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Navigating the Surge in Electrification and the Engineering Plastics Landscape

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Date•MAY 09,2024

Agenda

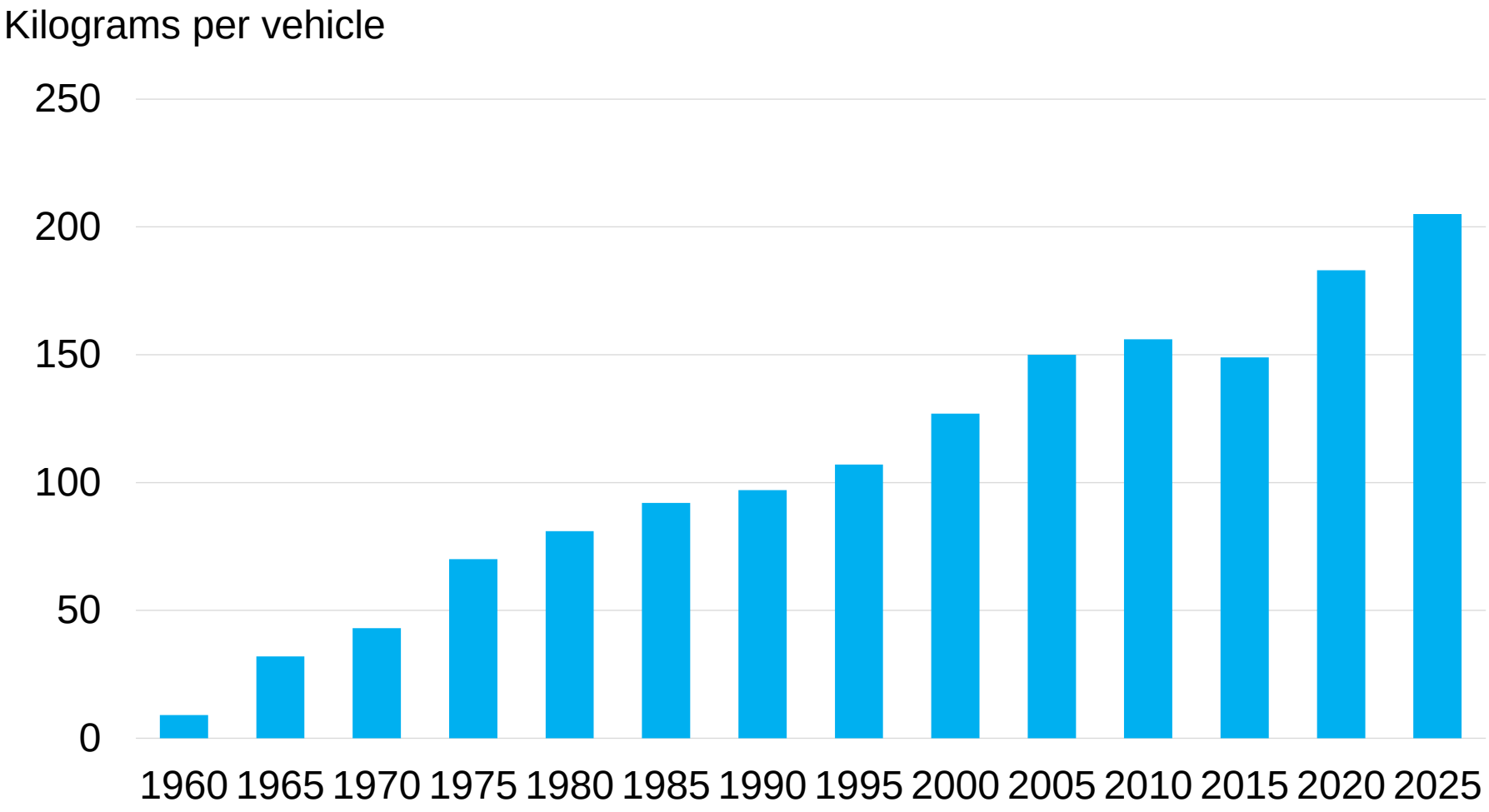
- Automotive Plastics use
  - By Region
  - By Application/Resin
  - By Vehicle Type

