Car Body structure March 2014

Audi RS7 Sportback 2014

Audi RS 7 Sportback

Karosseriematerialien
Materials in the body structure

07/13

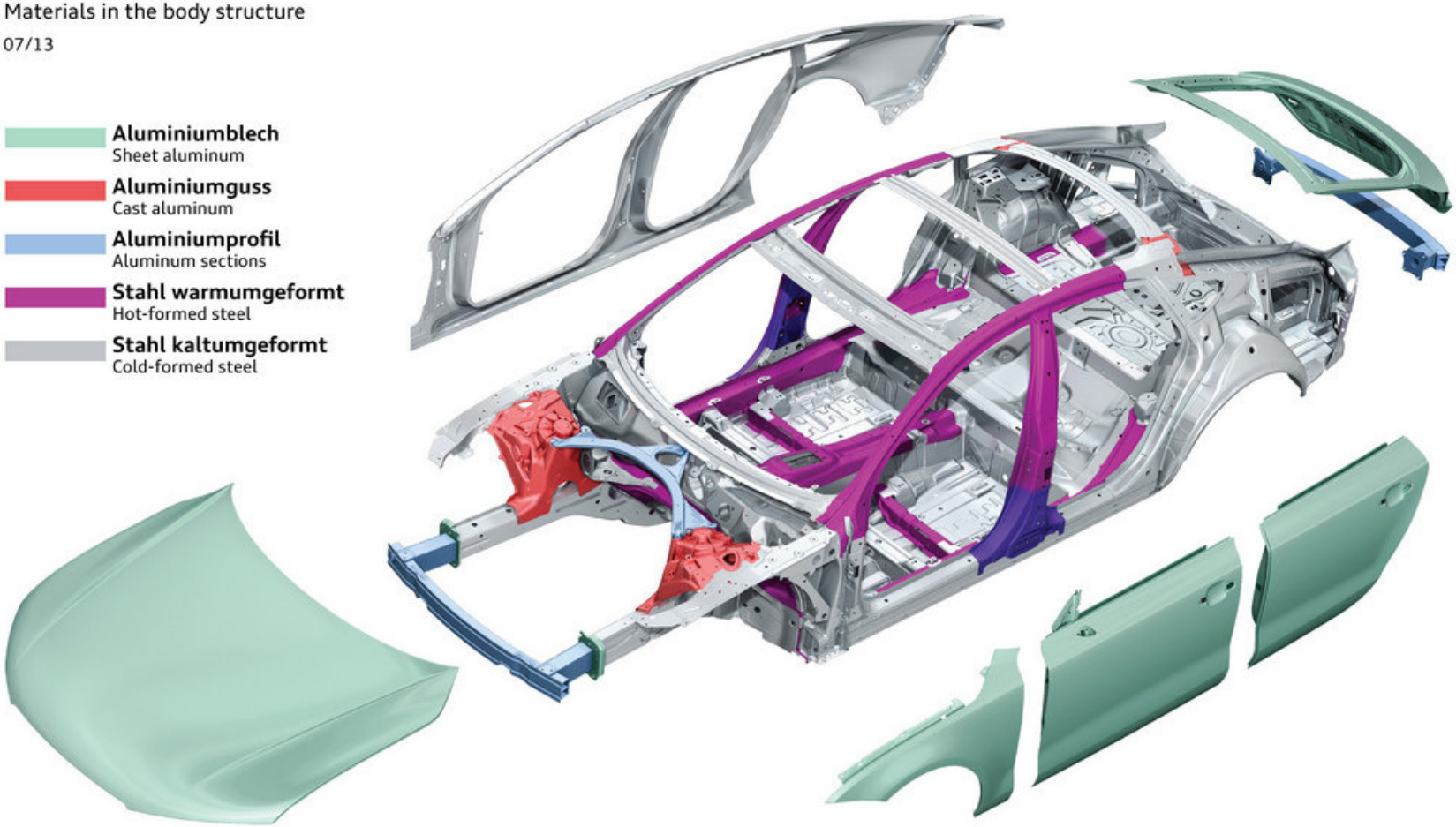
Aluminiumblech
Sheet aluminum

Aluminiumguss
Cast aluminum

Aluminiumprofil
Aluminum sections

Stahl warmumgeformt
Hot-formed steel

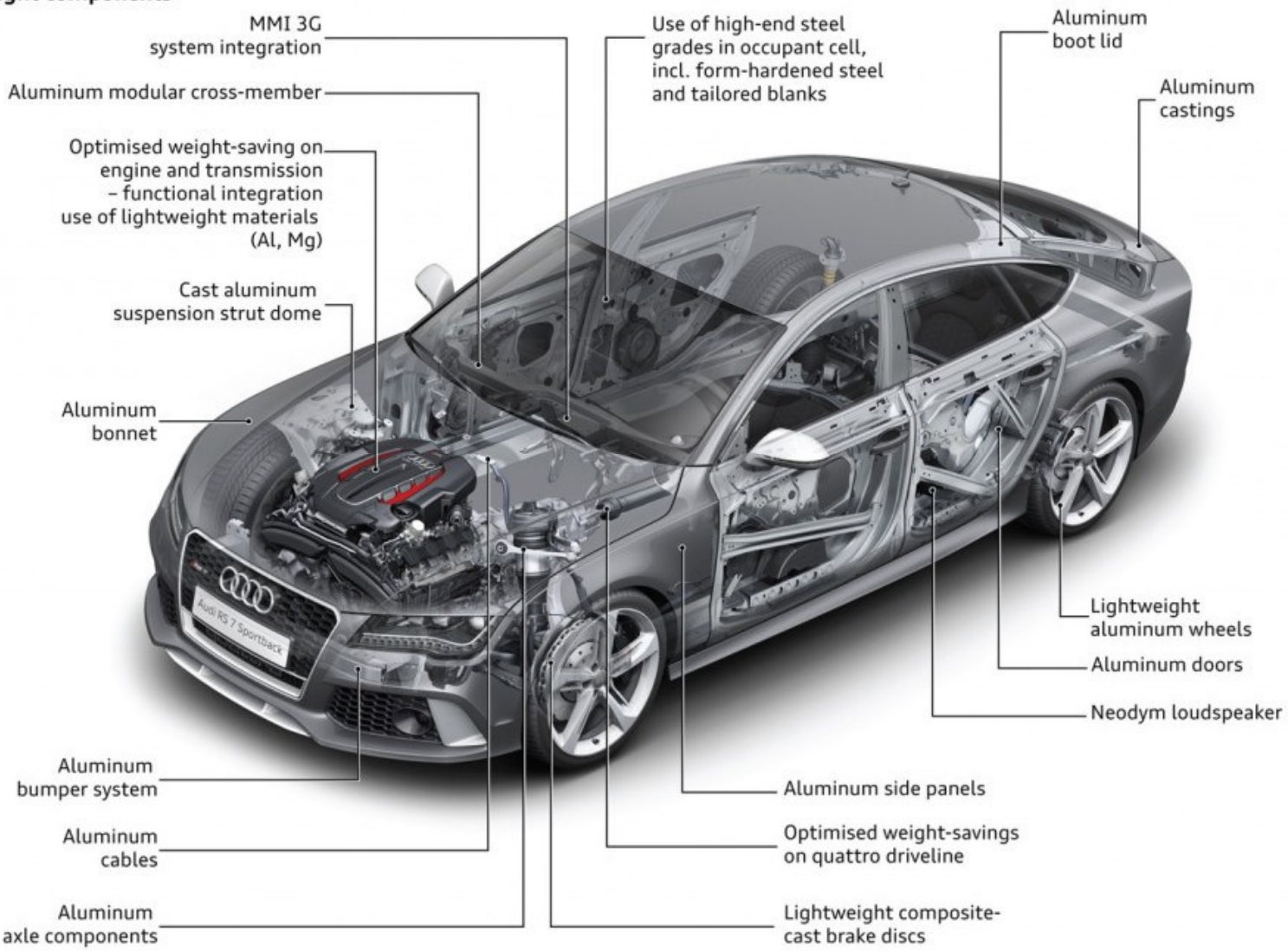
Stahl kaltumgeformt
Cold-formed steel



Audi RS 7 Sportback

Lightweight components

07/13



Audi RS 7 Sportback

Driver assistance systems

07/13

Front camera:

- Audi active lane assist
- ACC with Stop&Go function
- Speed limit display
- Audi pre sense / front / plus
- Audi adaptive light

Ultrasonic sensors at side:

- Park assist with display of surroundings

Front and rear camera:

- Parking system plus with front and rear camera
- Park assist with front and rear camera

Ultrasonic sensors at rear:

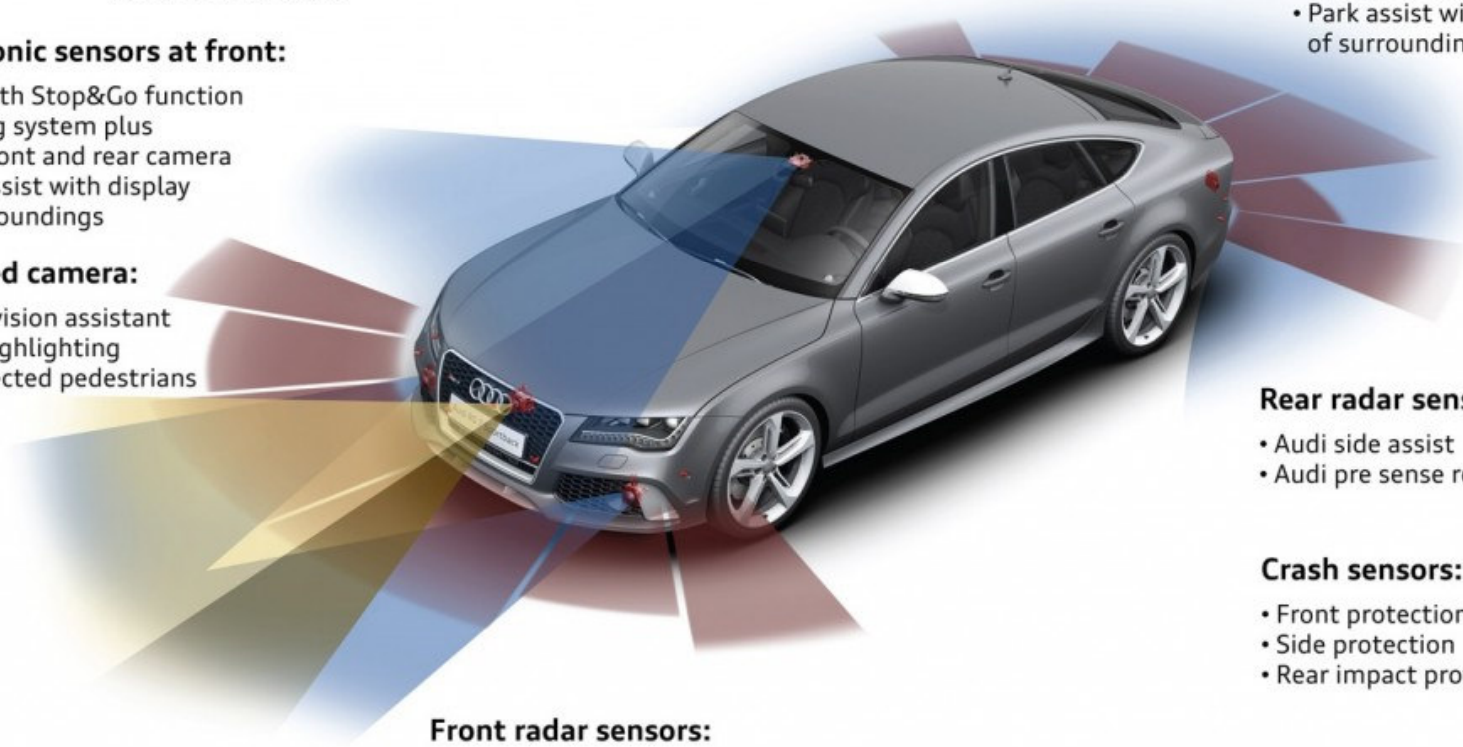
- Parking system plus with front and rear camera
- Park assist with display of surroundings

