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# Motion in Sustainable Transport

## Capital Markets Day 2021

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# Important notices

This presentation includes forward-looking information and statements including statements concerning the outlook for our businesses.

These statements are based on current expectations, estimates and projections about the factors that may affect our future performance, including global economic conditions, and the economic conditions of the regions and industries that are major markets for ABB Ltd.

These expectations, estimates and projections are generally identifiable by statements containing words such as “expects,” “believes,” “estimates,” “targets,” “plans,” “outlook,” “on track,” “framework” or similar expressions.

There are numerous risks and uncertainties, many of which are beyond our control, that could cause our actual results to differ materially from the forward-looking information and statements made in this presentation and which could affect our ability to achieve any or all of our stated targets or anticipated transactions.

## **The important factors that could cause such differences include, among others:**

- business risks associated with the volatile global economic environment and political conditions
- costs associated with compliance activities
- market acceptance of new products and services
- changes in governmental regulations and currency exchange rates
- general market conditions, and
- such other factors as may be discussed from time to time in ABB Ltd’s filings with the US Securities and Exchange Commission, including its Annual Reports on Form 20-F.

Although ABB Ltd believes that its expectations reflected in any such forward-looking statement are based upon reasonable assumptions, **it can give no assurance that those expectations will be achieved.** We caution that the foregoing list of factors is not exclusive and you should not place undue reliance upon any forward-looking statements, including projections., which speak only as of the date made. We do not undertake or accept any obligation to release publicly any updates or revisions

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This presentation contains non-GAAP measures of performance. Definitions of these measures and reconciliations between these measures and their US GAAP counterparts can be found in the “Supplemental Reconciliations and Definitions” section of “Financial Information” under “Quarterly results and annual reports” on our website at [www.abb.com/investorrelations](http://www.abb.com/investorrelations). Reconciliations can be found on our website under “Capital Markets Day 2021”.

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# We enable the transition to sustainable transport

## Our technology



Common modular  
platforms



High performance  
control



Digital

## Our building blocks

1



**Converters**  
(main propulsion  
and auxiliary)

2



**Traction motors**  
(industrial and  
traction purposes)

3



Power module

4



**Industrial drives**

5



**Energy storage  
systems**

6



**Battery chargers**

## Our role

We provide  
technology and  
products to our  
OEM and System  
Integrator partners

With our domain  
expertise we help  
them to apply the  
technology in  
multiple applications



**Zurich**





# Energy savings of 30 gigawatt hours per year

- In a recent retro-fit project together with SBB the entire fleet **saves around 30 gigawatt hours of energy every year**, which correspond the average electricity consumption of 10,000 Swiss households
- The conversion to the latest converter technology and the cooling systems of the converters operated with water instead of oil enable a **reduction in energy consumption and ensure more ecological and safe rail operations**





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# The Netherlands





# Charging electric ferries in Amsterdam

- More and more ferries and short-distance transportation vessels at sea, lakes and rivers are moved by **electric powertrain**. Like EVs these need to be charged regularly
- ABB has delivered the power conversion technology to **charger of new electrical ferries in Amsterdam** reducing carbon, small particle emissions and noise in often very urban areas







Sweden





# Towards an emission-free mine

- Electric trolley truck system enables heavy transportation with electric driven battery vehicles to lower CO<sub>2</sub> emissions and improve the work environment at the underground copper-zinc mine
- Mine truck MT42 powered by ABB motors and drives and additional motor and a drive to running the hydraulic pump