- EV Penetration
- Winners and Losers with EV penetration

- Challenges in Engineering Plastics

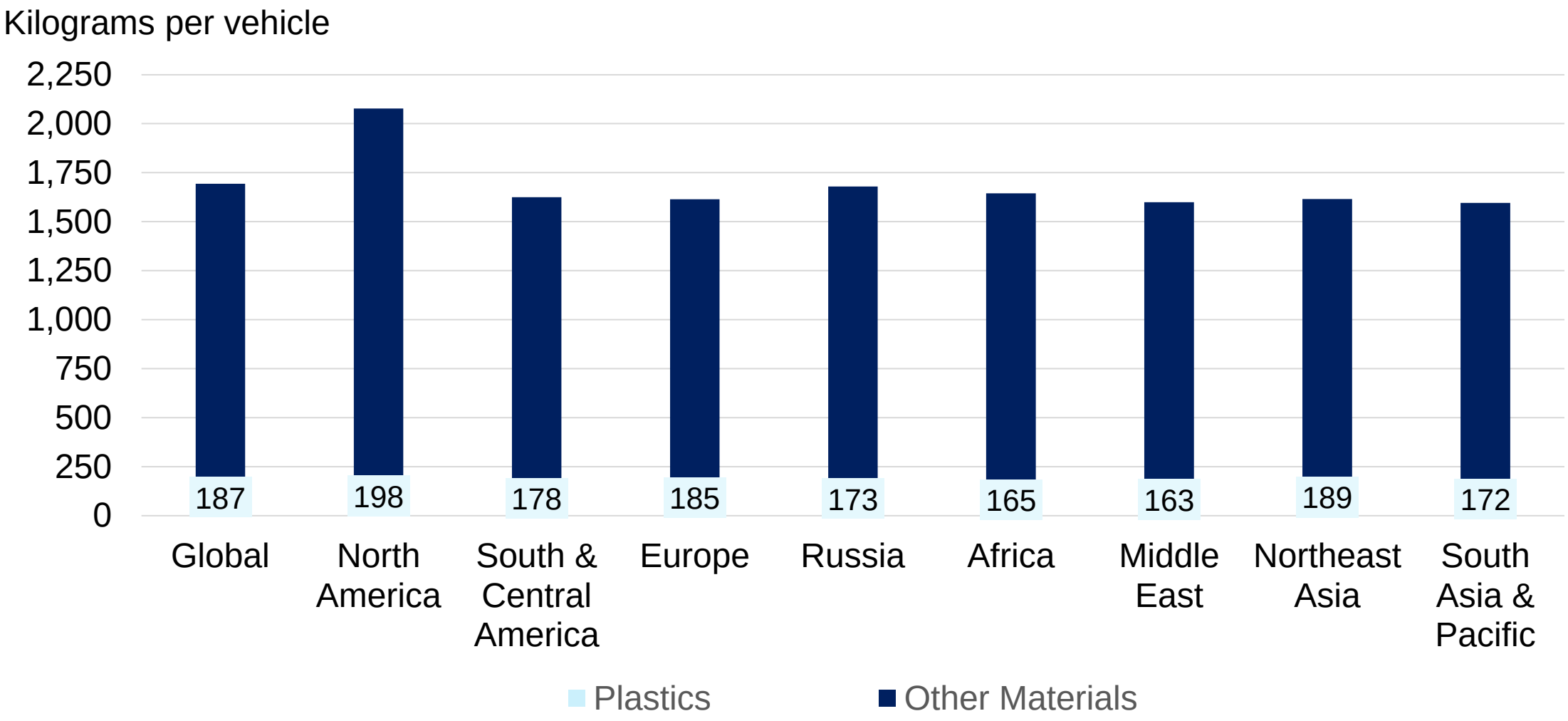
- Q&A

Progression of Plastics in Automotive



