

E-Mobility

# “Pure Play”

Investor/Analyst Presentation

USA Roadshow & Conference / October 2018

**V+LTABOX®**



# Agenda

- Introduction of Voltabox
- Business Overview
- Financials

# Corporate Development

1988

- Mother company paragon founded by Klaus Dieter Frers (as private ownership)

1994

- Certification as automotive Tier 1 for electronics

2000

- IPO of paragon AG (now paragon GmbH & Co. KGaA) at Frankfurt Stock Exchange (now: Prime Standard)

2011

- Market entry into Lithium-Ion Batteries: E-Mobility launched as a new business segment of paragon AG

2014

- Foundation of Voltabox as legal entities in Germany and the US (100% subsidiaries of paragon AG)

2017

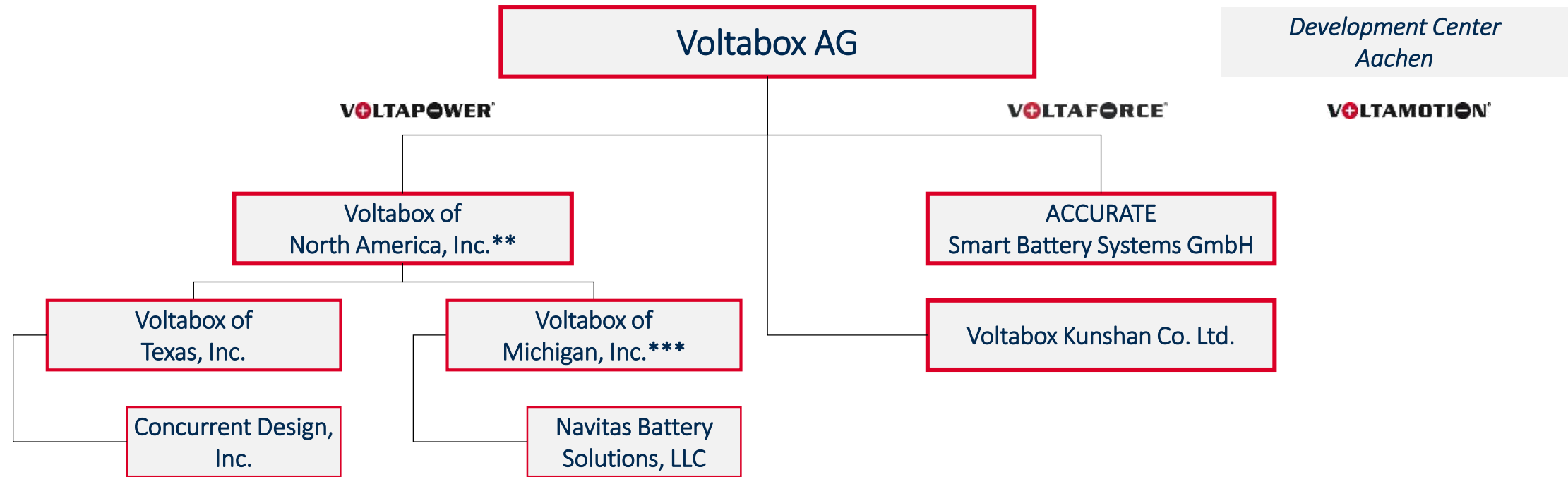
- Voltabox IPO in Frankfurt after change of legal form into a stock corporation with Voltabox of Texas, Inc. as a 100% subsidiary

2018

- Acquisitions of
  - Concurrent Design, Inc.,
  - Navitas Systems, LLC., and
  - ACCURATE Smart Battery Systems GmbHmarking key milestones in M&A growth strategy
- Rearrangement of intralogistics partner agreement with Triathlon Batterien GmbH to occupy a leading market position
- Start of direct sales activities in the intralogistics market



# Evolving Group Structure for an International Footprint



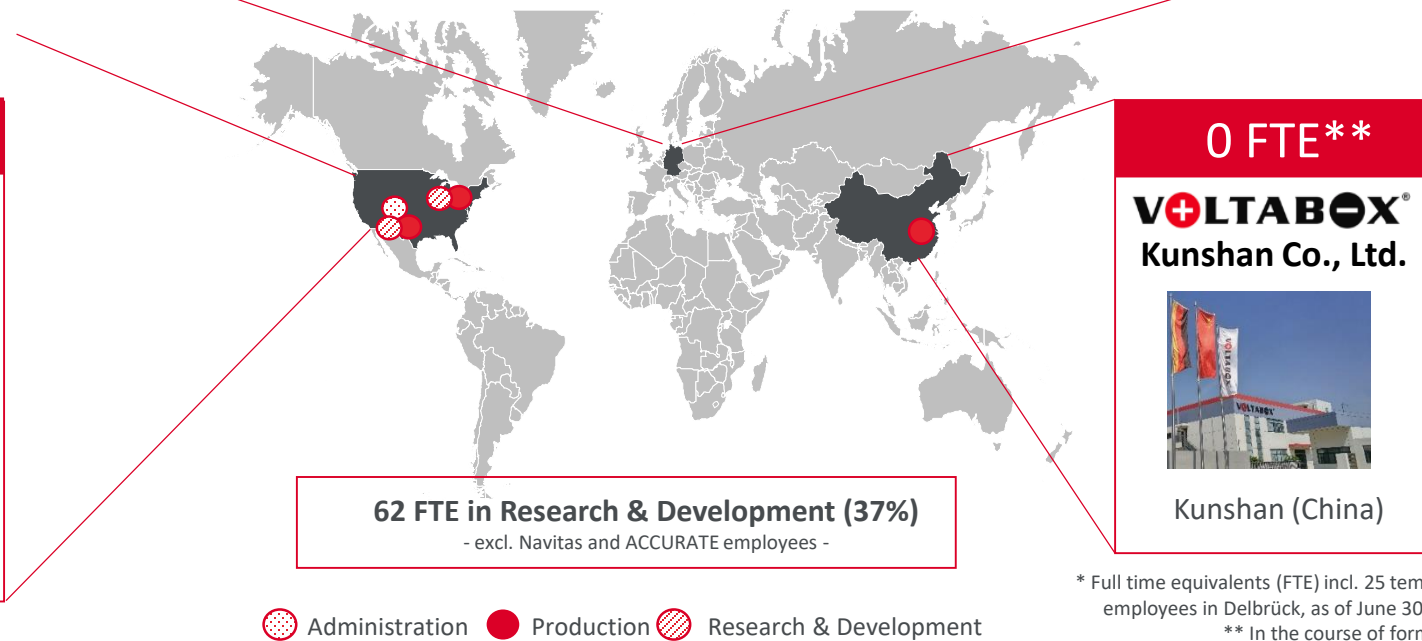
\* Closing pending.  
 \*\* Company under development.  
 \*\*\* Closing pending; previously Navitas Systems, LLC.

## Location Overview

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



**V+LTABOX® of North America, Inc.**



\* Full time equivalents (FTE) incl. 25 temporary employees in Delbrück, as of June 30, 2018.  
\*\* In the course of formation.  
\*\*\* Acquisition is subject to approval by the American CIFUS authority.