Ultrasonic sensors at front:

- ACC with Stop&Go function
- Parking system plus with front and rear camera
- Park assist with display of surroundings

Infrared camera:

- Night vision assistant with highlighting of detected pedestrians



Rear radar sensors:

- Audi side assist
- Audi pre sense rear / plus

Crash sensors:

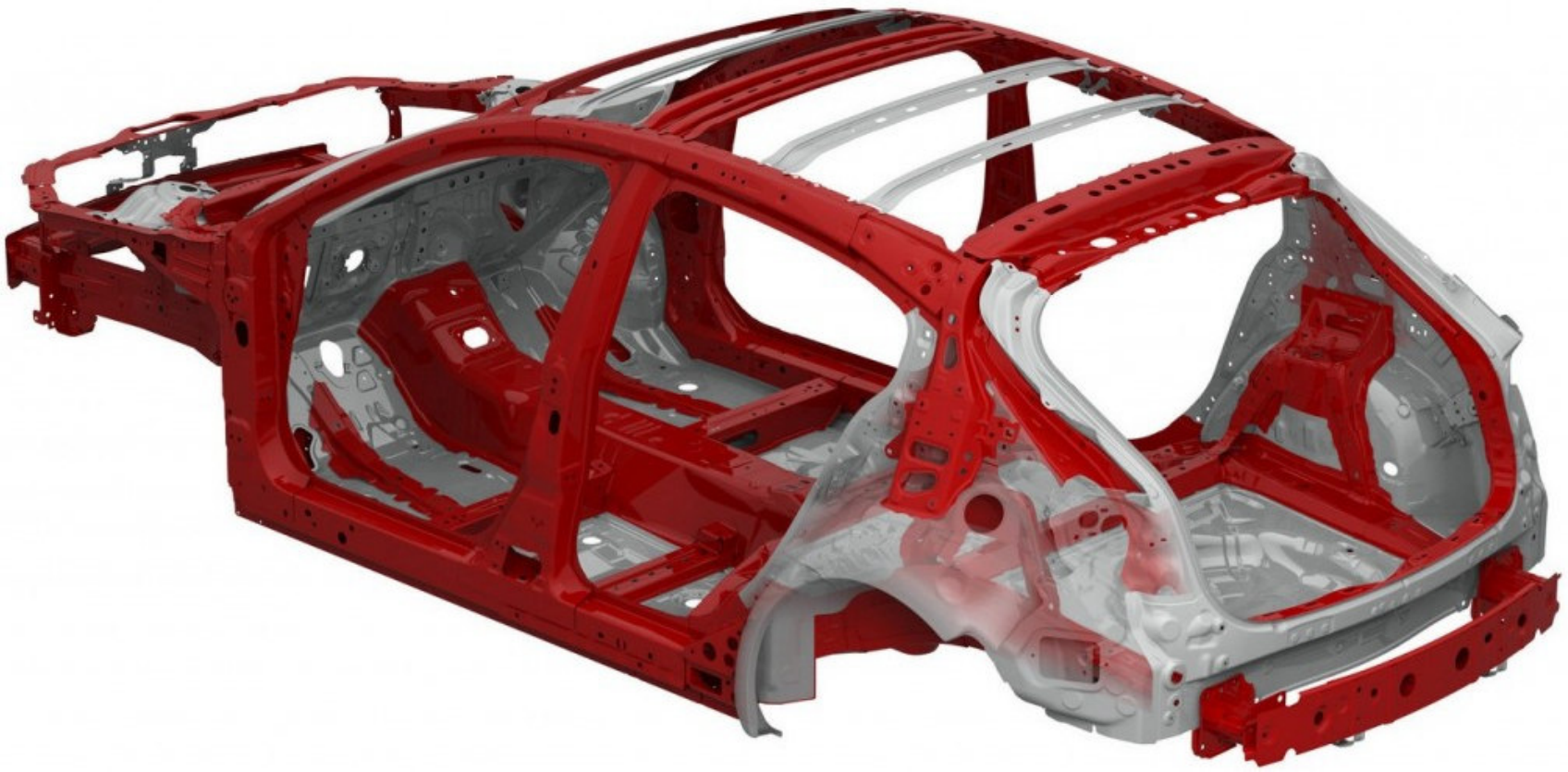
- Front protection adaptivity
- Side protection
- Rear impact protection

Front radar sensors:

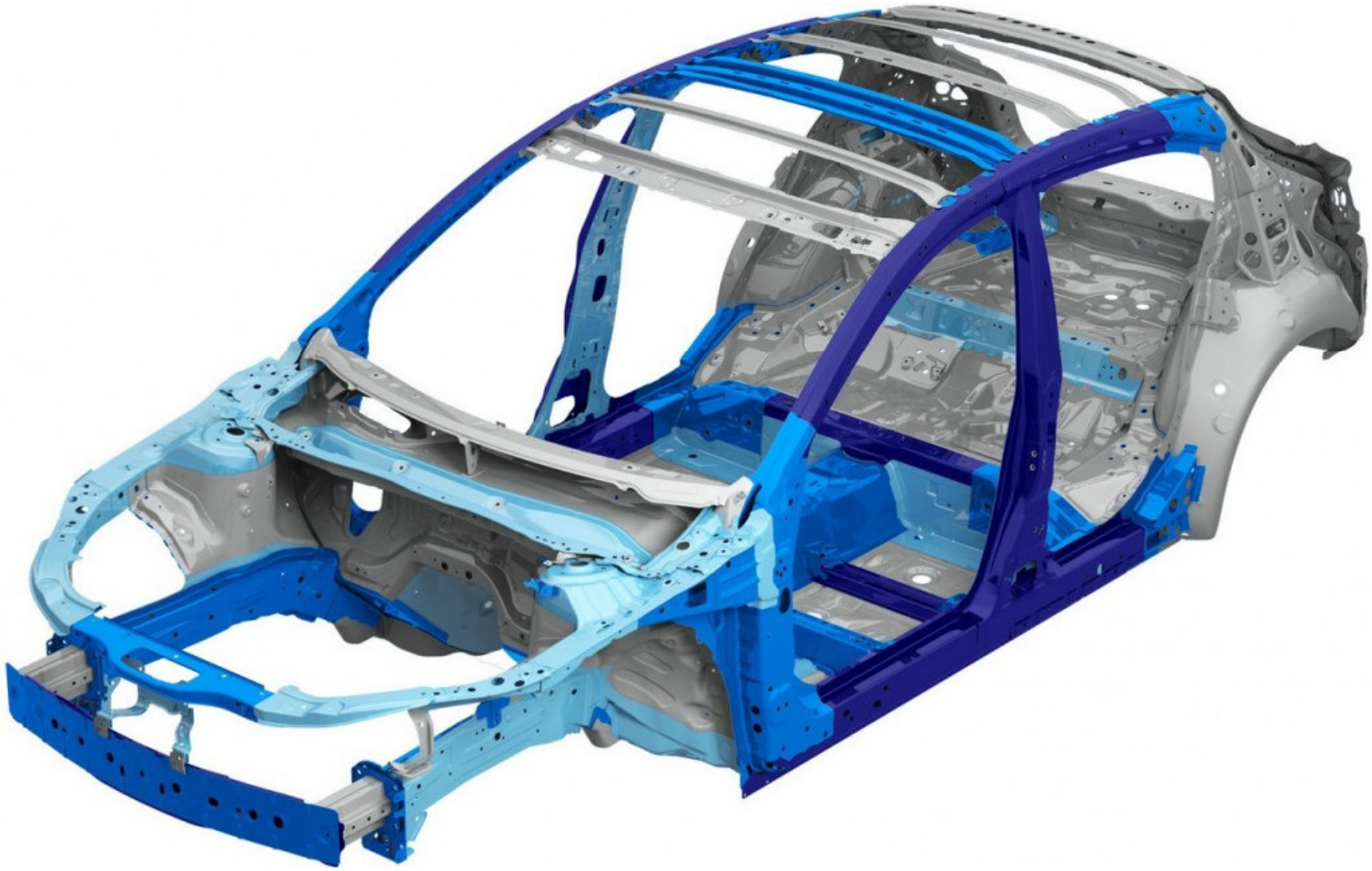
- ACC with Stop&Go function
- Audi pre sense / front / plus