**Norway**





# Clean air and low noise construction site with ABB electrical powertrain

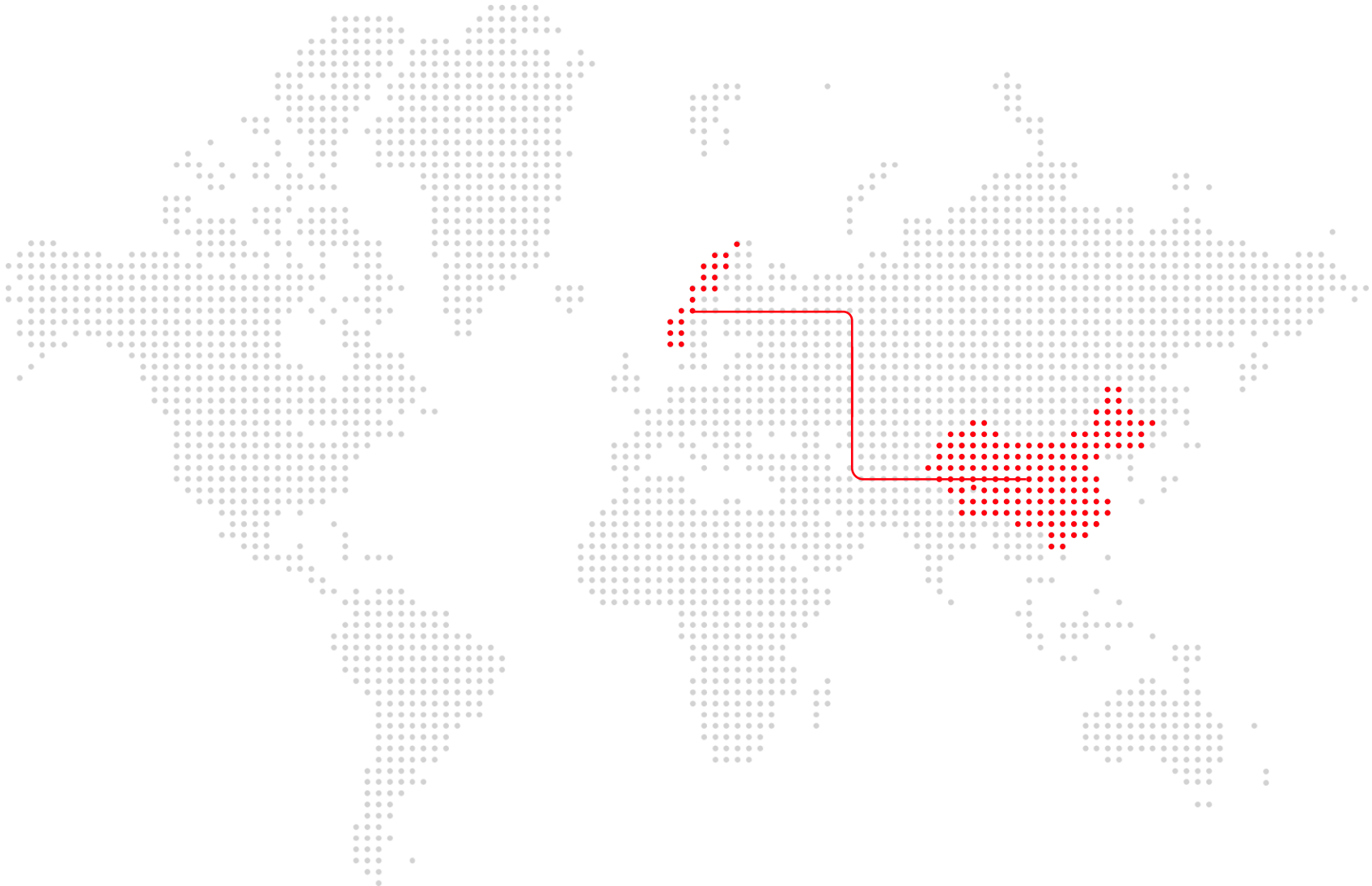
- Electric powertrain is used more and more also in heavy industrial vehicles and construction machines
- The powertrain consist of a new electric motor and a drive that replace the old diesel driven motor for the hydraulics
- ABB has used its broad technology platform to design dedicated products







China





# Reducing emissions with Shore-to-Ship power

- When in harbor, vessel can switch off the diesel generator and use shore power converters to power the vessel instead
- In this way, the CO<sub>2</sub> and other harmful emissions of the vessel during berthing will be lowered down to zero
- ABB frequency converters are an economic and efficient solution to convert the grid electricity to the appropriate frequency needed on board