# 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

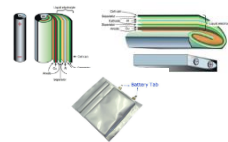
- Introduction of Voltabox
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# E-Mobility Pure Play

## 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)



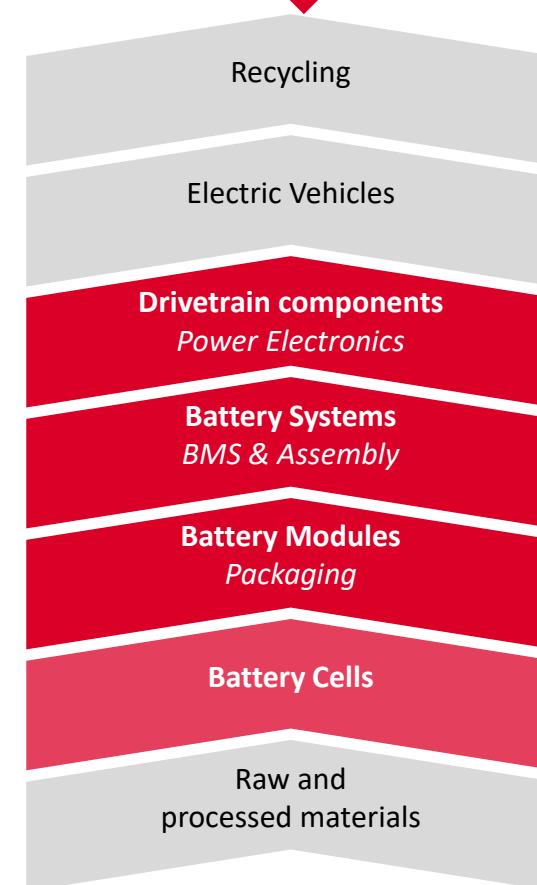
- Module cases with integrated
- Cooling Devices
- BMS Slave Circuit Board
- Sensors
- Wiring Loom
- Lids
- Sealings
- Rupture Discs

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





## Electrification Specialist in High-Performing Applications

Public transport buses  
Q2/2014



Agriculture vehicles  
Q4/2017



Forklifts  
Q1/2015



Construction vehicles  
Q2/2018



AGVs  
Q4/2016



Motorcycles  
Q3/2017



Mining vehicles  
Q2/2016



Mass Markets  
Q4/2018



# From the cell to the complete system



# 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)

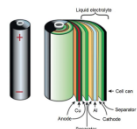
- Nominal cell voltage: 3.6 V to 3.7 V
- High cycle stability of at least 6,000 cycles at 80% DoD
- Great operating temperature range of -30/+ 60 °C
- High energy density (136 - 230 Wh/kg and at least 309 Wh/l)

### 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

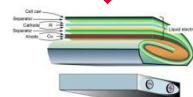
# Agnostic Approach to Cell Types

## Cylindrical



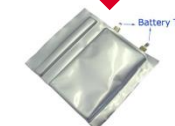
A spirally wound design (jelly-roll). Designated by size, e.g. 26650 cylindrical battery (Diameter: 26mm, length: 65.2 mm; code for cylindrical shape: 0)

## 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

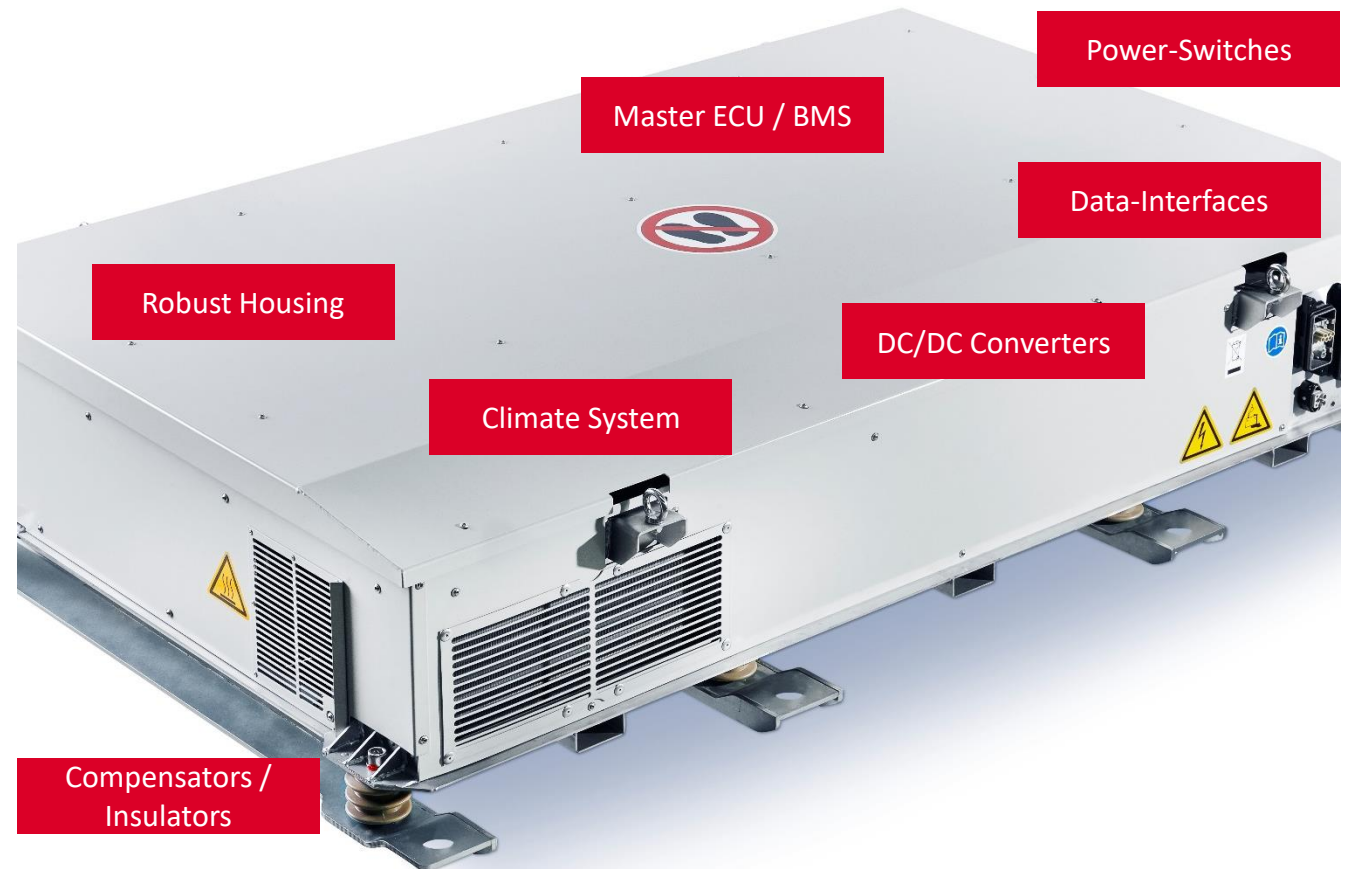


4x9 LFP round cell module

\* Excerpt from product portfolio.

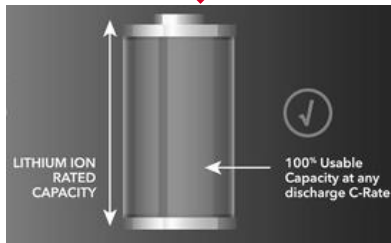
# Li-Ion Battery System Supplier for Industrial Applications

- **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*)



