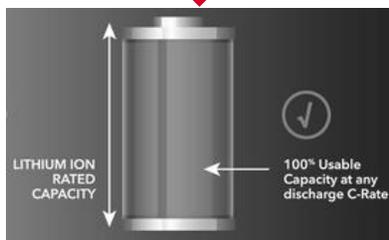
E-Mobility Value Chain



The sweet spot of E-Mobility

Li-Ion vs. Lead-Acid Technology

Li-Ion Technology



Additional advantages:

- No memory effect (opportunity charging)
- Very low self-discharge
- No maintenance
- Full functionality at low temperatures
- Optimum control and (remote) monitoring

Up to 240 Wh/kg	Energy density	40 Wh/kg
Up to 95%	Charging efficiency	Up to 70%
Up to 30,000 cycles at 80% DOD	Cycle life	1,200
Up to 80% in 6 min (10C)	Fast charging	50% in 3 hrs.
Zero emissions	Emissions	Gassing & water loss

Lead-Acid Technology



Li-Ion-Battery Technology Overview

Available Li-Ion Cell Chemistry

- Li-Ion chemistries are replacing the leading battery technologies of the past like Nickel-Metal Hydride, Nickel Cadmium and Lead-Acid
- Future technological developments are also carefully tracked and evaluated by Voltabox
- New lithium based technologies like Li-Air, Li-Sulfur and Lithium Solid State cells are expected to achieve market readiness around 2023

Cell Supplier Base



Li-Ion Cell Chemistry Types used by Voltabox

Lithium Iron Phosphate (LFP)

- Nominal cell voltage: 3.2 V to 3.3 V
- No risk of thermal runaway (in case of an accident)
- High cycle stability of up to 4,000 cycles at 80% DoD
- Large operating temperature range -20/+ 55 °C
- High energy density (125 Wh/kg and 292 Wh/l)
- Using only a small portion of rare earths

Nickel Manganese Cobalt (NMC)

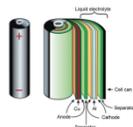
- Nominal cell voltage: 3.6 V to 3.7 V
- High cycle stability of at least 6,000 cycles at 80% DoD
- Great operating temperature range of -30/+ 60 °C
- High energy density (136 - 230 Wh/kg and at least 309 Wh/l)

Lithium Titanium Oxide (LTO)

- Nominal cell voltage: 2.3 V
- Highest cycle stability of up to 30,000 cycles at 80% DoD
- High level of safety thanks to LTO anode
- Great operating temperature range of -30/+ 55 °C
- Energy density of 96 Wh/kg or 202 Wh/l
- Great SoC range useable with the highest performances

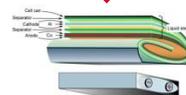
Agnostic Approach to Cell Types

Cylindrical



A spirally wound design (jelly-roll). Designated by size, e.g. 26650 cylindrical battery (Diameter: 26mm, length: 65.2 mm; code for cylindrical shape: 0)

Prismatic



A prismatical design indicate a flat battery design. The stacks can be wound (as shown in the photo) or stacked (with alternating cathode/separator/anode structure). The stacks are usually inserted into rigid casing to form prismatic

Pouch



Rather than rigid metallic casing, conductive foil-tabs are welded to the electrodes and seal the battery fully. The tacks inside can be wound or stacked. Swelling and gassing could be a concern for pouch cells

Cell Package	Impedance	Thermal	Tabbing	Cell Cost	Battery Cost
Cylindrical	Poor	Poor	Minimal	Medium	High
Prismatic (Wound)	Poor	Poor	Minimal	Medium	Medium
Prismatic (Stacked)	Good	Poor	High	High	Medium
Pouch (Wound)	Poor	Good	Minimal	Medium	High
Pouch (Stacked)	Good	Good	High	High	High

Source: IDTechEx

Modular Development & Production Approach*



NMC 24V standard



NMC 24V air-cooled



NMC 24V water-cooled



NMC 48V standard



NMC 48V air-cooled



NMC 48V water-cooled



NMC 103V water-cooled



NMC 36V standard



NMC 40V standard



NMC 40V water-cooled



LTO 48V standard



LTO 83V standard



LTO 83V long



LFP 24V standard



NMC 48V Pouch



3x8 LFP round cell module



4x9 LFP round cell module

* Excerpt from product portfolio.

Li-Ion Battery System Supplier for Industrial Applications

- **Many years of experience in development and production of electronic components**
 (via parent company paragon GmbH & Co. KGaA)
 - **Exceptional integration power**
 (*experience in automotive interfaces*)
 - **Mindset focus on applications**
 (*authentic added value solutions*)
 - **Superior realization processes**
 (*short time-to-market with modular kit*)



Market Penetration by Voltabox



Today:

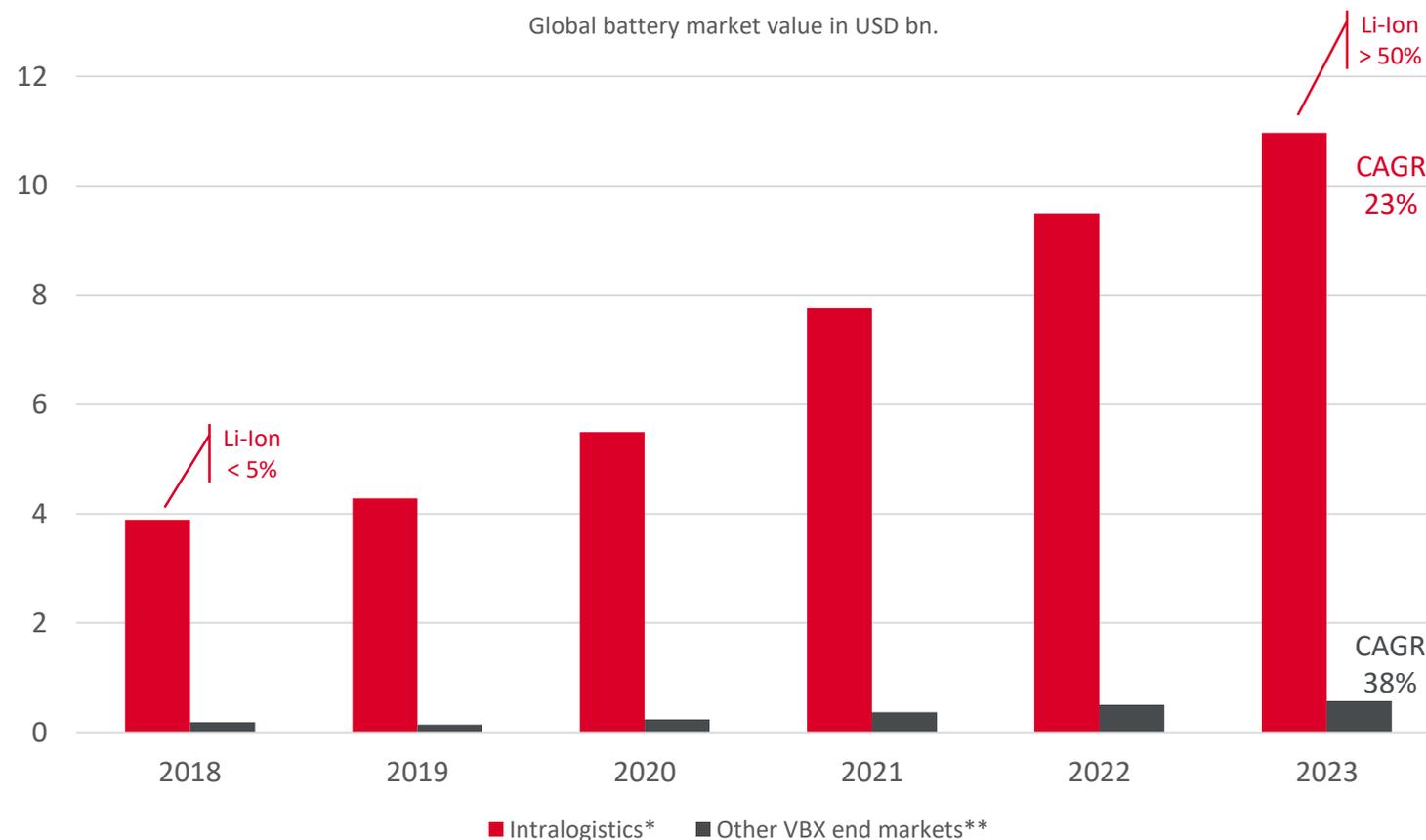
- Q2 2014: First major US-contract for battery systems in trolleybuses
- Q2 2016: Exclusive strategic partnership with leading mining equipment provider
- Q4 2016: Expansion of intralogistics market with batteries for Automated Guided Vehicles
- Q3 2017: First selected mass market entry with starter batteries for motorbikes
- Q4 2017: First strategic partnership in the area of agriculture and construction
- Q1 2018: Acquisition of the engineering services provider Concurrent Design
- Q2 2018: Strategically important rearrangement of intralogistics partner agreement
- Q2 2018: Takeover of Navitas systems and entry into production of customized battery cells

