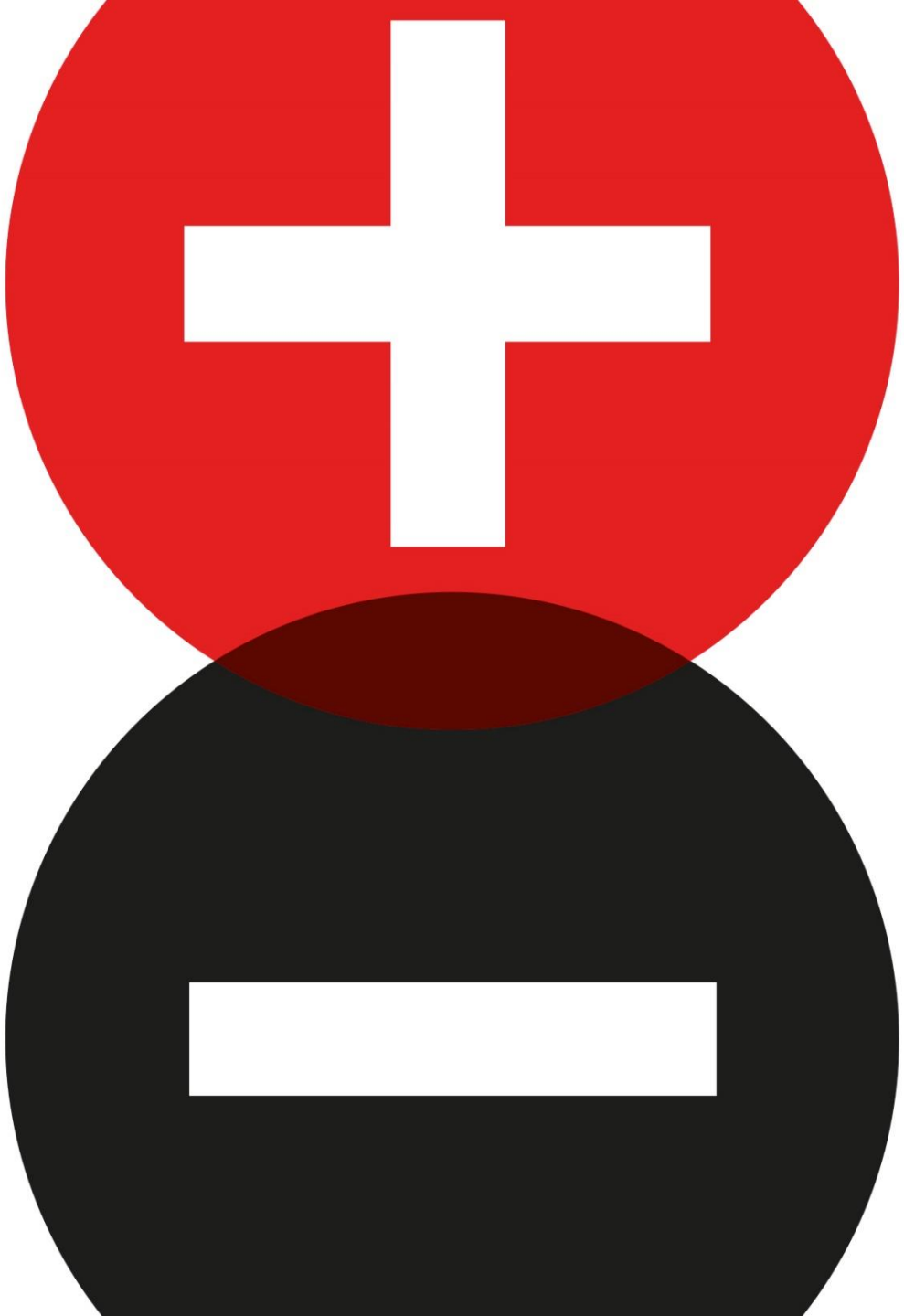
Voltabox electrifies!

Investor/Analyst Presentation

Eigenkapitalforum I Frankfurt/Main
November 25-27, 2019

VOLTABOX®



Key Facts from Nine Months 2019

Continued top line growth **+13.2%**

EBIT margin burdened, as expected at **-30.0%**

Equity ratio decreases to **74.9%**

Available liquidity at **€ 10.9m**

Main drivers in **9M/19**: and and

CAPEX: **€ 12.6m**

Q3 results as expected against the background of the revised forecast –
Outlook for 2019 still valid

Agenda

- Company Presentation
- Current Developments in Operational Business
- Financials
- Outlook

Voltabox Corporate Development

	Strategic Milestones	Market Development	Results
2019	+ Focusing in projects + Expansion of the US site	+ Retrofitted Buses + Stationary Energy Back-up Systems	➔ 2019e: € 70 – 80m Revenue, -8 to -9 % EBIT margin
2018	+ Acquisitions of Concurrent Design & ACCURATE (Branch: Korntal-Münchingen) + Start of Intralogistics direct sales	E-Bikes / Pedelecs	➔ € 66.9m Revenue, 8.4 % EBIT margin 235 FTE
2017	Change of legal form to AG & IPO + Branch Aachen	Agriculture & Construction VOLTAPOWER® VOLTAFORCE® VOLTAMOTION®	➔ € 27.3m Revenue, -10.3 % EBIT margin 99 FTE
2016		Mining	➔ € 14.5m Revenue, -25.4 % EBIT margin 67 FTE
2015		Material Handling (Intralogistics) Motorcycles	➔ € 7.4m Revenue -31.6 % EBIT margin 62 FTE
2014	Foundation Voltabox Deutschland GmbH + Branch Austin (TX, USA)	Trolleybuses	➔ € 4.6m Revenue -9.7 % EBIT-Marge 41 FTE

Location Overview

Voltabox has highly qualified personnel and state-of-the-art production facilities, which are closely linked to the most important markets for electromobility.