# Li-Ion vs. Lead-Acid Technology

## Li-Ion Technology

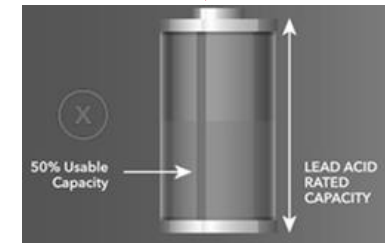


### Additional advantages:

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

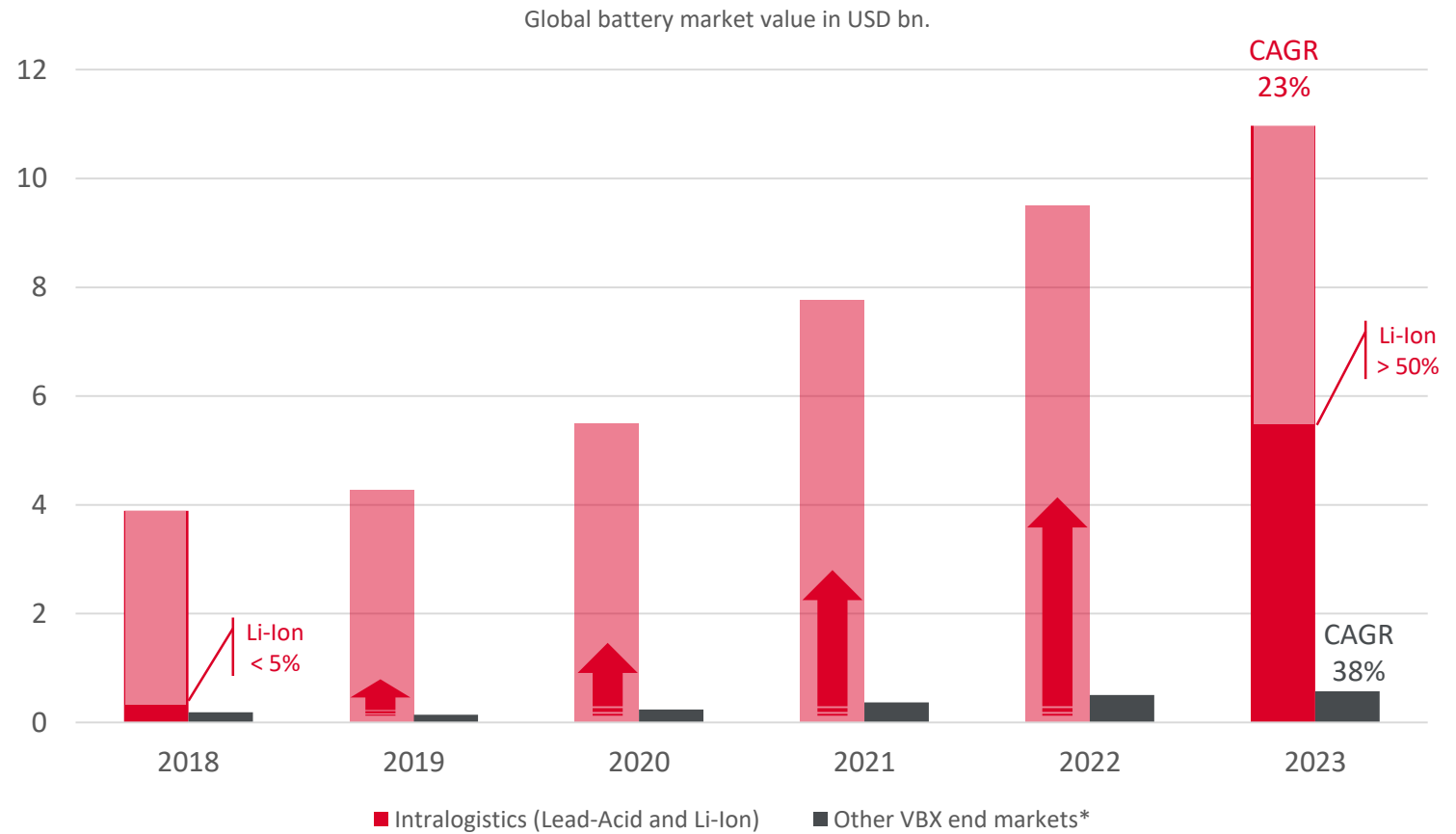
Up to 240 Wh/kg	<b>Energy density</b>	40 Wh/kg
Up to 95%	<b>Charging efficiency</b>	Up to 70%
Up to 30,000 cycles at 80% DOD	<b>Cycle life</b>	1,200
Up to 80% in 6 min (10C)	<b>Fast charging</b>	50% in 3 hrs.
Zero emissions	<b>Emissions</b>	Gassing & water loss

## Lead-Acid Technology



# 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



\* 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



# On Way to Market Leadership: Acquisition of Navitas

- Profitability broadly in line with 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



# New R&D Capabilities: Acquisition 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



Concurrent Design was the first acquisition for Voltabox in this field since its successful IPO. The whole team has been integrated into the structures of Voltabox of Texas and is now mainly working on projects for Komatsu.

# Horizontal Expansion: Acquisition of ACCURATE



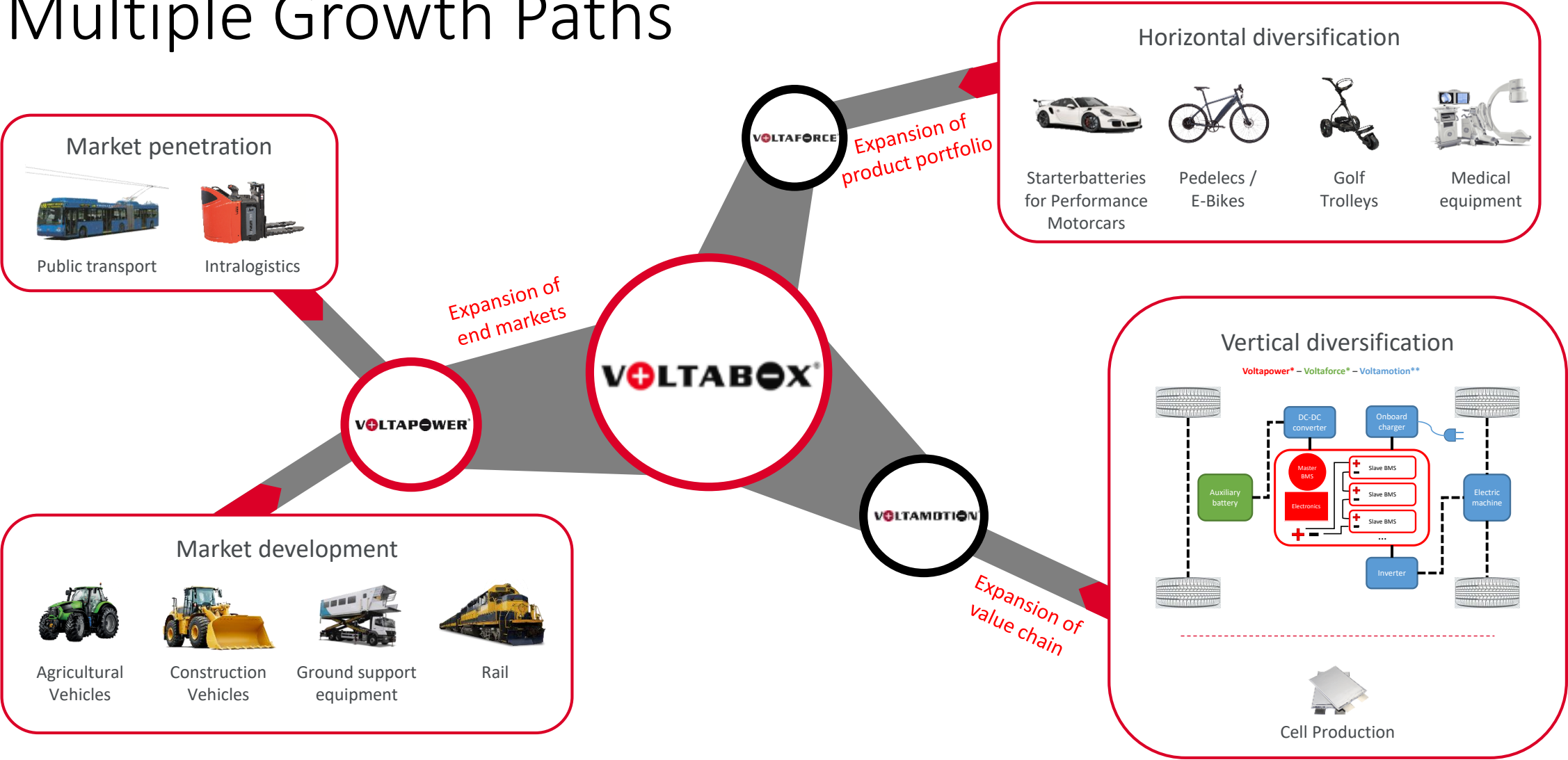
Voltabox acquired ACCURATE Smart Battery Systems GmbH in August 2018 for an amount of € 5m. The company and its portfolio will be a cornerstone for the expansion of the segment Voltaforce.