Significant future growth prospects backed by strong 60-month order backlog of € 740 million* weighted 100 percent

* As of June 30, 2018

Market Dynamics

- Overall usage of batteries will increase due to E-mobility mega trend
- Ongoing substitution of lead acid batteries resp. diesel generators by lithium-ion batteries in occupied submarkets
- 11% global market growth expected for battery systems in current Voltabox end markets in 2018
- Intralogistics submarket expected to show fastest adoption of Li-Ion technology due to TCO advantages
- Market penetration of Li-Ion expected to exceed 50% of new sales by 2023 in intralogistics



Source: idTechEx (2017)

* Partly Lead-Acid and Li-Ion.
 ** HEV/PHEV Buses over 5 meters, mining vehicles, agriculture & construction, motorcycles.

New Agreement for Targeted Market Leadership

In June 2018 Voltabox rearranged the strategically important agreement with Triathlon for a close partnership in order to supply the market with innovative and technologically advanced Li-Ion batteries.

Early implementation of a differentiation strategy with three essential manufacturing and sales players: Voltabox, Triathlon, Navitas

Ensuring a fast market penetration at Voltabox' own pace in both Europe and the USA in order to occupy a leading market position

Creating competitive advantages via transfer of technology know-how

Creating market entry barriers for competitors by securing access to exclusive system components

Time and cost advantages compared to own development of system components

Additional access to the (shared) margins from the end customer business on the system level



Voltabox Growing Into a New Dimension

**New facilities,
more sites**

- Tripling of production area (esp. in USA) and space expansion for R&D as well as administrative functions
- Foundation of Voltabox Kunshan Co., Ltd., Kunshan, China (3,400m²)

**Increase of resources
and brilliant minds**

- R&D staff to increase to a total of 70 employees in FY 2018
- Further setting up of the R&D site in Aachen

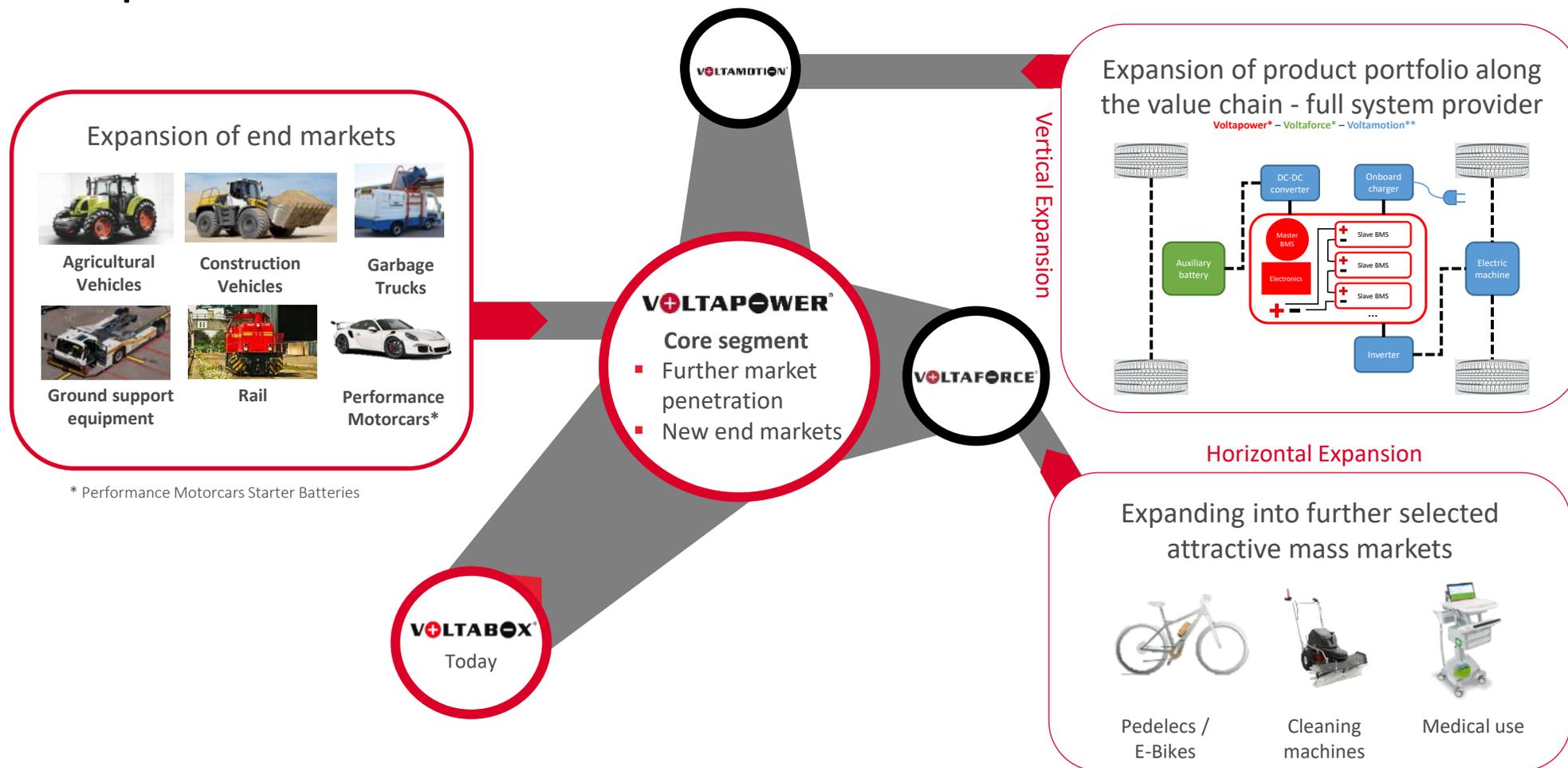
**Innovative products,
new markets**

- Expanding product portfolio into selected mass markets
- Entering into new market segments (i.e. airport ramp, rail, pedelecs/E-Bikes)

