

# THERMOPLASTIC BATTERY HOUSINGS FOR THE GLOBAL EV MARKET

Local trends drive local solutions for supply chain, design and manufacturing

17. Kunststoff-Dia(hr)log 2026

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Director Research, Kautex Textron



# Textron Inc. | Leading Branded Businesses

2025 Revenues - \$14.8B

## Textron Aviation

Cessna | Beechcraft  
BY TEXTRON AVIATION

TEXTRON AVIATION  
DEFENSE

Able  
AEROSPACE SERVICES  
A Textron Company

AeroMOTION+  
BY TEXTRON AVIATION

McCAULEY

TRU SIMULATION

## Industrial

CUSHMAN

EZGO

KAUTEX  
A Textron Company

JACOBSEN

TEXTRON GSE  
GROUND SUPPORT EQUIPMENT

## Textron eAviation

PIPISTREL

## Textron Systems

TEXTRON Systems

ATAC  
A Textron Company

LYCOMING

HOWE X HOWE

## Bell

BELL

## Finance

TEXTRON  
FINANCIAL

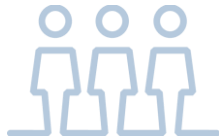
# Offering Value Creation – Close to our Customers



13 Countries



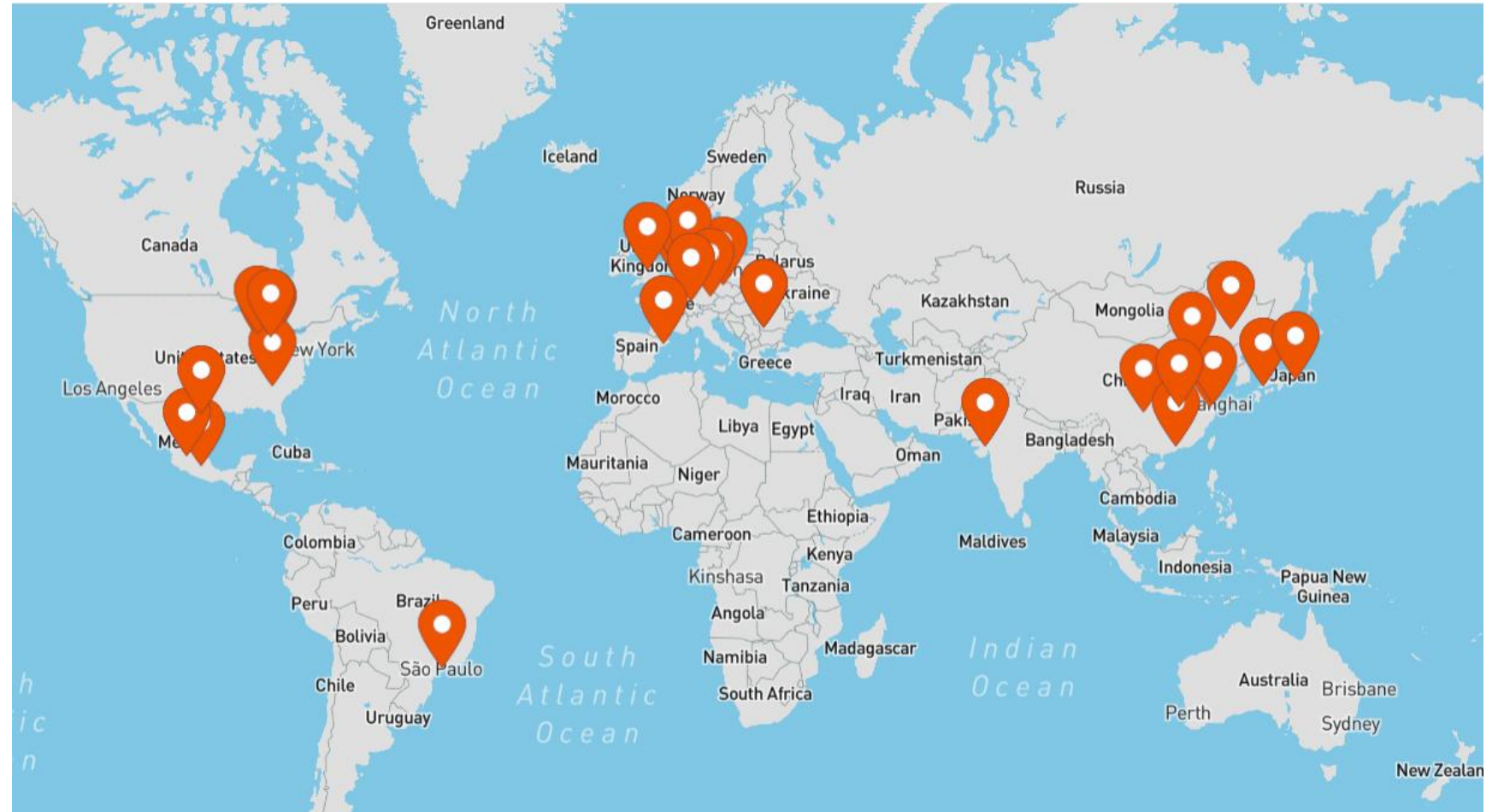
30+ Plants



~5000 Employees



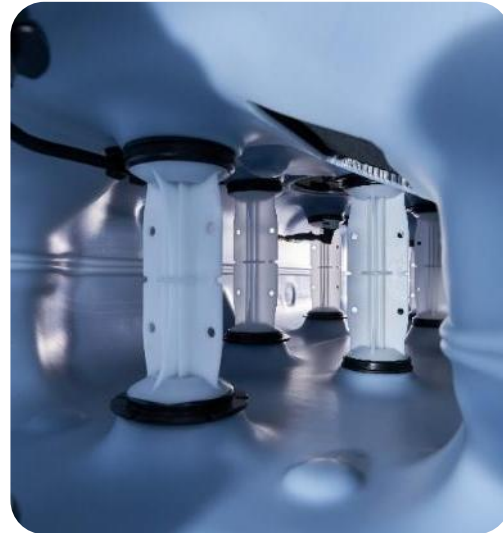
Regional Development Centers



# Kautex Automotive Product Portfolio



**THERMO-  
PLASTIC  
BATTERY  
ENCLOSURES**



**CONVENTIONAL &  
NGFS® HYBRID  
PRESSURIZED  
FUEL SYSTEMS**



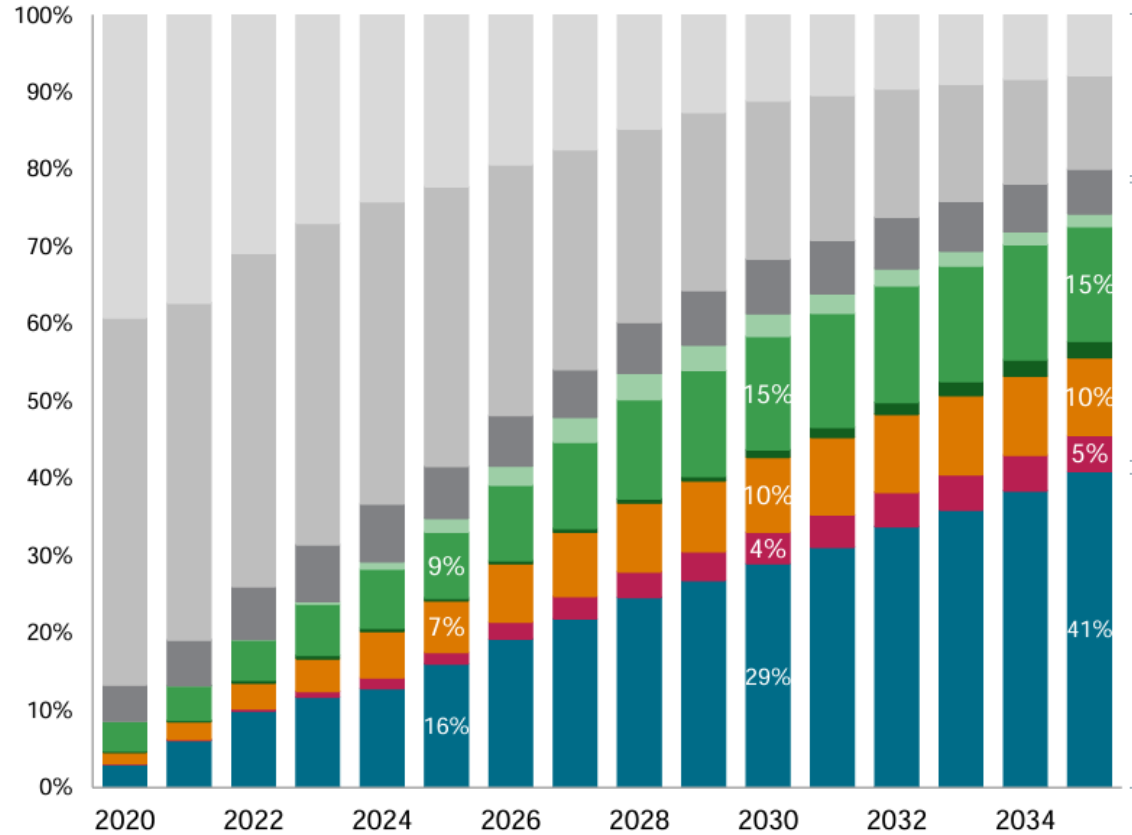
**CLEAR VISION  
SYSTEMS,  
CLEANING SYSTEMS  
FOR ADAS &  
AUTONOMOUS  
VEHICLES**