Chile





# Sustainable fish harvesting

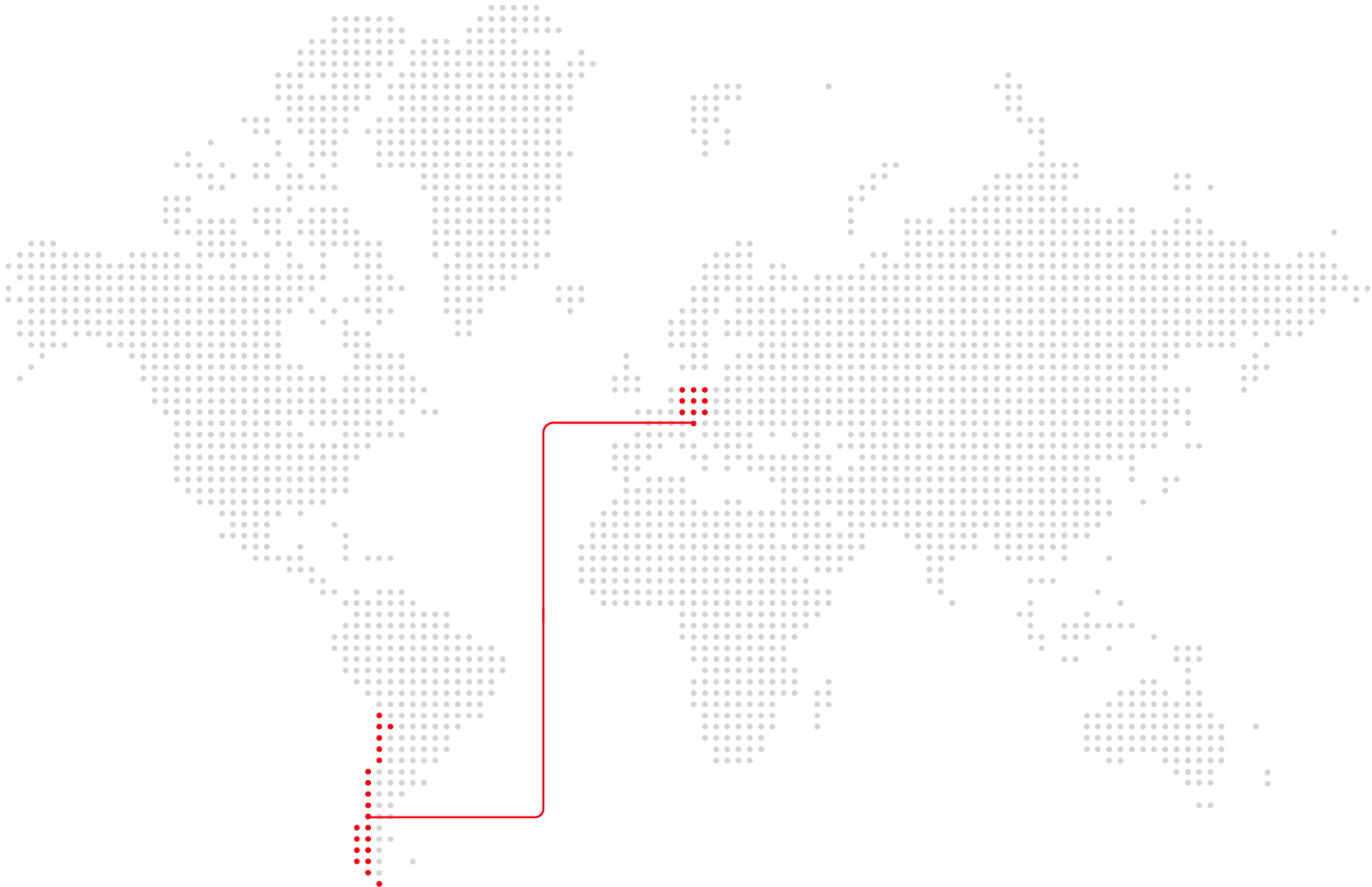
- Specialty vessel are a growing market for electric power conversion and ABB is well positioned for that market
- Asenav and Patagonia Wellboats worked together to create a fleet of hybrid fish carrier vessels in Southern Chile where salmon and trout are harvested from the farms on the fjords and transported to processing plant
- Asenav relies on ABB motors and drives, together with a Power Management System, which improves the ships' energy use and improves maneuverability in very demanding environment. Patagonia Wellboat cuts down diesel consumption by 20%