Development and production of **high-quality battery systems** for several **volume markets**

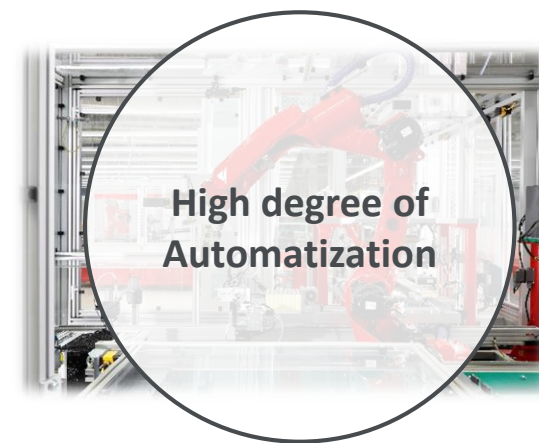
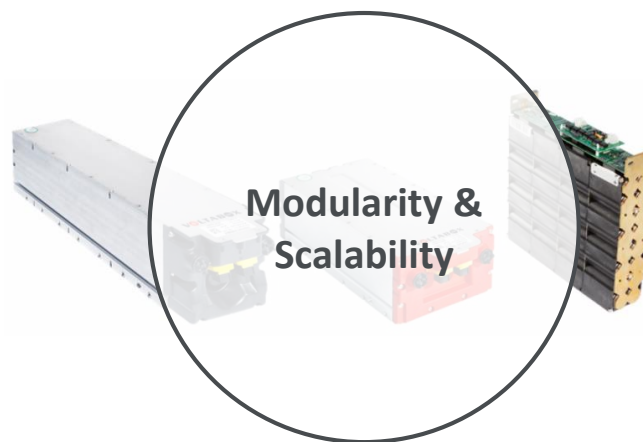
ACCURATE will form the **centre of the Voltaforce-segment** and hereby focus on **high-margin mass market applications** such as pedelecs, E-scooters, gardening, medical technology etc.

**Wide performance spectrum** of battery packs to complex Lithium-Ion Systems incl. self-developed BMS – ACCURATE is a **pivotal puzzle piece** in terms of providing a **full-service offer for electrification** of new target markets

# Multiple Growth Paths



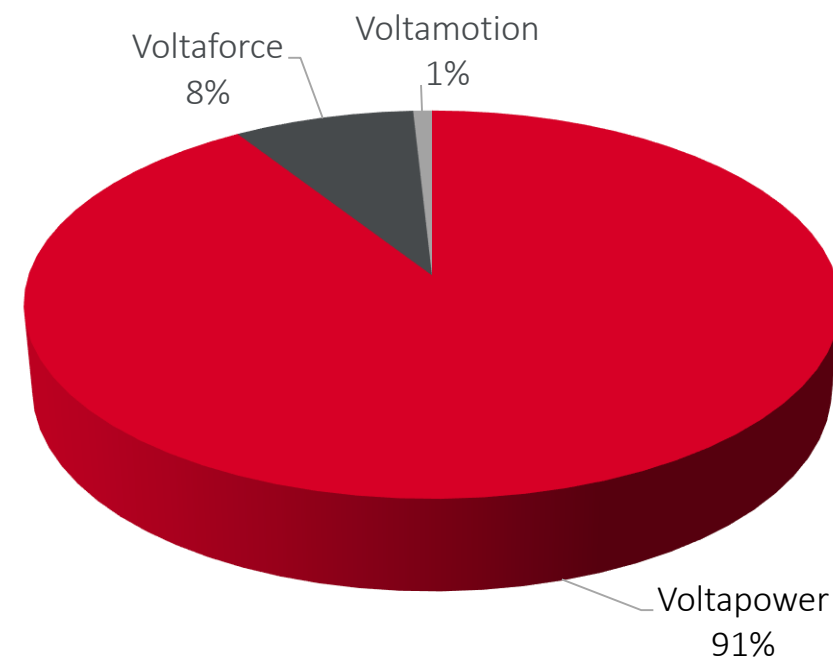
# USPs of Voltabox



# 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

# Agenda

- Introduction of Voltabox
- Business Overview
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# Financial Highlights H1/2018

**↗ € 18.1 million** <sup>↗ 71 %</sup>

Revenues (previous year: € 10.6 m)

**↗ 144 employees** <sup>↗ 85 %</sup>

(June 30, 2017: 78)

On the way to a new level

**↗ € 1.7 million** <sup>↗ 758 %</sup>

EBITDA (previous year: € 0.2 m)

**↗ € 0.1 million**

EBIT (previous year: € -0.7 m)

# 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)

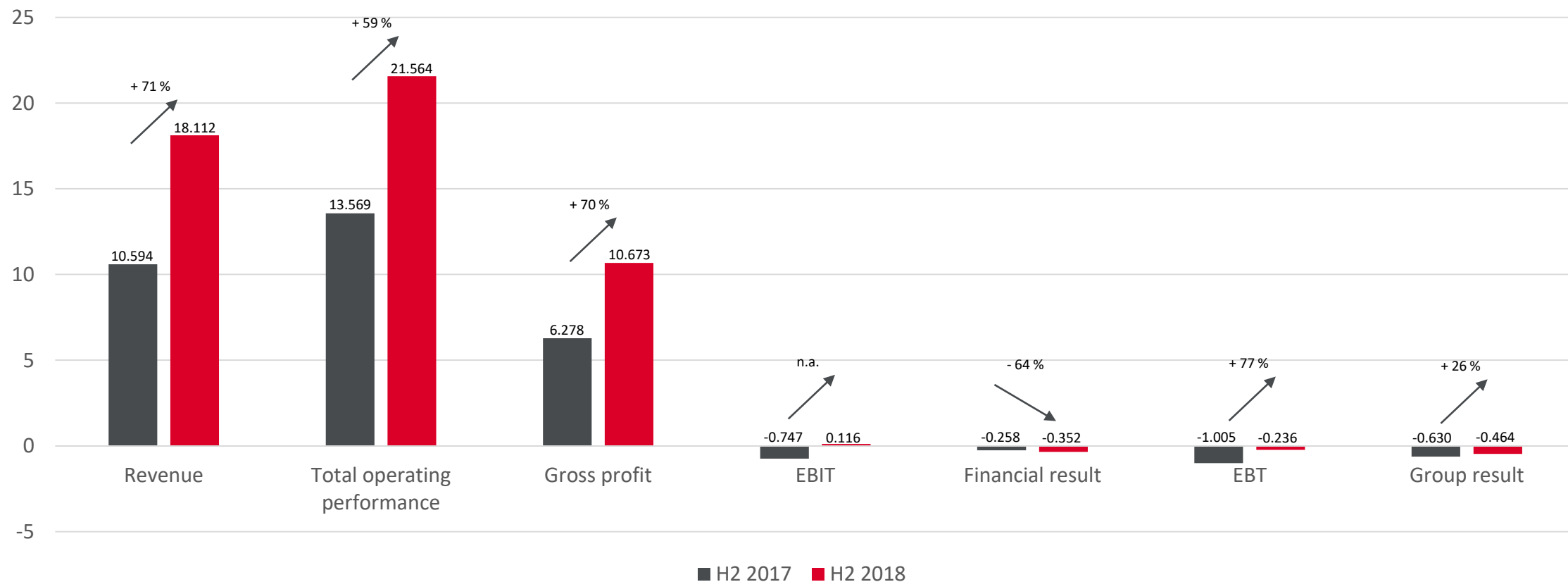
## Profitability on track

- 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

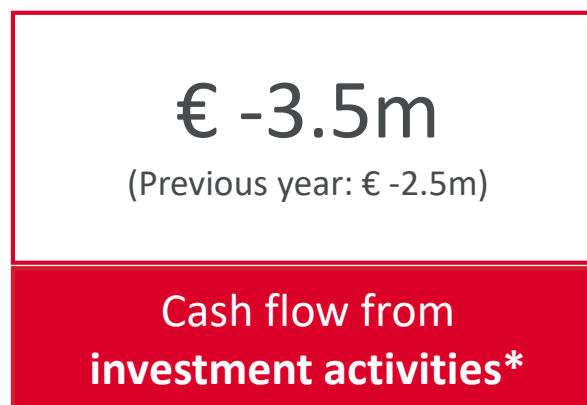
# Top Line Growth with Increasing Profitability



