SOLVAY

Progress beyond

Capturing Growth in Clean Mobility

FEBRUARY 2, 2022

SPEAKERS

Dr. Ilham Kadri | Michael Finelli

With you today

Dr. Ilham Kadri

CEO and President of the Executive Leadership Team of Solvay

Mike Finelli

President of Solvay Growth Platform

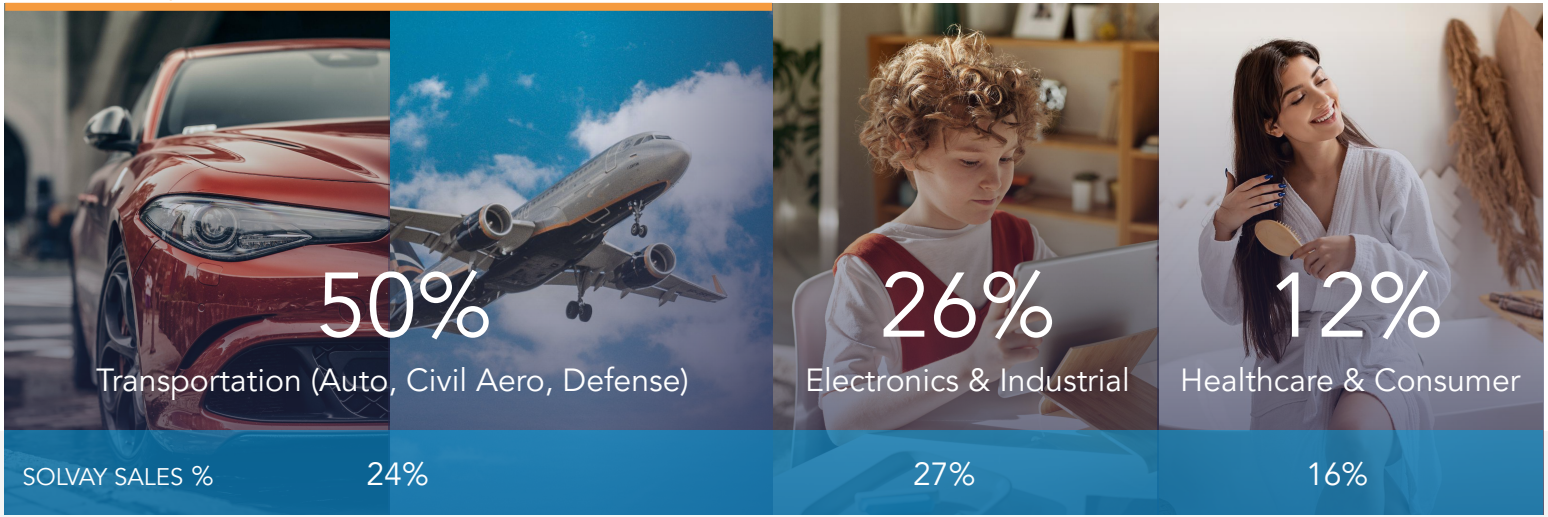
Dr. Maurizio Gastaldi

Director of the Battery Materials Platform


SOLVAY
The future of mobility

Materials business delivers above market growth at superior returns

Transportation is a significant growth driver



Materials FY 2021

Sales	Sales Growth	EBITDA margin	ROCE
€ 2.9 bil	~10% *(2021-2025)*	30%	~12%

Unmatched specialty portfolio to offer best technology for each customer unmet need

	High Performance Polymers									High Perf Composites						
	HPPA	PPS	PEEK	PSU	PTFE	PVDF	PFA	FKM	PFPE	Thermo-plastic comp.	Carbon Fiber	Thermoset comp.	Resin Infusion	Adhesives & films	3D Additive Mfg	Space Ablatives
ARKEMA	✓					✓								✓		
BASF	✓			✓												
Celanese		✓													✓	
Chemours					✓		✓	✓	✓							
DAIKIN					✓	✓	✓	✓	✓							
DSM	✓	✓														
DUPONT	✓															
dyneon					✓	✓	✓	✓								
EMS	✓															
HEXCEL										✓	✓	✓	✓	✓	✓	✓
Henkel 3M														✓		
KUREHA		✓				✓										
SOLVAY	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TORAY		✓								✓	✓	✓	✓	✓	✓	✓
TEIJIN										✓	✓	✓				
victrex			✓													