MAZDA 3 2014

MAZDA 3 SKYACTIVE Body

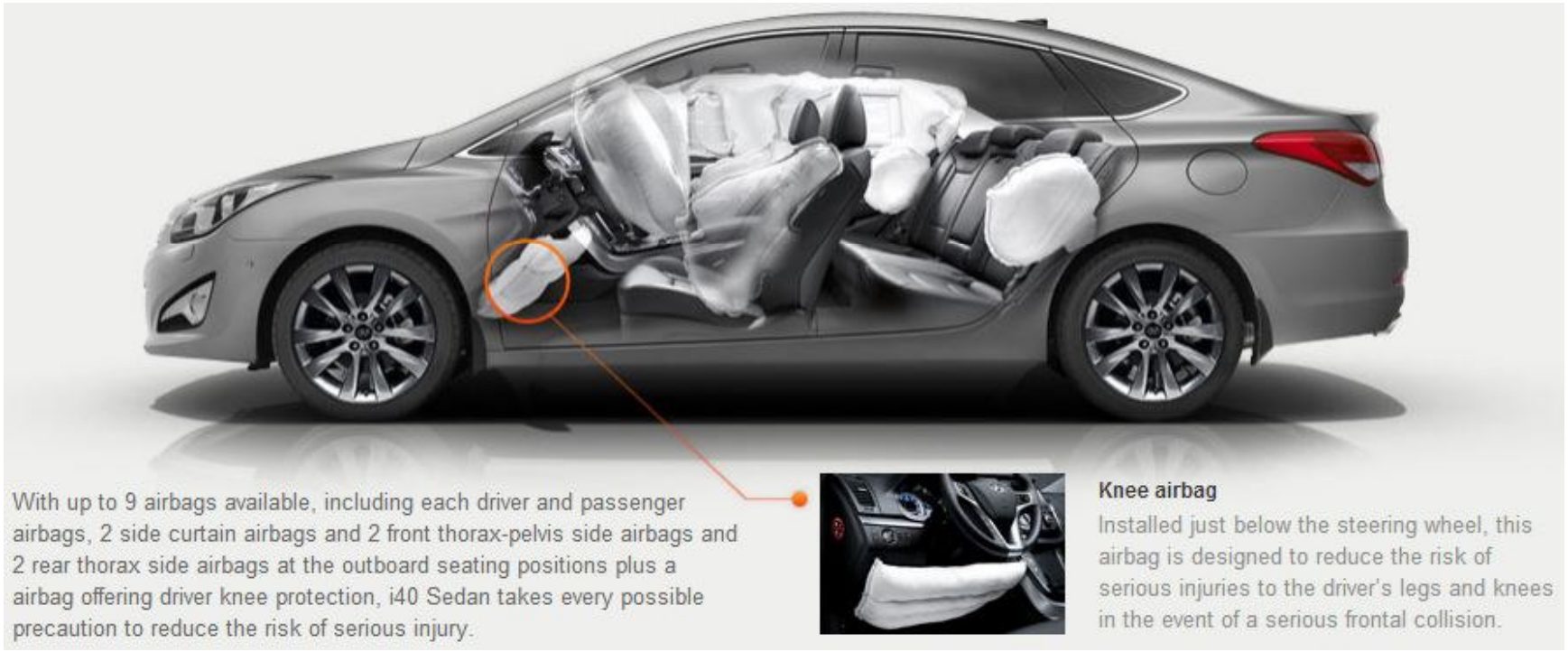


MAZDA 3 UHSS



MAZDA3 AIRBAG SYSTEM

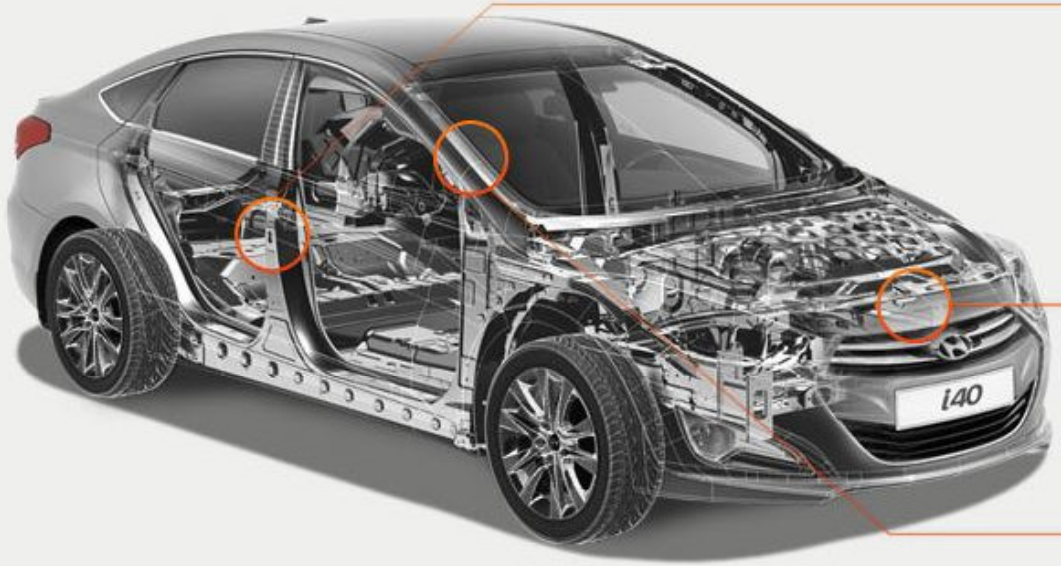
HYUNDAI i40



With up to 9 airbags available, including each driver and passenger airbags, 2 side curtain airbags and 2 front thorax-pelvis side airbags and 2 rear thorax side airbags at the outboard seating positions plus a airbag offering driver knee protection, i40 Sedan takes every possible precaution to reduce the risk of serious injury.

Knee airbag

Installed just below the steering wheel, this airbag is designed to reduce the risk of serious injuries to the driver's legs and knees in the event of a serious frontal collision.



Hot stamping method

Premium ultra-high tensile strength steel is used in key body areas to maximize strength. But the steel is so hard it must first be pre-heated to 900 ºC before stamping. This Hyundai innovation offers more protection to the driver and passengers in the event of a collision.

Steel multi-coned structure and hood inner frame

Applied to the hood, this novel structure is highly effective in absorbing impact forces and represents a major advancement in reducing the risk of serious head injuries in pedestrian-car collisions.

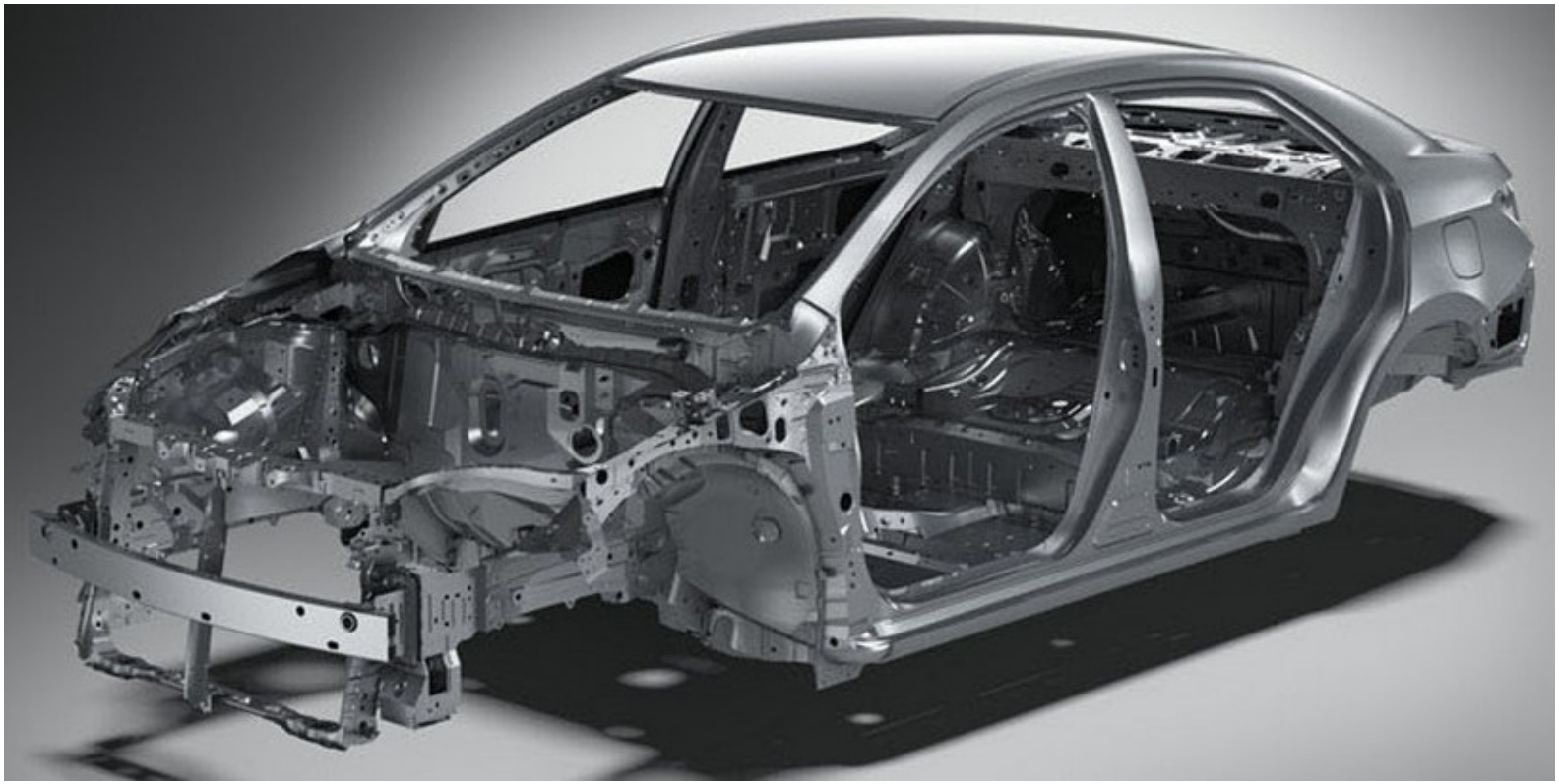
Ultra-high tensile strength steel

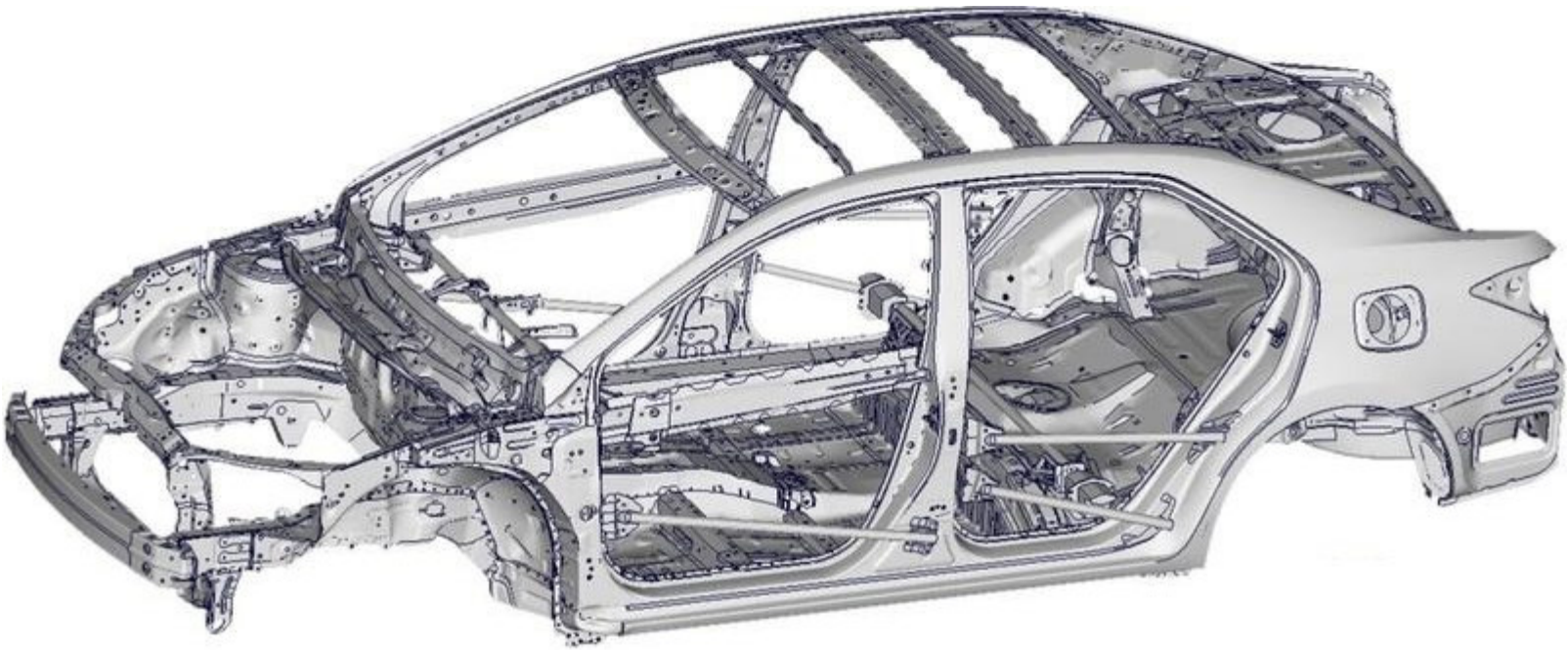
No ordinary, run-of-the-mill steel, the ultra-high tensile strength steel is a high performance special steel alloy applied to critical areas of the body's shell where additional strength reinforcement is required. The benefit is superior crashworthiness.