VOLTABOX of North America, Inc. **VOLTABOX of Texas, Inc.**

Austin, TX (USA)

R&D Center Voltamotion

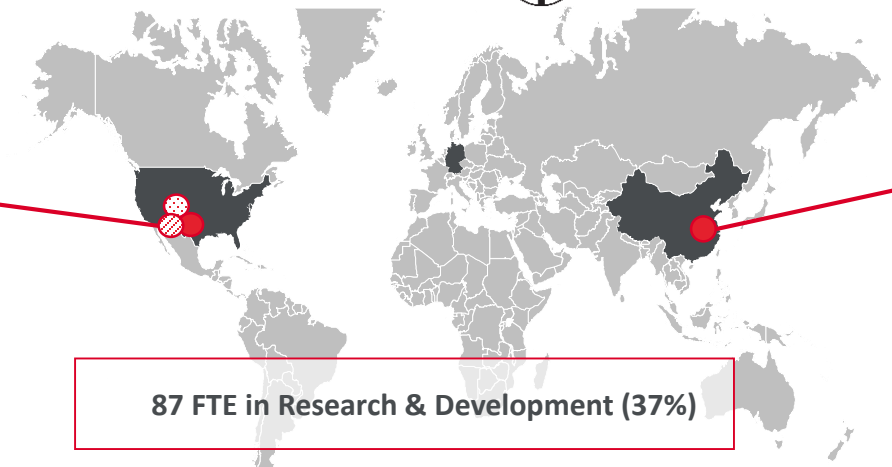
Aachen

VOLTABOX AG

Delbrück

R&D Center Voltaforce

Markgröningen



87 FTE in Research & Development (37%)

Administration Production Research & Development

VOLTABOX Kunshan Co., Ltd.

Kunshan (China)

** Full time equivalents (FTE), as of September 30, 2019.*

E-Mobility Pure Play

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

in various low and high voltage versions

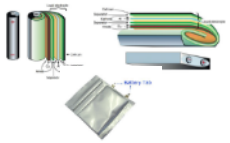
- Separator
- Anode
- Cathode
- Electrolyte
- Cell Housing
- Insulation Strips

E-Mobility Value Chain

- Recycling
- Electric Vehicles
- **Drivetrain components** *Power Electronics*
- **Battery Systems** *BMS & Assembly*
- **Battery Modules** *Packaging*
- Battery Cells
  Cell-agnostic approach
- Raw and Processed Materials

The Sweet Spot of Electromobility

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



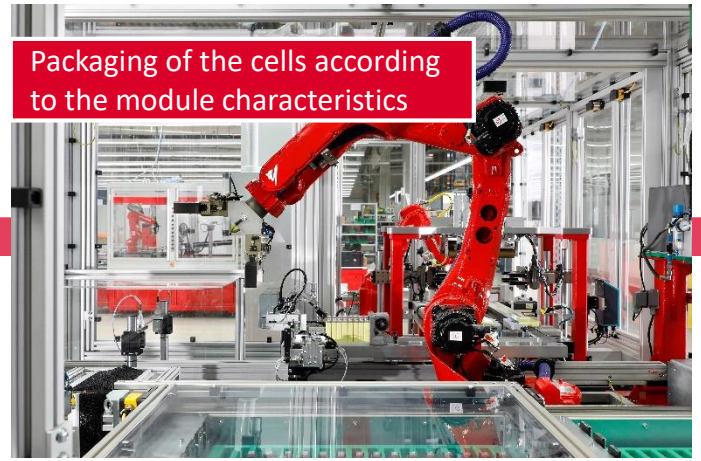
- Cylindrical cells
- Prismatic cells
- Pouch cells

in various Li-Ion chemistries

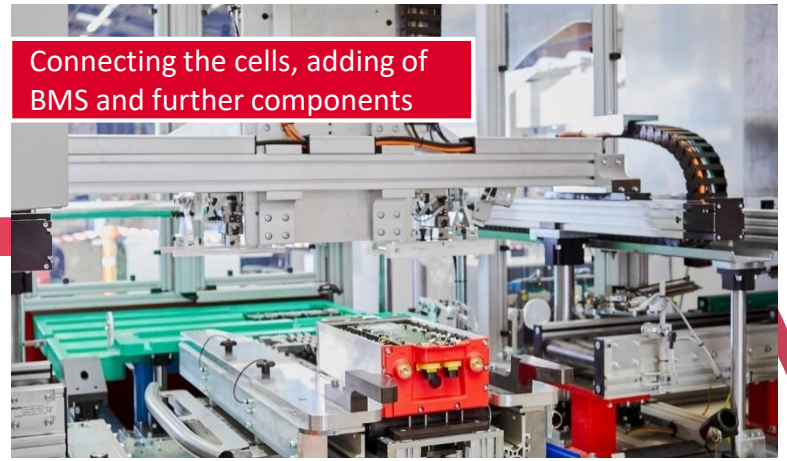
- LFP
- NMC
- LTO
- NCA

Production Steps - From the Cell to the Complete System

Procurement of cells and preparation of production

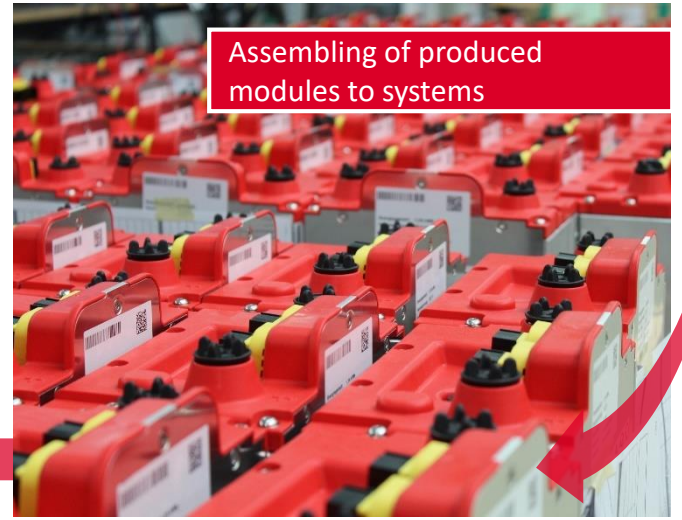


Packaging of the cells according to the module characteristics



Connecting the cells, adding of BMS and further components

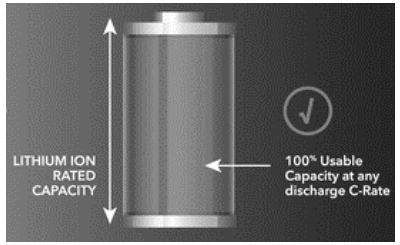
In case of large battery systems e.g. for mining applications: Comprehensive End-of-Line Tests