Our global materials presence supports customers globally and locally

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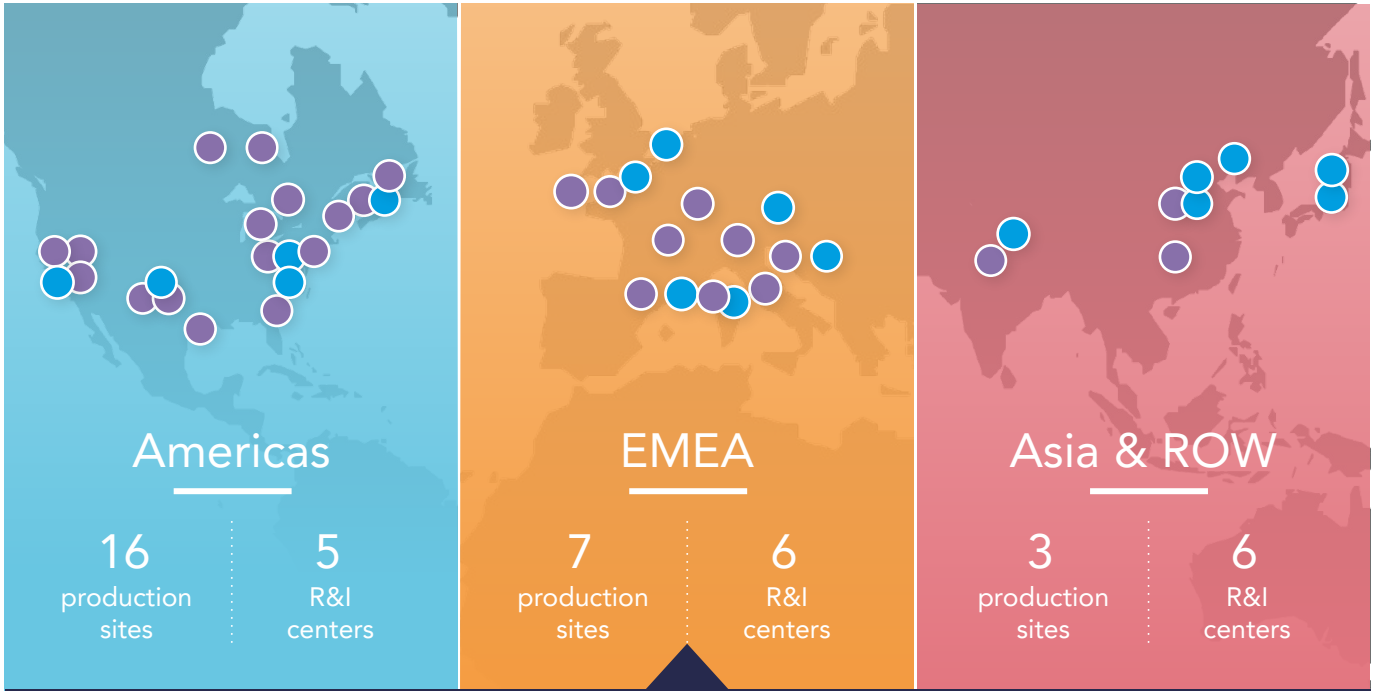
Production Sites