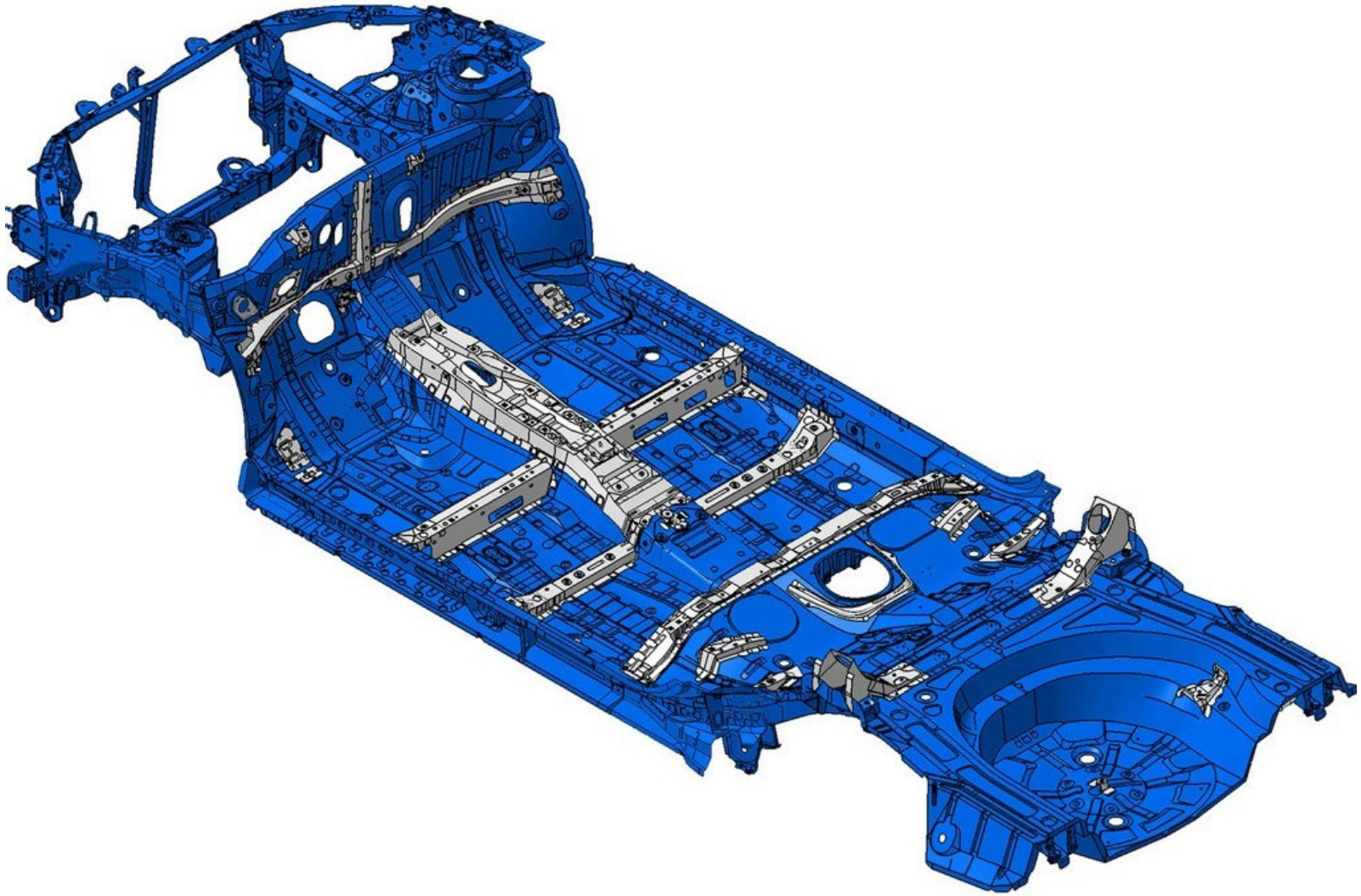
Qoros 3

Qoros 3

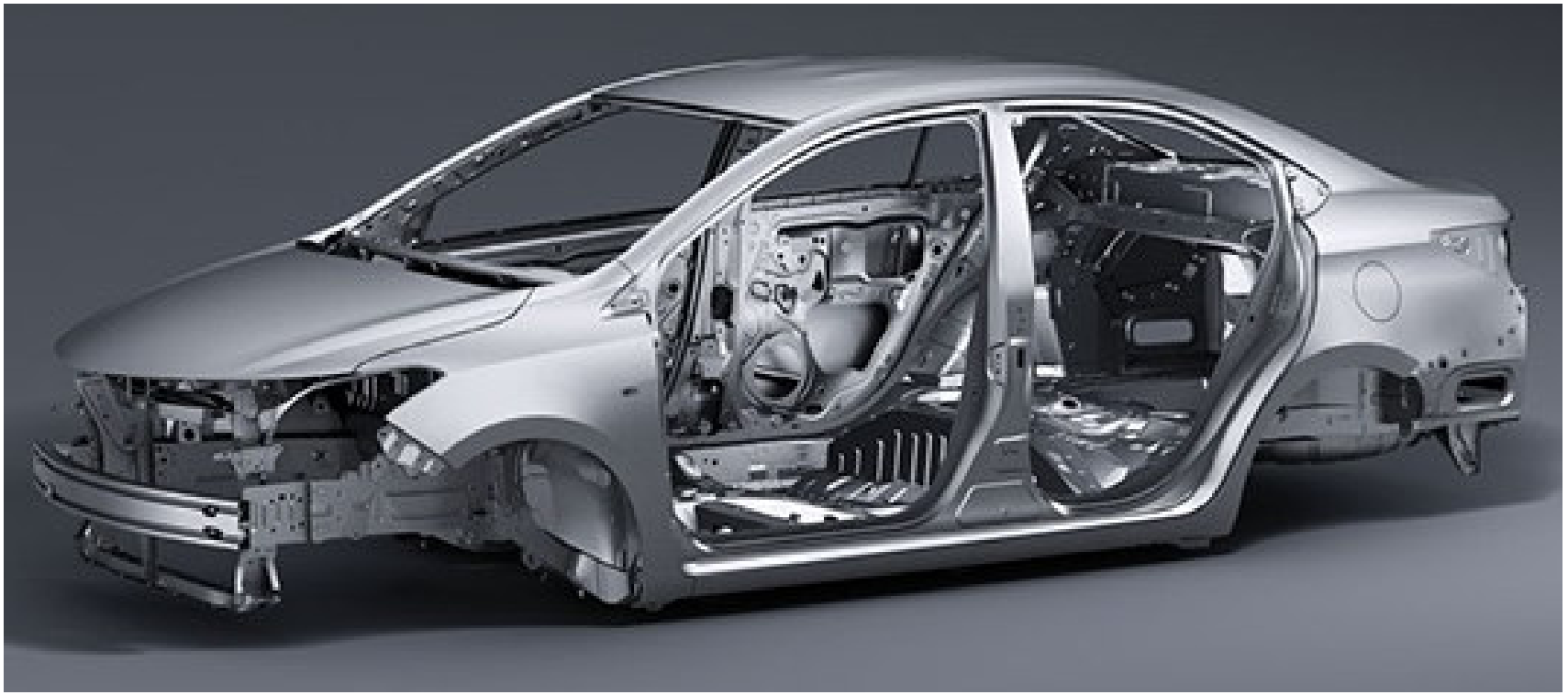
TOYOTA COLLORA



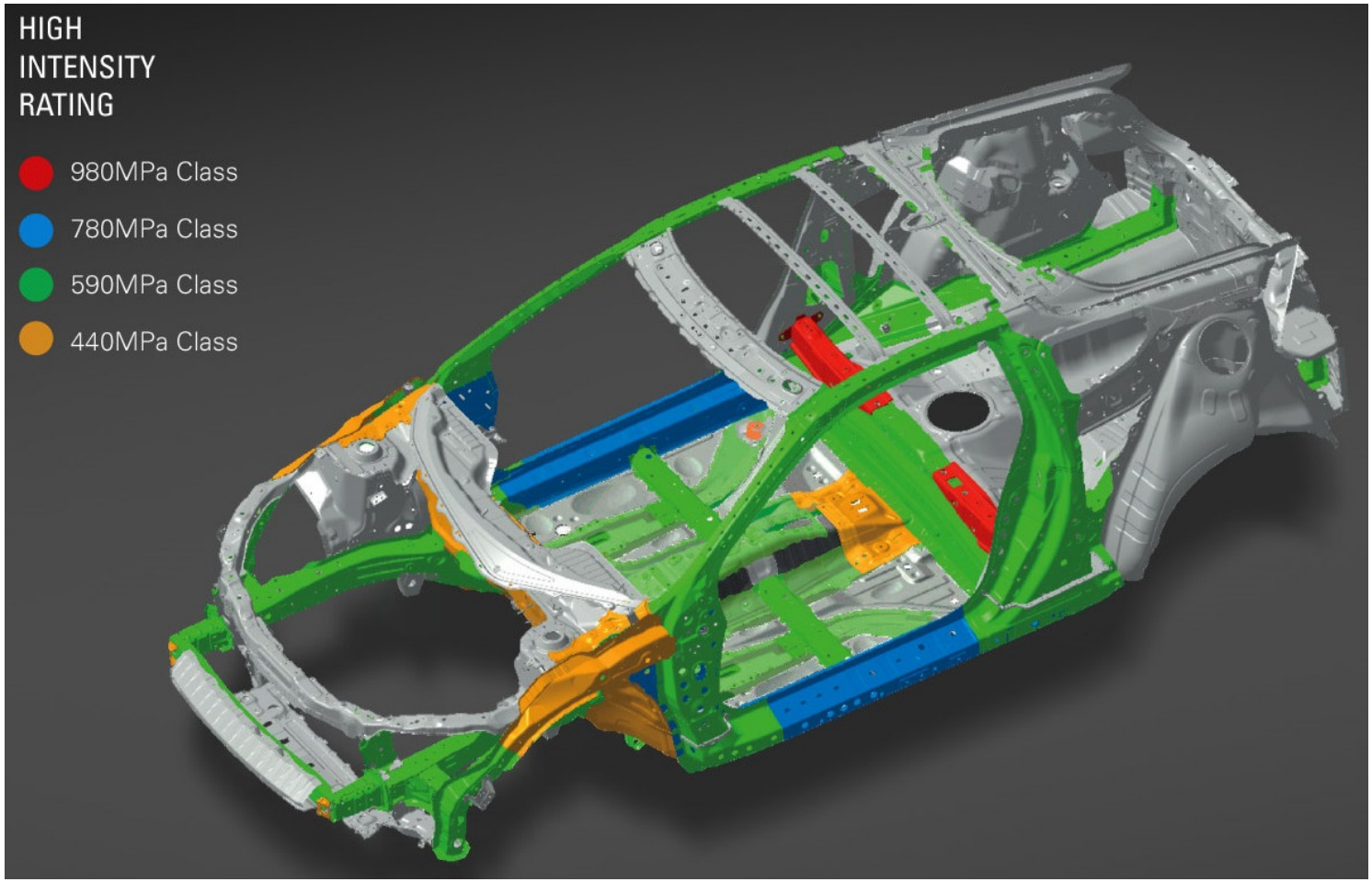




TOYOTA VIOS



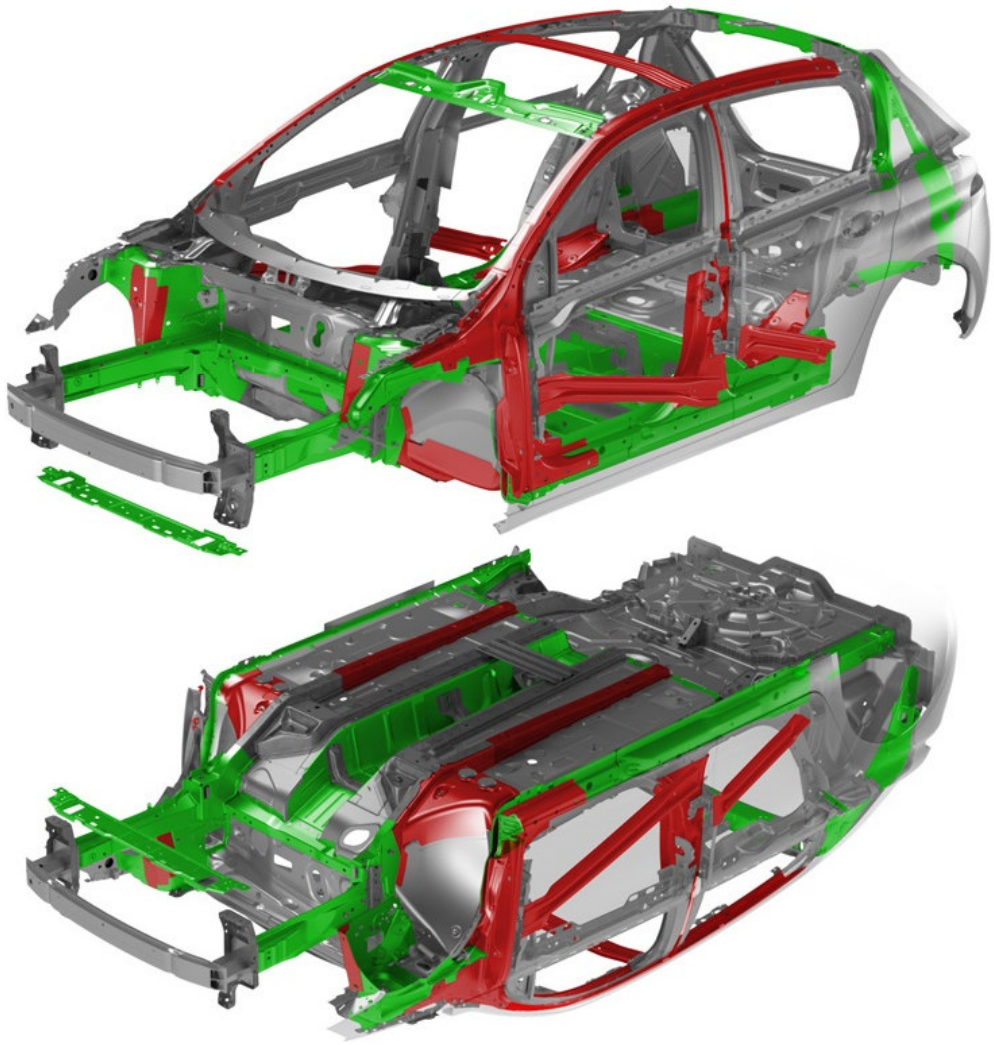
HONDA CRZ


HIGH
INTENSITY
RATING
980MPa Class
780MPa Class
590MPa Class
440MPa Class

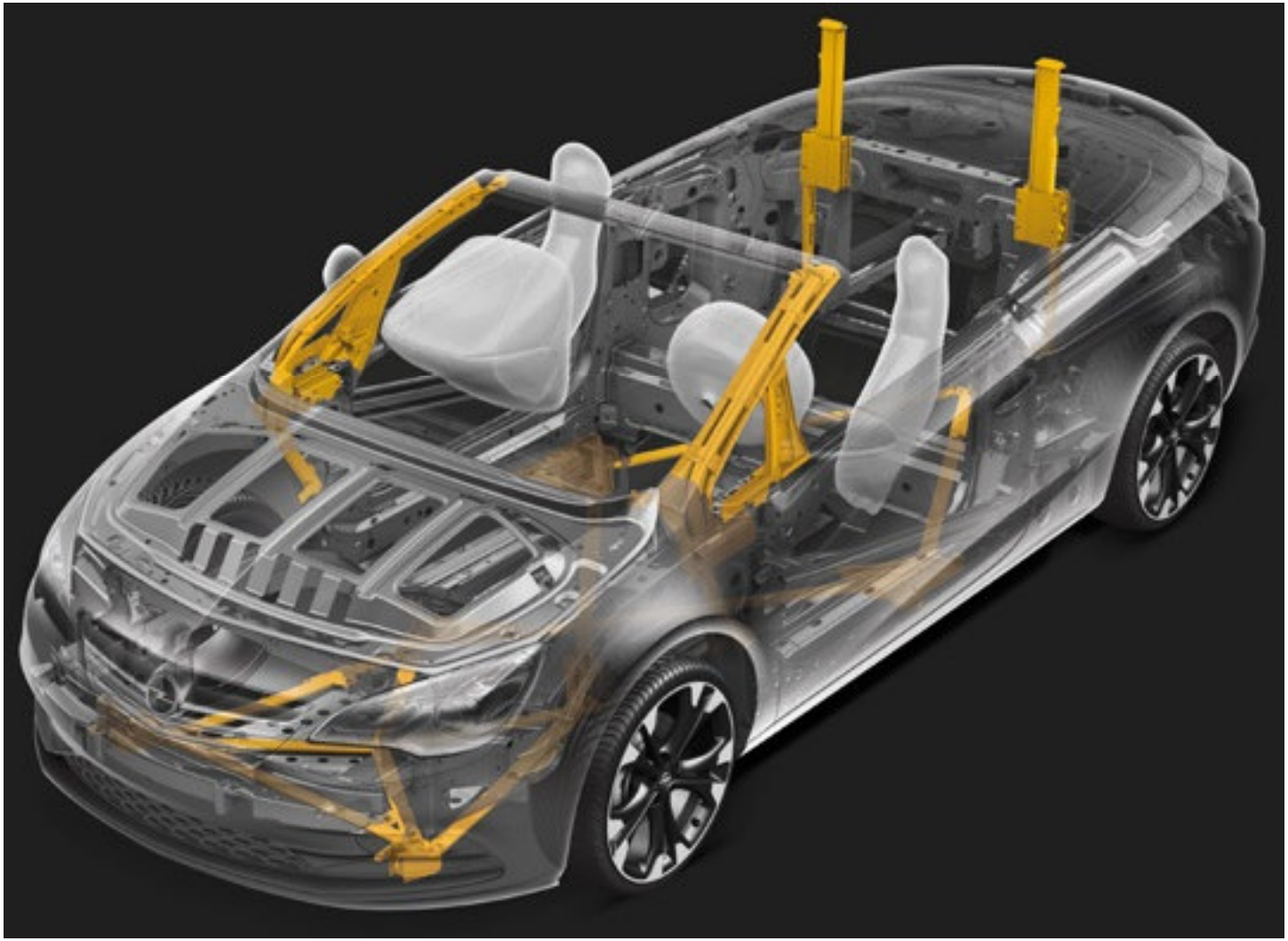
PEUGEUOT 308

Very high strength steel

Ultra high strength steel

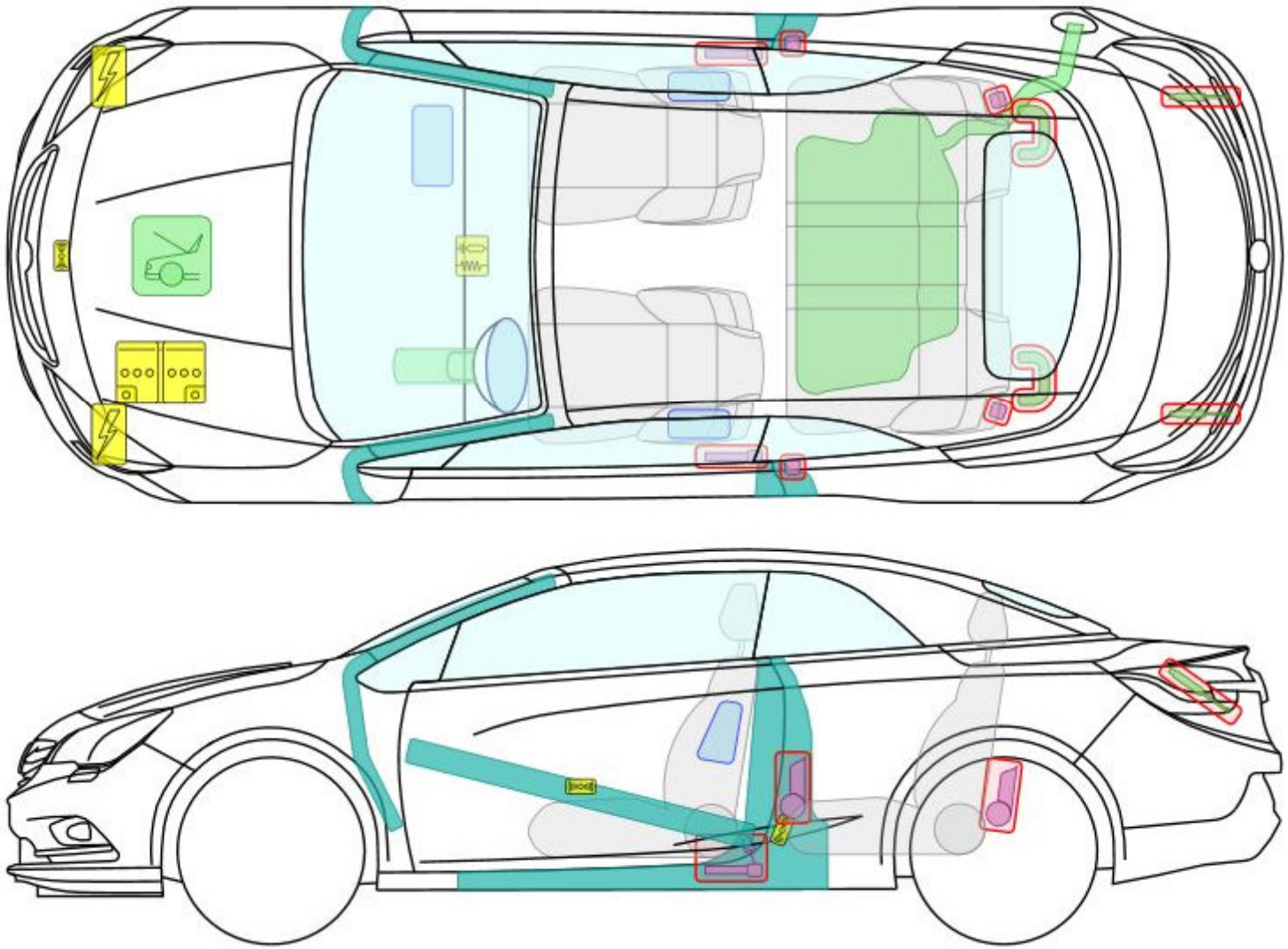