Assembling of produced modules to systems

TCO-Advantages Driving Substitution of Lead-Acid by Li-Ion

Li-Ion Technology

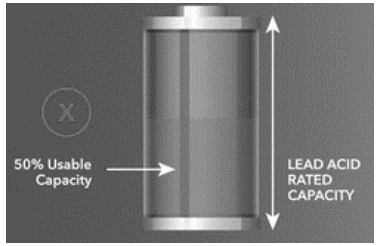


Additional advantages:

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

Li-Ion Technology		Lead-Acid Technology
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

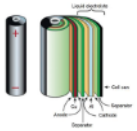
Lead-Acid Technology



Voltabox is Cell Agnostic!

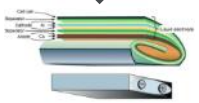
Cell Types

Cylindrical



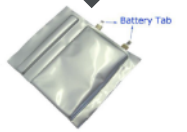
A spirally wound design (jelly-roll). Designated by size, e.g. 26650 cylindrical battery (Diameter: 26mm, length: 65.2 mm; code for cylindrical shape: 0)

Prismatic



A prismatic 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 Chemistries

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

Nickel Cobalt Aluminum Oxide (NCA)

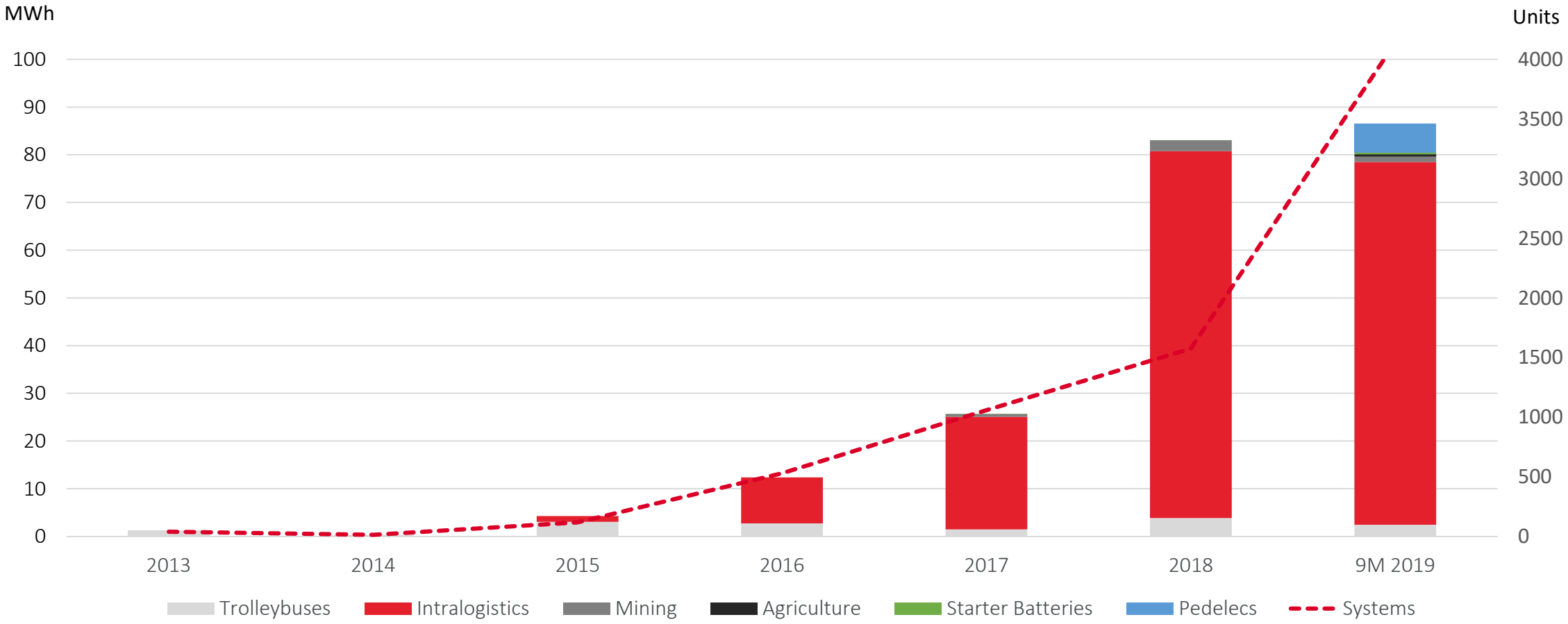
- Nominal cell voltage: 3.6 - 3.7 V (vs. graphite)
- Very wide operating temperature range of -20 /+75°C
- High cycle stability of up to 1,500 cycles at 80-70% DoD
- High energy density (140 - 280 Wh/kg and 300 - 590 Wh/L)
- Currently being tested or upscaled by many cell manufacturers

Source: IDTechEx.

Li-Ion Battery System Supplier for Defying Applications

- Voltabox is a **pioneer** in the **electrification of industrial applications**. In 2018, the Group **expanded** its **solution portfolio** in order to open up **further mass markets** in the future.
  - **Mindset focus on applications** *(authentic added value solutions)*
  - **Exceptional integration power** *(experience in automotive interfaces)*
  - **Superior realization processes** *(short time-to-market with modular kit)*

Installation of Energy by End Markets



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Adjusted Forecast 2019

prior: € 105m to € 115m

&

now: € 70m to € 80m

Change in revenue forecast 2019 (e)

prior: +8 to +9 **now: -8 to -9 %**

Change in EBIT margin forecast 2019 (e)

