# (plug-in) Hybrid &



# Electric vehicles











-3450

were with

- Kaumenss

2

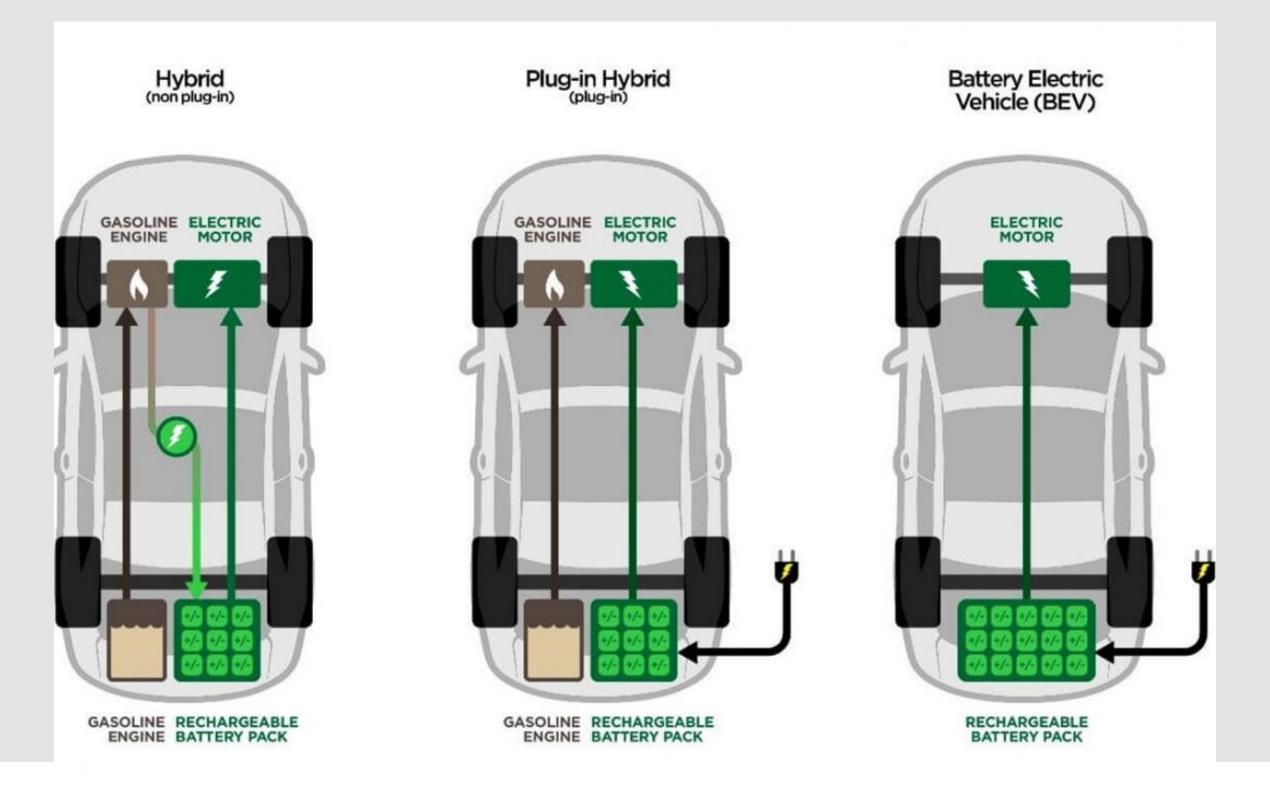
## Content

- Variations in drive train
- How to recognize?
- Step-by-step approach
- Fire
- Electrocution





### **Variations in Drive train**





## How to recognize?





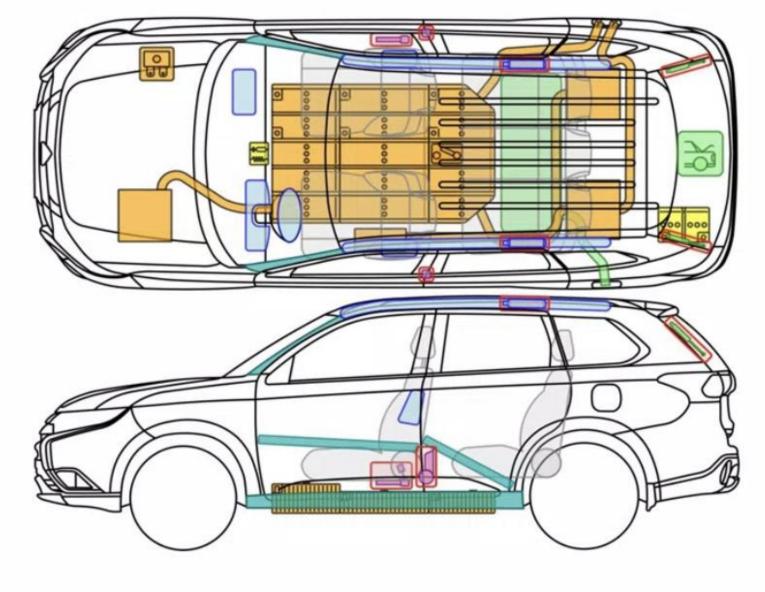
# OUTLANDER MITSUBISHI Plug-in Hybrid MOTORS Typ: CW0, ab Modelljahr 2019