**CASTINGS**

# EV Battery is a Growing & Young Market - Fuel Tanks Remain a Remarkable Business Opportunity

■ FCEV 
 ■ BEV 
 ■ REEV 
 ■ PHEV 
 ■ SERIES 
 ■ FHEV 
 ■ MHEVe 
 ■ MHEV 
 ■ ICEss 
 ■ ICE



**Conventional fuel tanks**

**Hybrid Fuel Tanks as growing segment, REEV as new opportunity with challenging slosh and complex venting**

**Fast growing BEV segment; battery systems as differentiator technology for OEMs**

FCEV = fuel cell electric vehicle, BEV = battery-electric vehicle, REEV = range-extended electric vehicle, PHEV = plug-in hybrid electric vehicle, FHEV = full hybrid electric vehicle, MHEV = mild hybrid electric vehicle, ICE = internal combustion engine, S/S = start/stop

Date compiled January 2026.

Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, December 2025

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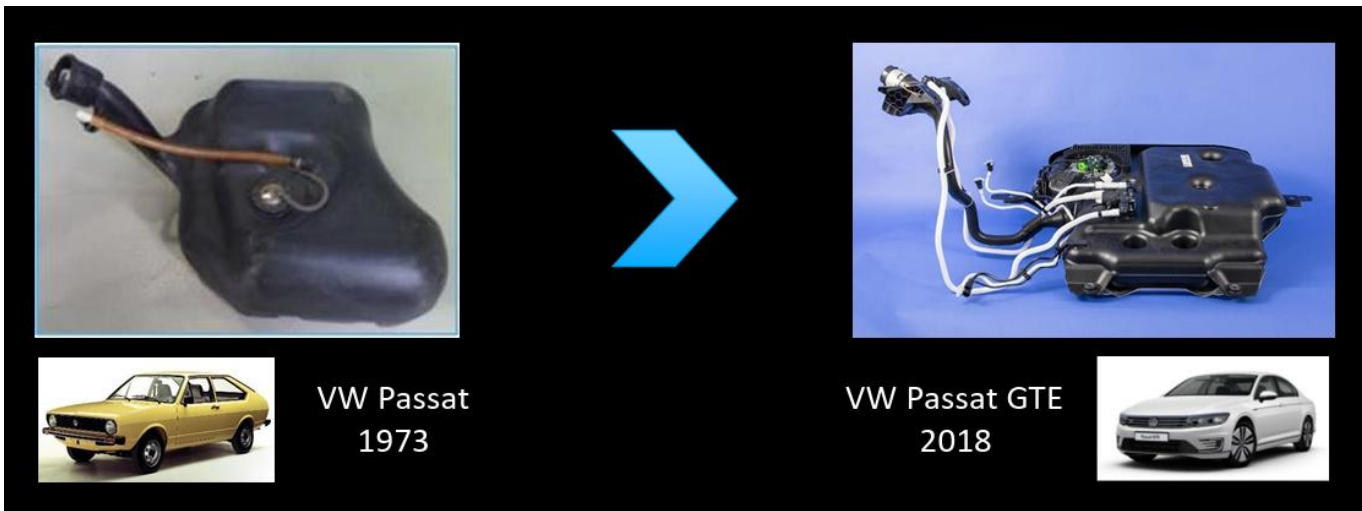
# FUEL TANK INSIGHTS