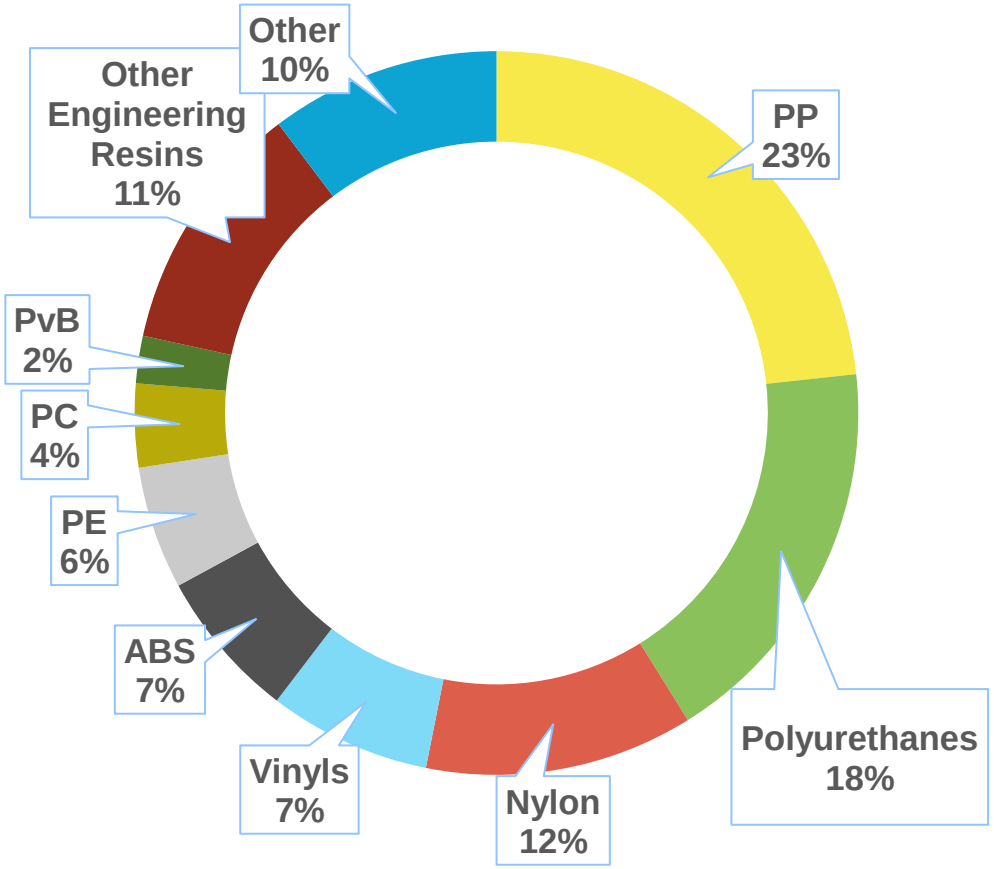
Source: American Chemistry Council

Automotive plastics use varies by region

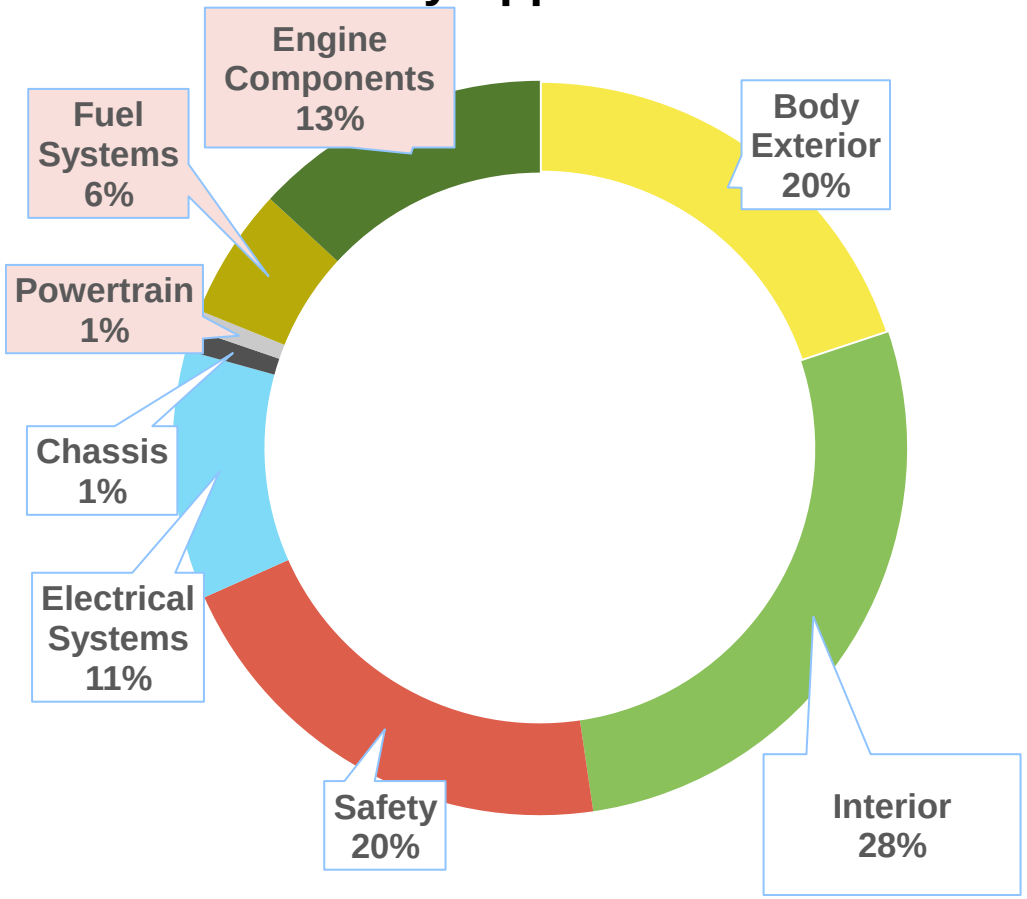


North American Automotive Plastics Use

By Resin