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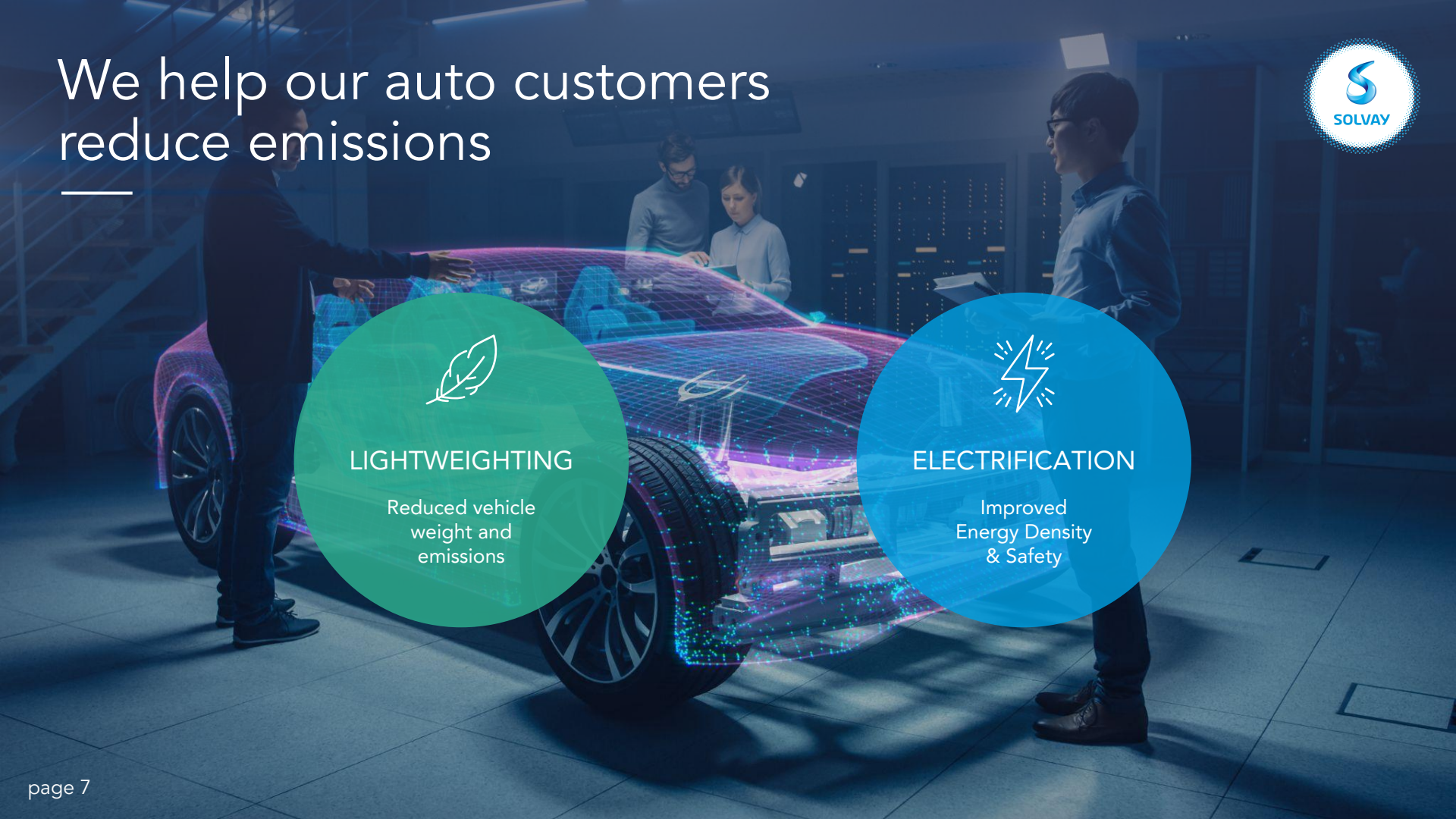
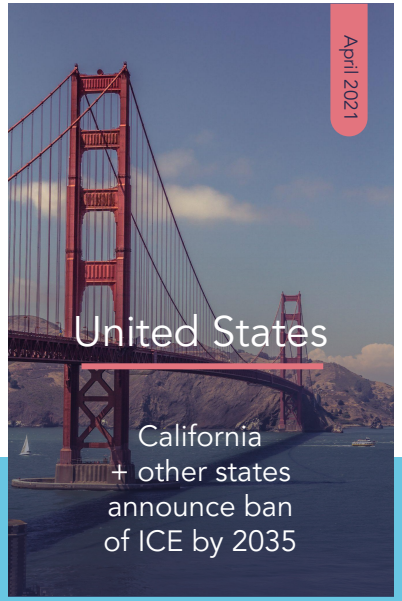
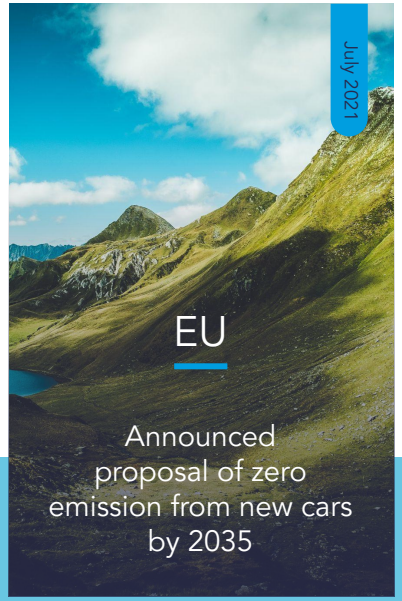
Research & Innovation Centers