# Today's Core Business: HDPE Fuel Tanks at Industrial Scale

Kautex processes ~64 Mio. kg HDPE annually for >8 Mio. fuel tanks worldwide

## Technology Evolution:



### Conventional fuel tank:

- Established, mature technology
- High level of standardization
- Increasing functional complexity with limited differentiation

### Pressurized fuel tank

#### (hybrid & range extender):

- Higher functional integration & system complexity
- Differentiation potential via slosh management and venting concepts

## Challenge Landscape:

- **Material supply base:** Low material diversity at high volumes – global availability & quality to be ensured
- **OEM strategy:** Global platforms with locally optimized solutions
- **Rising complexity for Tier 1s:** More localized design, validation, and regulatory requirements

# PENTATONIC

Battery Enclosures

# PENTATONIC

Battery Enclosures

**thermal+**

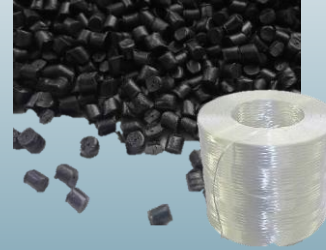


**Injection Molding**



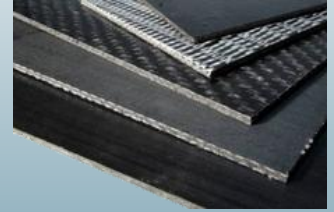
**IM Compounds**  
PP & PA6

**Molding Compounds & Processes**



**D-LFT Compounds**  
PP & PA6

**Compression Molding**

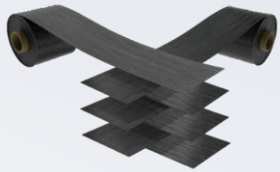


**GMT/GMTex Sheets**  
PP



**Pentatonic Material Overview**

**Composites**



**Crossply Laminates**  
Stacked UD-Tapes  
PP & PA6

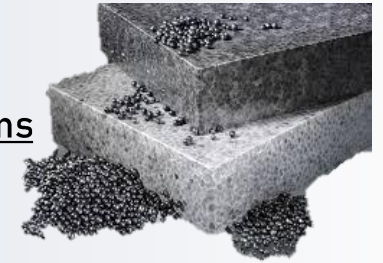


**Organosheets**  
Woven fabrics  
PP & PA6



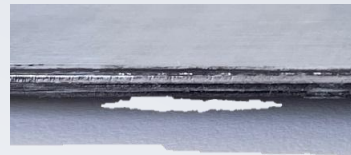
**Pultruded Profiles**  
UD fibers  
PP & PA6

**Foams**



**Particle Foams**  
PP & PA6

**Metals**



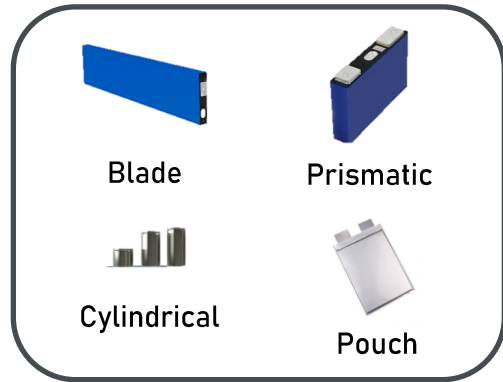
**Composite-Metal Sandwich**  
PP & PA6  
Steel & Aluminium