# Cash Flow Statement

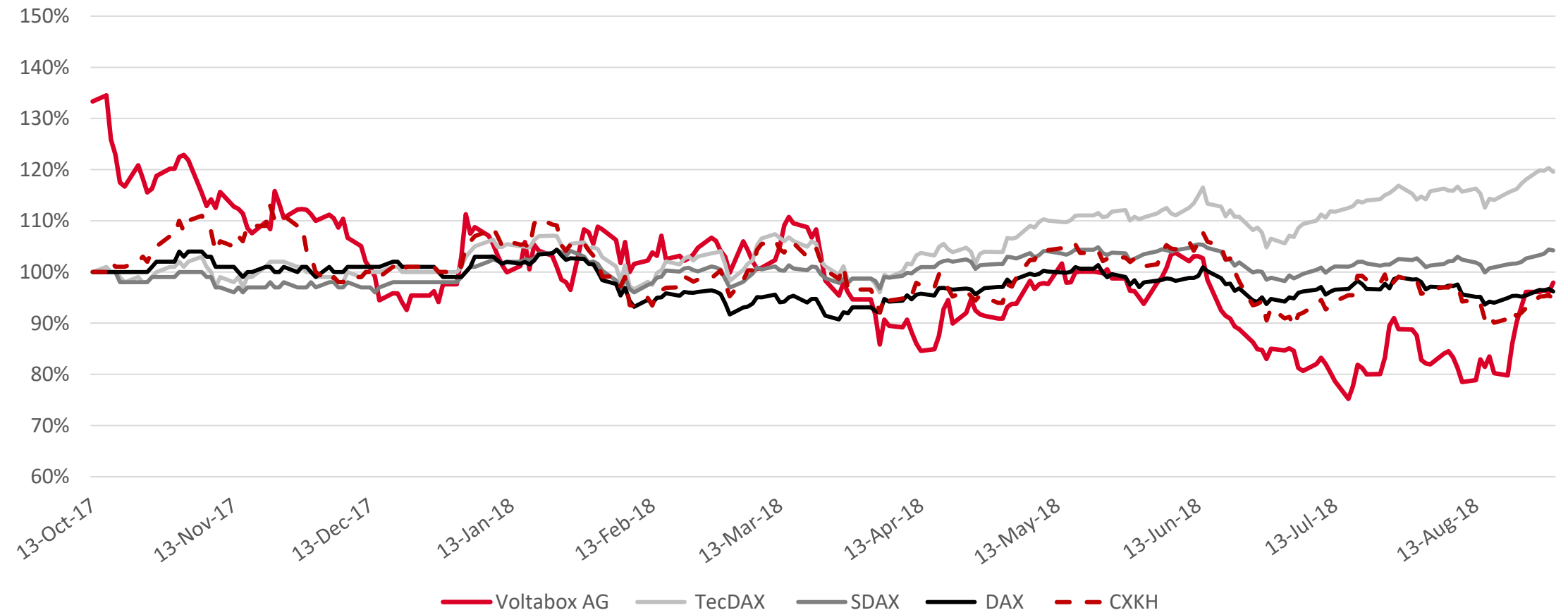
- Large increase in trade receivables owing to very good business development in the Voltapower segment and sales financing support for main Voltabox partner (limited to 2018)
- Other non-cash expenses increased due to currency effects
- Significant decrease in trade payables and other liabilities of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

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



\* FY 2017

# 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

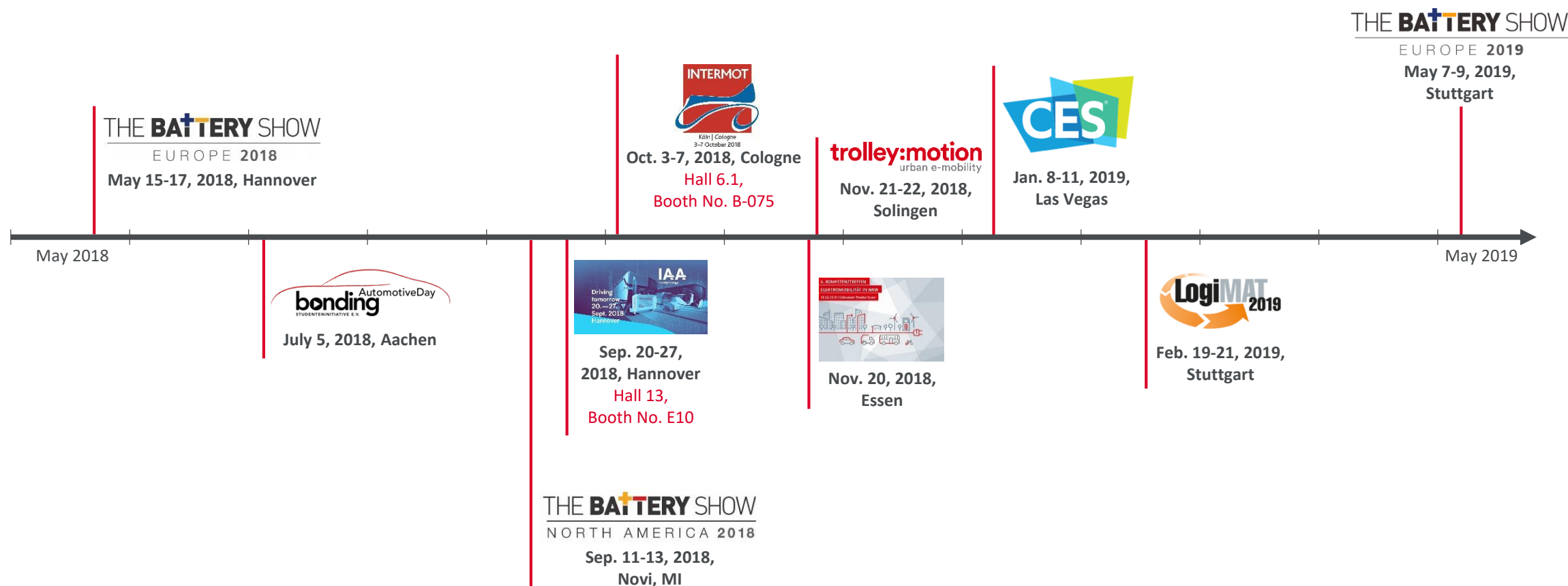
Financial performance indicators of Voltabox AG	2017		2018	
	Forecast	Results	Forecast (old)	Forecast (new)
[in € million / as indicated]				
Group revenue	25	27*	Approx. 60	Approx. 65-70**
EBIT margin	Slightly positive	2.1%	Approx. 10%	Approx. 7%***
<i>Analyst estimates</i>	2017		2018	
<i>Group revenue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