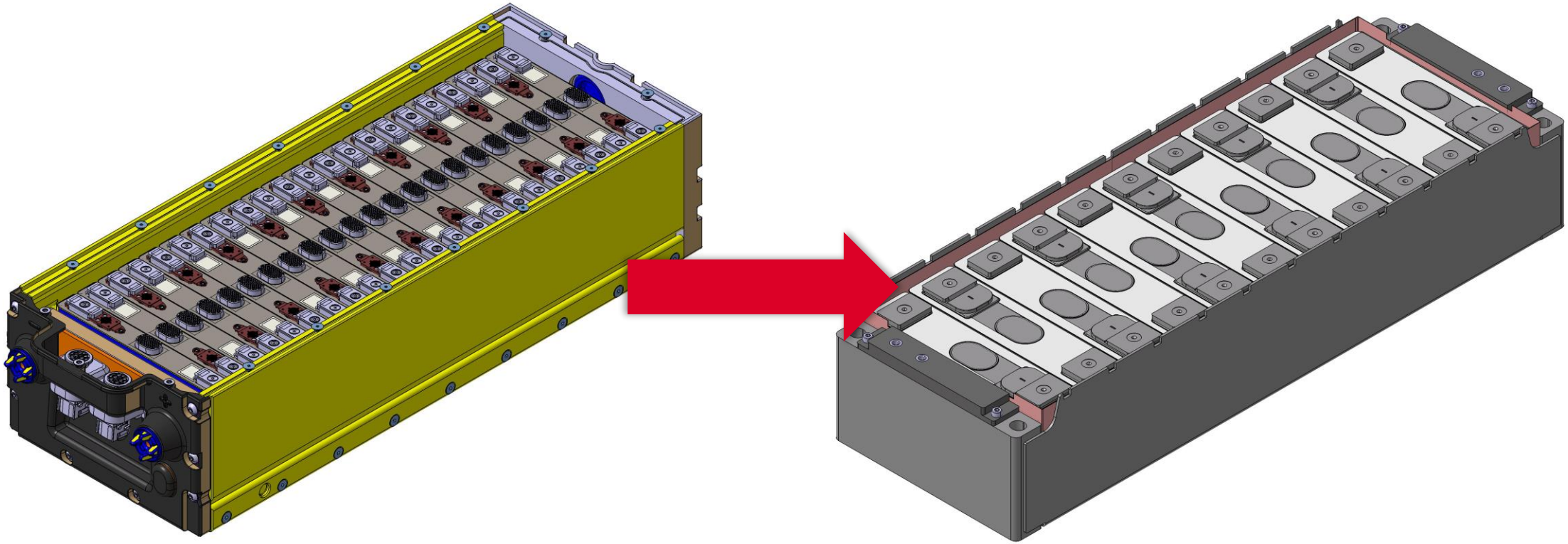
5G Back-up Systems – Large Initial Order Postponed

- Client: located in Austin, active in 5 federal states
  - Alpha Prototype: June 18, 2019 (1 piece)
  - Beta Prototype: July 2019 (5 pieces)
  - Volume First Order: 2,200 pieces
- New customer requirements in 08/2019:
  - 44 hrs durability instead of 33 hrs
  - 1,500 cycles instead of 3,600 cycles

- Technically not challenging – Adjustments already done
- Impact on battery size and management
- New validation caused time delay

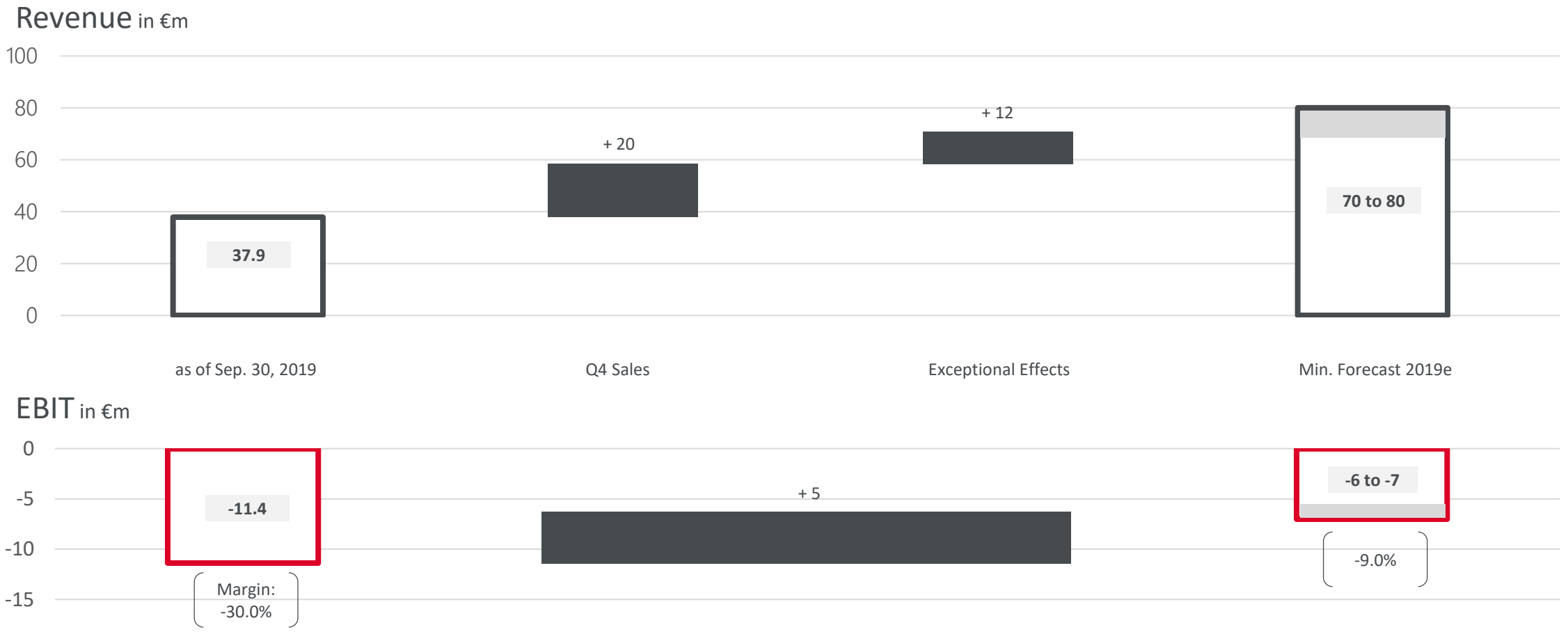
Images: Prototype installations of the Voltabox systems in Austin/TX