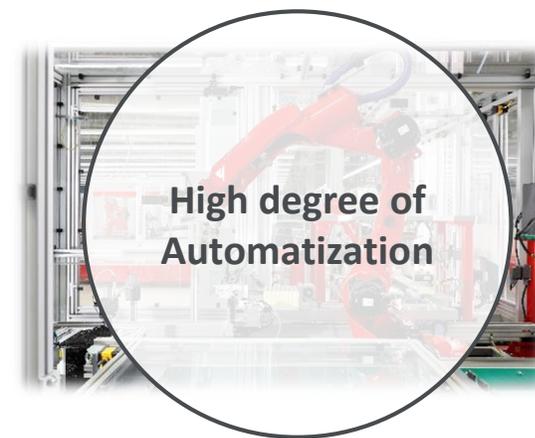
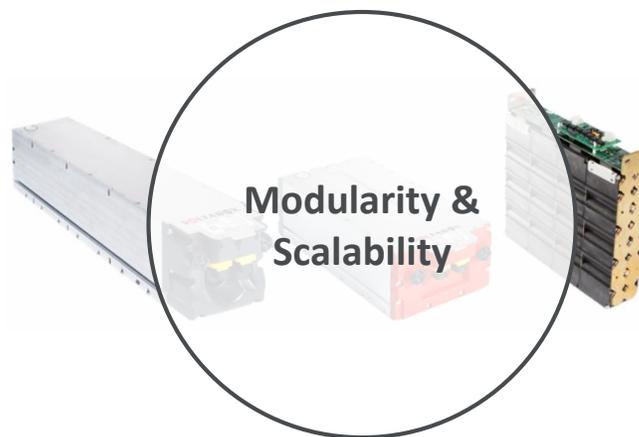
**Pushing organic growth
by M&A**

- Working on the integration of acquired companies (esp. Navitas Systems) and on further precisely fitting M&A opportunities, e.g. to accelerate market penetration

Multiple Growth Paths



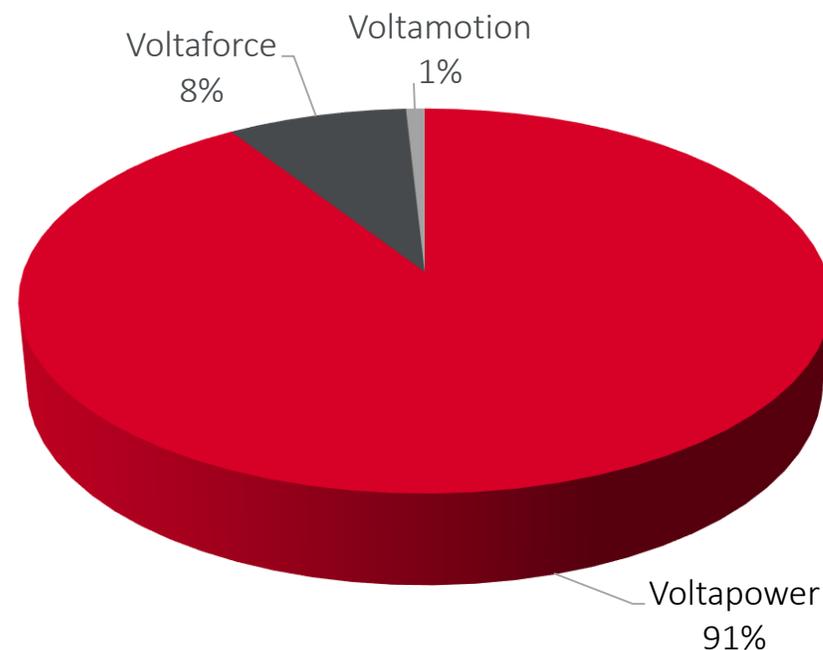
USPs of Voltabox



60-Months Order Backlog (Q2 2018 – Q2 2023)

- Total 60-months order backlog amounts to more than € 1bn*.
- Thereof approx. 74% signed orders and framework agreements (weighted with 100%)
 - Estimated order backlog is weighted according to the expected lifetime and the probability of occurrence
 - Serves as base for planning
 - Evaluation system in place since inception in 2011

60-months order backlog with 100% weighting as of H1/2018



* As of Jun. 30, 2018

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Key Figures for the Group from H1 Report 2018

Strong Financial Background

- Equity ratio of 91.5 % (equity: € 154.9 million)
- Liquid funds of € 74.2 million
- Balance Sheet Total: € 169.2 million

Dynamic Growth in all areas

- Group revenue increased 71 % to € 18.1 million
- FTE up 45.5 % to 144 (excl. 25 temporary employees)

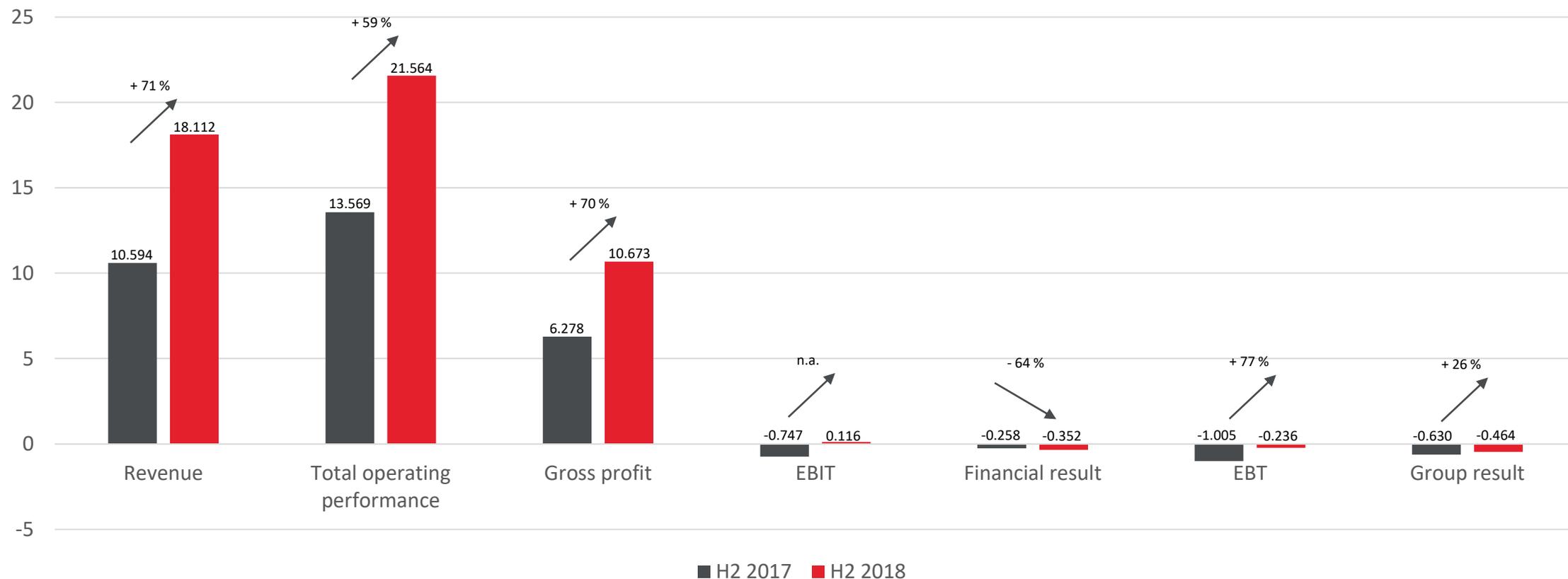
Profitability on track

- EBITDA increased 758 % to € 1.7 million
- EBIT margin at 0.6 %

Successful Execution of Growth Strategy

- Entry into direct sales activities in Intralogistics
- Auspicious Takeover of Navitas Systems for € 37 million incl. excellent market access in the US
- Investments of € 3.5 million as expected

Top Line Growth with Increasing Profitability



Cash Flow Statement

- Large increase in trade receivables owing to very good business development in the Voltapower segment and sales financing support for main Voltabox partner (limited to 2018)
- Other non-cash expenses increased due to currency effects
- Significant decrease in trade payables and other liabilities of € 7,798m
- Slightly increased amortization of noncurrent fixed assets

Free
Cashflow:
€ -28.1m
(Previous year:
€ 1.9m)

€ -24.6m

(Previous year: € 4.4m)

Cash flow from
operating activities*

€ -3.5m

(Previous year: € -2.5m)

Cash flow from
investment activities*

€ -0.3m

(Previous year: € -0.5m)

Cash flow from
financing activities*

* FY 2017

New R&D Capabilities: Takeover of Concurrent

Concurrent Design is an engineering services provider located in Austin, Texas with proven and long-standing expertise in R&D

More than **20** highly skilled
employees,
mostly engineers, software developers &
project managers

Expertise from more than **1,700**
successfully completed **projects**

Multiple boost of
velocity for **Voltabox**
by additional resources



On Way to Market Leadership: Acquisition of Navitas



21st CENTURY
Lithium
Alternative

- Profitability broadly similar to Voltabox
- Expected revenues of around €25m in 2018

Voltabox took over Navitas Systems for €40m in order to accelerate market penetration in the market segments of particularly rapid growth.