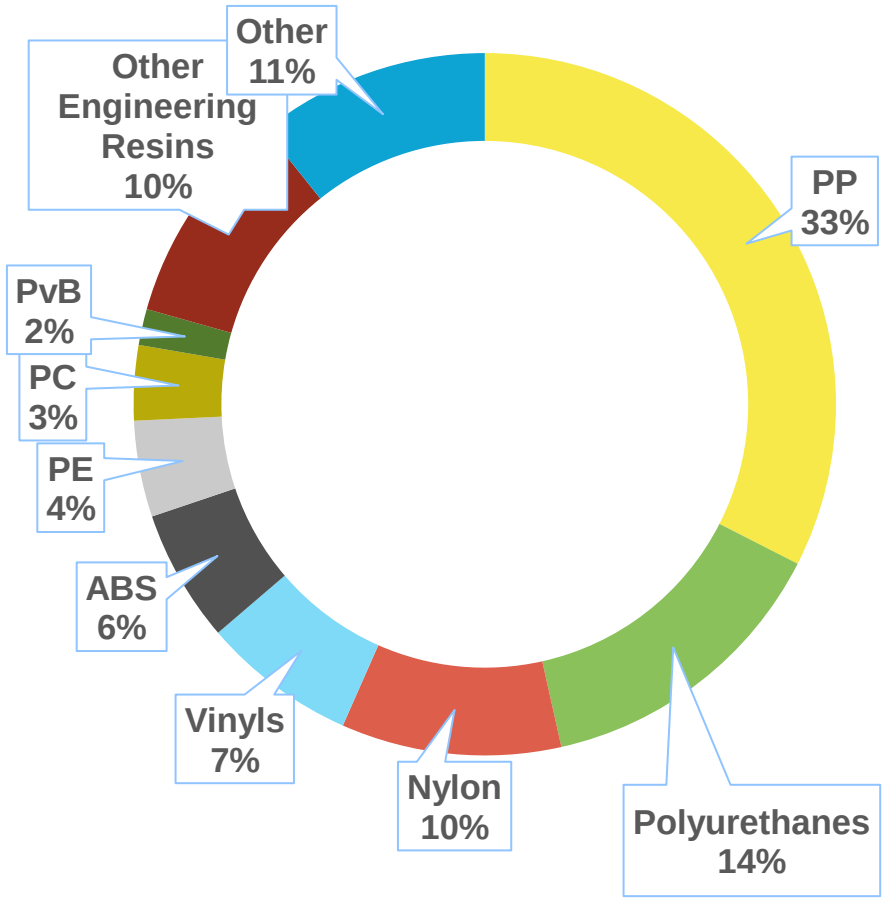
By Application



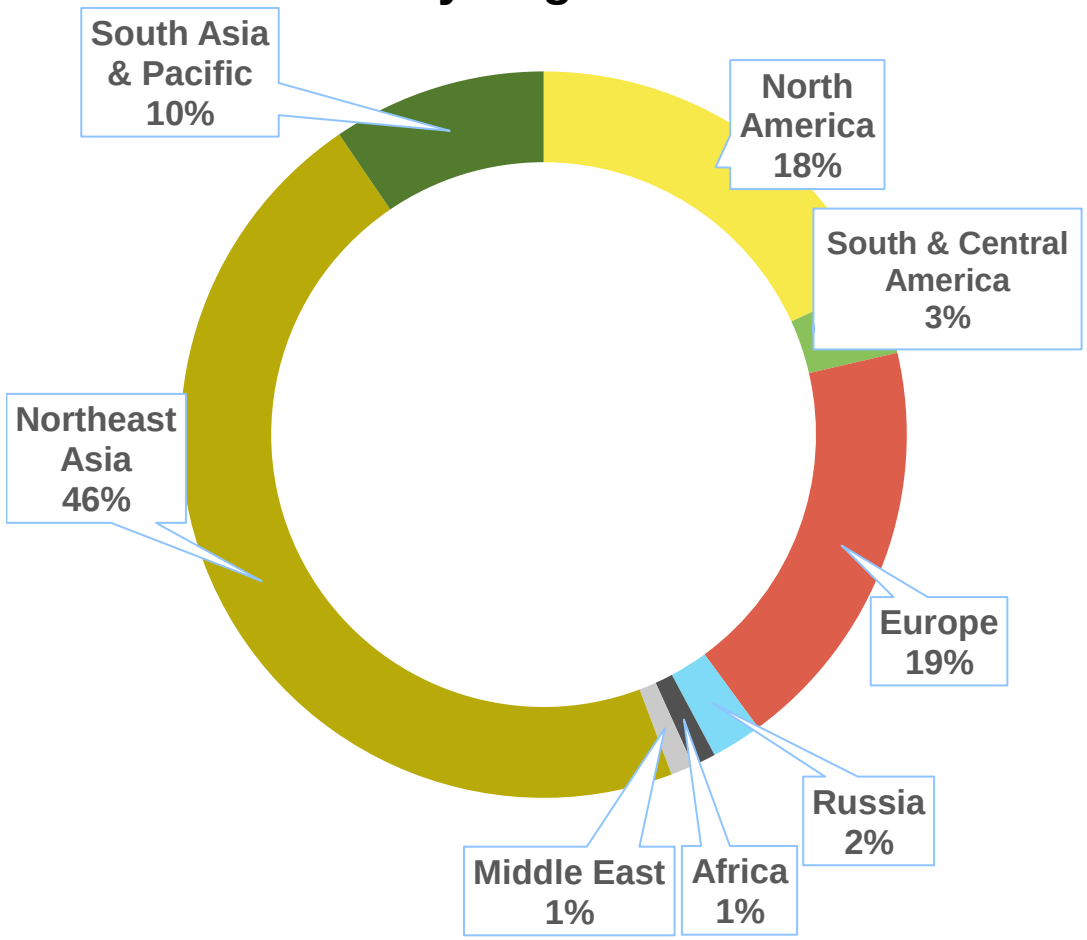
TOTAL : 198 KGS in 2023

Global Automotive Plastics use: 14.1 million tonnes in 2023

By Resin