Change of Technology: Single Size vs. Double Size



Two alternative cells approved in the meantime –
significantly increased security against delivery stops

Q4 incl. Exceptional Effects Through Divestments



Countermeasures for Optimizing the Cost Structure

1	Personnel cost adjustments (Delbrück)	Large reduction of annual personnel costs and reduction of temporary workers - mainly effective from 01.01.2020	✓
2	Personnel cost adjustments (Austin)	Reduction of personnel costs in 2019 already effective today	✓
3	Sharpening of development focus	Focus on 38 projects (including 23 projects with higher priority) with stringent controlling	✓

Savings on fixed costs of 30 % in 2020

4	Material savings through double size technology	Especially cost optimization of battery module for new cells of several manufacturers	✓

New Planning Process

Reason:
Sales shifts in 2019

Goal: Minimize realization risks of new projects

Consultation of a specialized auditing and consulting company

Revision of the planning process

Clusters according to sales probability, based on sales process

- Short- to medium-term planning remains at the level of individual customers

Distinction between nominal and valuated sales figures

- Signed framework agreements = high probability
- Bidding = very low probability

Integration into sales process

- Newly introduced sales tracking tool incorporates evaluation mechanisms and updates them on a daily basis

Parameterization of sales data

- The project character of Voltabox sales is taken into account much more strongly
- In the future, potential time-related ramp-up effects from the industrialization of projects will also be evaluated

No impact on total order backlog –
changed conservative approach shall allow more realistic estimation of future revenue recognition

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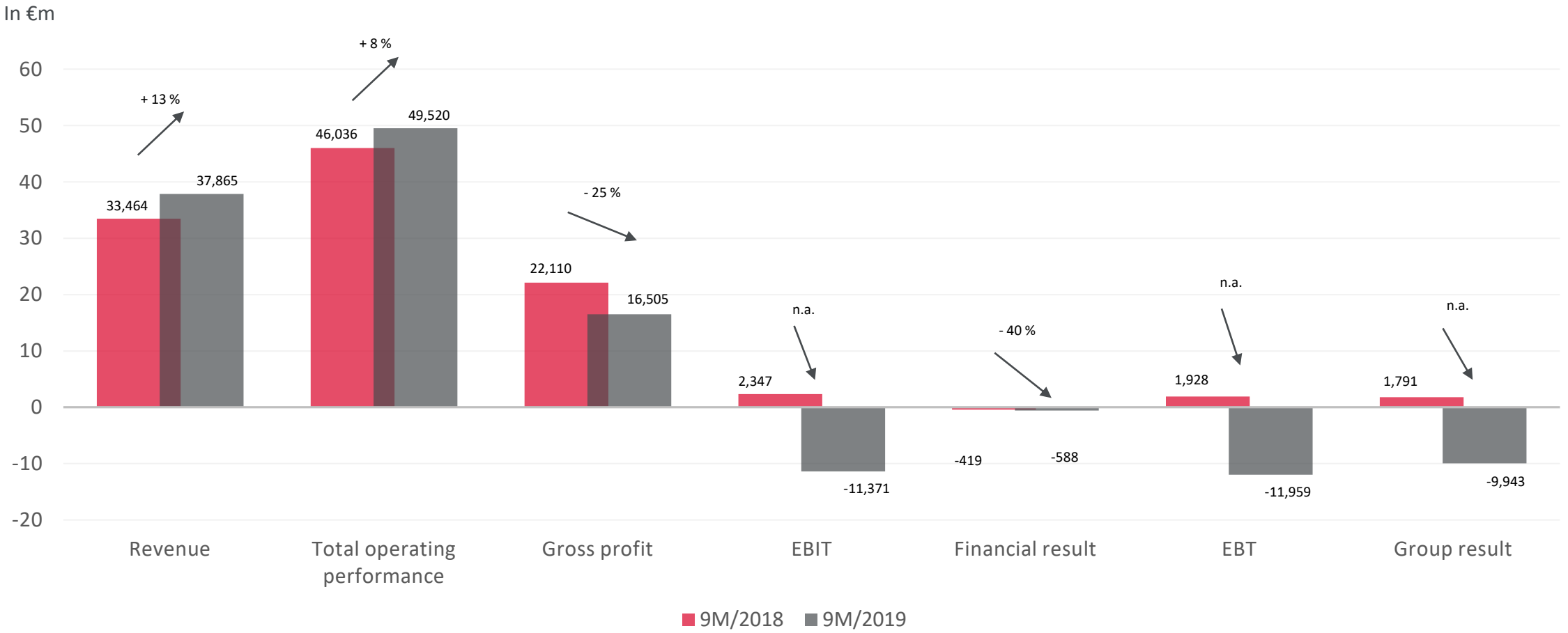
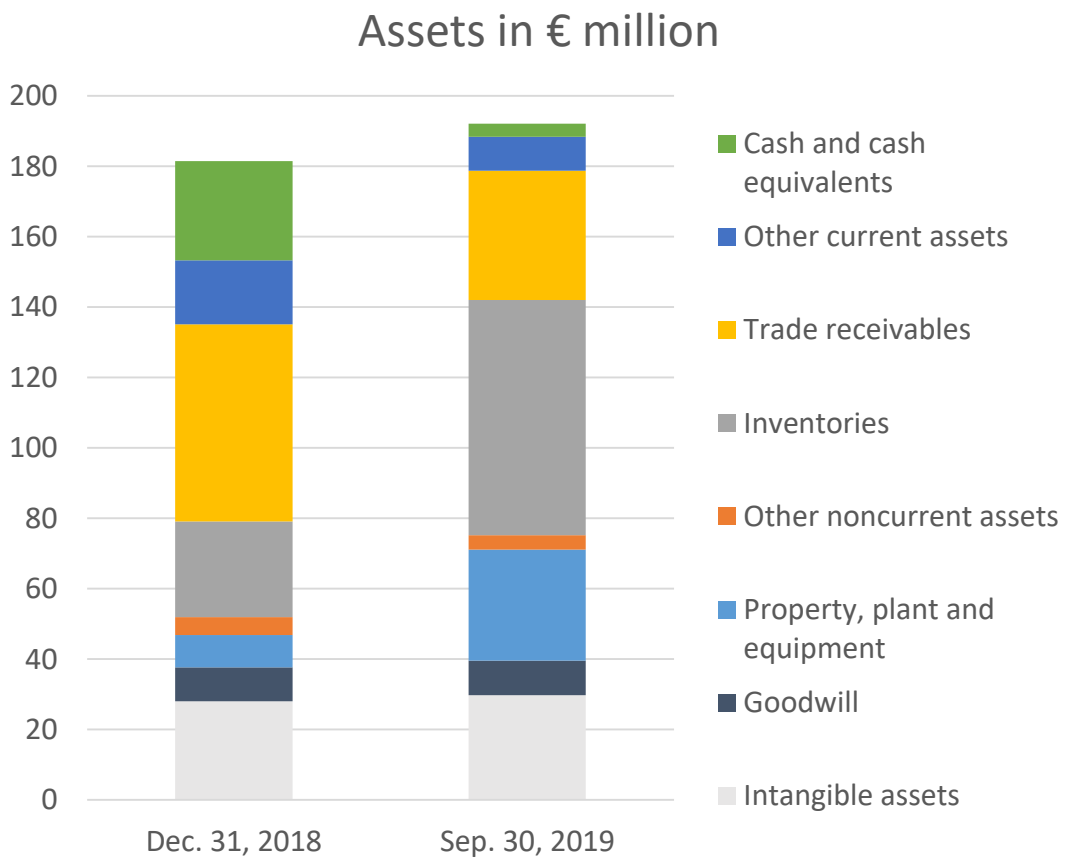
Ongoing Top-Line Growth at a Negative Profitability