OPEL CASCADA

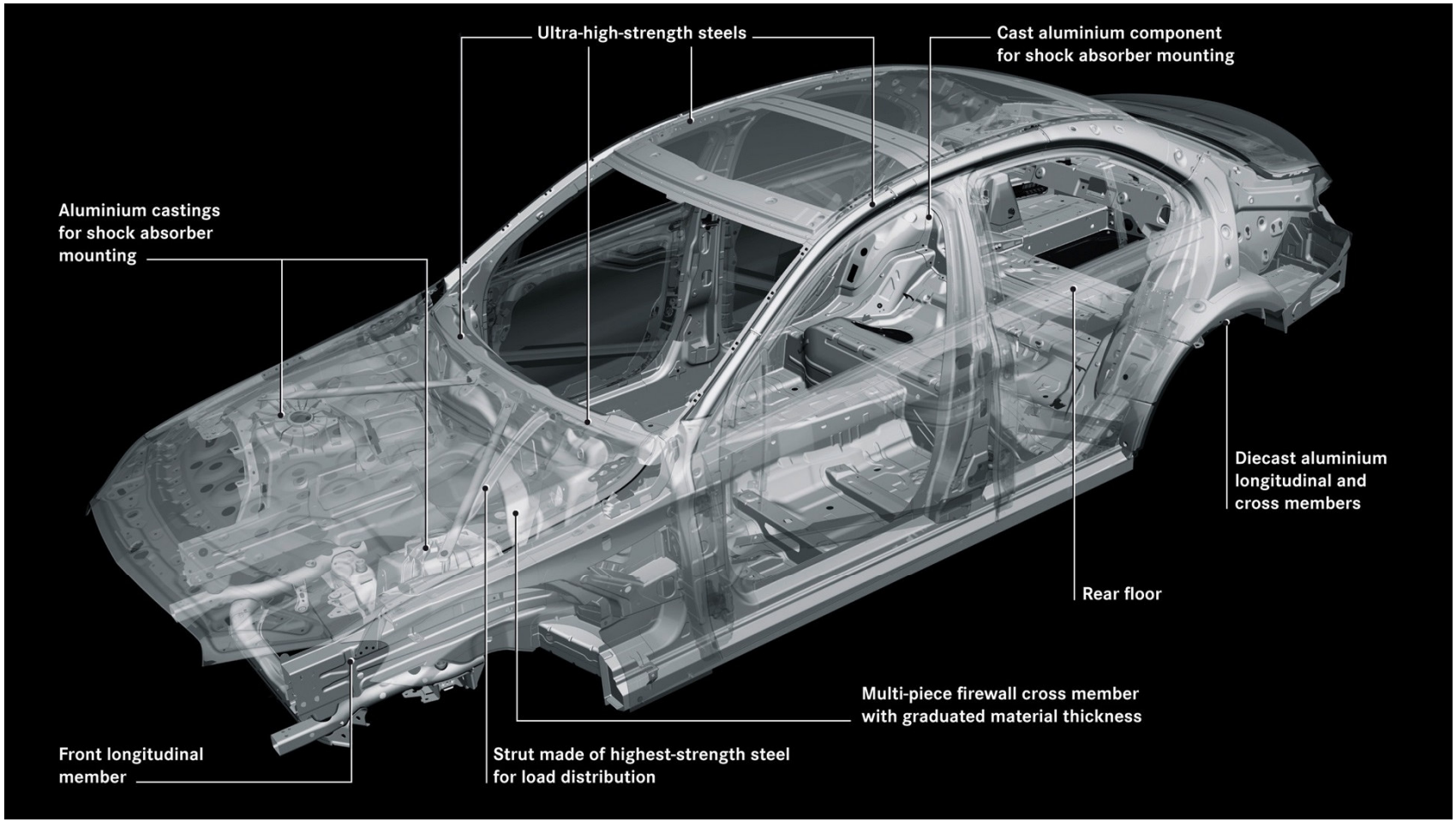


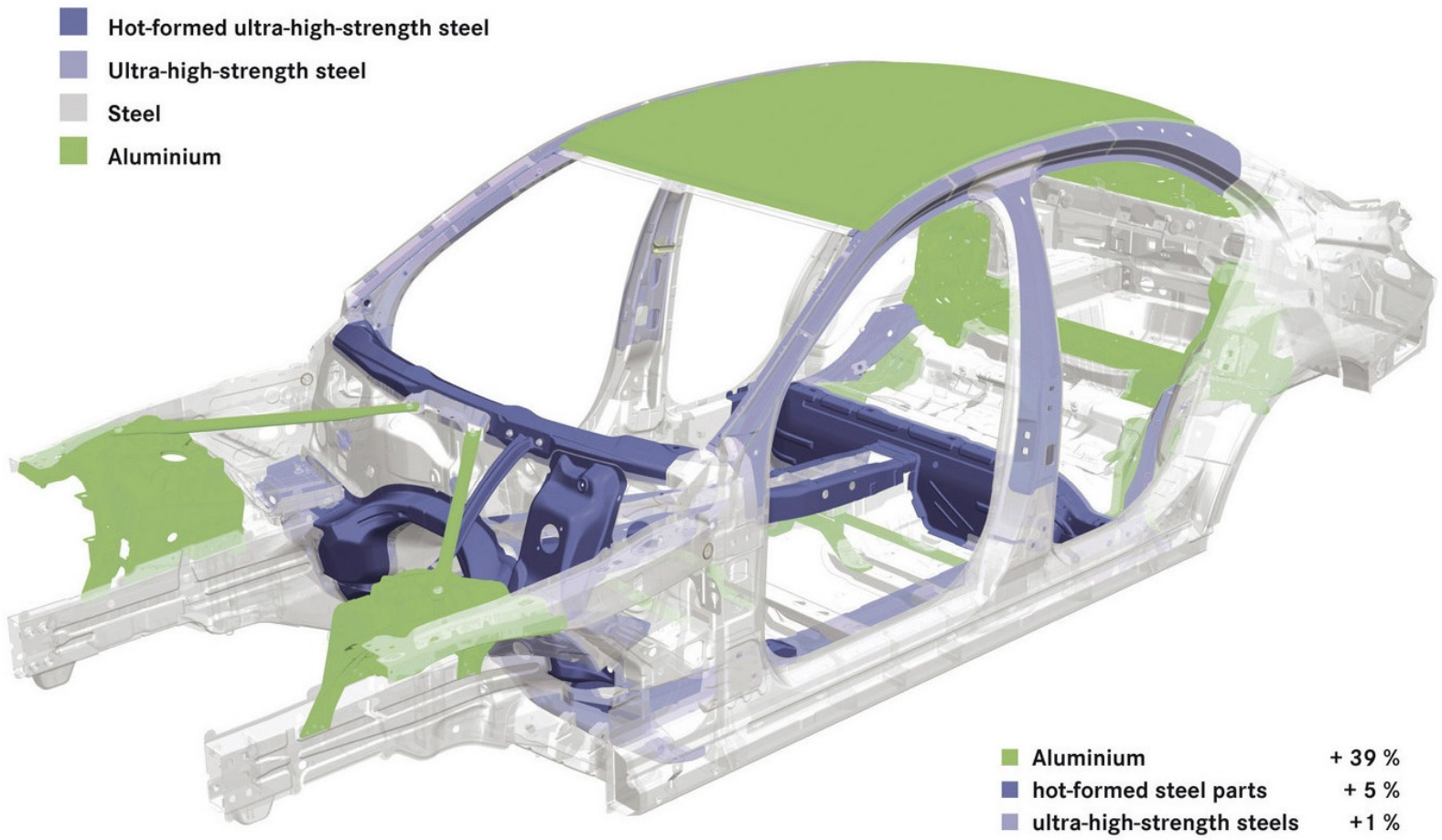
Opel - Cascada - ? - 2dr cabriolet - 2013-2014

VIN Edition: 4106. Fileversion: OP_05_10_00020 1.11. Database: Europe 28-Feb-2014-01.



MERCEDEZ BENZ C CLASS

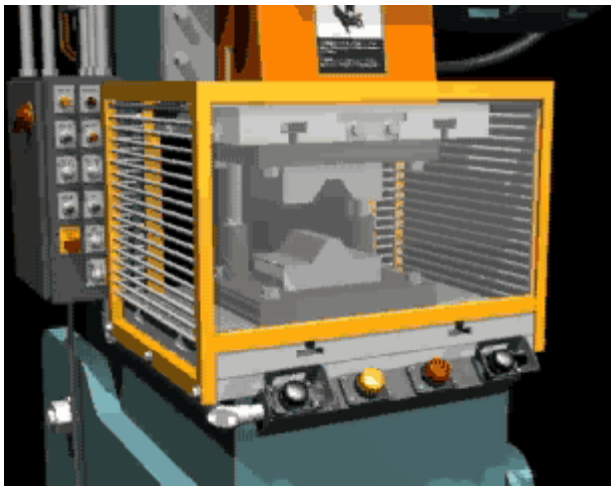


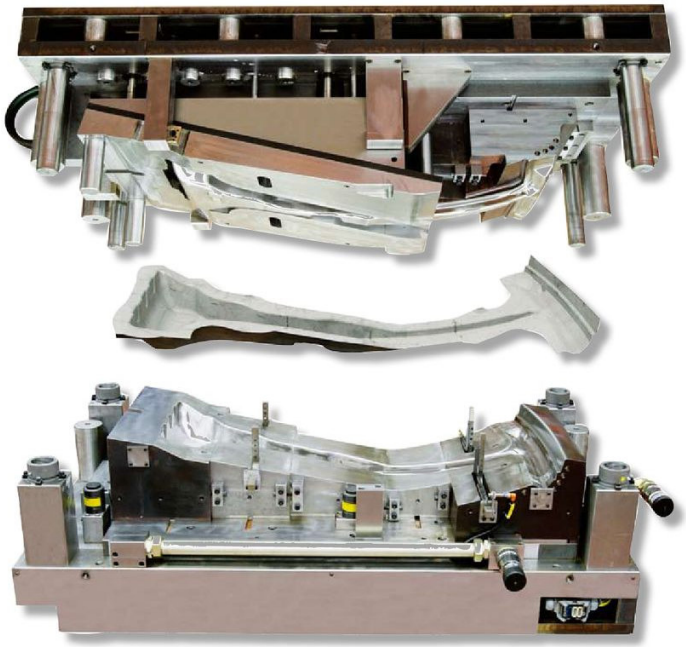


◢ Thanks to intelligent and innovative lightweight construction, the aluminium hybrid body is around 70 kg lighter than conventional production using steel.

Mercedes-Benz has pulled off this technological leap primarily through an entirely new design and the extensive usage of aluminium, hot-formed steel parts and ultra-high-strength steels – an unusual combination in volume-production vehicles. The proportion of these materials has therefore increased noticeably compared with the successful predecessor.