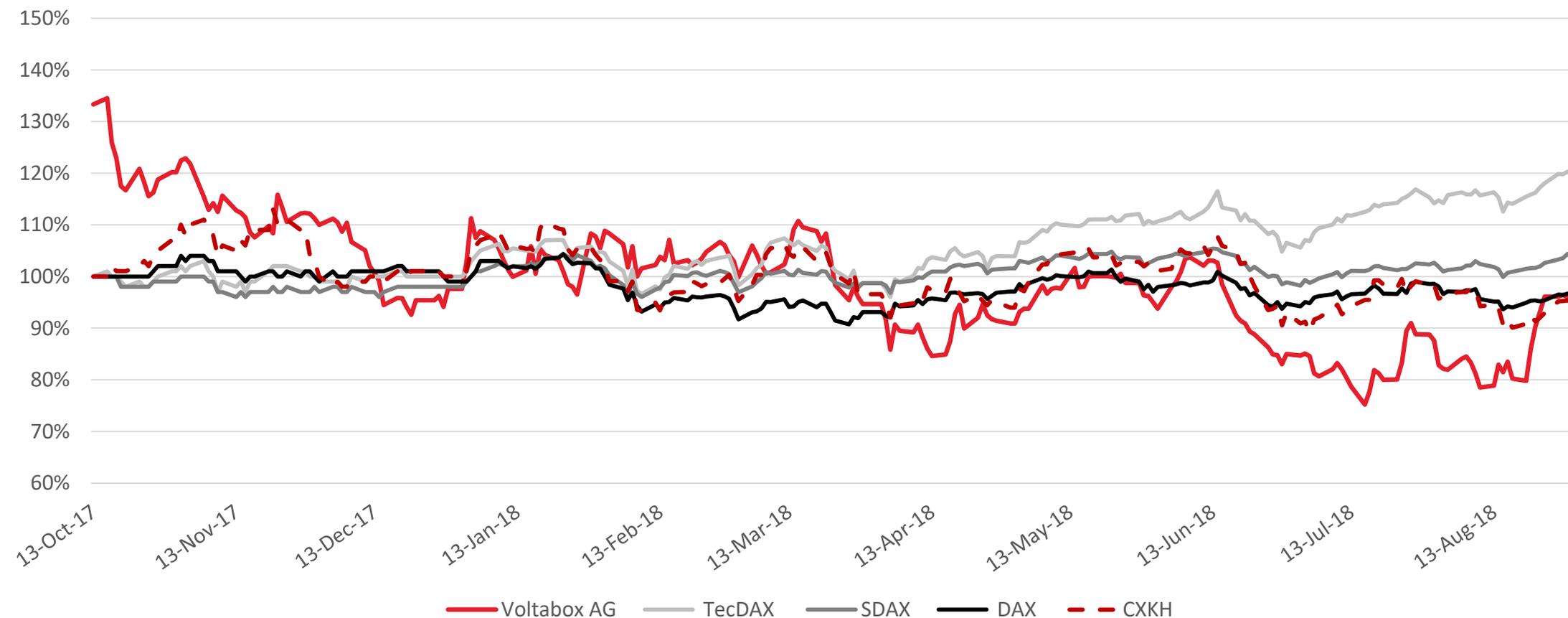
With the acquisition, Voltabox have come a **great deal closer** to the goal of becoming the **global market leader** in the field of **battery systems for intralogistics.**

Navitas has established a **market-leading position** in the region with its **“Starlifter” batteries.**

Navitas employs a total of **85 people** - including **top experts** with **in-depth cell know-how** with an A123 background.

Navitas opens up **new applications** and thus **completely new prospects** in the North American market.

Performance of Voltabox Share (VBX)



Updated Forecast 2018

↗ € 65-70 m

Revenues 2018 (e)*

* In the course of the acquisition of Navitas System – expected initial consolidation in Q3 2018

↗ ca. 7 %

EBIT margin 2018 (e)**

**Considering € 2m add. expenses from rearrangement of intralogistics partner agreement

Forecast and Analyst Consensus

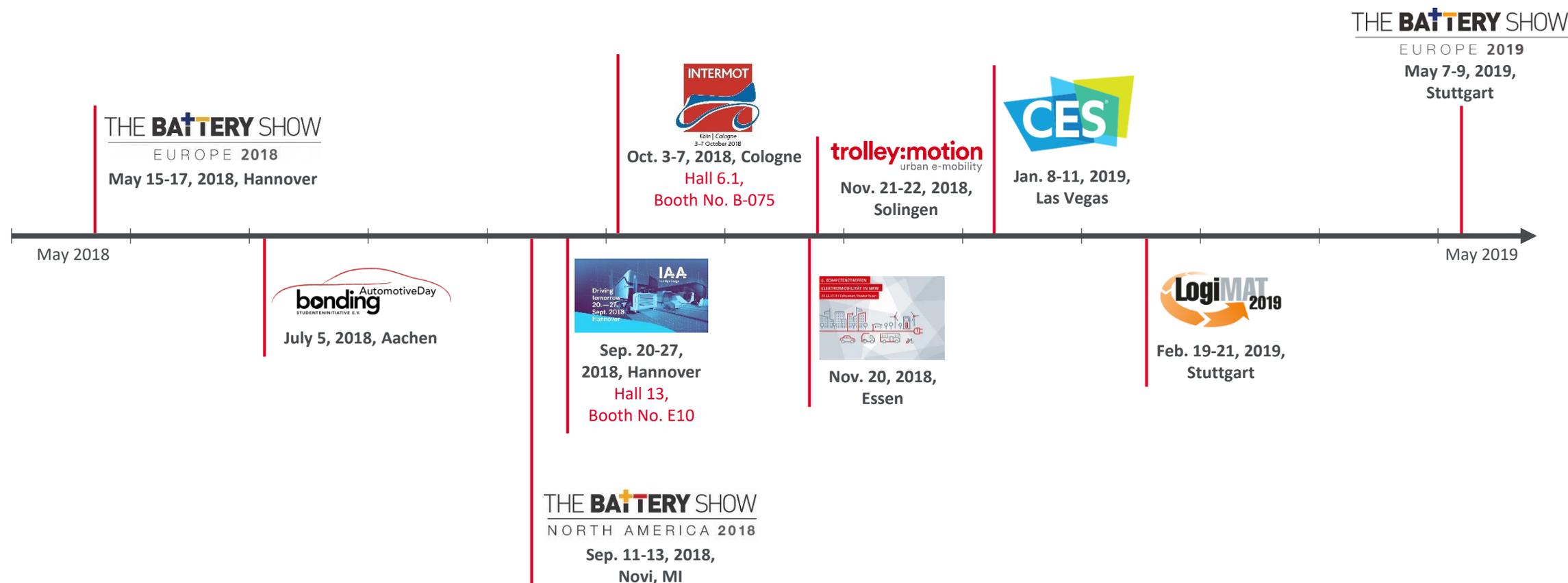
Financial performance indicators of Voltabox AG	2017		2018	
	Forecast	Results	Forecast (old)	Forecast (new)
[in € million / as indicated]				
Group revenue	25	27*	Approx. 60	Approx. 65-70**
EBIT margin	Slightly positive	2.1%	Approx. 10%	Approx. 7%***
<i>Analyst estimates</i>	2017		2018	
<i>Group revenue</i>	25.5		58.2	
<i>EBIT margin</i>	0.8%		10.1%	