Key Developments of Assets

- Increase of noncurrent assets by € 23.3m
  - Property, plant equipment € +22.3m – IFRS16 (Leasing) effect
  - Other assets € -3.1m – Reclassification of noncurrent rental prepayments in property, plant and equipment due to IFRS16 & recognition of contractual assets
  - Deferred tax assets € +2.1m – Recognition of loss carryforwards
- Decrease of current assets by € 12.8m
  - Inventories € +39.6m – supply of production material, which will be used primarily in 2020 for planned projects
  - Trade receivables € -19.3m – repayments from important customer
  - Liquid funds € -24.9m – expansion of operational business activities, prefinancing of production and spatial expansion of US site
  - Receivables from related parties € -11.3m – Repayment from parent company



Key Developments of Equity and Liabilities

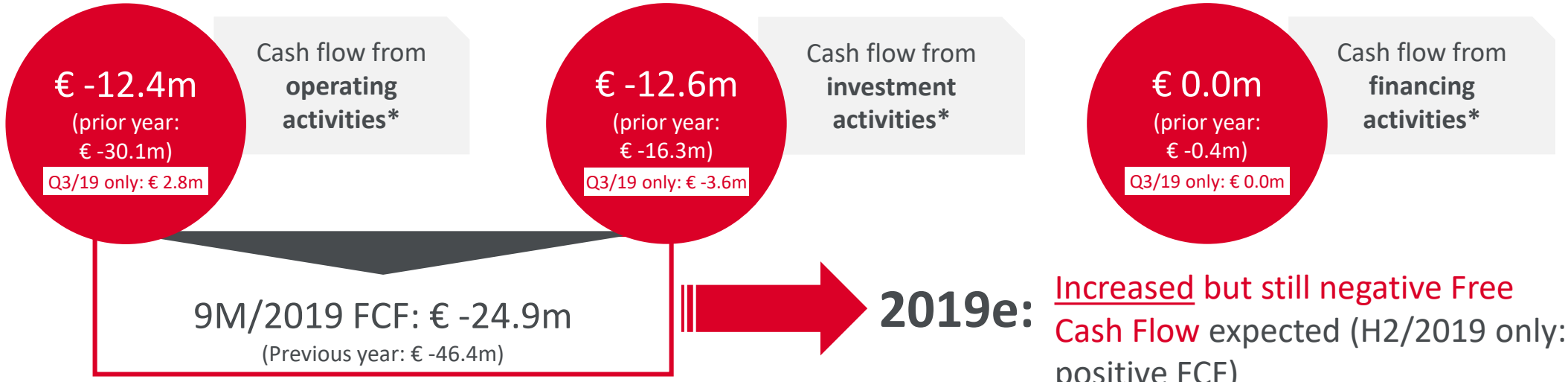
- Increase of noncurrent provisions and liabilities by € 14.1m
  - Noncurrent loans € +0.8m
  - Noncurrent liabilities from Finance Lease € +13.1m
- Increase of current provisions and liabilities by € 7.2m
  - Trade payables € +7.6m
  - Liabilities to related parties € 1.4m
  - Other current liabilities € -3.8m
- Decrease of equity by € 10.7m
  - Equity ratio at 74.9 % (Dec. 31, 2018: 85.3 %)

	Sep. 30, 2019	Dec. 31, 2018
Equity	**143,779**	**154,484**
Subscribed capital	15,825	15,825
Capital reserve	127,992	127,992
Profit/loss carried forward	9,718	7,614
Consolidated net income	-9,943	2,579
Currency translation differences	187	474
Noncurrent provisions and liabilities	**21,868**	**7,808**
Noncurrent finance lease liabilities	13,147	17
Noncurrent loans	958	141
Deferred tax liabilities	7,763	7,650
Current provisions and liabilities	**26,389**	**19,224**
Current loans	3,535	3,539
Trade payables	16,881	9,257
Liabilities to related parties	1,910	557
	194,308	**181,516**

Cash Flow Statement 9M/2019

Operating Cash Flow increased by € 17.7m compared to prior year and characterized by countervailing effects

- **Inventories** increased again in the light of sourcing cells which will be used in the coming year in projects underway
- **Trade receivables** decreased significantly according to plan and will be further reduced until the end of the year



** Jan. 1, 2019 – Sep. 30, 2019.*

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Market Entry in 2020 - Conversion of Diesel Buses

- Sales expectation in higher single-digit million range in 2020 - strong increase in sales figures from 2021 according to e-troFit
- Newly validated cells at Voltabox are ideal for application (cost and functional benefits) - Voltabox as sole battery system supplier
- e-troFit battery module can also be used for intralogistics (less dependence on previous main cell supplier)