We help our auto customers reduce emissions



Auto industry transformation underway driven by policy and major players





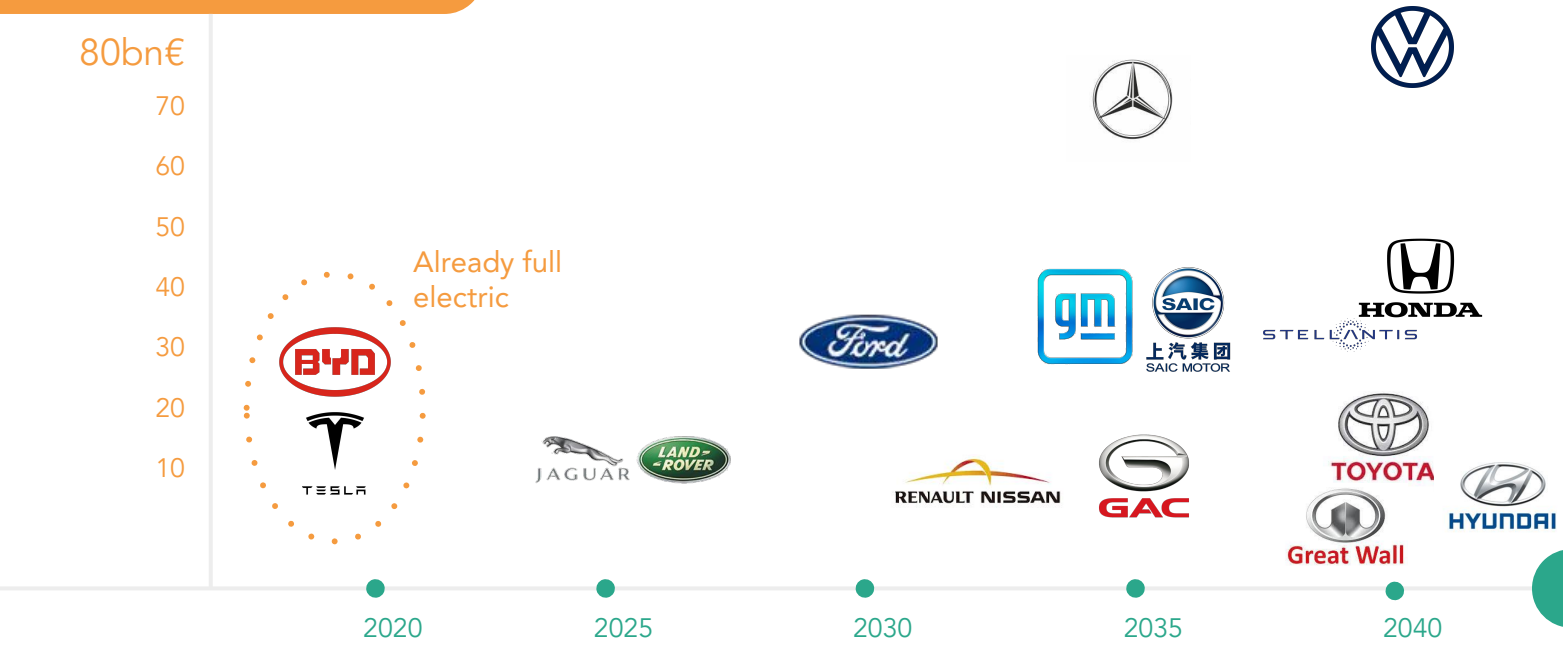
Main drivers

- Consumer preferences
- Fundamental shift in regulatory environment
- Massive investments in capacity and infrastructure

PHEV - Plug-in Hybrid; BEV - Battery Electric Vehicle; FCEV - Fuel Cell Electric Vehicle

Major OEM investments in e-mobility are underway

Investments announced



ICE phase out

>400bn€

Investments in EV from OEMs in the next 10 years

Source: OEM / company public disclosures

We have a track record of outgrowing the auto market with a proven model

1
Decade-long OEM and tier 1 partnerships

~€900 million of customer opportunities in the pipeline with launch date in the next 3 years

2
Unmet needs

Lightweighting by 20% to 50%
E-motor efficiency increase by 10%

3
Innovation

25% of sales from products launched in the last 5 years
1,000 patent families in force (200 filings in the last two years)

4
Capex & people

€300m investment in EU; Capacity sufficient to secure EV battery growth to 2025; 400FTE in Auto & Batteries

Source: LMCA G LVPTF (Q3 2021)

Key Takeaways

Shift to EV will accelerate Solvay growth to double digit

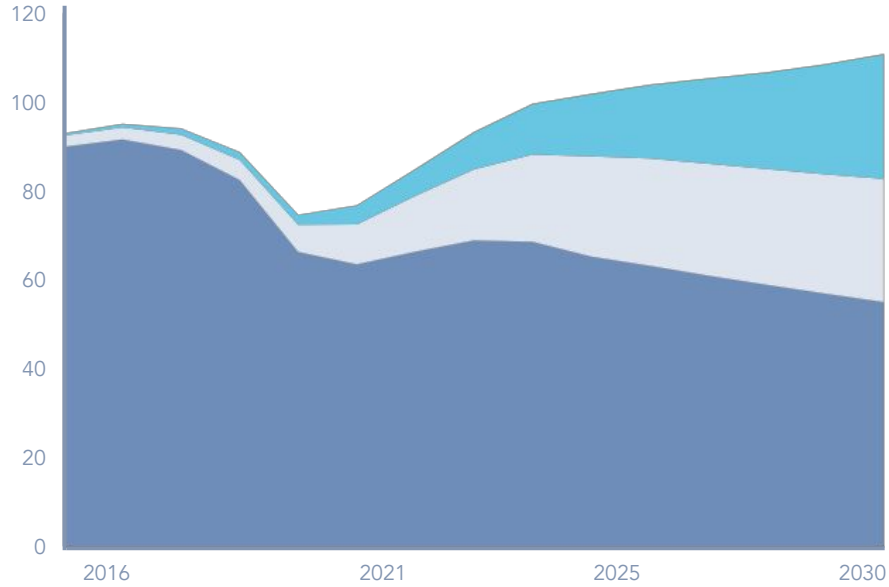
We announced a major capacity expansion to secure our growth until 2025

We have a track record of outgrowing the Auto Market

We have an unrivalled leadership position in EV batteries

The electrification transformation is accelerating

Light Duty Vehicles,
global production by powertrain (million units)