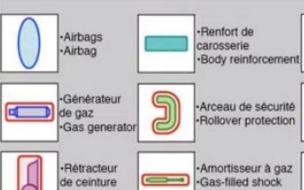


## Plug-in Hybrid



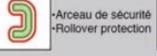






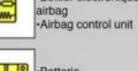
de ceinture •Belt tensioner





·Renfort de



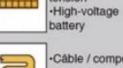


·Réservoir de

carburant

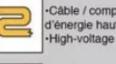
·Fuel tank

·Boîtier électronique





·Boltier de fusibles haute tension ·High Voltage Fuse box



Câble / composant d'énergie haute tension
 High-voltage wire / components



 Sectionneur haute tension d'urgence ·High-voltage disconnection point

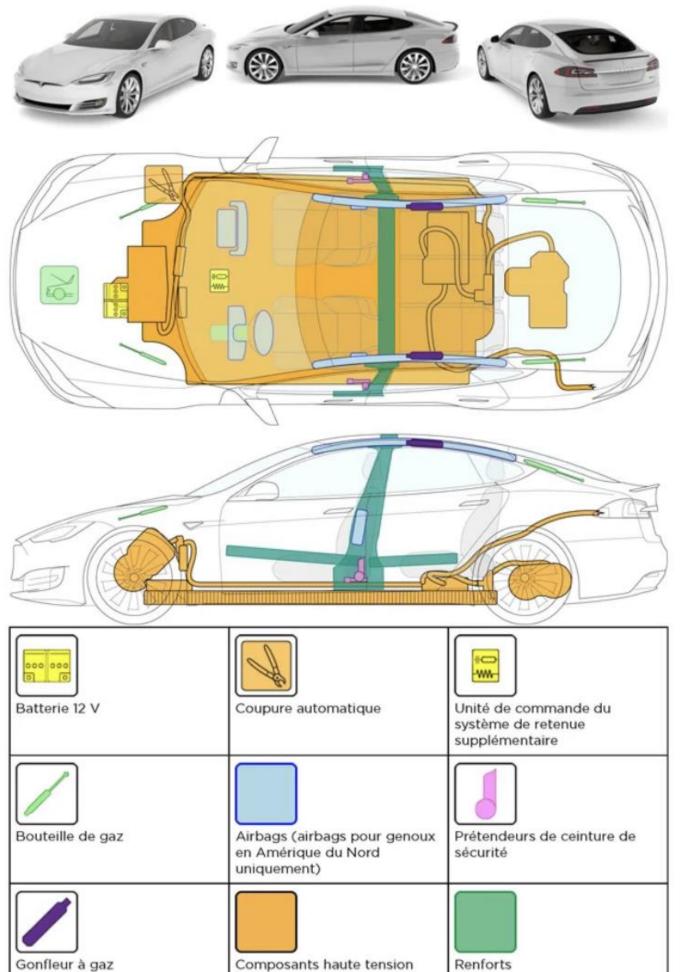
·Batterie haute



### V

## **Electric vehicle**









### Step 1:

Establish that there is talk of an electric / hybrid vehicle

- a) Request driver's passenger (if approachable)
- b) Check the license plate number (if visible)
- c) Note characteristics:
  - type designations / stickers on bodywork
  - charging connection / Charger cover
  - Orange wiring (visible due to crash)

#### Step 2:

Estimate the risk of danger from the high-voltage system

A: No damage

B: Only tin damage

C: Activated airbags

D: Serious deformed cage construction

No danger



## A: No damage







### Step 1:

Establish that there is talk of an electric / hybrid vehicle

- a) Request driver's passenger (if approachable)
- b) Check the license plate number (if visible)
- c) Note characteristics:
  - type designations / stickers on bodywork
  - charging connection / Charger cover
  - Orange wiring (visible due to crash)

#### Step 2:

Estimate the risk of danger from the high-voltage system

A: No damage

B: Only tin damage

C: Activated airbags

D: Serious deformed cage construction

No danger



## **B:** Only tin damage







#### Step 1:

Establish that there is talk of an electric / hybrid vehicle

- a) Request driver's passenger (if approachable)
- b) Check the license plate number (if visible)
- c) Note characteristics:
  - type designations / stickers on bodywork
  - charging connection / Charger cover
  - Orange wiring (visible due to crash)