**Metal Sheets or Extrusions**  
Steel & Aluminium

# Battery Pack Design Varies by Market & OEM

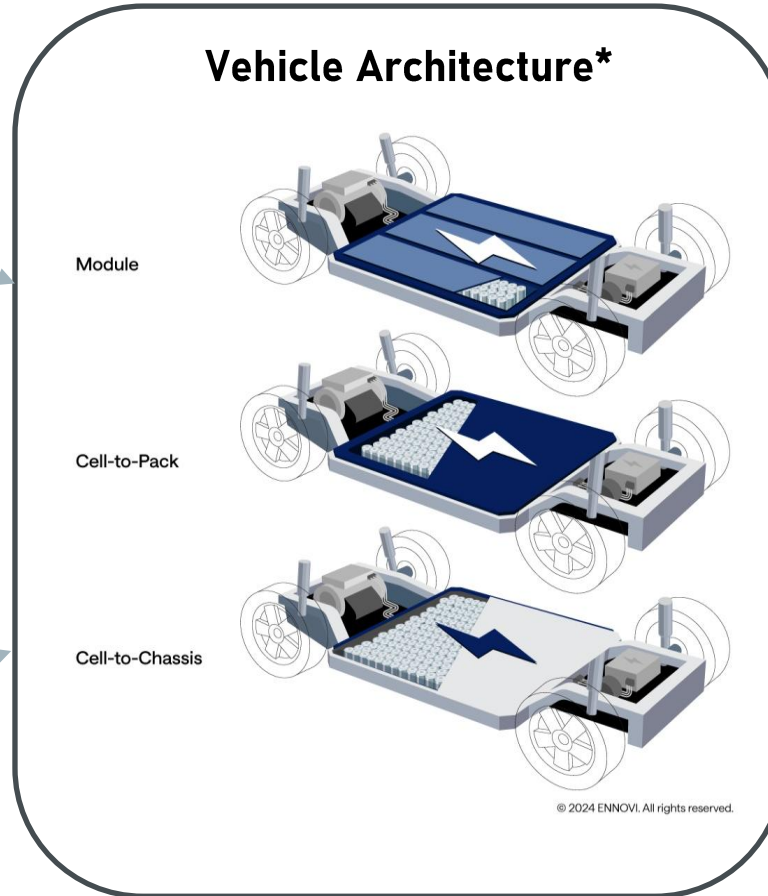
## Cell Availability & Chemistry



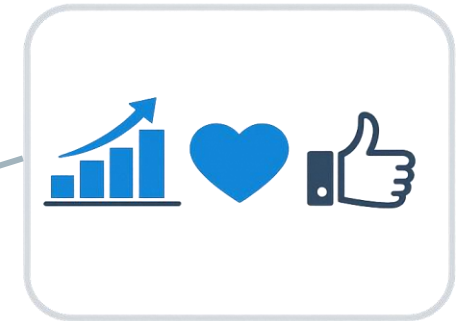
## Regulation & Safety



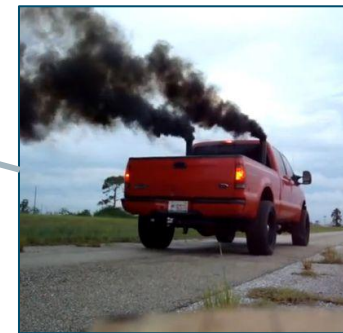
## Vehicle Architecture\*



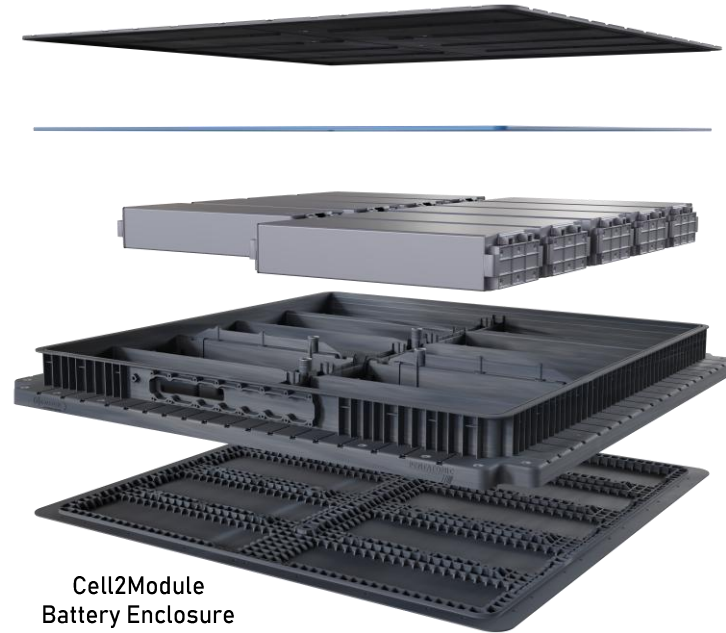
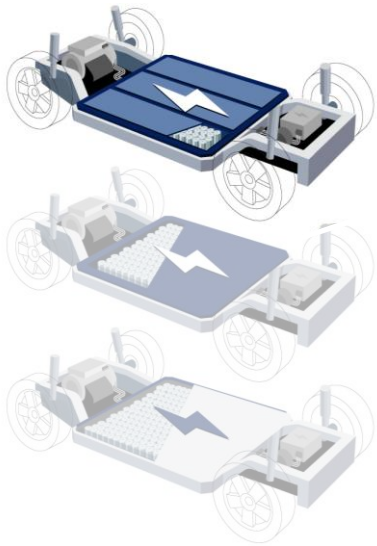
## Market Expectations & Consumer Preferences