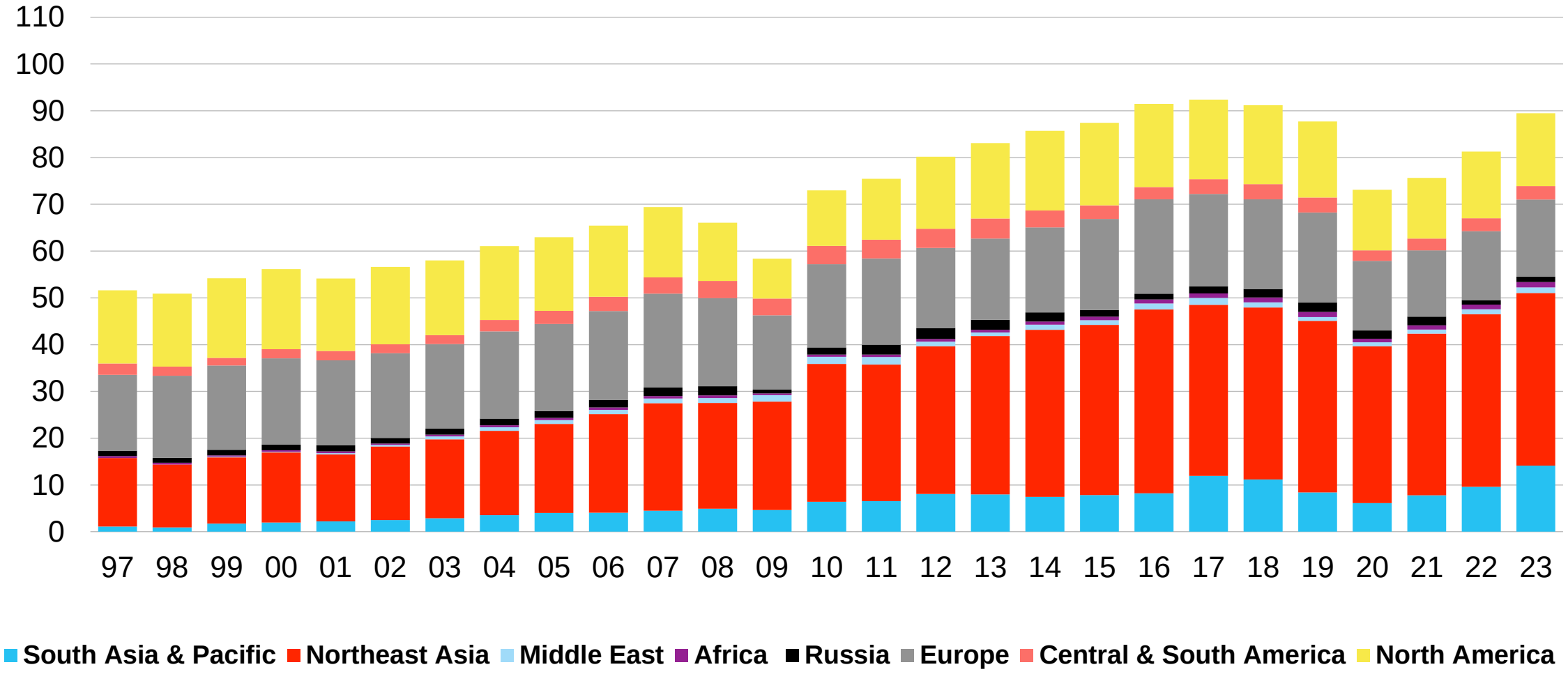


By Region



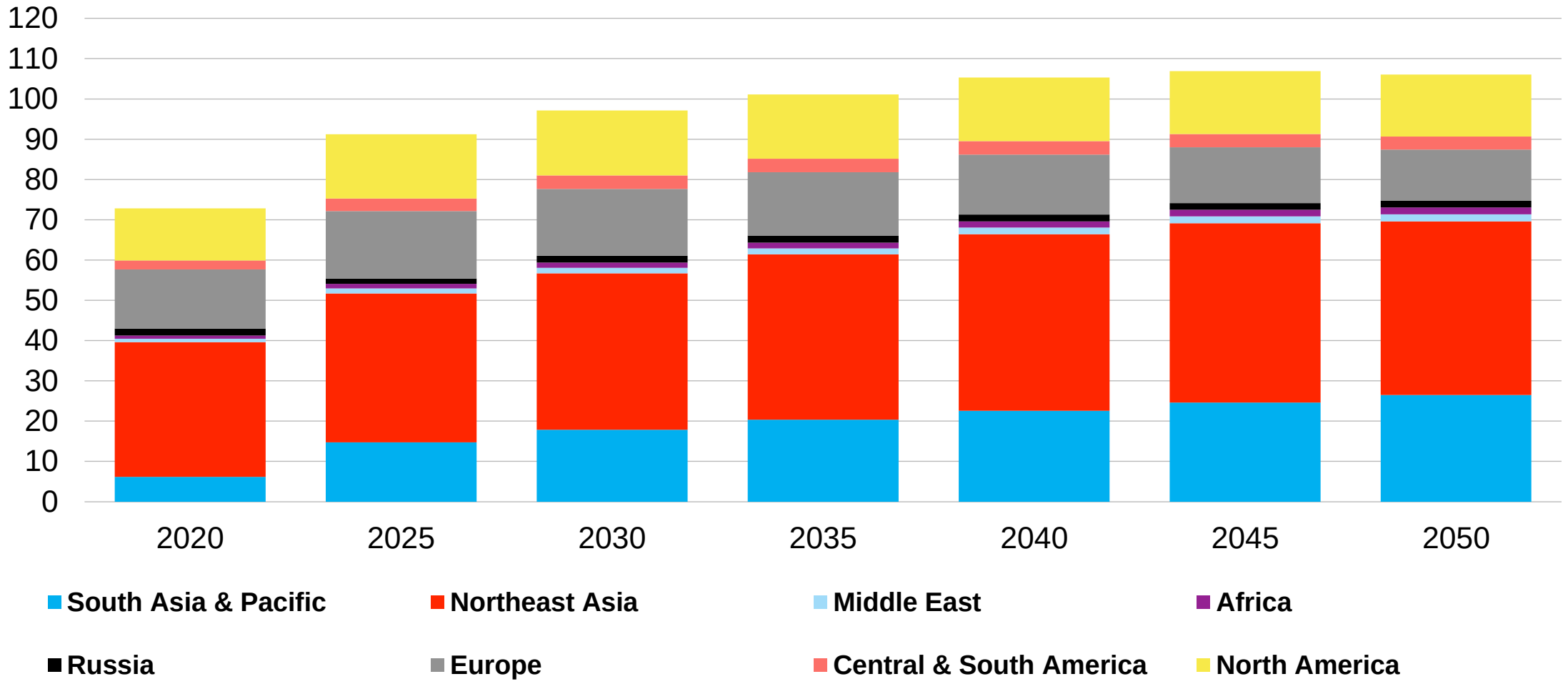
Light Vehicle Production

Millions of vehicles

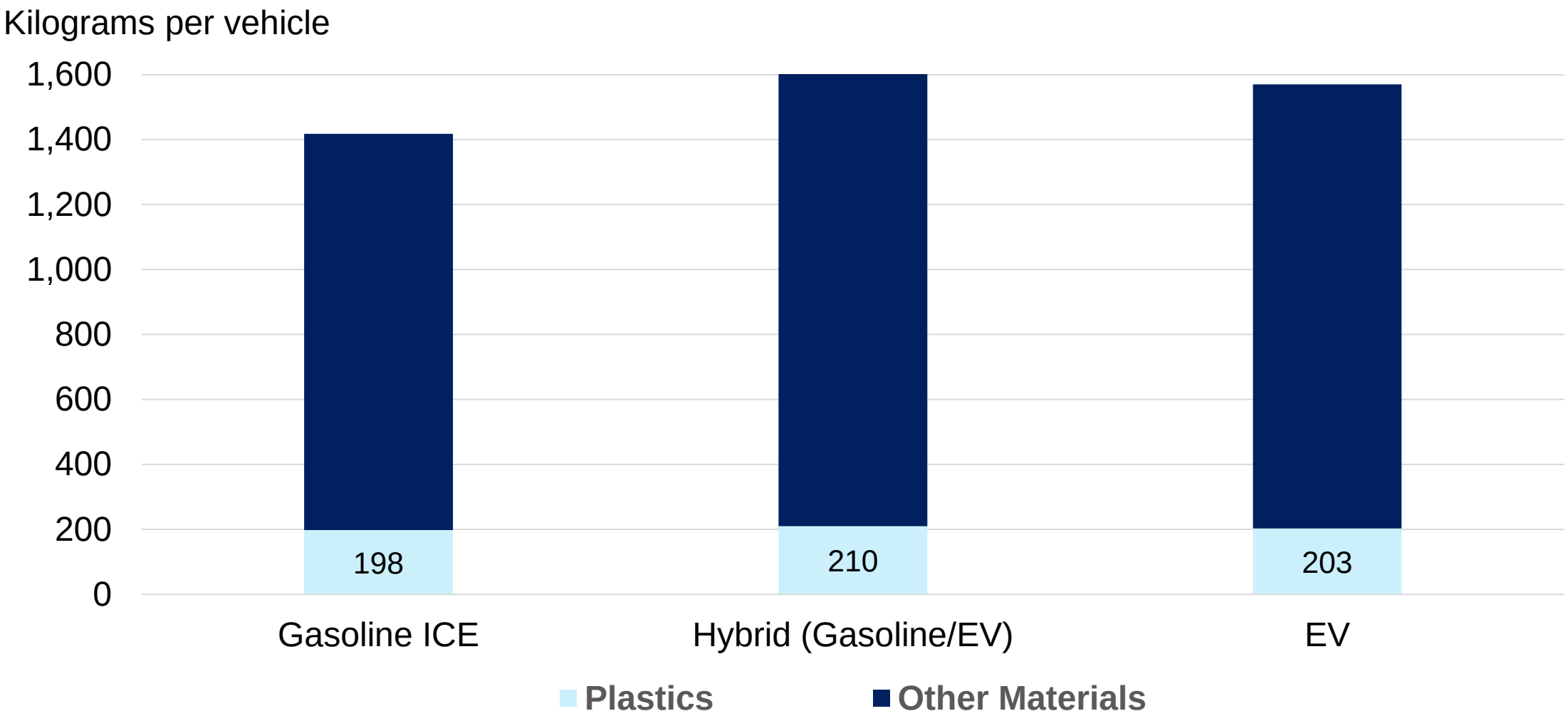


Light Vehicle Production- Forecast