Share in 2030

BEV 25%

Hybrid 25%

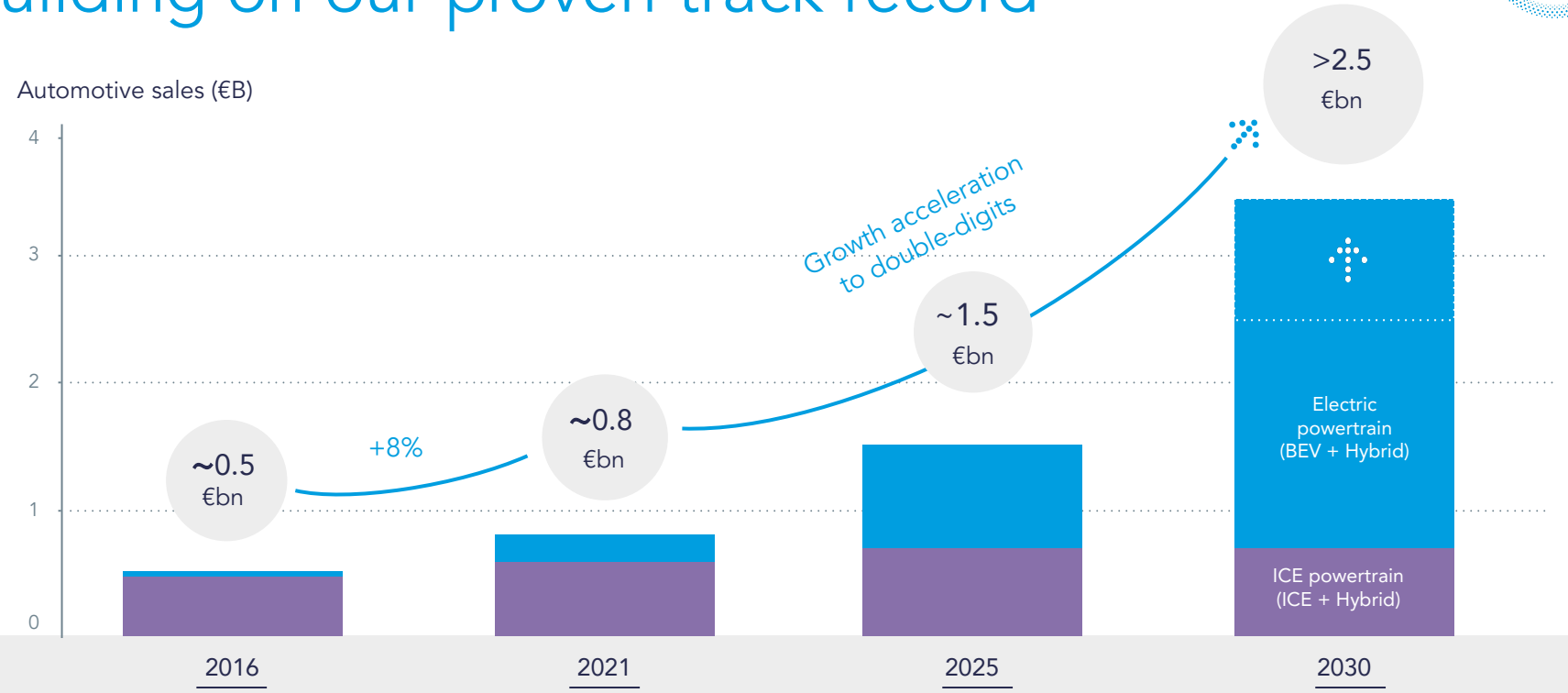
ICE 50%

Electric powertrain

ICE powertrain

Source: LMCA G LVPTF (Q3 2021)

Solvay growth will accelerate to double digit, building on our proven track record