* Thereof around € 2 million with parent company paragon AG (now paragon GmbH & Co. KGaA)

** In the course of the acquisition of Navitas System – expected initial consolidation in Q3 2018

*** Considering € 2m add. expenses from rearrangement of intralogistics partner agreement

Voltabox on tour – Trade fairs and exhibitions

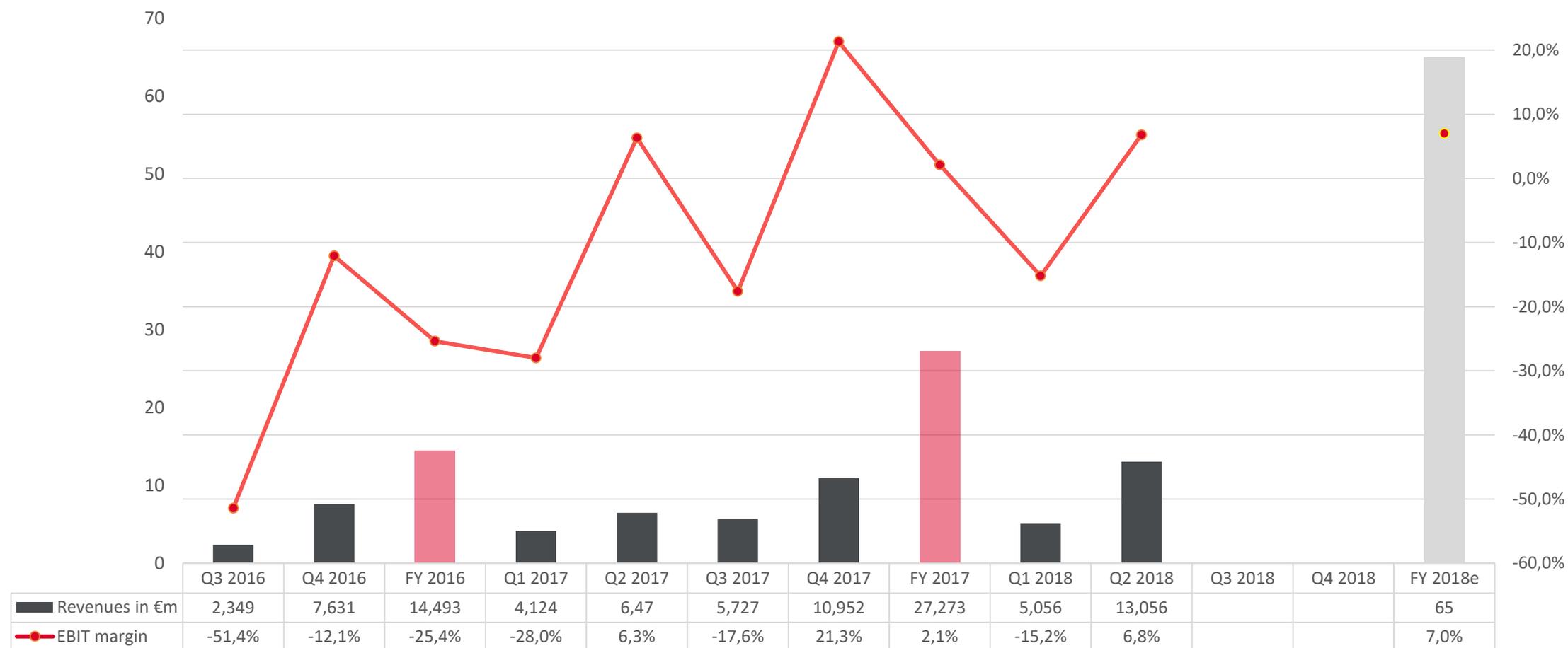


Financial Calendar

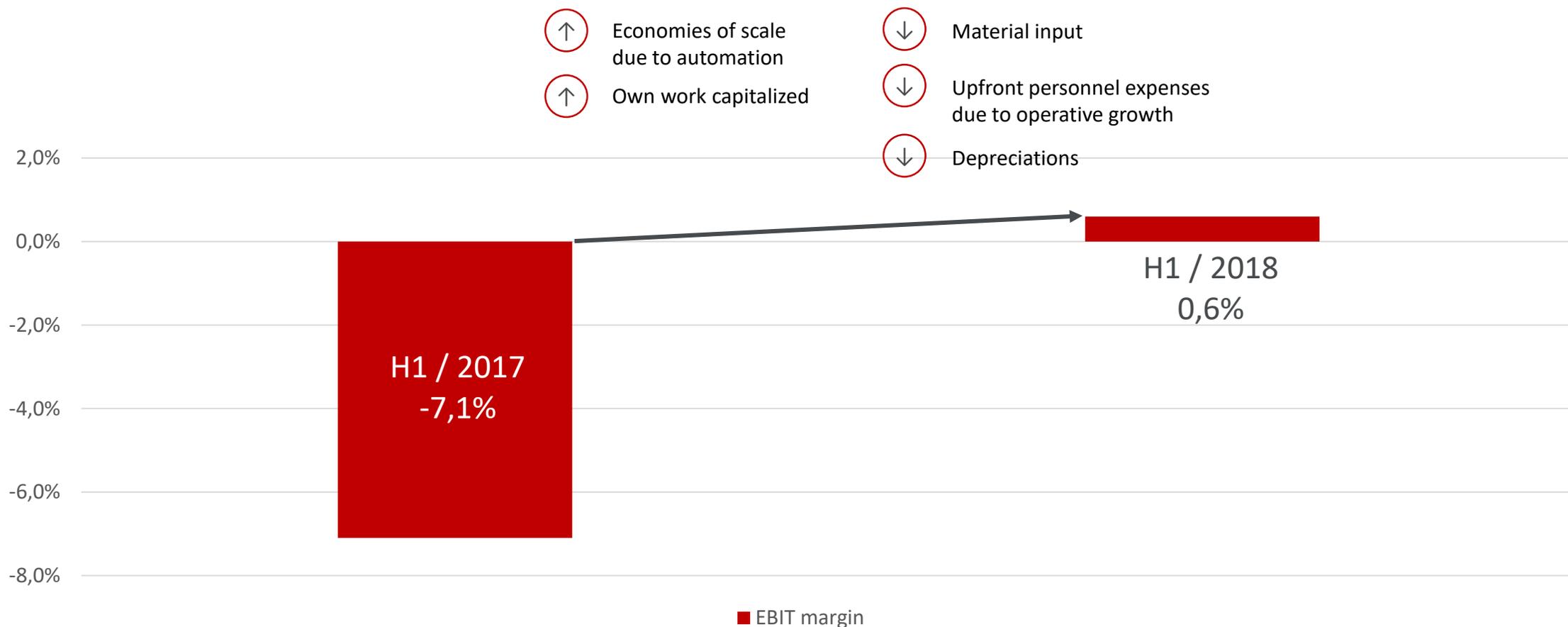
- Jan. 11/12, Oddo Forum, Lyon
- Feb. 1, Bankhaus Lampe German Corporate Conference, London
- Feb. 21/22, 12. Oddo-BHF German Corporate Conference, Frankfurt am Main
- Mar. 13, Annual report 2017
- Apr. 18-20, Bankhaus Lampe Deutschlandkonferenz, Baden-Baden
- May 8, Interim release as of March 31 – 3 months
- May 9, Annual general meeting, Delbrück
- May 16, Berenberg Investor Forum at The Battery Show, Hannover
- Jun. 7, quirin Champions 2018, Frankfurt am Main
- Jun 21/22, Berenberg Pan-European Discovery Conference
- Aug. 21, Interim release as of June 30 – 6 months
- Sep. 3/4, Equity Forum Herbstkonferenz, Frankfurt am Main
- Oct. 25, Berenberg Discovery USA Konferenz, New York
- Nov. 13, Interim release as of September 30 – 9 months
- Nov. 26-28, Deutsches Eigenkapitalforum 2018, Frankfurt am Main