Millions of vehicles

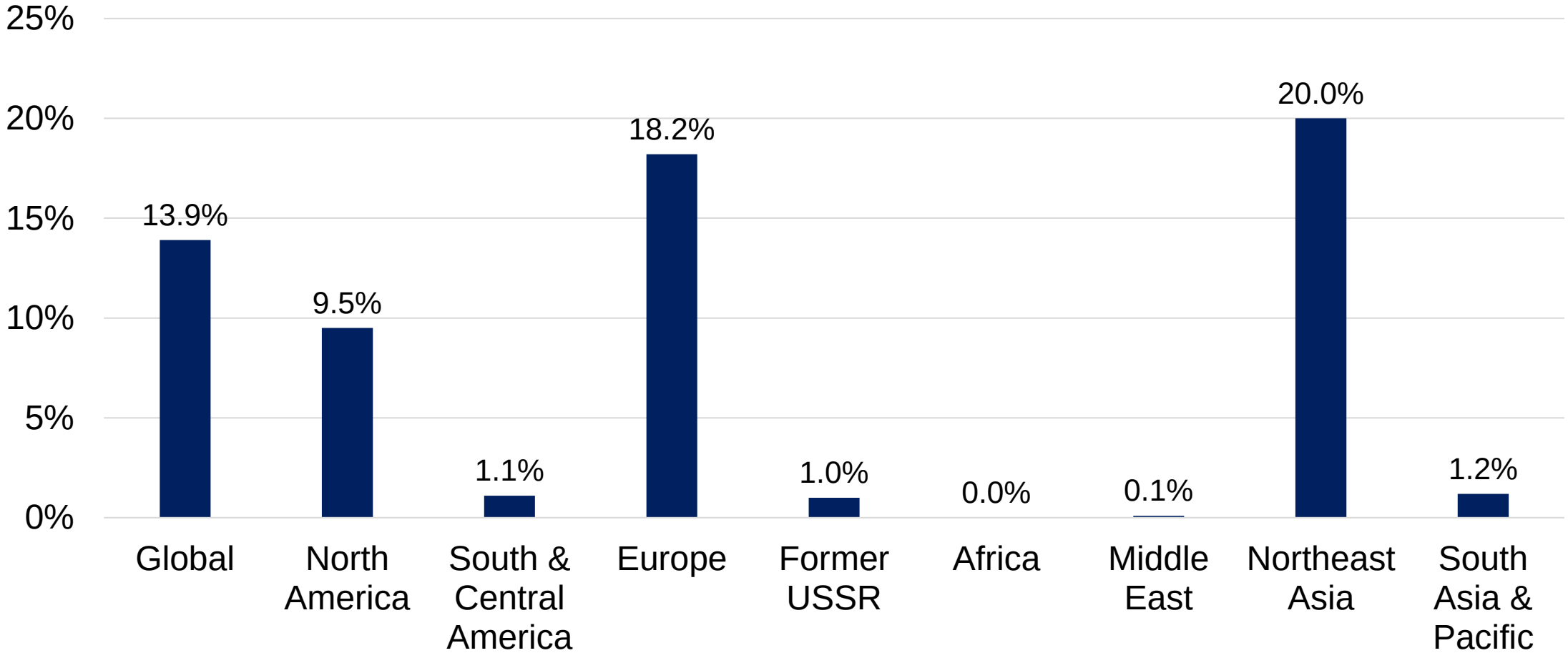


Automotive plastics use varies by vehicle type



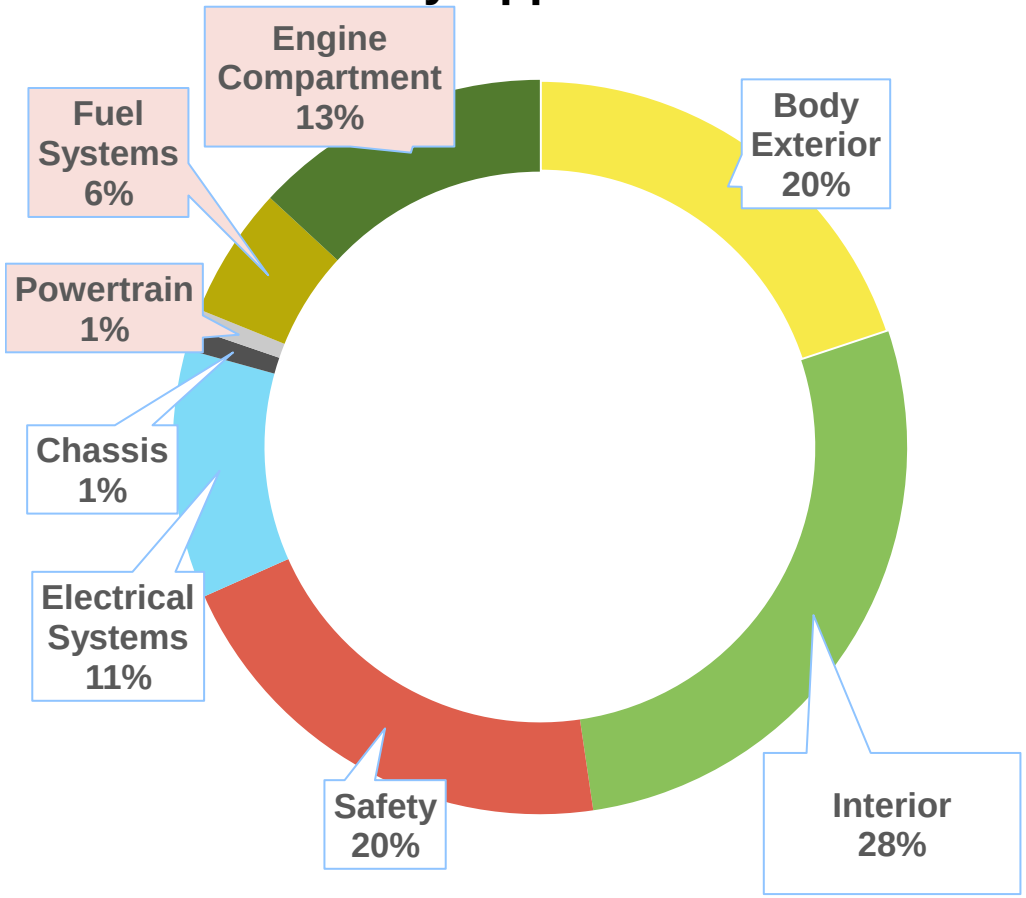
Global EV penetration varied by region in 2023