## Rate of EV-Adoption



# Cell2Module: Established 1<sup>st</sup>-Generation Technology with Ongoing Market Demand



Cell2Module  
Battery Enclosure



Plastic Compounds



Heat Shield Materials



Metal Reinforcements



Coldplates

## Key Drivers

- Battery cell supplier independent architecture
- Proven, series-validated technology
- Applicable across multiple vehicles platforms

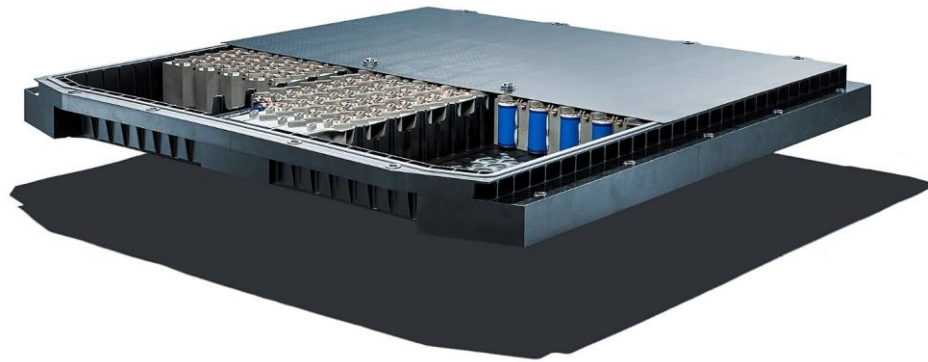
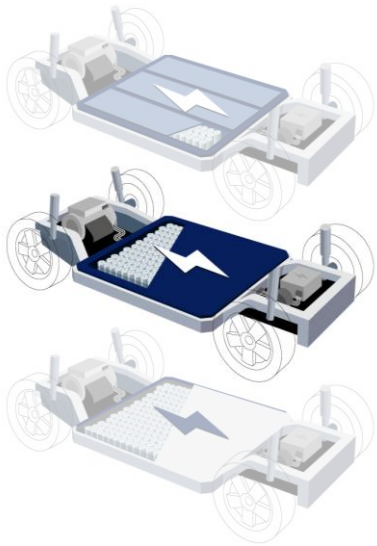
## Technical Characteristics

- Crash requirements achievable down to regulatory minimum levels
- Serviceable underbody protection (UBP)

## Market Perspective

- Conservative OEMs and market followers
- Independent cell/module supply chain
- Strong focus on reliability and repairability

# Cell2Pack: System Integration to Enable Cost and Packaging Efficiency



Cell2Pack Battery Enclosure



Plastic Compounds



Composite Sheets



Metal Reinforcements



Lateral Cooling/Coldplates

## Key Drivers

- Reduction of system complexity & part count

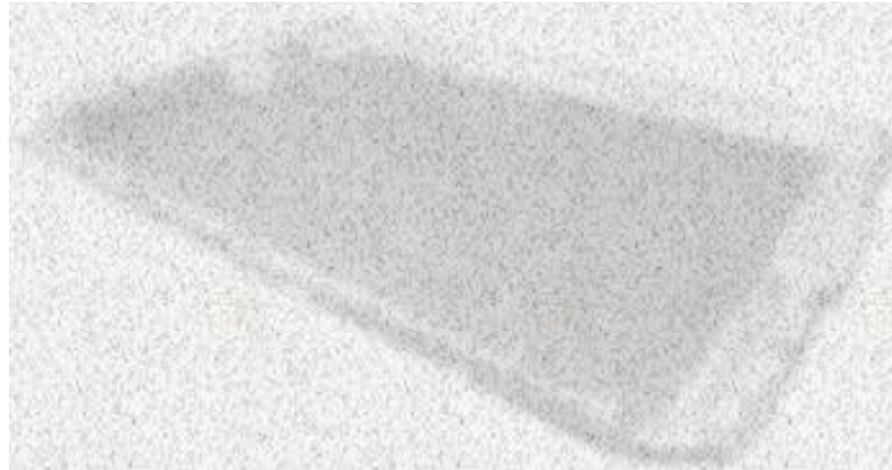
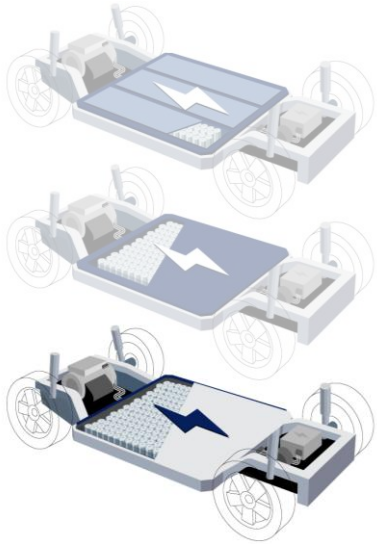
## Technical Characteristics