#### Step 2:

Estimate the risk of danger from the high-voltage system

A: No damage

B: Only tin damage

C: Activated airbags

D: Serious deformed cage construction

No danger



## C: Activated airbags







#### Step 1:

Establish that there is talk of an electric / hybrid vehicle

- a) Request driver's passenger (if approachable)
- b) Check the license plate number (if visible)
- c) Note characteristics:
  - type designations / stickers on bodywork
  - charging connection / Charger cover
  - Orange wiring (visible due to crash)

#### Step 2:

Estimate the risk of danger from the high-voltage system

A: No damage

B: Only tin damage

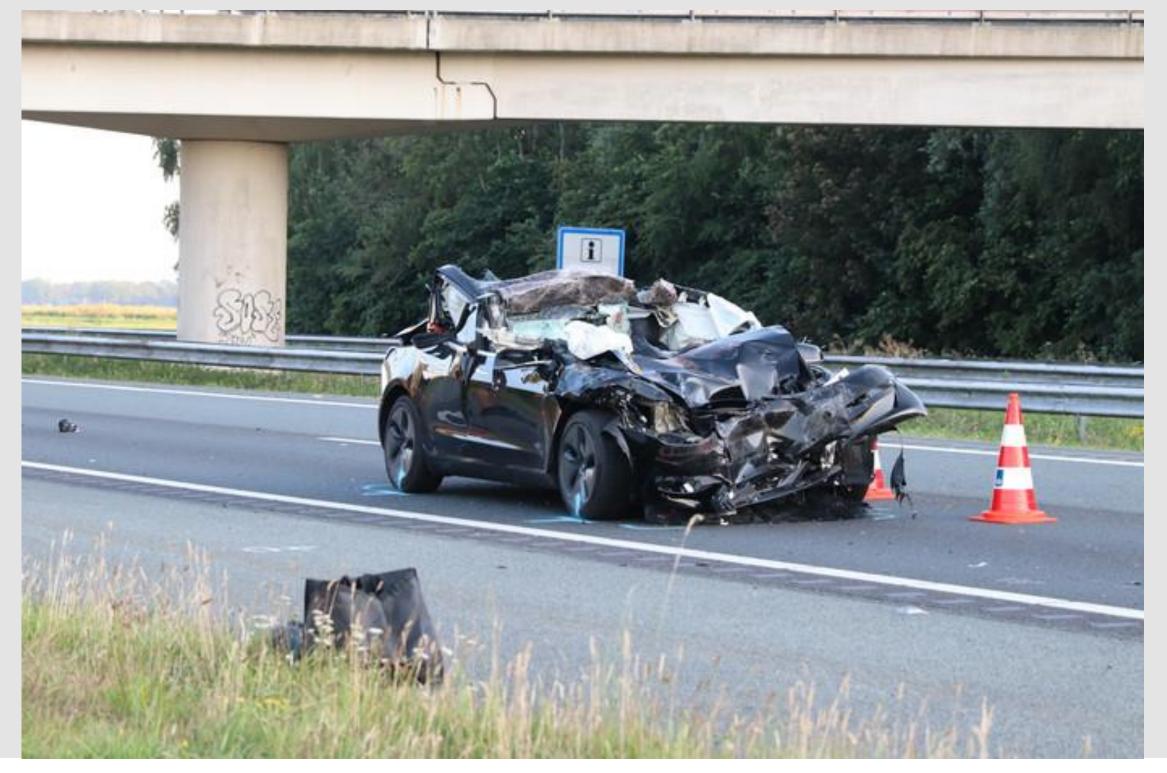
C: Activated airbags

D: Serious deformed cage construction

No danger



## D: Serious deformed cage construction







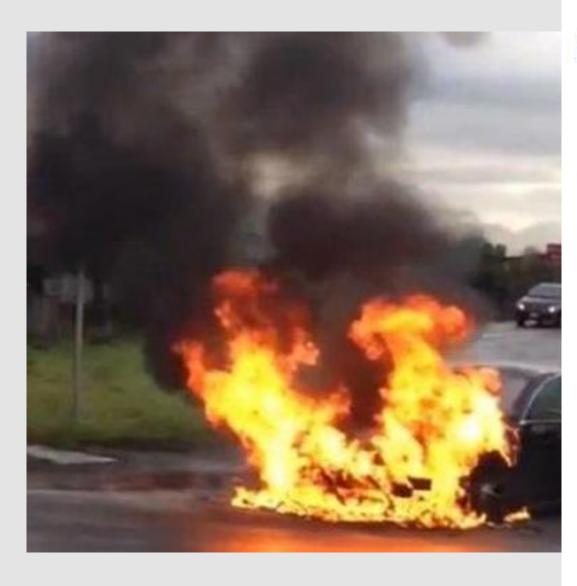
## Pay attention! The vehicle can move unexpectedly.