EVs as % of total light vehicle production



North American Automotive Plastics Use

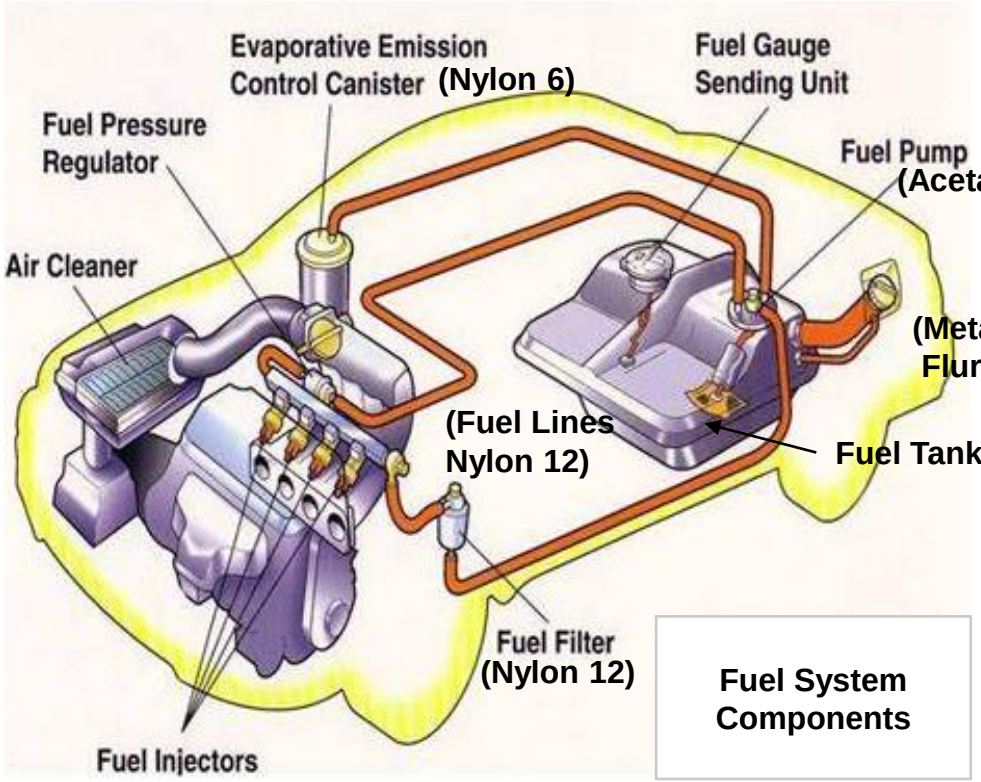
By Application



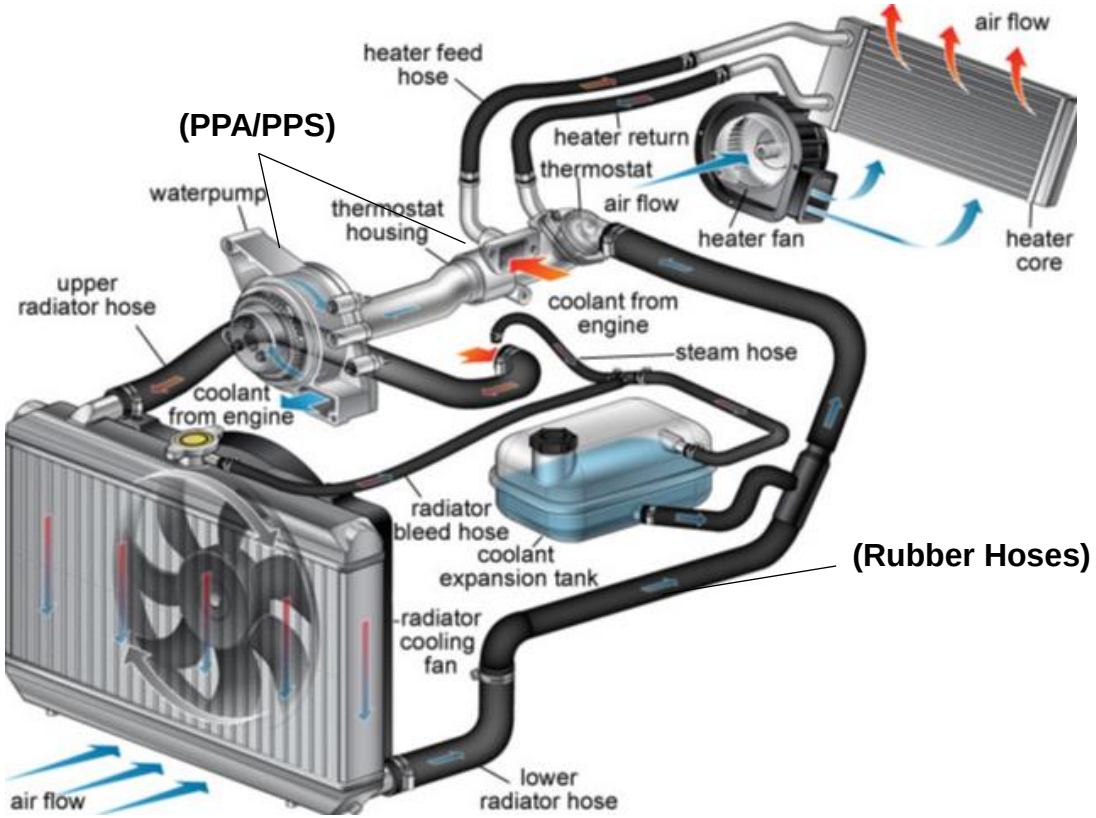
- **Migration from ICE to EV will eliminate the plastics used in fuel systems, engine compartment and powertrain**
- **Plastics associated with battery components, electrical charging, and delivery systems would be additions in an EV vs ICE**

TOTAL : 198 KGS in 2023

Fuel System and Cooling System



Fuel System Components



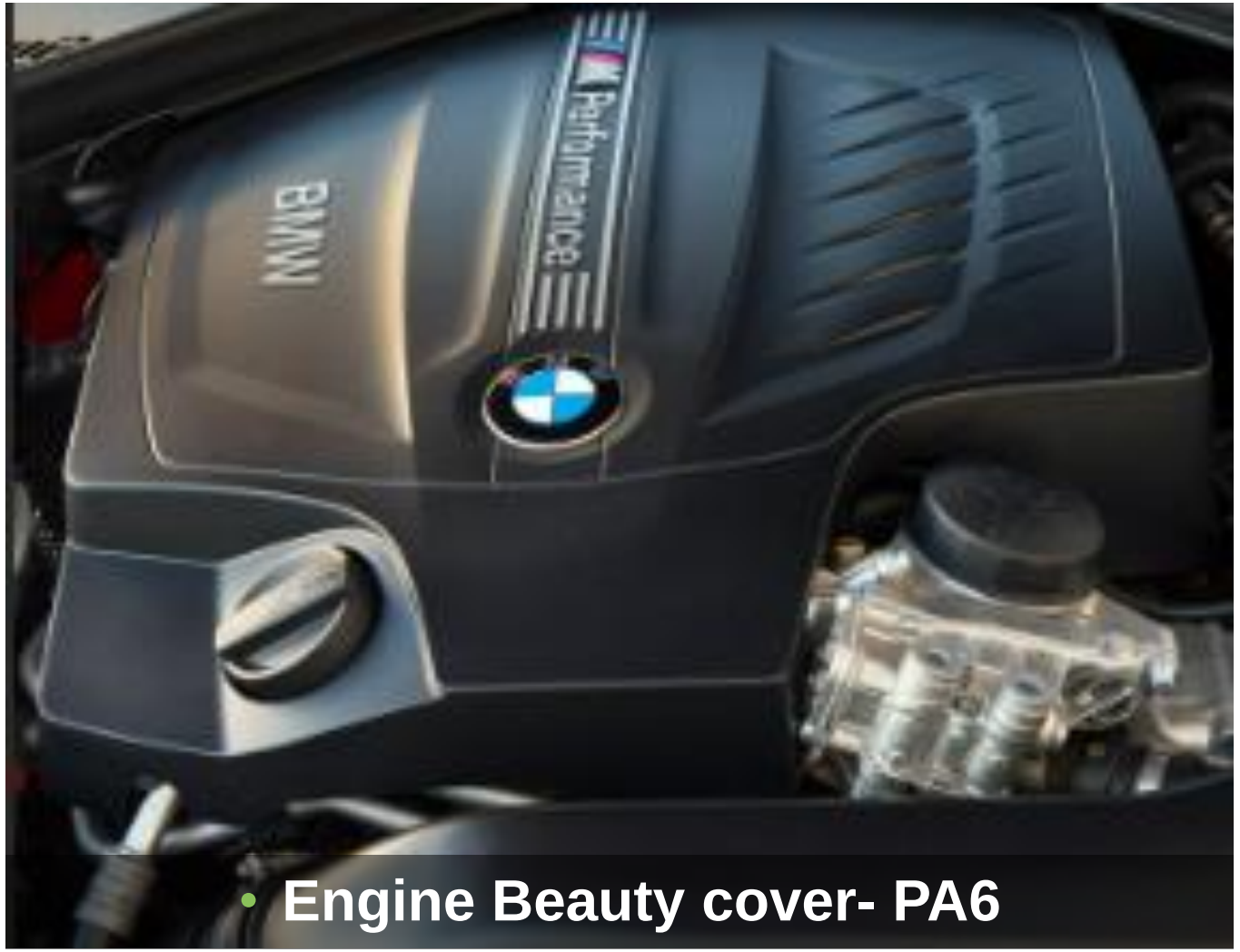
Component	Material
Radiator end tanks	Nylon 6,6
Fans and Shrouds	PP or PA6
Overflow tank	PP
Blower wheel	PP