HOT PRESS STAMPING





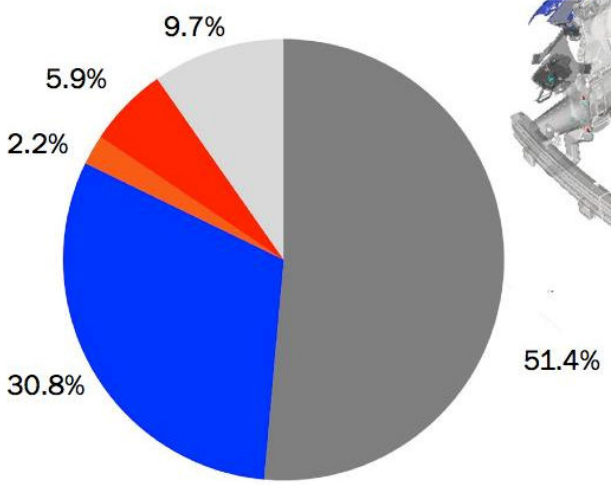
The right tool is half the work

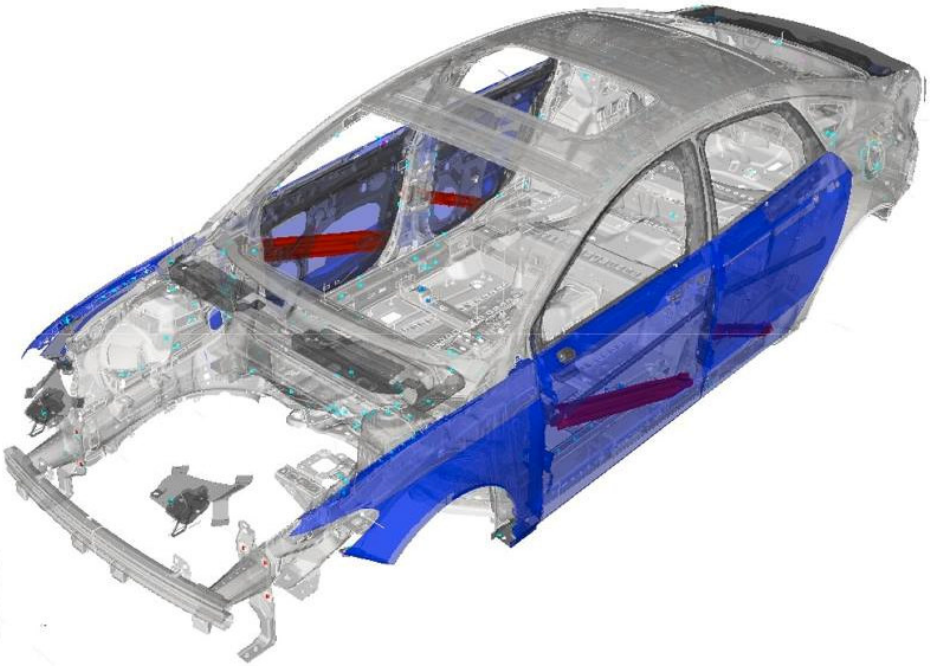
AP&T has the expertise and resources in house to develop the right tool solution for your press hardening line. Our total focus on production gives us greater opportunities to optimize the tool for both product quality and process reliability.

FORD FUSION

Material - Closures

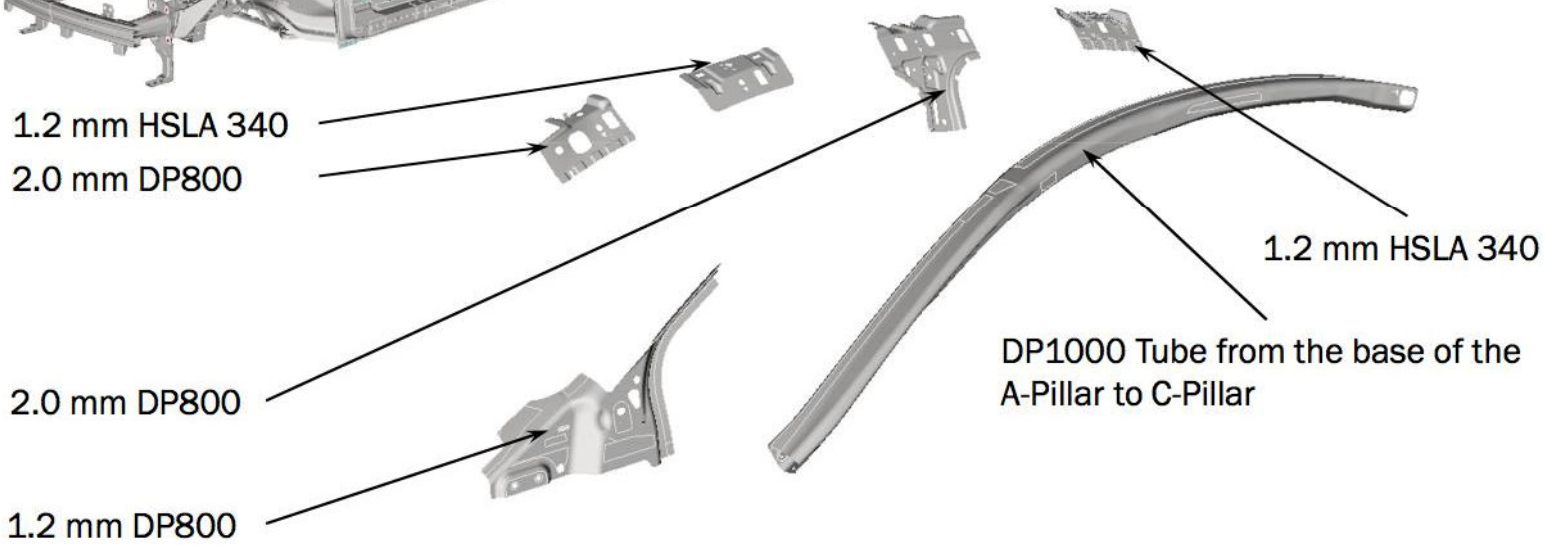
- Mild Steel
- BH – HSLA (YS < 300)
- DP 800
- Boron - Martensitic
- Other





A-Pillar / Roof Rail Design

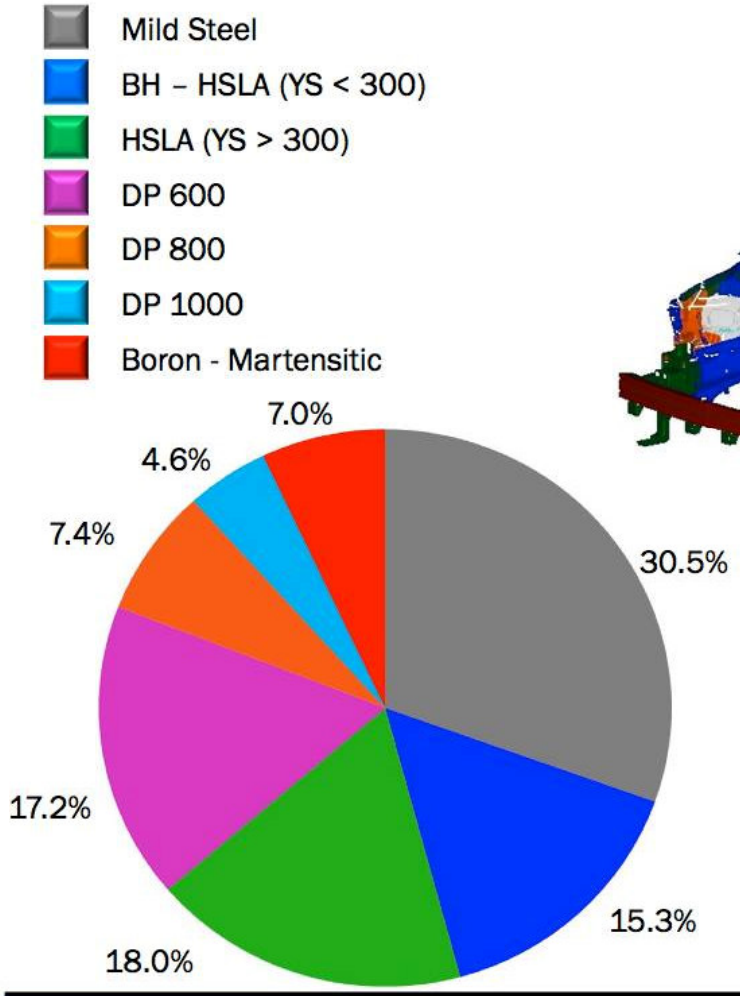
Added brackets allow for the continuation of standard Bill of Process – Resistance Spot Welding

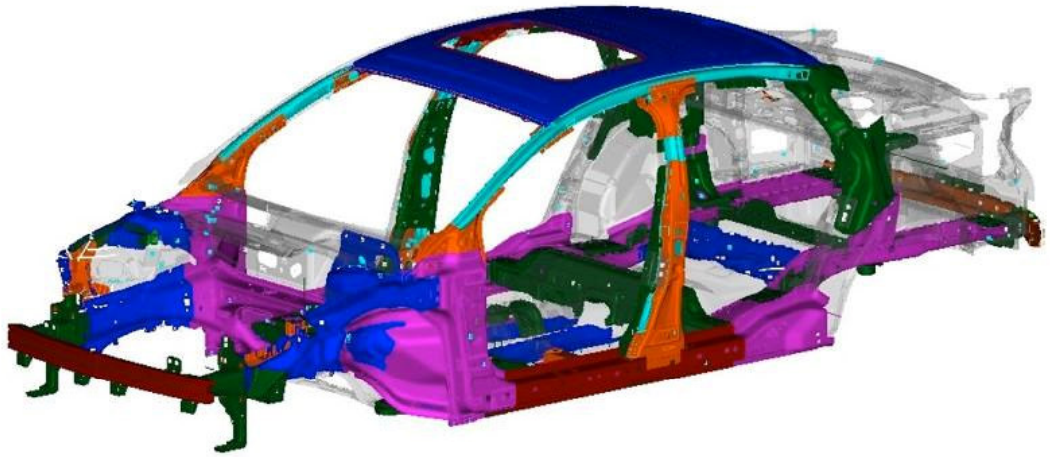


Extension of the design concept used for the F-150 into a unibody structure

Advantages associated with the performance of continuous closed sections resulted in a 2.1 kg /side save and significant cost reduction compared to a Press Hardened, stamped design