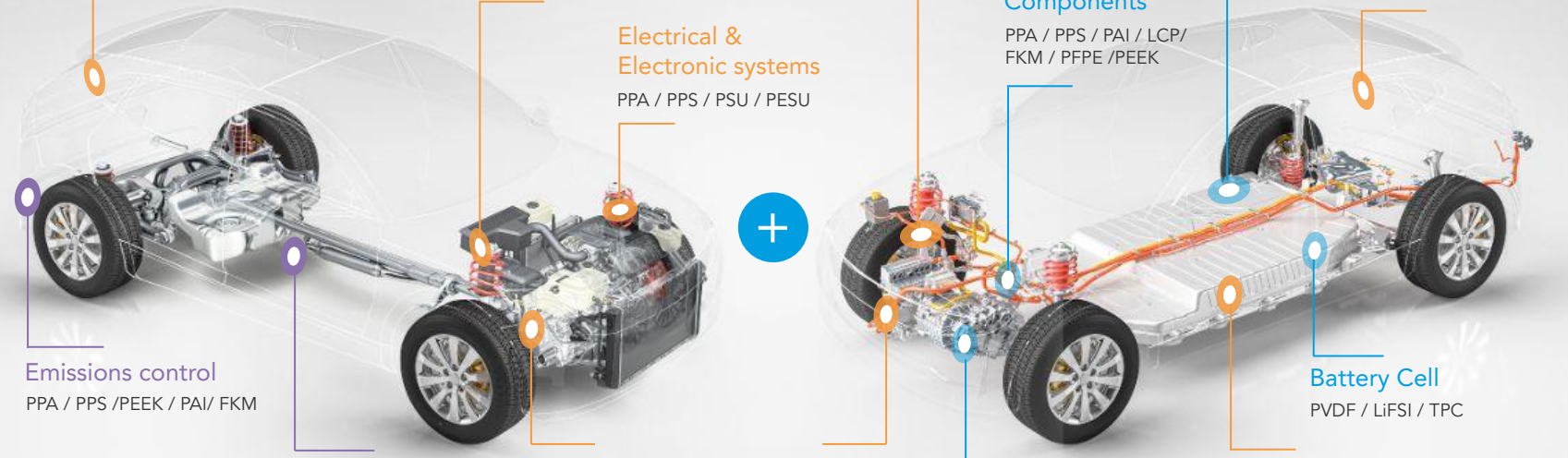
Market Source: LMCA G LVPTF

Reinforcing our leadership position in highest growth, highest value part of the market

	Market CAGR '21-'25	Addressable Market value per vehicle[1]	Market share '21
Electric powertrain	~4%	1x	1x
ICE powertrain	~32%	~2x	~1.5-2x

Note: (1) Value of polymers Solvay can provide;
Hybrid represented in both ICE and Electric powertrains Source: LMC

Transition to EV doubles addressable market for Solvay



Structural & semi-structural parts
Epoxy prepregs

Thermal & air management systems
PPA /FKM / PPS /PEEK / PAI

Electrical & Electronic systems
PPA / PPS / PSU / PESU

Emissions control
PPA / PPS /PEEK / PAI/ FKM

Transmission
PPA / PEEK / PAEK / PAI / PPS / FKM

Lighting
PPS / PESU / PPA

Electrical & Electronic systems
PPA /FKM / PPS /PEEK / PAI

Battery Pack
MTM®/ VTM®/ LTM® / HTM®

E-motor/eDrive Components
PPA / PPS / PAI / LCP/ FKM / PFPE /PEEK

Structural & semi-structural parts
Epoxy prepregs

Lighting
PPS / PESU / PPA

Power Electronics
PPA / PPS / PARA / HPPA

Battery Cell
PVDF / LiFSI / TPC

Thermal management systems
PPA /FKM / PPS /PEEK / PAI

EV applications
ICE and BEV
ICE applications

€1X → €2X

Examples of high performance solutions

Coolant Lines

50% weight reduction

- Metal replacement by Ryton XE PPS
- Design flexibility
- High heat resistance
- Safety (lower leakage risk)

ICE POWERTRAIN

e-Motor Magnet Wire Insulation

25% motor weight reduction
9% horsepower
3% higher torque

- 1st mover with PEEK magnet wire application
- Thermal endurance at 240 °C
- Electrical properties at temp

ELECTRIC POWERTRAIN

Battery

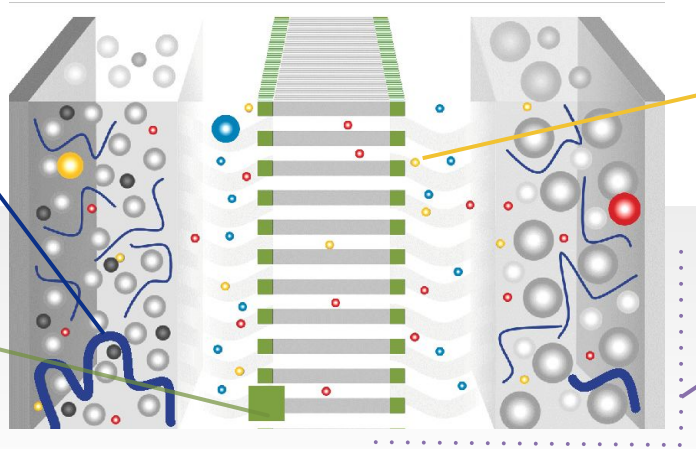
25% vs aluminum
40% vs steel
casing weight reduction

- Inside: PDVF + LiFSi
- Outside: PPA + TPC
- Weight savings
- Improved economics vs Aluminum
- Functional integration of multiple components

ELECTRIC POWERTRAIN

Our materials circle the battery with a total opportunity of >€2B by 2030

Li-ion battery cell



PVDF cathode binder

Keeps the cathode active material in place and connects it to the cathode current collector

PVDF separator coating

Improves the chemical and mechanical resistance of the separator

Electrolyte Ingredients & Solutions

LiFSI salt, Energain® high voltage solvent, Solgain® solid electrolyte, Inorganic conductors