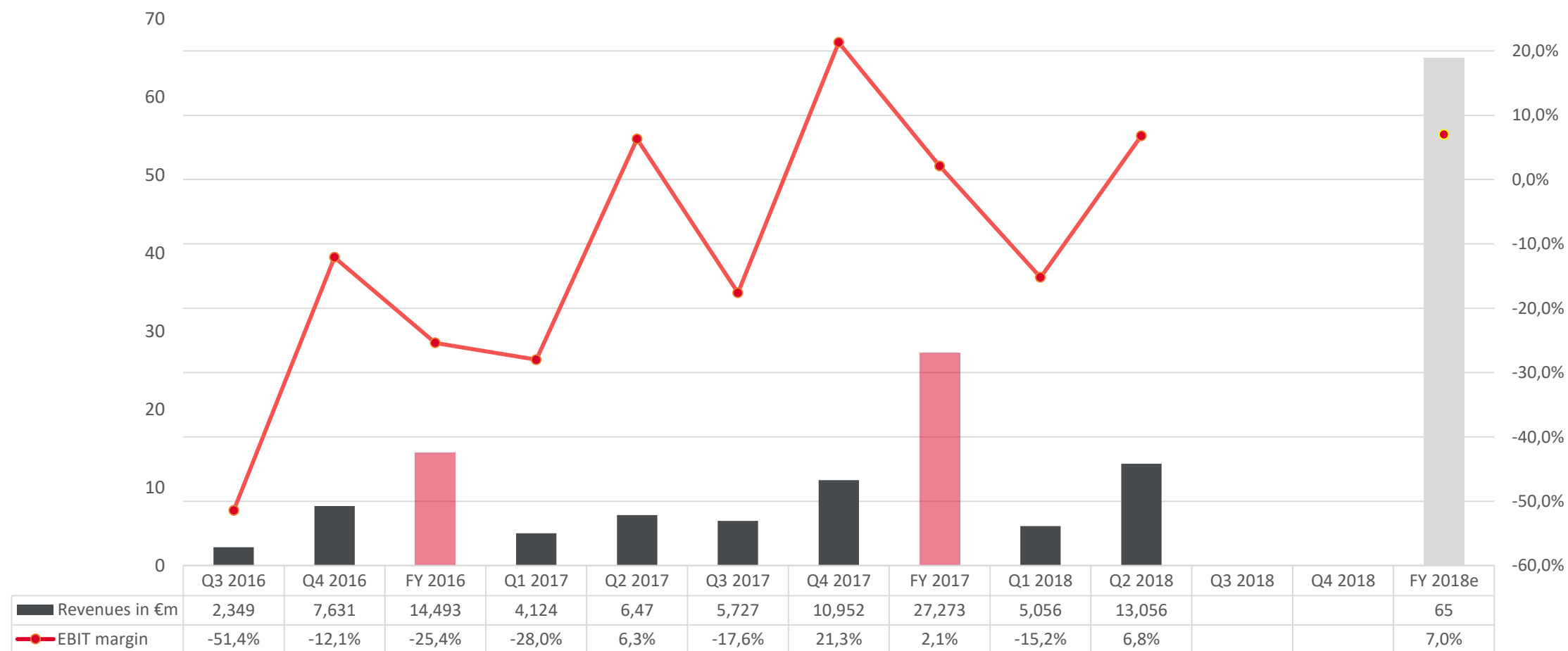


# Financial Calendar

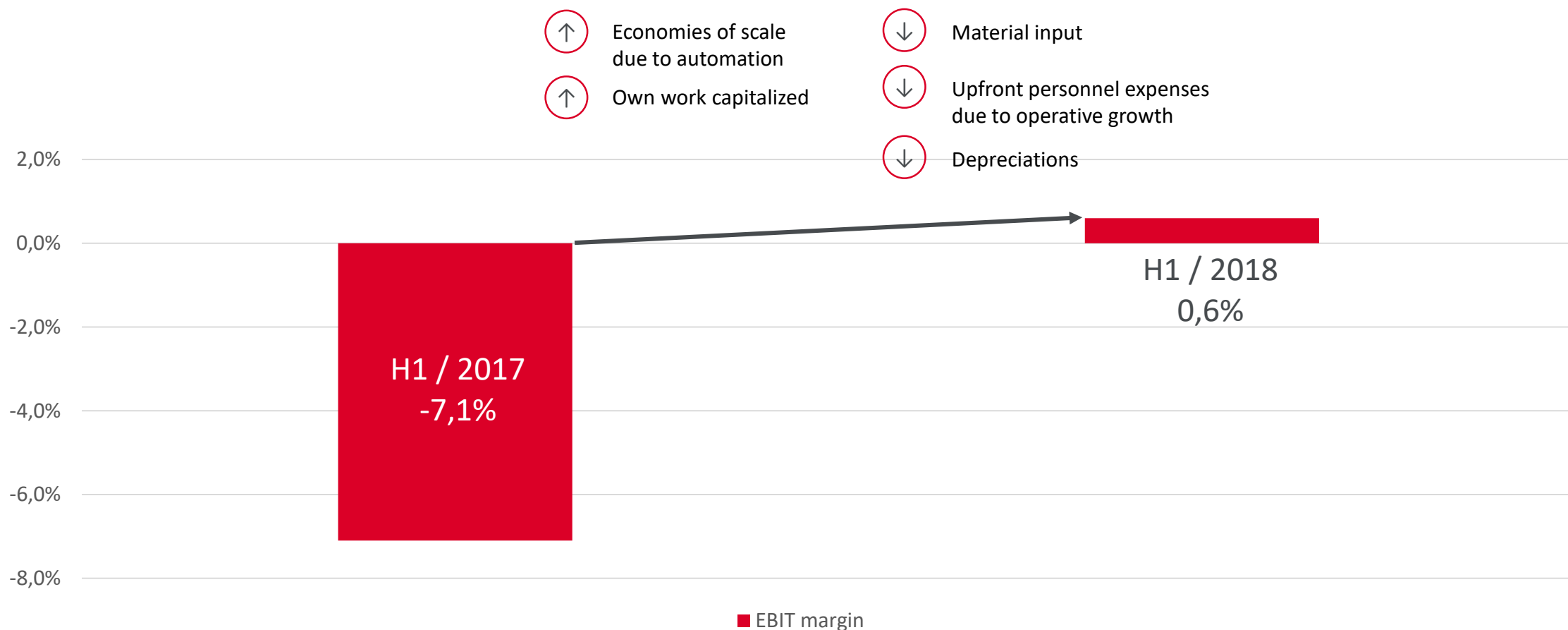
- Jan. 11/12, Oddo Forum, Lyon
- Feb. 1, Bankhaus Lampe German Corporate Conference, London
- Feb. 21/22, 12. Oddo-BHF German Corporate Conference, Frankfurt am Main
- Mar. 13, Annual report 2017
- Apr. 18-20, Bankhaus Lampe Deutschlandkonferenz, Baden-Baden
- May 8, Interim release as of March 31 – 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

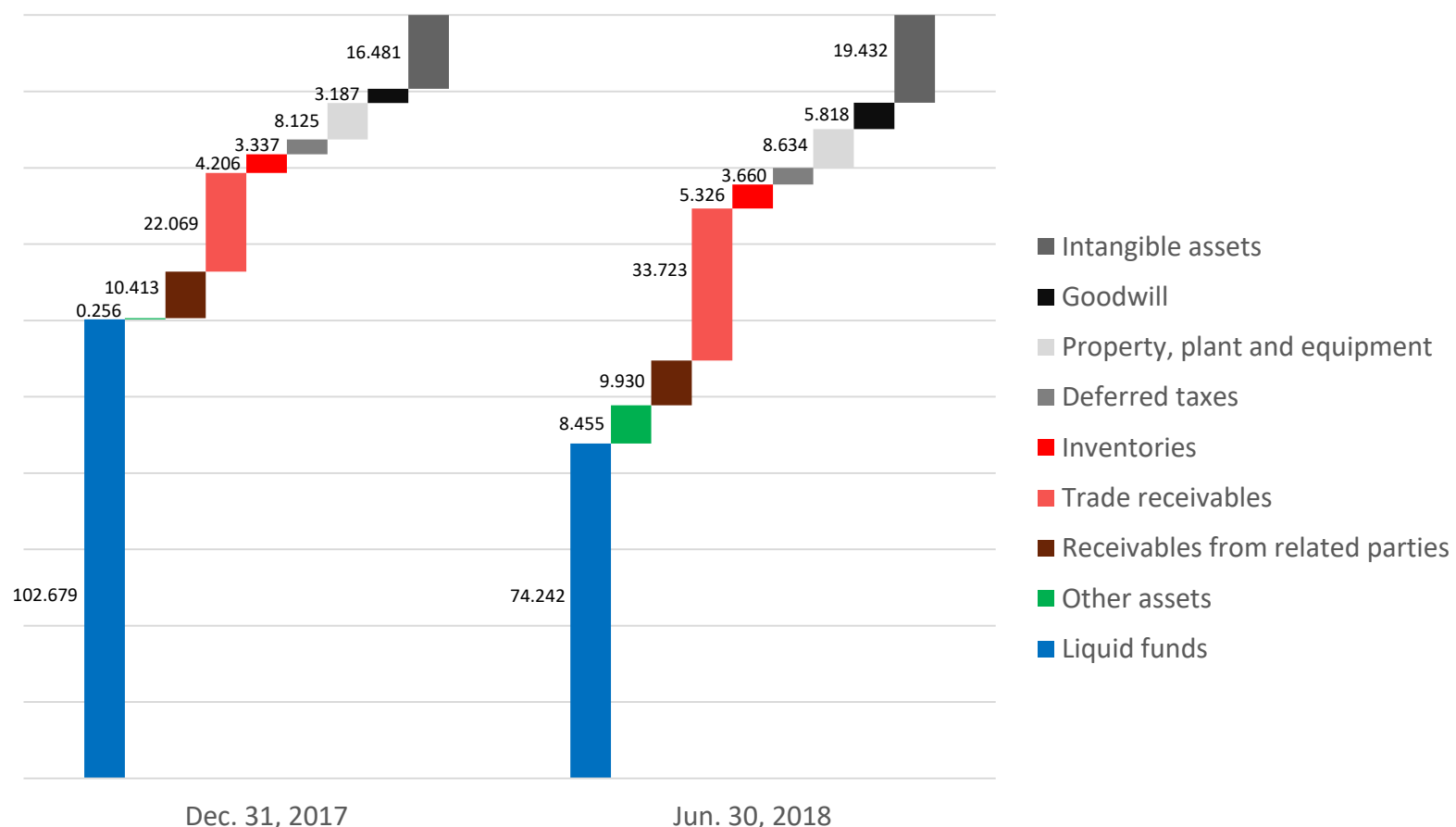
# H1/18: Revenues & EBIT Margin Development