Voltabox Li-Ion Batteries for 5G Network

- New requirements of the US customer already implemented
- Start of series production in 2020 at US plant
- Sales contribution 2020 expected up to **19** M€

- Studies show **demand for 750,000 to 1.2 million 5G mobile masts in Germany**
- Compared to conventional lead-acid batteries, **Voltabox lithium-ion batteries are lighter, smaller, more durable** and **maintenance-free**

Energy Thought Flexible – Voltabox Mobile Power Units

4 Core Markets

- **Construction**
- **Disaster Relief**
- **Border Patrol**
- **Event**

Furter potential application areas

- Emergency response
- National Parks
- Toll Stations
- Oil Field
- Welding (Construction)
- Mobile Broadcasting (TV crew)
- Medical Support
- Underground Applications
- AAA Automotive Support
- Field Hospital
- Pumping Stations
- Agriculture

Energy Thought Flexible – Voltabox Mobile Power Units

- **Voltafox are the new mobile energy storage devices from Voltabox** - Portable lithium-ion battery system for a wide range of applications
- Voltabox uses its ready-developed and powerful forklift battery system for this purpose

>> Optimum use for stock of prismatic NMC cells/modules (1. Generation)

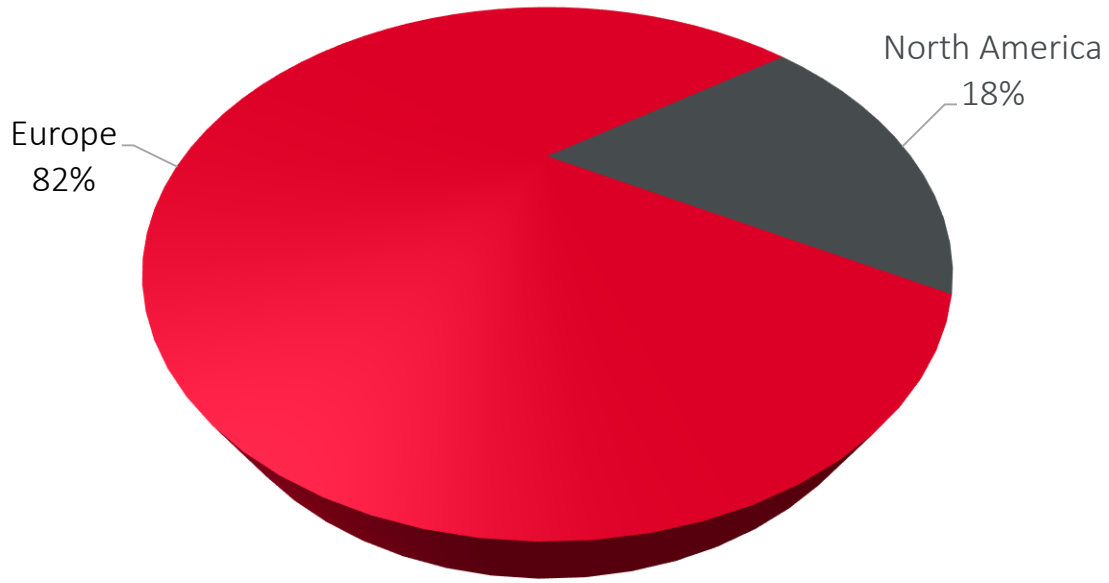
- Various scalable designs and performance features possible
- **Calendar week 46: Construction of prototypes Calendar week 49: Start of pilot project in Austin**

Characteristics

- LTE/3G/4G/GPS connectivity
- Remote control via Web-APP
  - Proactive recommendations for exchange by providers
  - Location determination, anti-theft protection