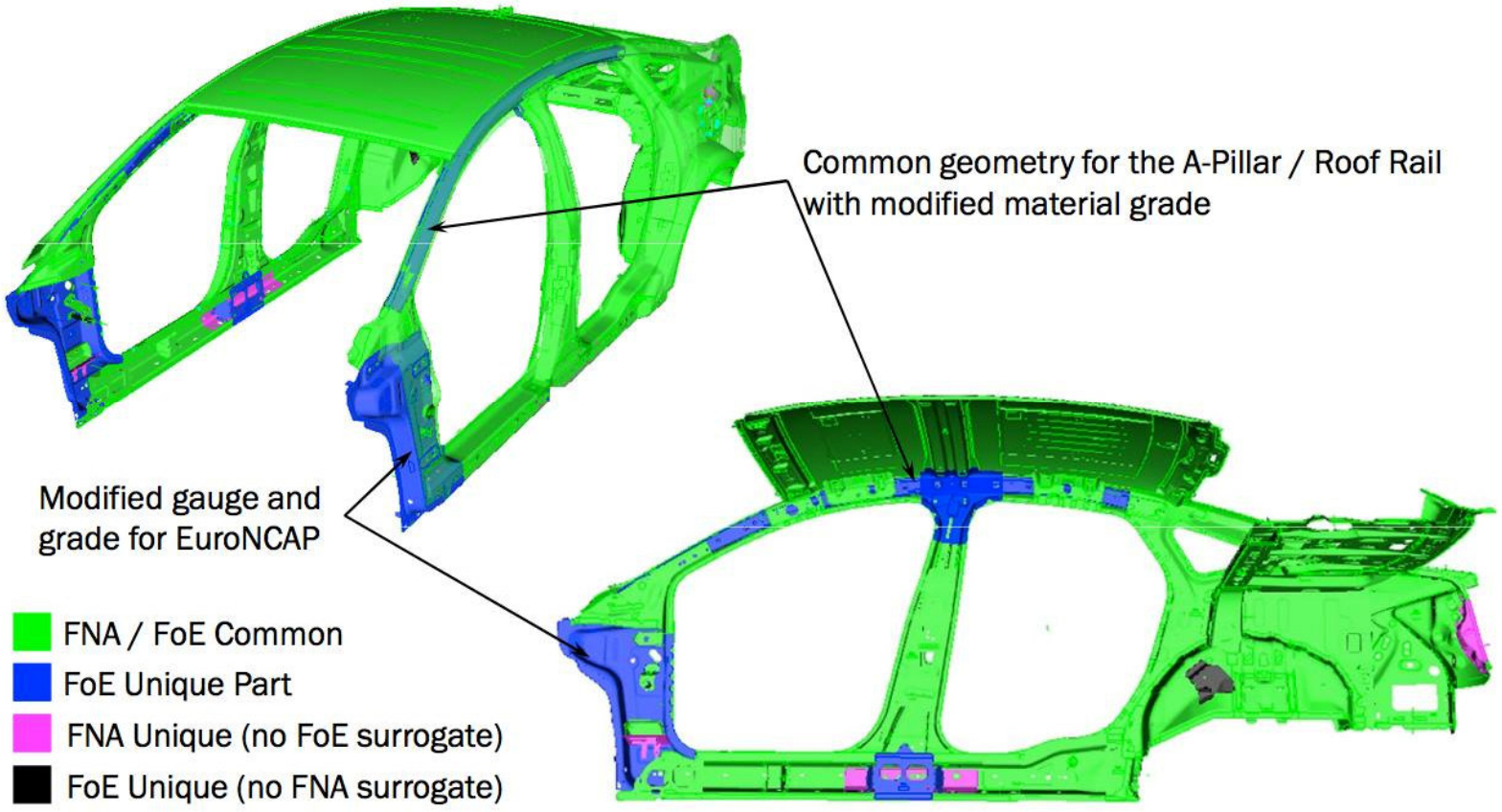
Material - BIW



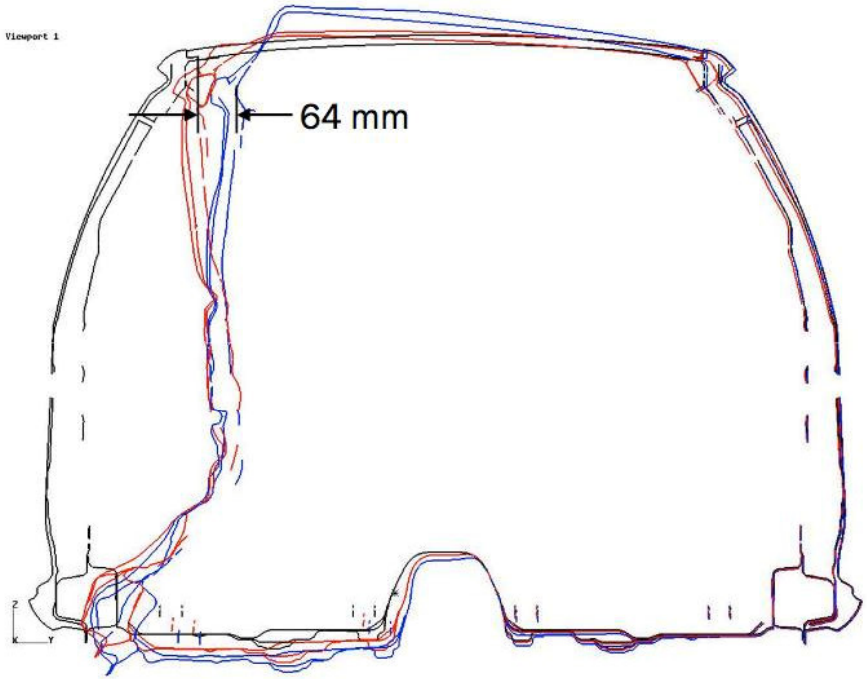


Average Yield Strength = 348 MPa

Upper Body – Global Commonality



B-Pillar Performance Benefits



Black – Un-deformed

Blue – CD4 Baseline

Red – Hydro-formed Tube

IIHS Side Impact Performance :

- Max intrusion is similar at the beltline
- Intrusion with the tube is 64 mm lower than the baseline vehicle at the roof rail.

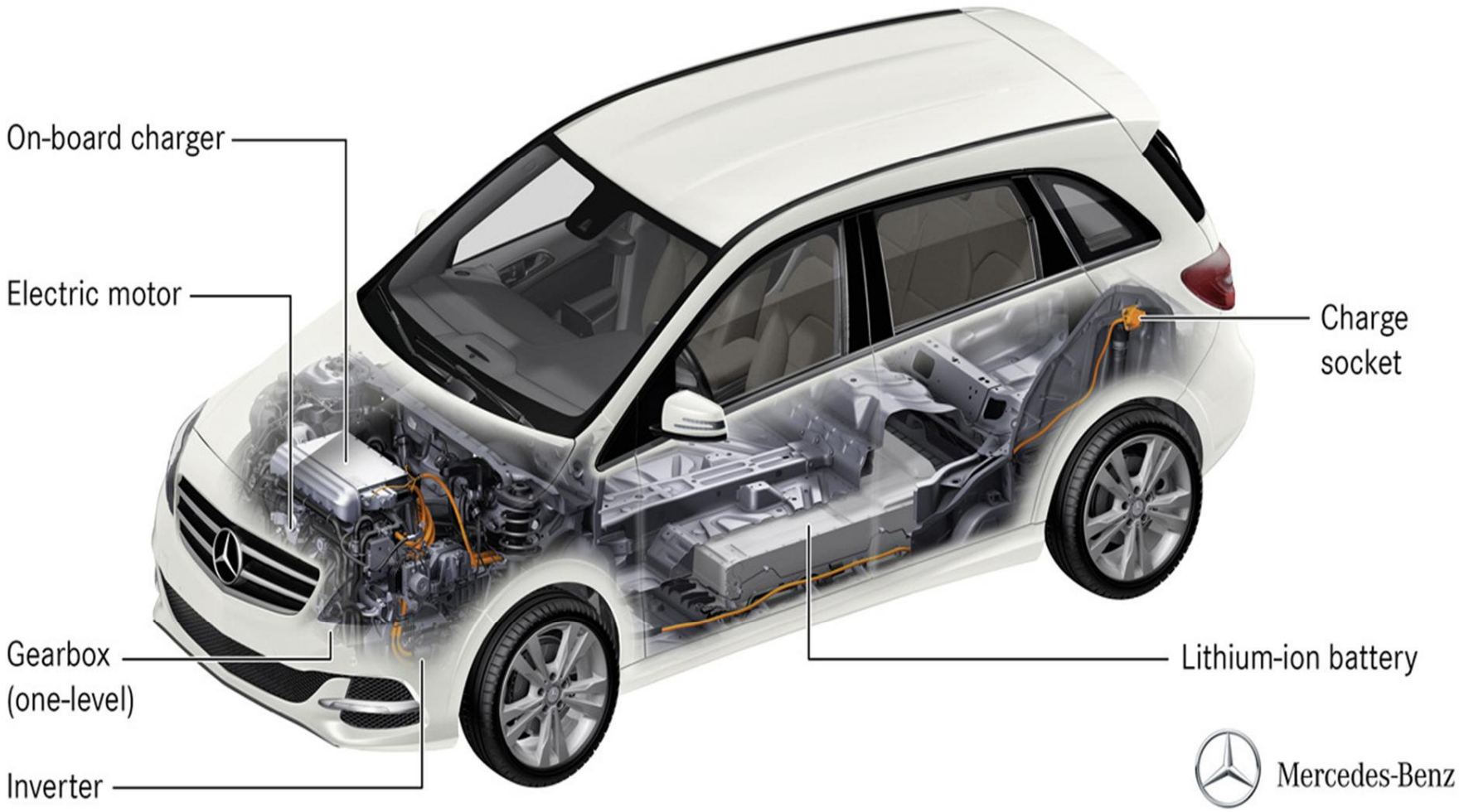
Mass Savings:

- 6 kg over a conventional Press Hardened design
- 4 kg over a Press Hardened design with TRB

Cost Savings: Significant

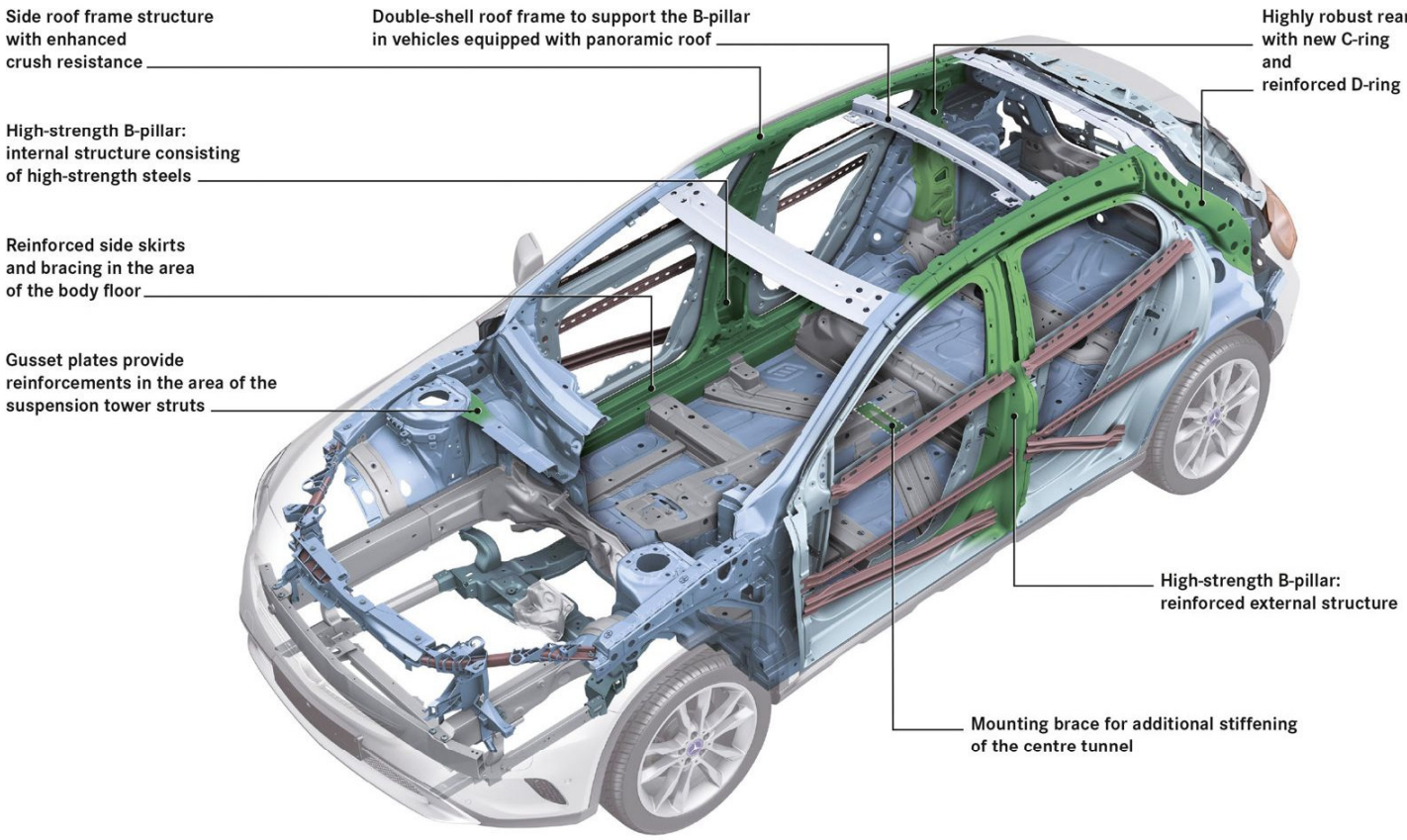
B-Class Electric Drive

B-Class Electric Drive



Endurance testing at Mercedes-Benz: a car's lifespan in fast motion

Extremely robust, reinforced body withstands the gruelling on- and off-road testing marathon



Mercedes-Benz