Proprietary & Confidential

Plastic components in the engine compartment

- Cylinder Head Cover-PA66

- Air intake Manifold-PA66

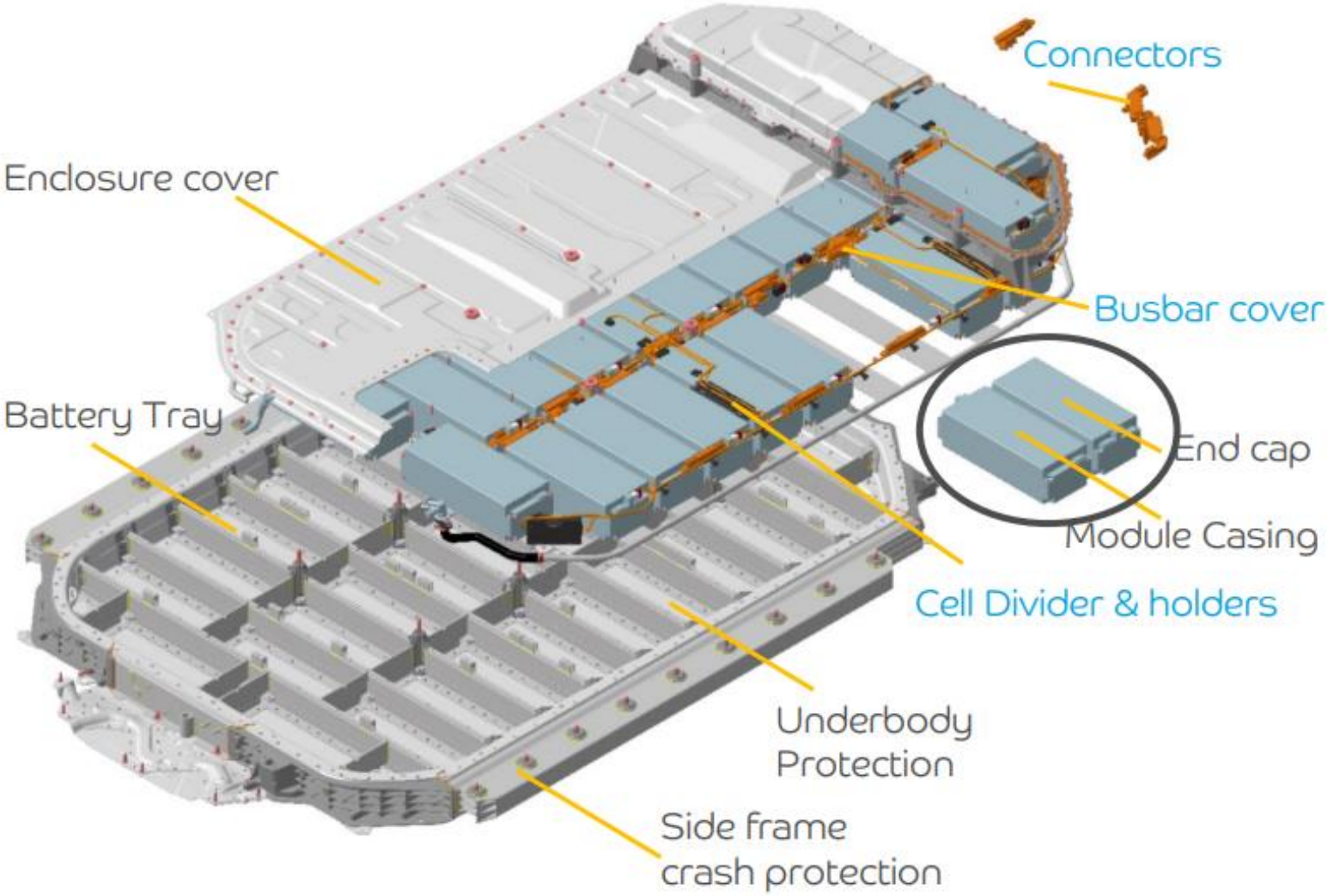


- Engine Beauty cover- PA6

Proprietary & Confidential

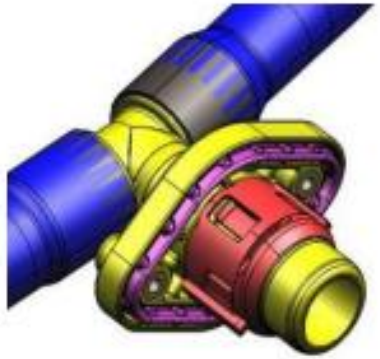
EV Battery

Battery Components



Battery Cooling Components

Hoses & Connectors



Cooling Inlets

Battery Charging Components

Battery Electrical cables and Connectors

Cables and Headers

Charge Inlets

No Front Grill in EV’s

Exterior

ICE

EV

Winners and Losers with EV Transition

Material	Change	Comment
Polypropylene	Increase	Battery enclosures would be a huge addition. FR capability established
Polyurethanes	No change	No change to seating and glass bonding
Nylon	Slight Decrease	Loss of engine component applications
Polycarbonate	Increase	Front End applications as well as battery charging components.
PBT	Increase	Connectors

Winners and Losers with EV Transition

Material	Change	Comment
Polyethylene	Decrease	Fuel Tank
ABS	Decrease	Move away from Chrome Plateable Front Grill
Elastomers (FR)	Increase	Cable Covering
PVC	No Change	No change in interior
Other engineering resins (PPS, PPA, POM..)	Decrease	No need for high chemical and heat resistance.

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