Germany





# ABB technology conquers the mountains

- ABB is the market leader in providing power to ski-lifts around the world – from the Rockies to Alps to Akaishi
- The new ABB-powered cable car system at to the Zugspitze, Germany's highest peak, can take as many as 580 passengers an hour to the top of the mountain
- Pulling the gondolas such a long distance at steep gradients of as much as 104 percent (about 46°) and a speed of 10.6 meter per second requires significant power, which is supplied by two ABB High-power motors







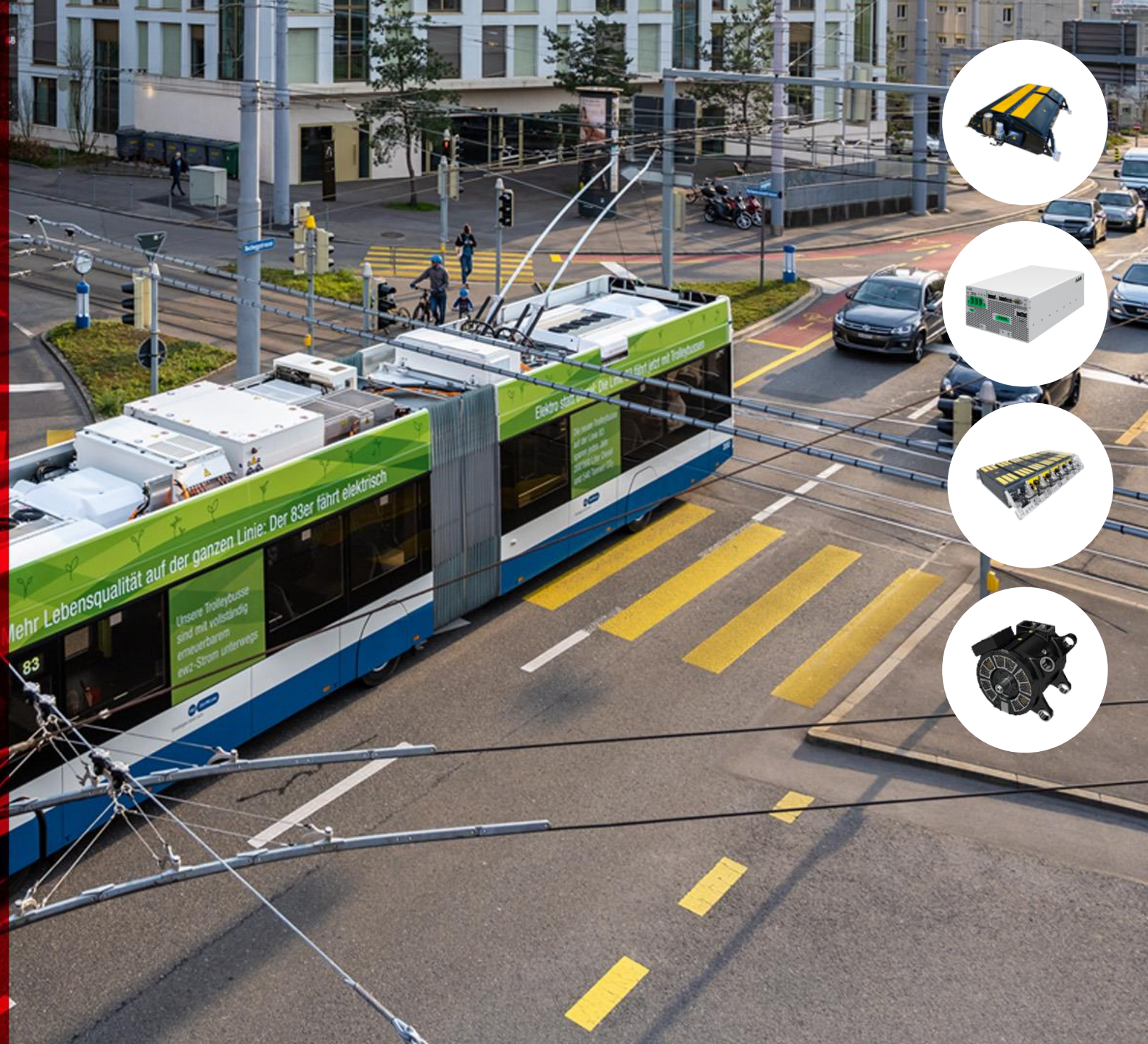
**Zurich**





# ABB enables energy-efficient bus operation on route 83 in Zurich

- More than 100 electric buses with ABB technology are already in use in cities in Switzerland and Europe