- Contribution to overall vehicle stiffness & crash performance
- Defined cell compression forces (prismatic & blade cells)
- Integrated UBP possible

## Market Perspective

- OEMs with existing battery platforms & strong cell supplier partnerships
- Inhouse battery architectures & invest
- Cell manufacturers as vertical integrators

# Cell2Body/Cell2Chassis: Full Structural Integration Shapes Vehicle Architecture



Cell2Body/Cell2Chassis Battery Enclosure



Plastic  
Compounds



Composite Sheets



Metal Reinforcements



Lateral Cooling/Coldplates



Particle Foams



Adhesives

## Key Drivers

- Significant z-height reduction through elimination of cabin floor elements
- Vehicle mass reduction via structurally integrated battery

## Technical Characteristics:

- Vehicle stiffness relies on battery pack
- Bottom coldplate as main cooling approach
- Side cooling allows for additional z-height reduction

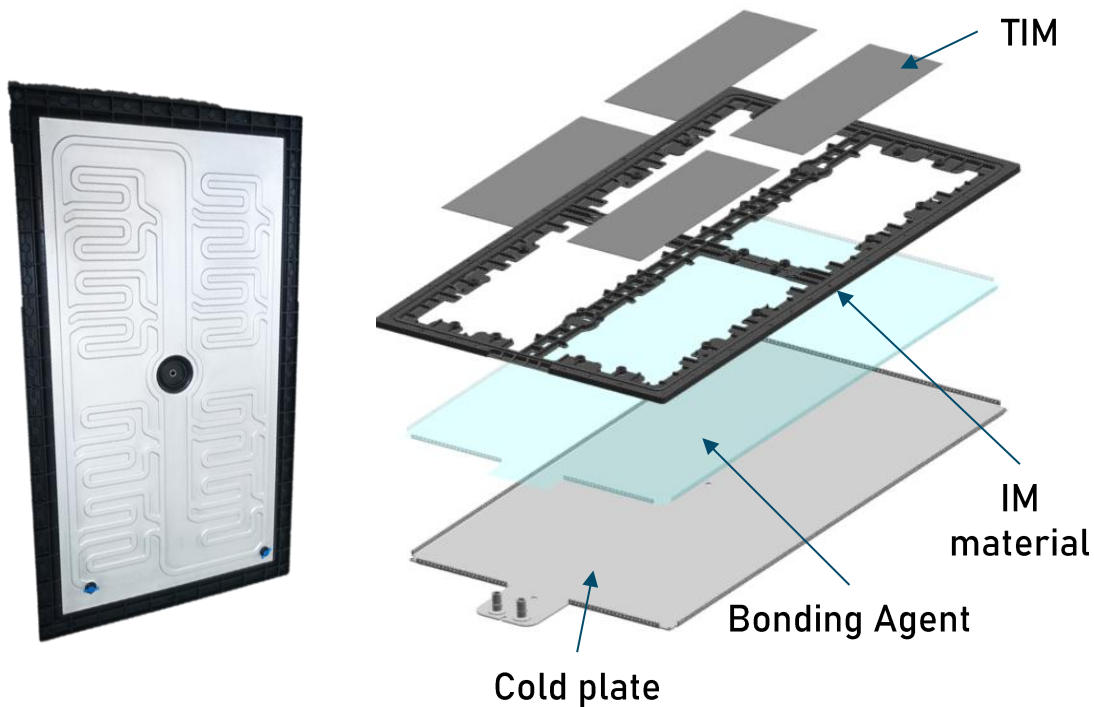
## Market Perspective

- Combined battery and chassis development
- Technology-leading OEMs driving architectural change
- Compatibility with cylindrical & blade cell formats