Financials - Appendix

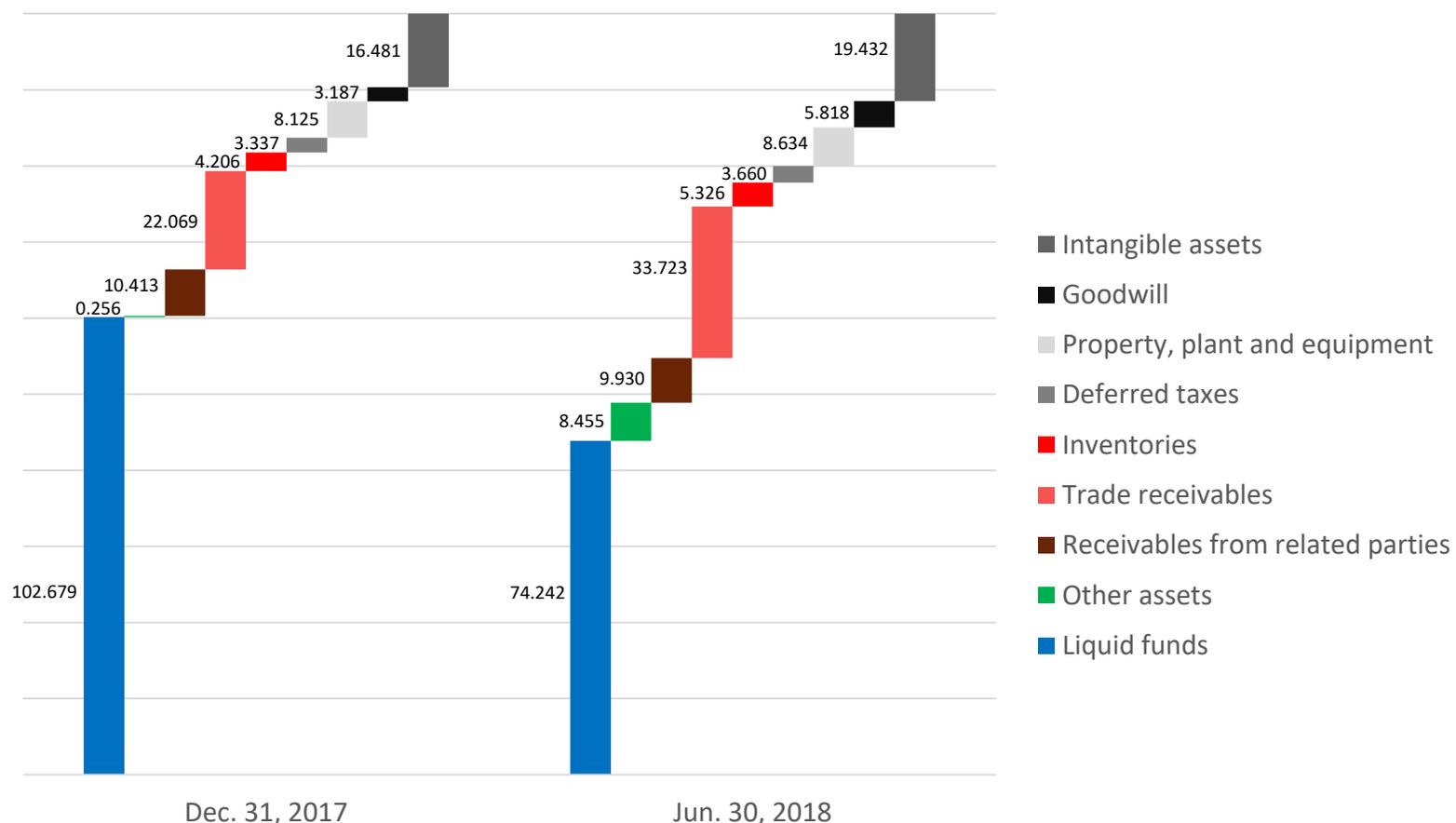
H1/18: Revenues & EBIT Margin development



H1/18: Key Factors Profitability Development



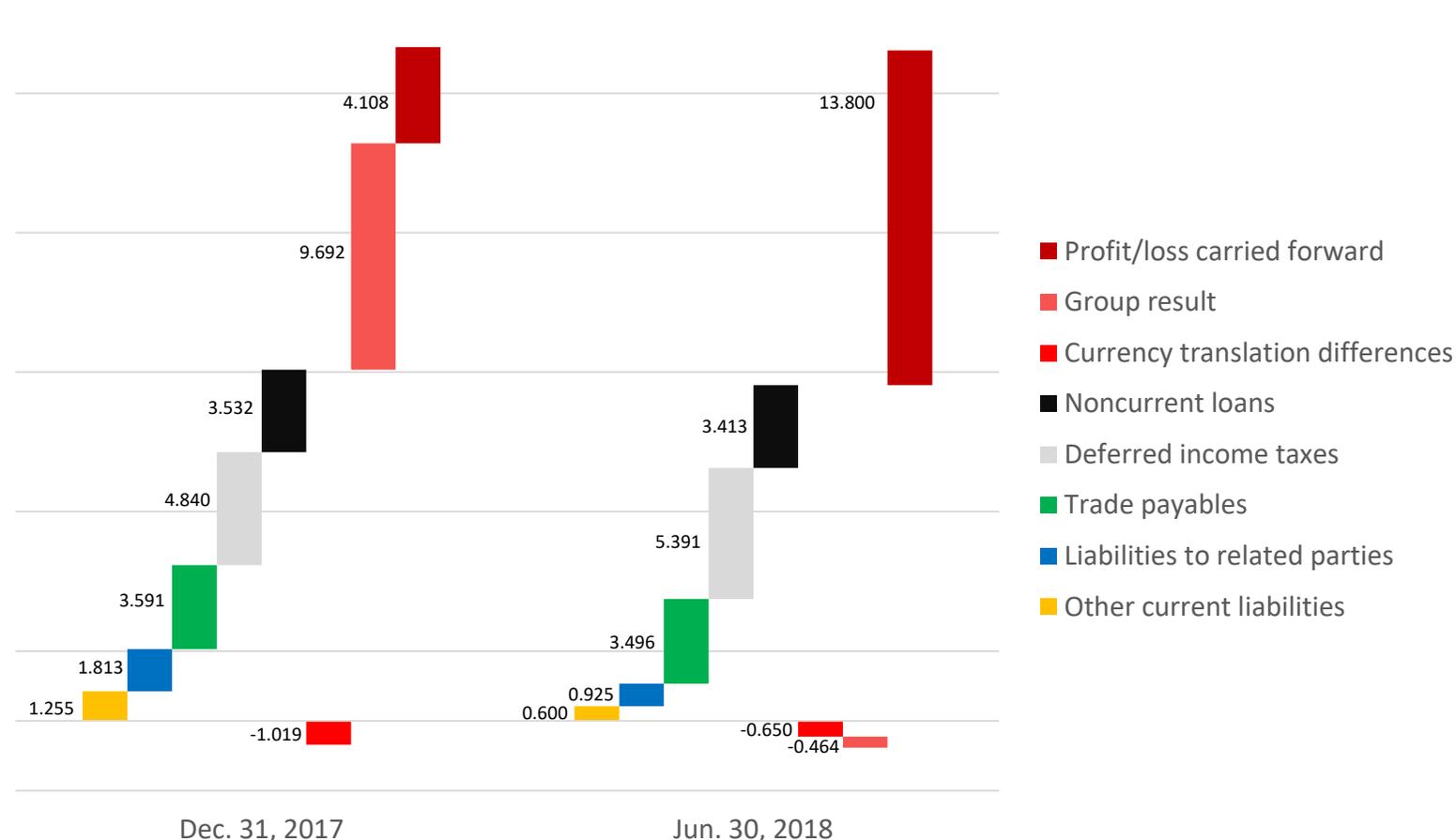
H1/18: Significant Changes of Group's Assets