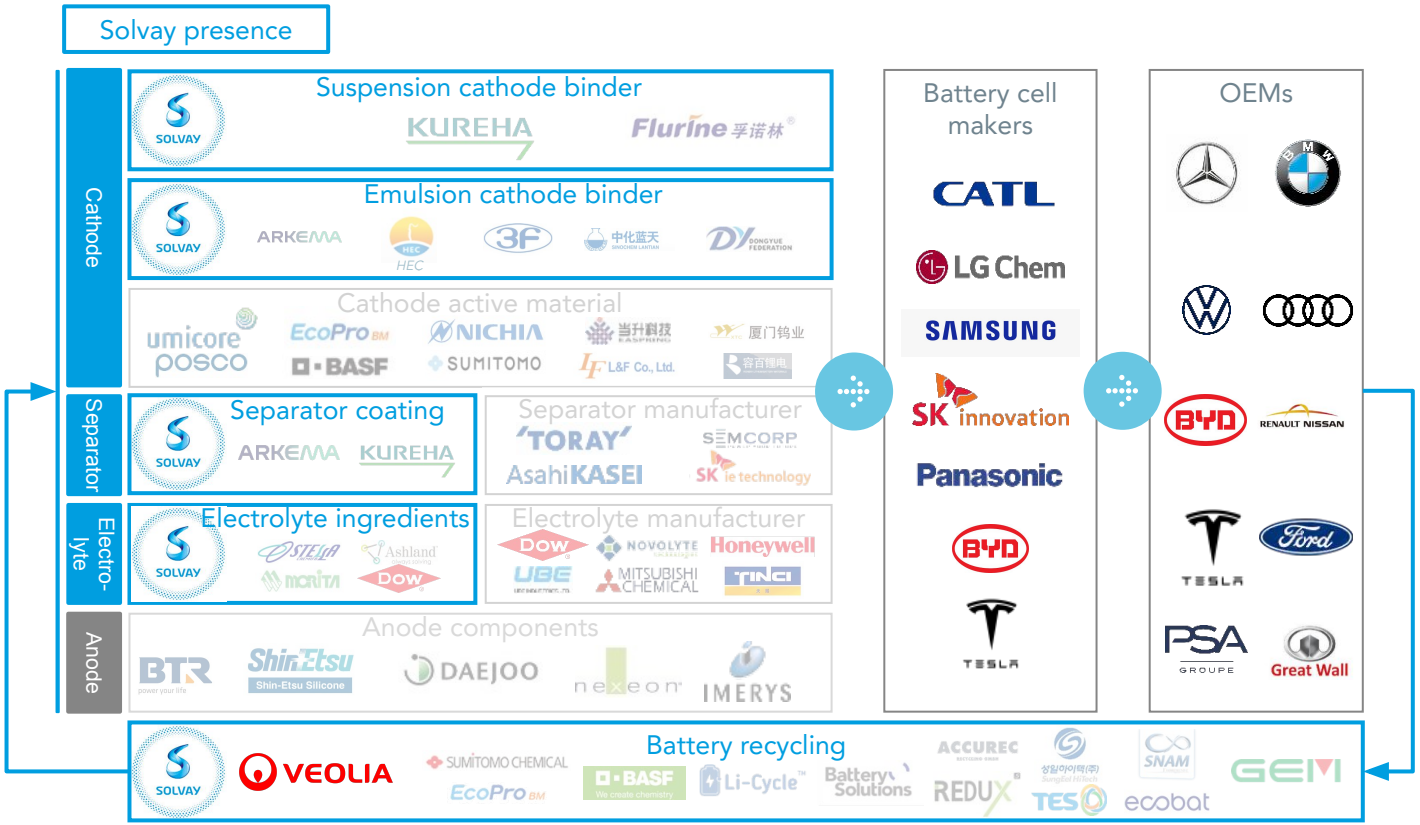
Structural Components

Thermoplastic composite casing Gaskets and insulators

We enable key functionalities:

- Safer
- Better energy density
- Better power
- Lower cost

We are uniquely positioned in the value chain

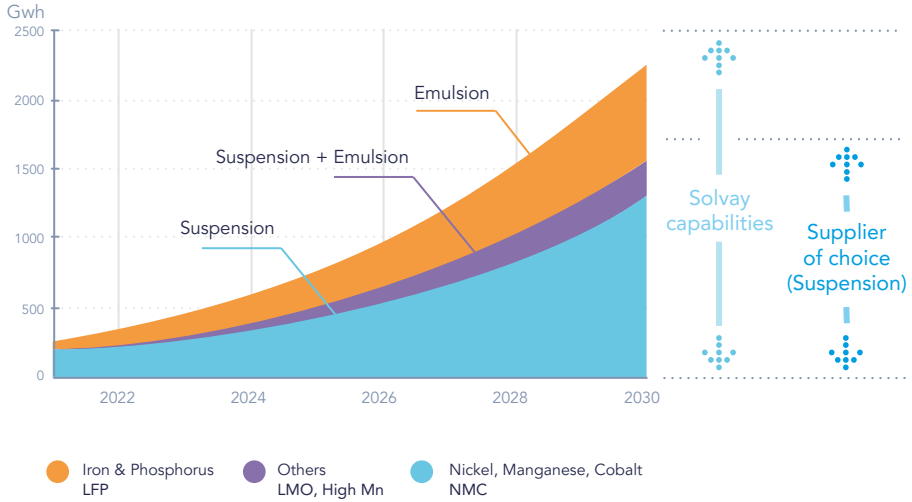


- Solvay is specified with all of the major players
- We continuously innovate together with our key customers
- Solvay is the undisputed leader on suspension PVDF, with backward integration

