Diagnostics in EU legislation: overview and recent developments

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Overview

- OBD (emission related, focus on LD Euro 5/6)
- Access to Repair and Maintenance Information (RMI)
  - Repair shops
  - Manufacturers of diagnostic tools/replacement parts
- Outlook
  - “Full” regulation of non-emission-related diagnostics?
  - Road-worthiness inspections etc.
  - E-call, tele-monitoring

OBD: General Purpose

OBD :=

A system, which has the capability of identifying malfunctions, its likely area and of storing this information in a computer memory

- Malfunction of safety, emission control or any other vehicle functionality
- Important tool for identifying failures & deterioration of components (and tampering) => timely repairs & higher durability

Today: regulatory OBD requirements only for emission control (may change in the future)

Emission-related OBD: diagnostic requirements

On/off-board communication (diagnostic network architecture):

- Euro 6: ISO 15765-4 CAN, in future TCP/IP (?)
- Euro 5 also allowed: ISO 14230 – Part 4 KP 2000; ISO 9141 – 2 K-Line; 1994 CARB; SAE J1850 Class B DCNI

Communication between external diagnostic tool and vehicle:

- ISO 15031: diagnostic connector, external test equipment, diagnostic services, trouble codes, security/tampering protection
- New in Euro 5/6: communication of in use performance ratios (IUPR) via ISO 15031

Access to RMI (applies to whole vehicle)

Euro 5/6 Regulations (EC) 715/2007 and 692/2008, main objective:

- ensure functioning of independent aftermarket

Primary beneficiaries of legislation:

- repairers/roadside assistance

  => web-based RMI interface standardised by CEN to be made available to independent operators

But wider definition of independent operators:

- manufacturers/distributors of tools & spare parts, publishers, technical services,…

=> Encourage the manufacture of generic, multi-brand diagnostic tools by independent operators

Access to RMI: reprogramming of vehicles (voted by TCMV on 17 November 2011)

Annex XIV of Regulation (EC) 692/2008 provides for reprogramming of LD vehicles manufactured after 31 August 2010 to be compliant with:

- SAE J2534 or
- ISO 22900 (MVCI)

Vehicle manufacturer shall offer to VCI manufacturer:

- Validation of VCI or
- Information and loan of any special hardware to conduct VCI validation

LD vehicles manufactured before 1 September 2010:

- Alternatively sale or lease of proprietary diagnostic tools to independent operators in a useable form and in a non-discriminatory, prompt and proportionate way. Special rules for fees apply.

Access to RMI for manufacture of diagnostic tools

Appendix 5 to Annex I of Regulation (EC) 692/2008 defines set of specific diagnostic tool information.

- Beneficiaries: any interested component, diagnostic tools or test equipment manufacturer

Type of information to be provided:

- Communication protocol used: addition information (to mandated standards) to enable complete diagnostics, fault codes, live data, functional tests, status information, time stamps, DTCs, freeze frames, resetting parameters, ECU identification/coding, connector details,…
- OBD monitored components: functionality tests, procedures, connection parameters, input/output values, failure modes,…
- Repair data: ECU and component initialisation, initialisation of replacement parts,…
- If ISO 22901/23209 Open Diagnostic Data Exchange (ODX) / Open Test sequence eXchange (ODX) are used: full access to ODX files, access to OTX still to be assessed in detail after standard is fully established.

Access to RMI for manufacture of diagnostic tools

Guidance paper for implementing Appendix 5 to Annex I of Regulation (EC) 692/2008 has been developed by vehicle manufacturers and independent operators:

- details on the technical scope of the information
- rules for diagnostic tools manipulating security-related data
- Online / offline operation of generic diagnostic tools with respect to specific VM data
- should define trustworthiness criteria for recipients of such information
- contractual guidance to ensure that the information is just used for the intended purpose

=> Objective is adoption as formal guidance (or “staff working paper”) by the Commission and Member States

Access to RMI in Euro VI (heavy duty)

Co-decision Regulation (EC) 595/2009: implement Euro 5/6 RMI provisions “mutadis mutandis”

- any deviations from Euro 5/6 must be justified by substantially different situation specific to HD sector
- details currently being discussed with stakeholders
- highly political debate
- RMI related to diagnostic tools: no obvious differences to LD sector

=> Commission proposal in the 2nd semester 2011 to be expected

Regulatory vehicle diagnostics: outlook

Currently:

- Emission-related OBD highly regulated with respect to its functional requirements and communication protocols (ISO 15765-4, ISO 15031)
- Non-emission-related diagnostics technically (almost) not regulated but subject to RMI

Future:

- Vehicle diagnostics becomes increasingly relevant for all aspects of a vehicle such as safety
- Higher degree of use, e.g. for road-worthiness inspections
- “Full” standardisation of diagnostics necessary?

Commission to issue a study in this respect, probably end of 2011

E-call / Telemonitoring

E-call: Vehicle may “call” emergency services in case of accident

- Strong support for EU regulation from “telematic community”
- To be addressed: IT and telecommunication infrastructure, technical vehicle requirements (type approval legislation)

Tele-monitoring: Vehicle is monitored (remotely?) for repair & maintenance needs and may call vehicle manufacturer or “next repairer”,...

- No drive for imminent technical regulation but probably use of e-call infrastructure

Legal & political issues (non-exhaustive…):

- Personal data protection
- Non-discrimination of independent operators (in particular repairers)

Conclusions

Euro 5/6 has introduced new diagnostic requirements:

- OBD regulation: ECU tampering protection, communication protocol
- Vehicle reprogramming standards
- Access to information for the manufacture of diagnostic tools

Euro VI RMI requirements to follow Euro 5/6 (if there are no specific reasons for deviations)

Future:

- Imminent: “adaptation to technical progress”, e.g. ODX/OTX, TCP/IP vehicle communication protocols
- Possible further standardisation of vehicle diagnostics to facilitate e.g. road-worthiness inspections
- New technologies such as e-call and tele-monitoring