

# Meeting Minutes

## Hybrid Breakout Session

### Topics

Distributed OBD-Architecture  
How do you certify your systems?  
PVE – Destruction?  
Test-outs

### “Functions” to be diagnosed per regulation

Energy Input Devices  
Charging Systems  
Electric Motors  
Hybrid Energy Storage Systems

### ***Regenerative Braking***

- Is ABS going to be part of the OBD-system?
- Very difficult to test-out OBD relevance: Burden is on manufacturers to define worst case test cycle.
- How to threshold these diagnostics? Many things unknown at times of development (e.g. battery aging).
- Regenerative braking is actually a function of all other devices (e-motor, battery,...)
- Conclusion: Regenerative Braking should not be diagnosed explicitly; rather through all other component diagnostics

### ***Charging Systems***

- Unclear what is meant by Charging Systems: Regenerative braking? Engine? DCDC Converter? OEM forced to get concurrence with CARB.
- DCDC converter may have an impact on other functions of the engine management.
- Proposal: All 12V system diagnostics should remain non-OBD-relevant

### ***Electric Machines***

- Concurrence this should be OBD relevant

## **Start/Stop**

- One could assume start/stop is not emissions relevant. Though is still required to be diagnosed.
- CARB requested start/stop disable matrix. This was then used to find gaps in diagnostics.

## **Energy Storage Systems**

- Concurrence this is OBD relevant

General: How shall these diagnostics be thresholded?

## **PVE**

- Regulation allows for exemption not to do PVE testing in case hardware needs to be destroyed. Can CARB challenge OEMs to do these kind of tests.?
- Vehicle should not be designed to allow PVE testing.
- Clear definition for “destructive” is desired.
- HD: Change cal/software to do PVE testing.

## **Certification**

- IP issues with suppliers. How to convince suppliers to provide all information needed for certification?
- What ways are preferred to certify: Direct contact with CARB or through alliances (e.g. AAM)? Apparently direct contact is preferred by most OEMs in the room.

## **General topics**

- Is a 12V start/stop system considered a hybrid? Regulation lacks clear definition of “Hybrid”.  
Are CARB and EPA definitions be different?
- HD issue: Engine Manufacturers needs to talk to CARB – no longer the OEM. Who is responsible for the overall OBD-compliance? Engine Manufacturer or OEM?
- Which exceptions are needed for diagnostics: Crash-sensor, ...

## **Plug-in**

- New definition for general denominator is desired

- Two types of chargers: On vehicle/off vehicle? On-vehicle charger needs to be OBD compliant.
- Huge testing burden for plug-in certification (many test cycles needed)
- Boundary for OBD-systems