- Increase in noncurrent assets by € 6.4m
 - Intangible Assets up € 3.0m owing own work capitalized
 - Increased Goodwill as a consequence of the Concurrent Design acquisition

- Decrease in current assets by € 7.9m
 - Increase in Trade Receivables about € 11.7m due to sales supporting activities in intralogistics
 - Other assets up € 8.2m due to the capitalization of the one-time investment subsidy for capacity expansion granted by Voltabox due to the revised cooperation agreement with the partner Triathlon
 - Liquid funds went down about € 28.4m mainly through operating expenses in connection with the dynamic growth strategy

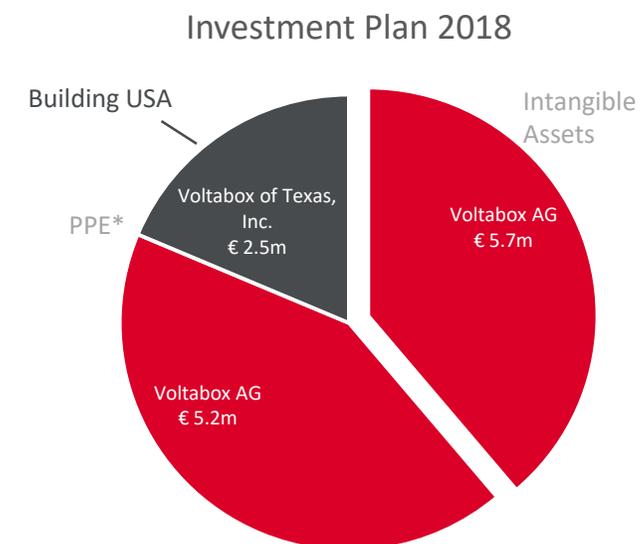
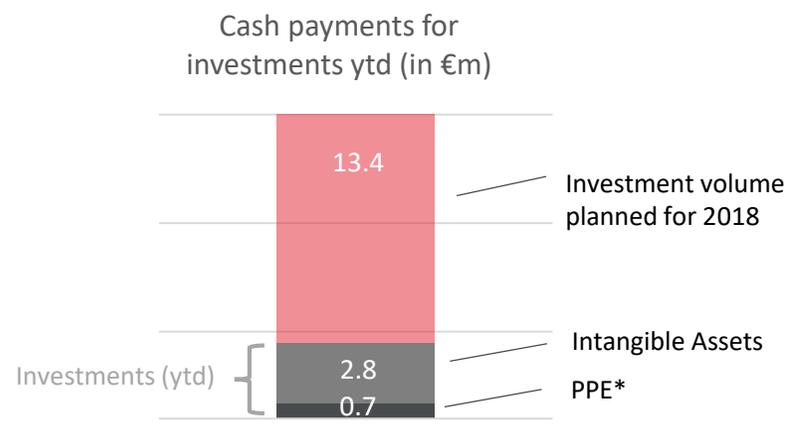
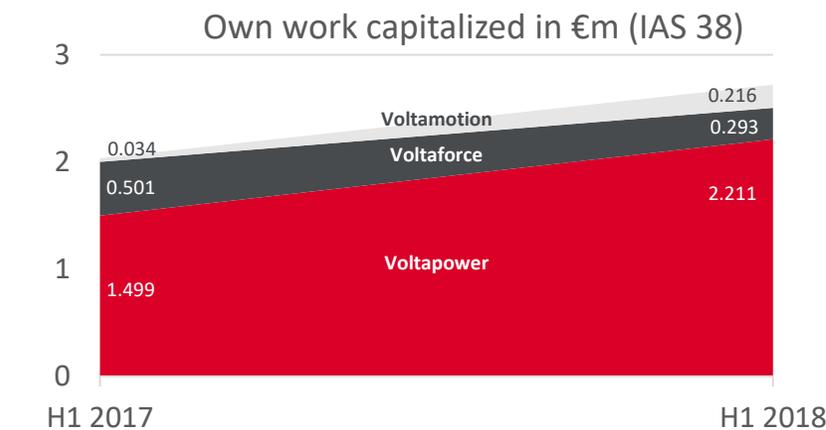
H1/18: Significant Changes of Equity and Liabilities



- Equity remained nearly unchanged at € 154.895m
- Noncurrent provisions and liabilities slightly increased to € 8.818m
- Current provisions and liabilities decreased about € 1.9m to € 5.507m
 - Liabilities to related parties went down about € 0.9m
 - Other current liabilities reduced about € 0.7m

H1/18: Investing in Further Growth

- CAPEX breakdown: € 10.9 million in Germany and € 2.5 million in the US
- Capitalized development costs expected to increase by 6.6%
- Investments year-to-date at € 3.5m (thereof € 2.8m Intangible Assets)
- Own work capitalized mainly in the Voltapower segment – increased R&D in the Voltmation segment



i.a. prismatic line (outstanding payment), pouch line, technology/e-machines, charger/inverter, property deposit, measuring devices etc.

*Property, Plant and Equipment

FY17: Highlights

Strong Financial Position

- Equity ratio of 90.8 % (equity: € 154,990 million)
- Liquid funds of € 102.7 million

Dynamic Top Line Growth

- Group revenue increased 88.2 % to € 27.3 million

Increasing Profitability

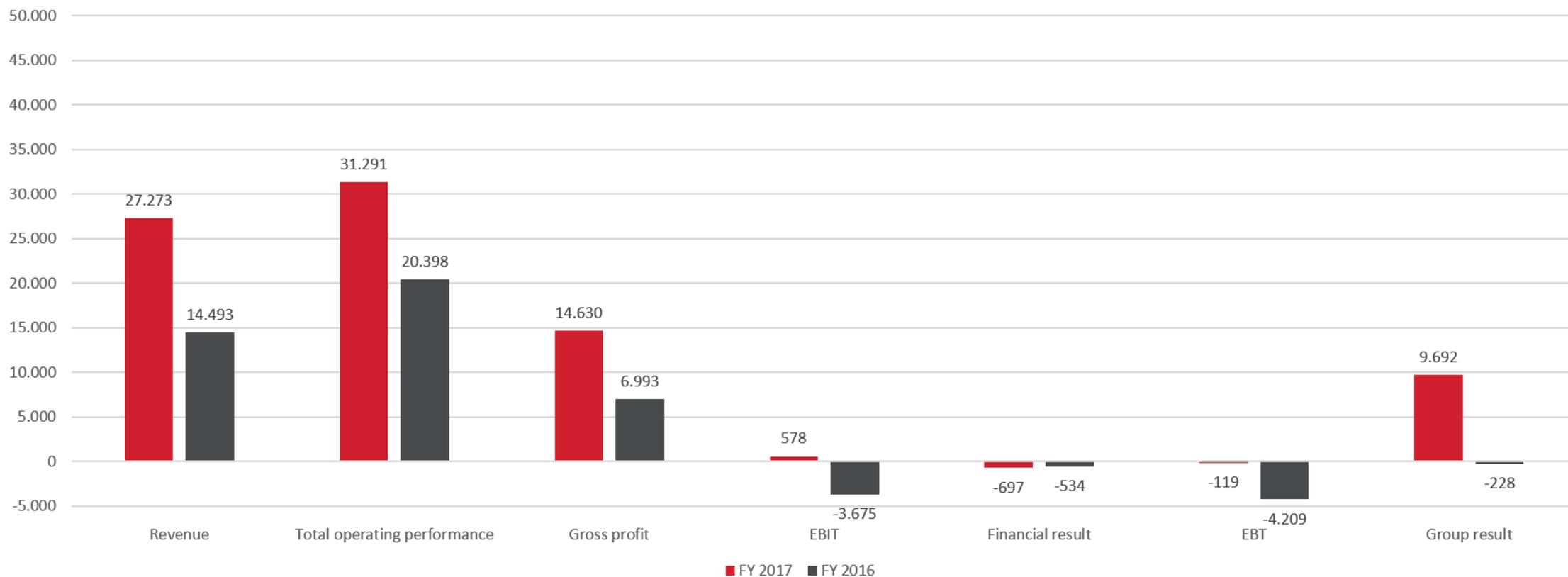
- EBITDA increased 240,9 % to € 3 million
- EBIT margin at 2.1 %