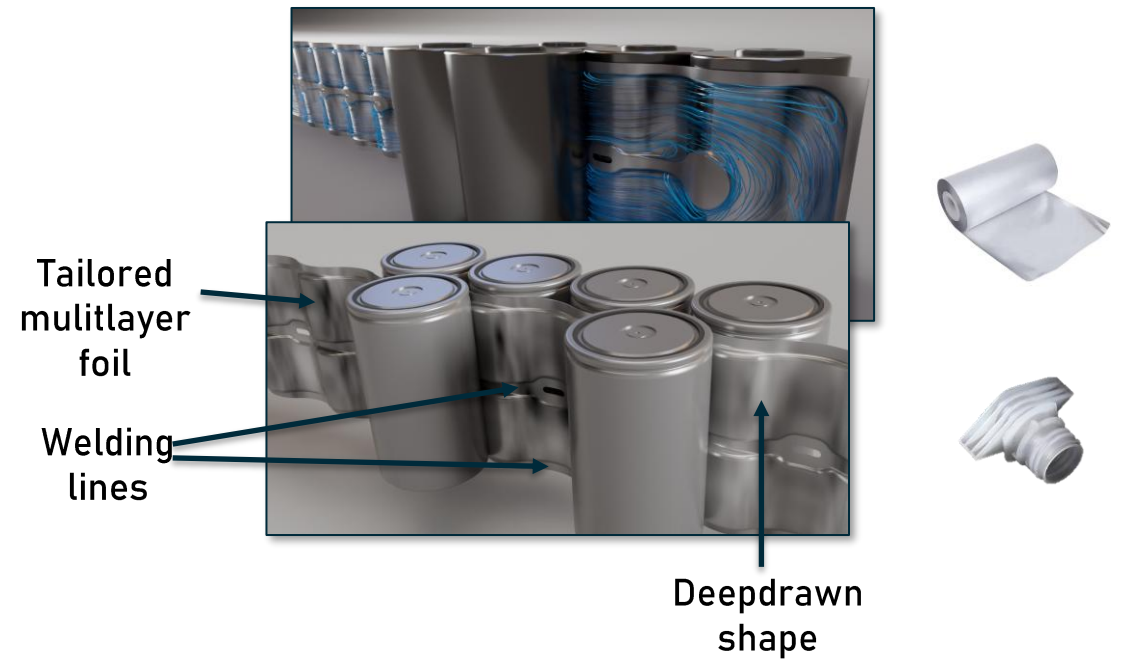
# *Pentatonic Thermal+* Thermal Management Solutions Adapted to Plastics Manufacturing and Market Needs



### Coldplate



### Flexible Foil Cooler



# Global Availability of Pentatonic Systems with Regional Flexibility

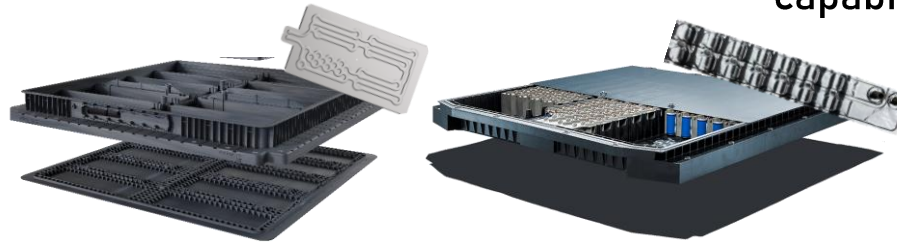


## Global Footprint with Local Execution

- Global development & production footprint
- Close to OEMs and regional supply chains
- Scalable to local market needs

## Balanced Integration Strategy

- Vertical integration where it adds value
- CAPEX decisions driven by differentiation potential, business case and trade-off in-house capability vs supplier ecosystem



## Product Strategy

- Modular system architectures across platforms
  - Cooling concepts tailored to performance, packaging & costs
  - Demonstrator vehicles supporting global customer engagement
-

# What We Expect from our Suppliers

- Local footprint with strong regional integration
- Commitment to emerging markets (invest in early-stage markets, long-term partnership mindset)
- Material expertise/data & support of OEM approval
- Sustainable material solutions & clear roadmap aligned with Kautex sustainability targets



## Kautex Sustainability Roadmap (extract):





**THANK YOU**