Therefore act as follows:

- 1. Do not approach vehicle from front, but on (co-driver's) side.
- 2. Put car in parking mode.
- 3. Switch off ignition, remove key 5 meter from the vehicle.
- 4. Switch on alarm lighting, to find out if the 12-volt system (the board network) is still active.
- 5. Insert charging plug into charging socket of vehicle to switch off driving mode.
- 6. Put blocks under the wheels to prevent the vehicle from rolling away on a sloping surface.



### **Fire**



### **New Car Assessment Programmes**









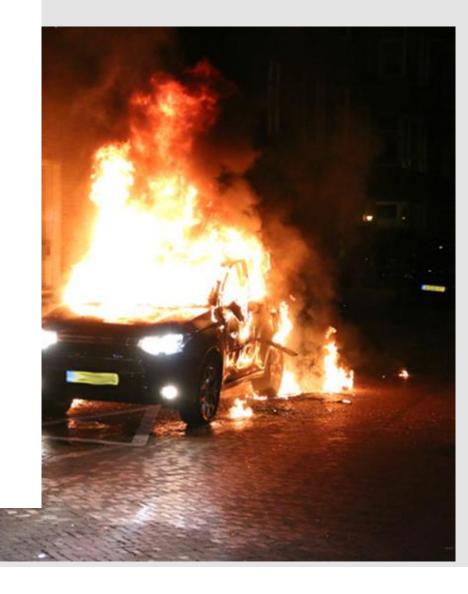












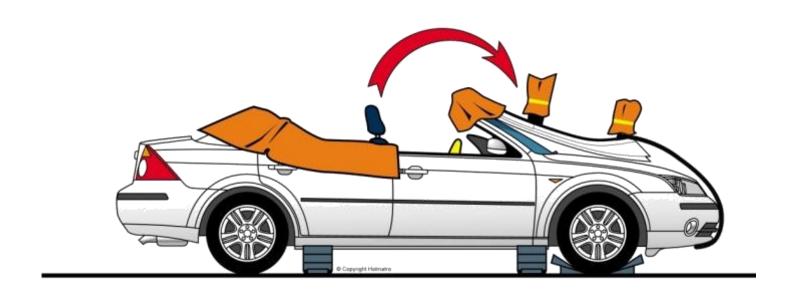




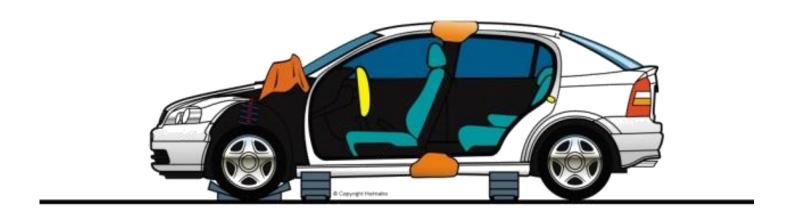




# All current techniques still apply to (plug-in) hybrid and electrical cars!







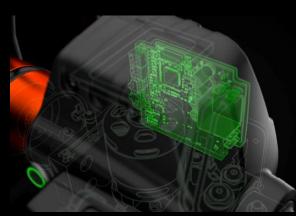






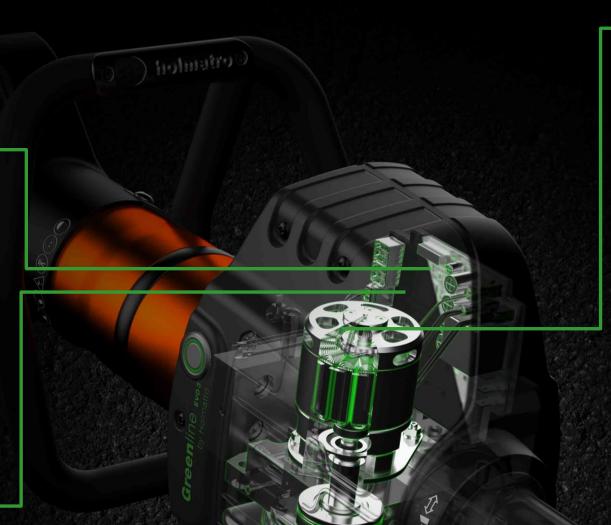


# EVO 3 Technology



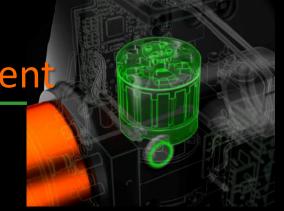
constant High speed

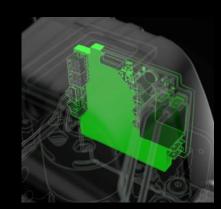
Electronic speed Control (ESC)



Powerful Energy efficient

Brushless motor





Dust & moisture proof

Sealed Circuit board

No energy loss

Direct-drive pump