- Line 83 of the Zurich Transport Authority (VBZ) has been operated purely electrically since this summer. The eight environmentally friendly battery trolleybuses are equipped with electric motors, drive technology and energy storage systems from ABB and have already proven themselves in practice
- Adrian Vogel, Head of Bus Fleet Management at VBZ, comments: “By switching to electrical operation, we are saving over 200,000 liters of diesel and around 540 tons of CO<sub>2</sub> a year”





# Leveraging technology portfolio across mature and emerging segments



**Rail**  
~\$10 bn



**Marine & shore to ship**  
~\$1 bn



**Trolley eBus**  
~\$1 bn



**Ski lifts**  
<\$0.5 bn



**BESS<sup>2</sup>, HEV<sup>3</sup>**  
High growth emerging segments

Market position<sup>1</sup>

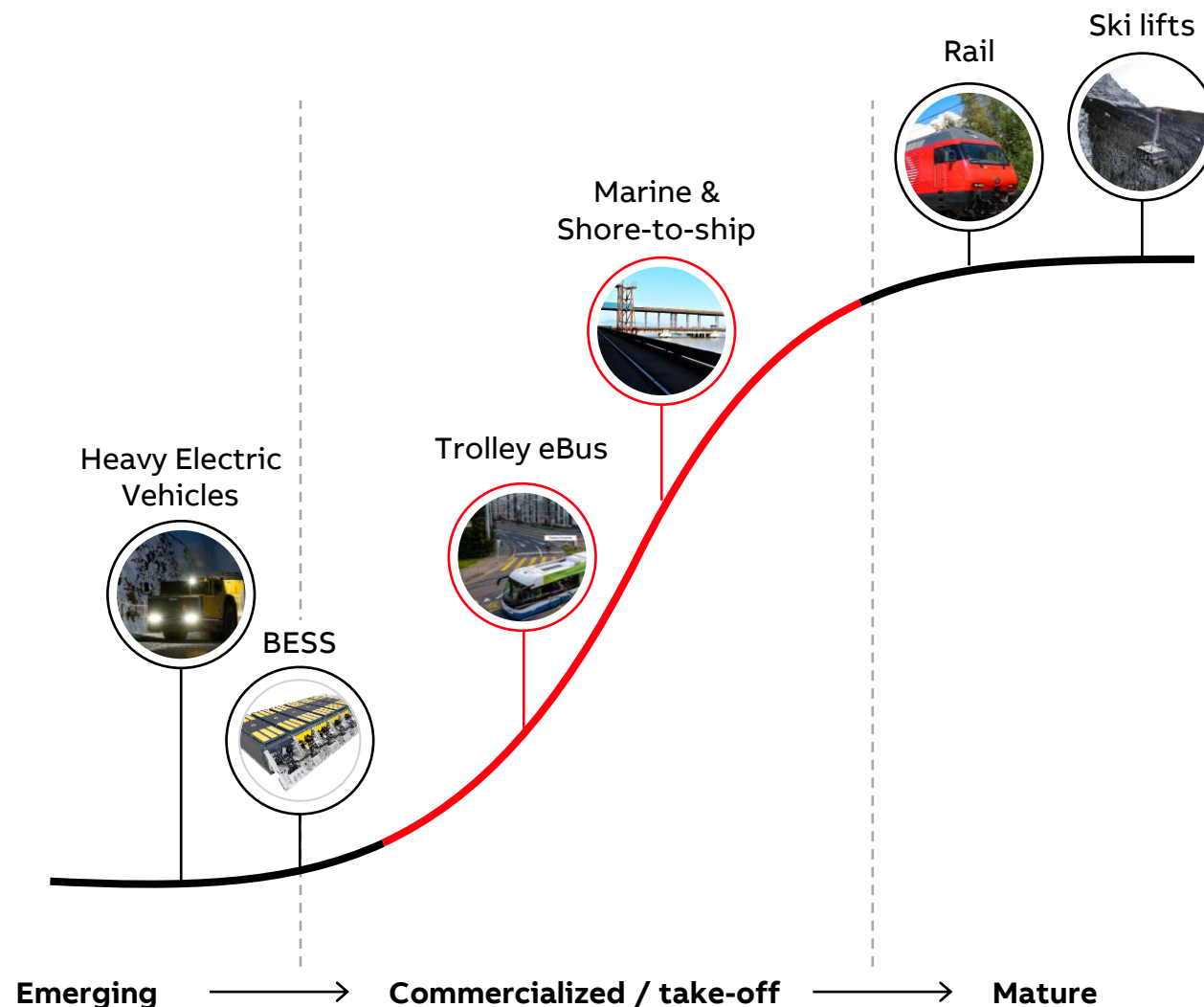
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#2