# H1/18: Key Factors Profitability Development

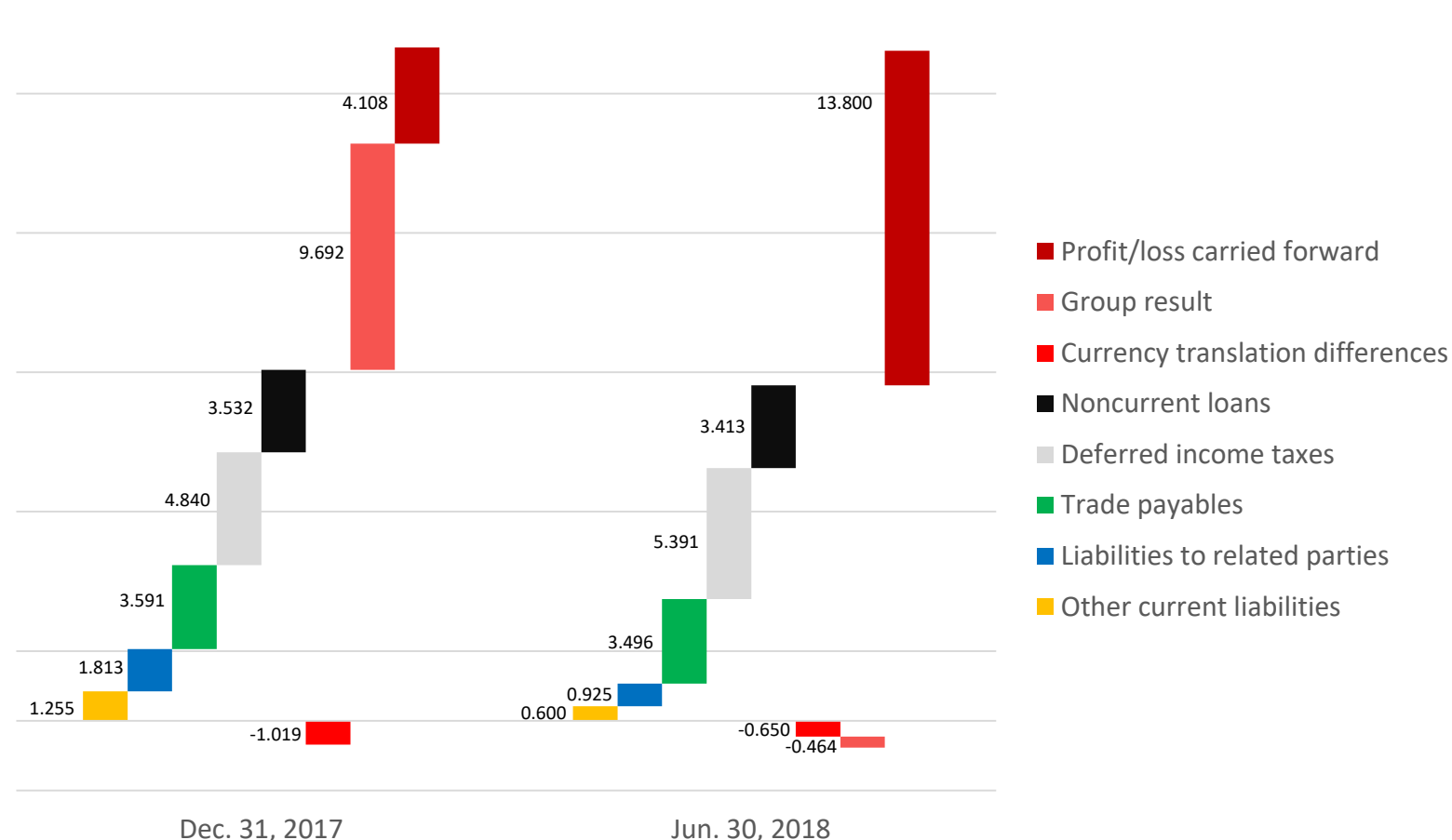


# H1/18: Significant Changes of Group's Assets



- 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

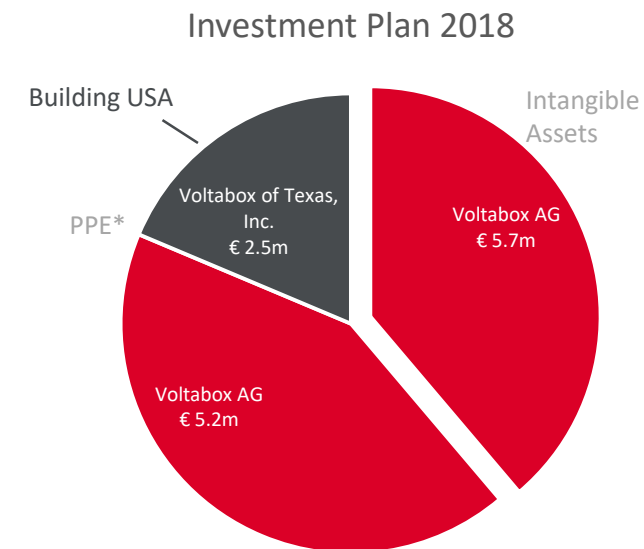
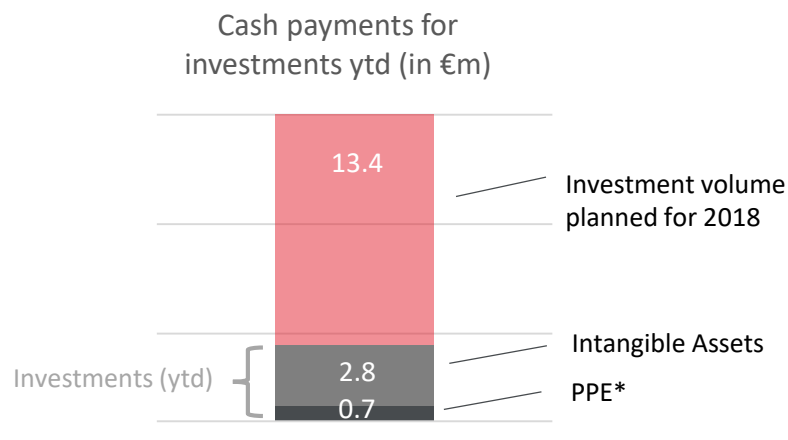
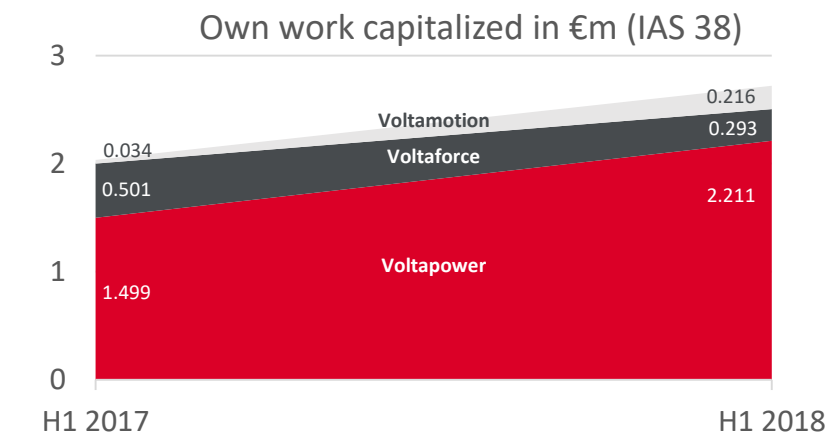
# H1/18: Significant Changes of Equity and Liabilities