Set for Future Growth

- Launch of a new R&D site in Aachen
- € 5.2 million internal R&D (R&D ratio 19.0 %)

FY17: Top Line Growth with Increasing Profitability

Selected parameters from the consolidated income statement of Voltabox AG



FY17: Net Assets and Financial Position

Assets*

- Noncurrent assets € 31.1m
- Current assets € 139.6m

Equity and Liabilities*

- Equity € 155.0m
- Noncurrent provisions and liabilities € 8.4m
- Current provisions and liabilities € 7.4m

- Voltabox invested in the further expansion of business activities
- Development work capitalized: € 5.2m
- Sufficient liquid funds of € 102.7m due to the IPO

Balance Sheet Total

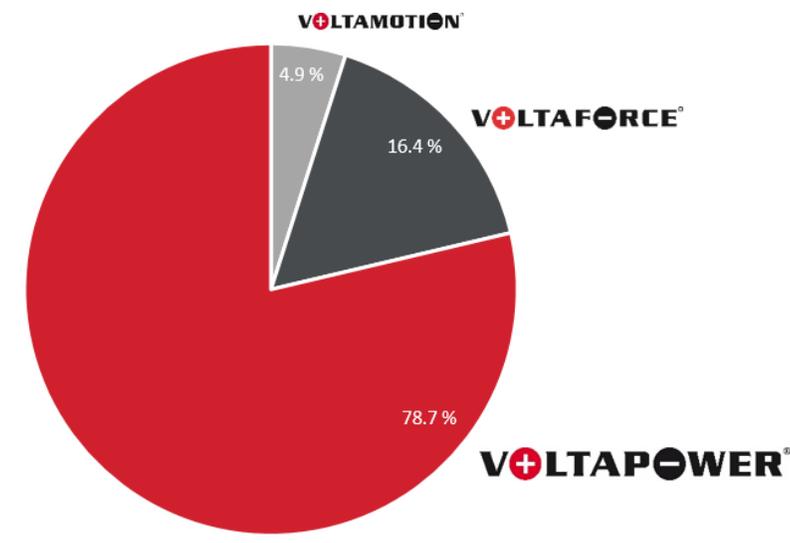
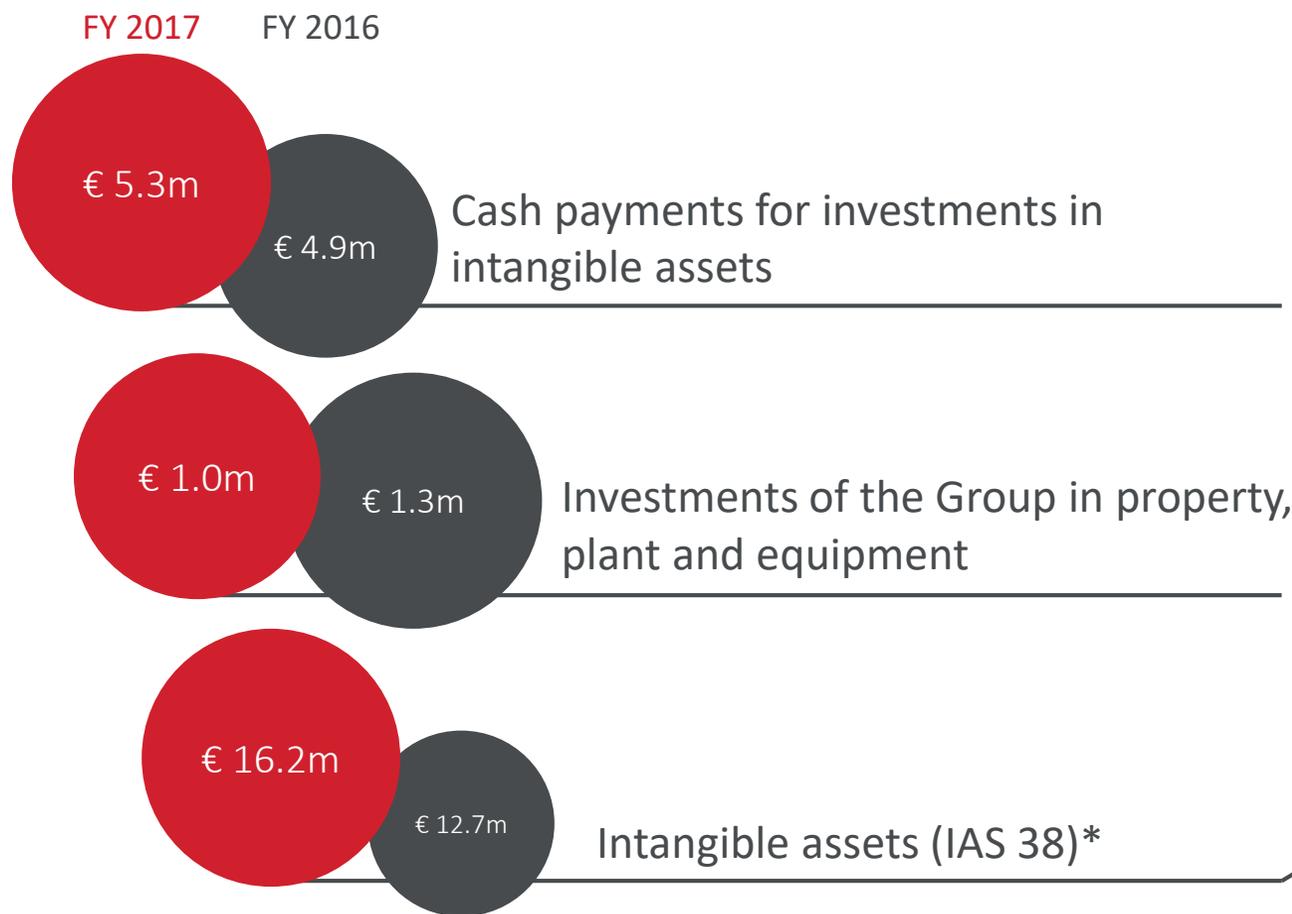
(Accounting date: Dec. 31, 2017)

- Assets + equity and liabilities € 170.8m
(2016: € 39.0m)

- Capital reserve increased to € 126.4m
- Significant reduction of noncurrent provisions and liabilities

* As of Dec.. 31, 2017

FY17: Investments as a Key Factor



by segments

* Capitalized development expenses

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