#3-5

#1

Emerging



Business opportunities have various levels of market maturity



# Sustainable transport as part of our business

Orders of ~\$1bn, ~15% of MO order intake<sup>1</sup>

## Sustainable transport market growth drivers

01

### Decarbonization

Policy makers and the broader society show a clear trend towards decarbonization, COP26 further reinforced the commitment

02

### Energy efficiency

Energy consumption is the major cost element in transport applications, therefore the energy efficiency is a must

03

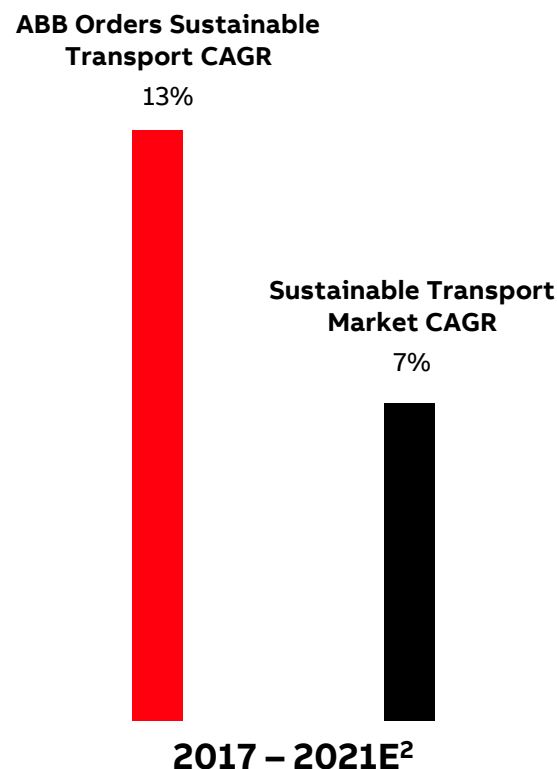
### Modernization of public transport

Urbanization and higher demand of comfort drives the need for investments into existing transport systems

04

### Fuel flexibility and battery maturity

Replacement of diesel propulsion to hybrid or full electric vehicles enabled by matured battery technology



We come from a strong order backlog and will **continue to outgrow the market**



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**The future of  
transport is electric**



**ABB**