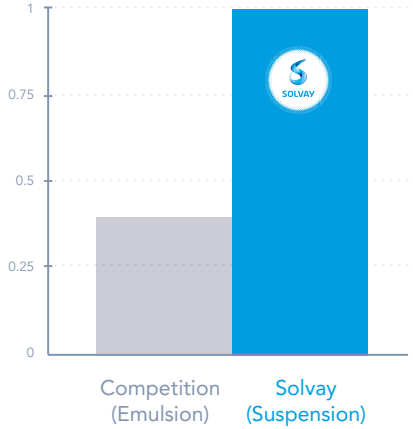
Note: value chain for Solvay production route; Key players, not exhaustive Source: Solvay internal data

We are the technology of choice for higher end battery applications

Evolution of Auto Gwh demand by cathode binders technology



Relative electrode adhesion in NMC



We have the full range of technological capabilities

We are battery technology agnostic

We focus on the higher-end segment where we are the supplier of choice

Suspension PVDF offers a unique combination of properties that makes it the solution of choice for NMC cathodes

Source:
Mineral Intelligence,
Wood MacKenzie, ICCSINO

Our innovation enables further progress in safety, energy density and total cost of ownership

2015 - 2028 LI-ION BATTERIES

Generation 2
150 - 320 Wh/kg

- Fluorinated additives
- Solef® PVDF as cathode binder or separator coatings

Generation 3
150 - 320 Wh/kg

- New lithium salt (LIFSI)
- Energain® for high voltage batteries
- New PVDF as binder & separator coatings
- Solgain® for dry process as cathode and anode

2027 SOLID STATE BATTERIES

Generation 4
300 - 500 Wh/kg

- Argyrodite - New inorganic conductors for all solid state batteries
- New polymers for polymeric solid state batteries

Main benefits

- Greater Range
- Faster Charging
- Safety
- Lower Total Cost of Ownership

Our planned capacity secures our growth until 2025 across US, Europe, and Asia

PVDF production

Tavaux,
France

West-Deptford,
USA

Changshu,
China

Research

Paris, France
Next-generation battery
Inorganic chemistry

Brussels, Belgium
Next-generation
battery Modeling

Bollate, Italy
Battery cell prototyping lab

Seoul, South Korea
Battery cell prototyping lab

~€300m
investment in
France

~35 kt
PVDF in EU
by 2024

#1 PVDF
producer
in Europe

#1 PVDF
suspension
producer
globally

Key Takeaways

We have a track record of outgrowing the Auto Market

We reduce emissions through lightweighting & electrification

Solvay +8%
vs. Market -4%
(2016-2021)

Shift to EV will accelerate Solvay growth to double digit

EV doubles the addressable market value

We have 1.5-2x the market share in EV vs. in ICE

We have an unrivalled leadership position in EV batteries

We are the undisputed leader in suspension PVDF

We are technology agnostic and focus on high end batteries

We announced a major capacity expansion to secure our growth until 2025

€300m announced capacity expansion in Tavaux

#1 PVDF in EU and the only suspension producer for high end batteries

Market Source: LMCA G LVPTF (Q3 2021)

Q&A

SOLVAY

Progress beyond

Dr. Ilham Kadri

CEO and President of the Executive Leadership Team of Solvay

Mike Finelli

President of Solvay Growth Platform

Dr. Maurizio Gastaldi

Director of the battery materials platform

Glossary

- **BEV**: Battery Electric Vehicle
- **FCEV**: Fuel Cell Electric Vehicle
- **ICE**: Internal combustion engine vehicle
- **LDV**: Light Duty Vehicles, mobile machine that is primarily used to transport passengers and cargo (e.g., cars, vans or SUVs)
- **OEM**: Original equipment manufacturer, an organization that makes devices from component parts bought from other organizations
- **PHEV**: Plug-in Hybrid
- **PVDF**: Polyvinylidene Fluoride is a highly non-reactive thermoplastic fluoropolymer that is inherently flame retardant. It has a high degree of purity, robust mechanical properties, electrochemical stability, and broad chemical resistance at high temperatures.
    - **Suspension PVDF** particles are much bigger, and they settle down when mixing is stopped. Because the polymers are more crystalline, they offer higher mechanical properties and higher melting points. Plus, they can be injection molded.
    - **Emulsion PVDF** particles are physically stable, even in the absence of mixing, and they remain evenly dispersed in water. Smaller particle size promotes faster powder dispersion in solution processing, a higher degree of branching, and smaller crystallites that enhance film clarity.

Thank you.

Progress beyond

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