- 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 %

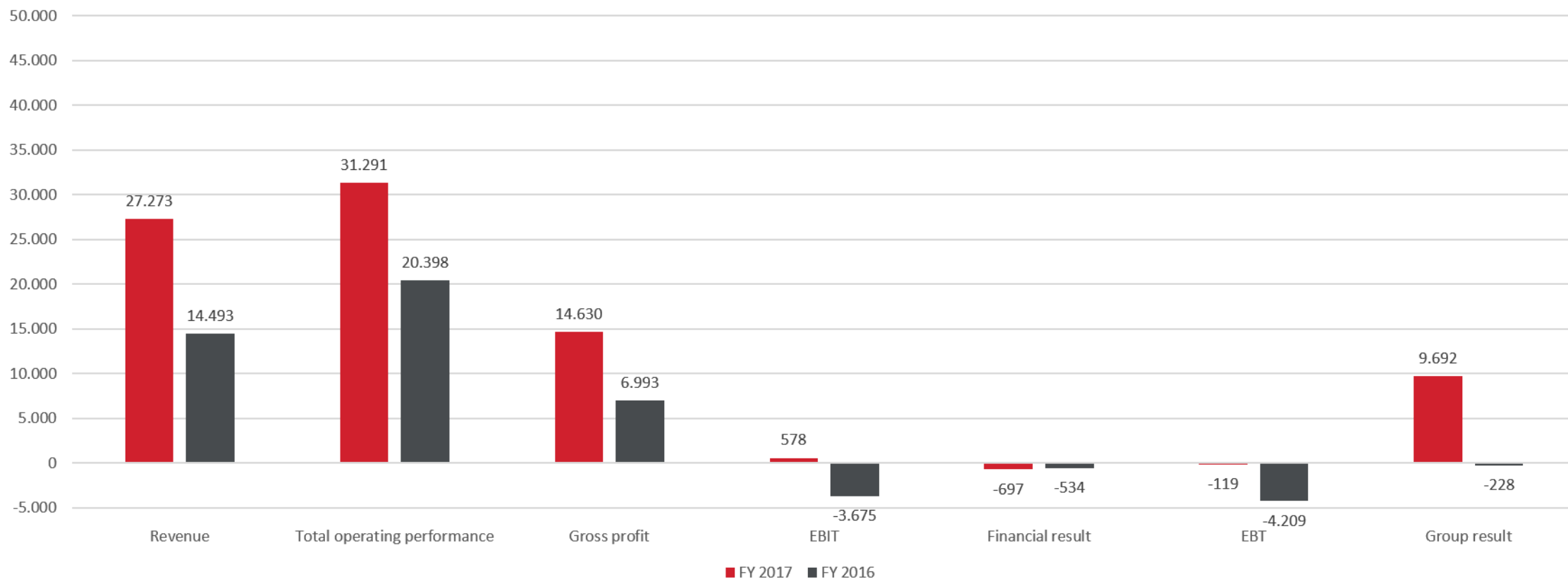
## Set for Future Growth

- 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

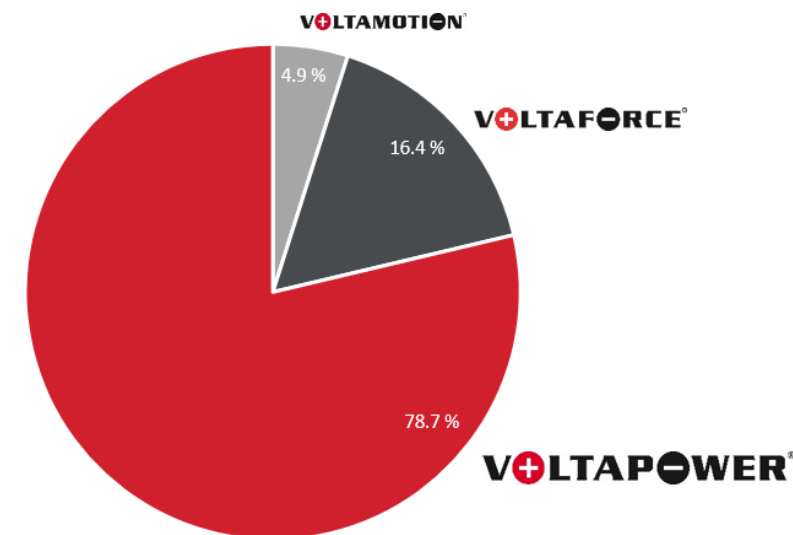
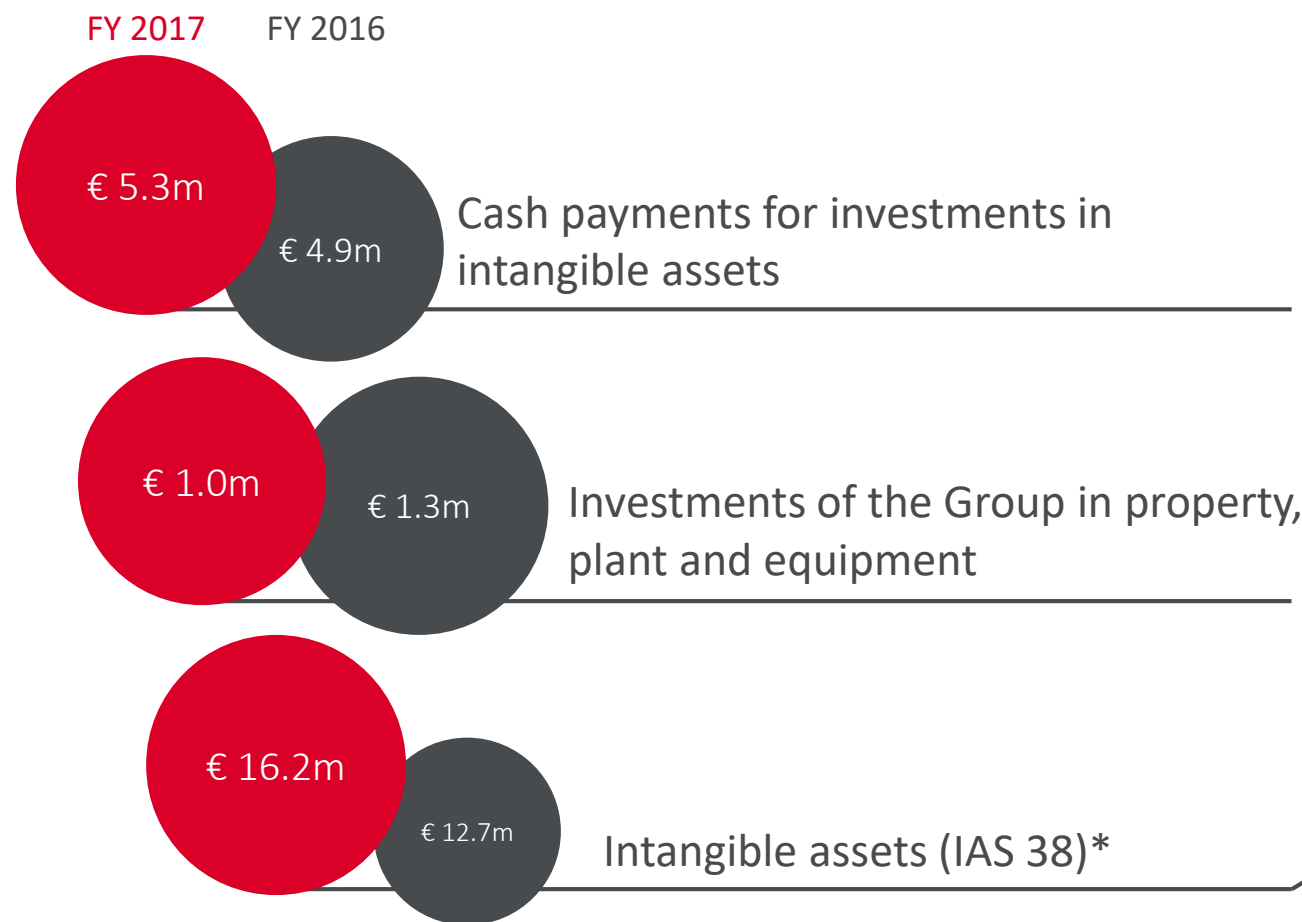
(Accounting date: Dec. 31, 2017)

- 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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