60-Months Cumulative Order Book*

60-months cumulative order book* with 100% weighting as of June 30, 2019

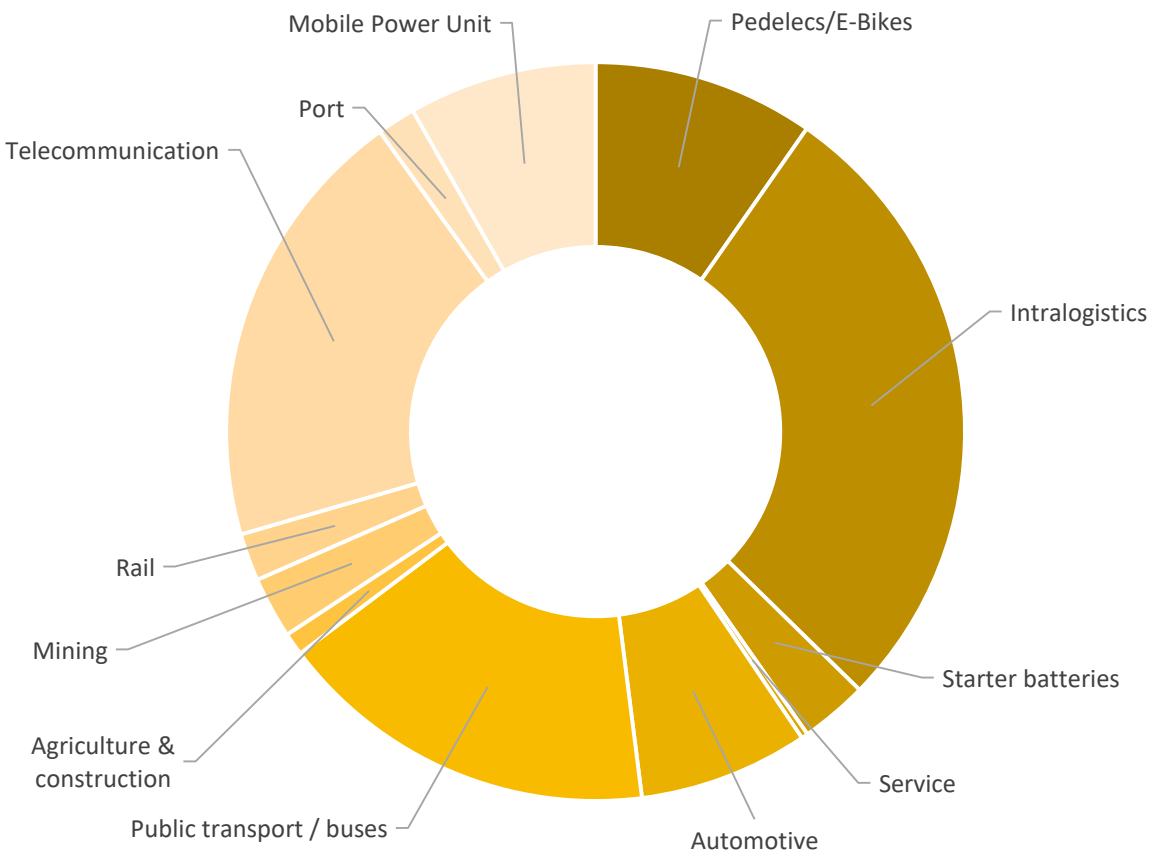


- Total 60-months order book* amounts to around € 1.1bn.
- Thereof approx. 64% signed orders and framework agreements (weighted with 100%)
  - Estimated order backlog is weighted according to the expected lifetime and the probability of occurrence
  - Serves as base for planning
  - Evaluation system in place since inception in 2011

** As defined by the company.*

Sales by Markets in 2020

- Continuation of the significant reduction in bulk risk with regard to major customers in the intralogistics sector
- Focusing within the occupied markets and further development of standardized solutions allows more efficient development and shorter time-to-market
- New (sub-)sales markets in the following areas
  - Public transport / buses (conversion of diesel buses)
  - 5G network
  - Mobile Power Unit (mobile battery storage for flexible use)
  - Port and rail applications

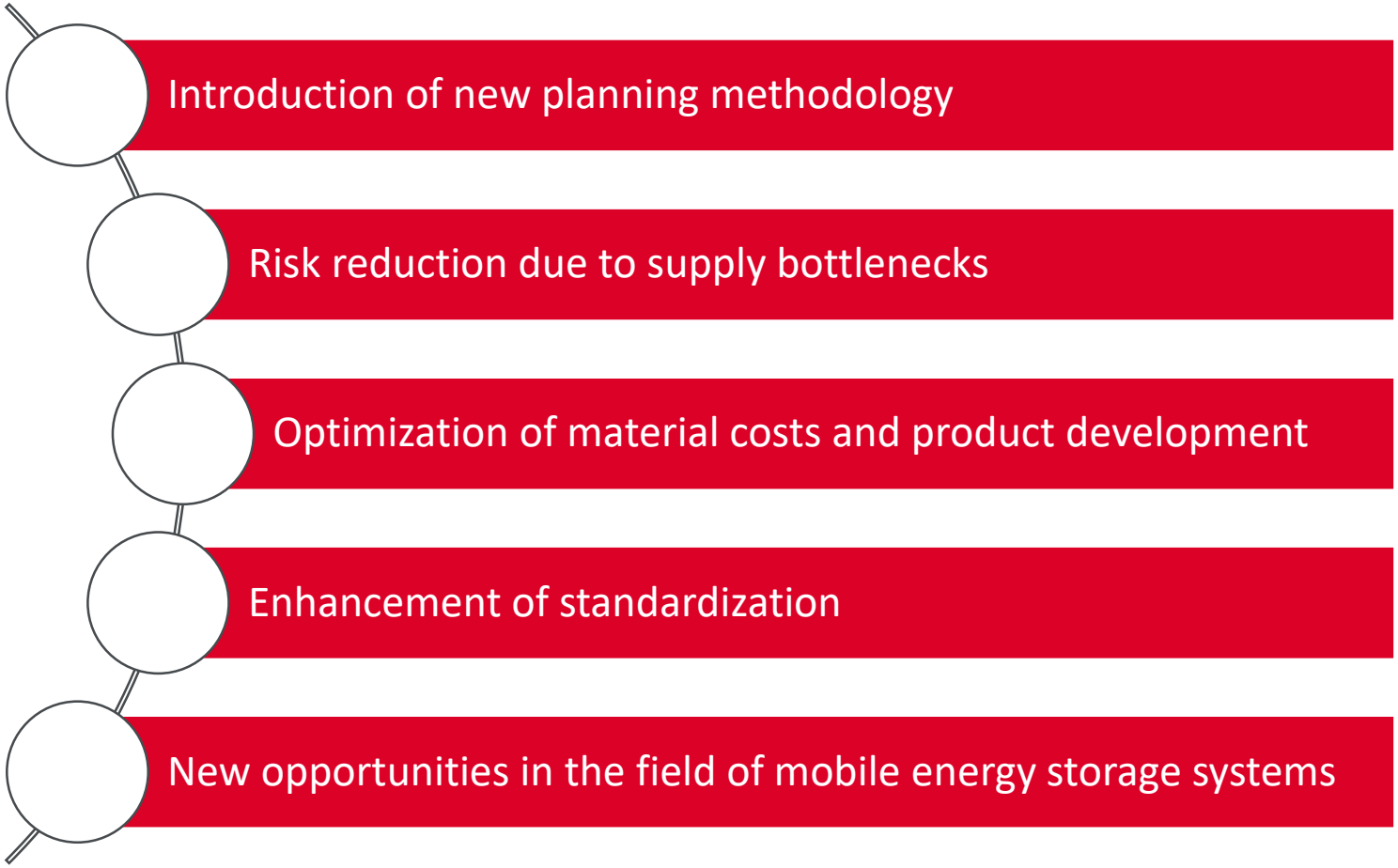


Forecast for Fiscal Year 2020

Sales	Profitability	Cashflow	Investments
Revenue € 85m to € 100m	EBITDA margin about 15% EBIT margin 5% to 7%	FCF single-digit positive	CAPEX-Investments about € 12.5m thereof about 70% capitalized development costs

Voltabox 2020ff. – Lessons Learned

- Shifts in sales have increased sensitivity to external, uncontrollable variables; large risk discounts on time scale of future projects
- Approval of further suppliers of prismatic NMC cells (CALB, SVolt) to reduce dependencies on existing suppliers
- Focusing and optimizing product portfolio in development and sales
- In-house developed solution with great market chances for value-conserving use of inventories



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