

Information Note

Application for approval of After-market alteration from a Fossil-fuel-engine driven vehicle to Hybrid / Pure Electric Vehicle

This information note details the TD approval requirements for an “after-market converted” hybrid / pure electric vehicle.

1. The base vehicle to be converted should either
 - Be a vehicle model with Hong Kong type approval certificate, or
 - Have obtained a Whole Vehicle Type Approval certificate from other jurisdictions (eg. EC Whole Vehicle Type Approval etc.) to demonstrate that the vehicle is properly designed so as to be roadworthy for use on roads in HK.

2. Prior to any conversion, the applicant should provide at least the following documents to TD for consideration and approval. No conversion on registered vehicles should be carried out prior to TD’s approval.
 - (i) **Application Letter** - An application letter from the applicant stating the reasons of conversion, and supplemented with the detailed conversion proposal (including a description of all major automotive parts/products involved), the vehicle registration document copy, company history of the automotive parts/products proposed for alteration and track records of conversion with details of any accidents and recalls.

 - (ii) **EPD’s Endorsement** - Approval or no objection from Environmental Protection Department concerning vehicle exhaust and noise emissions shall be required, especially for a hybrid vehicle.

 - (iii) **Vehicle Manufacturer’s Endorsement or EC Vehicle Approval**
 - a) **Vehicle Manufacturer’s Endorsement** - Approval or no objection from the original vehicle manufacturer regarding the proposed alteration or that the proposed vehicle after conversion is safe for use on road. Applicant shall declare that there is no modification to structural components of the vehicle. Otherwise, specific endorsement from the vehicle manufacturer regarding this change is required. If the power output of the modified vehicle is greater than the original design, specific endorsement / certificate from the vehicle manufacturer is needed regarding the compatibility of the braking system, suspension and chassis strength.

 - or

 - b) **EC Vehicle Approval** - Assessment of the modified vehicle model to the level of EC Whole Vehicle Type Approval or equivalent, as certified by a technical service designated under the EC Directive 2007/46/EC, that the vehicle is safely designed and integrated as a whole. The details of the assessment, conditions, and related reports with reference to EC

regulatory acts should be submitted.

(iv) **RPE/CEng Certification** – a Registered Professional Engineer (RPE) / Chartered Engineer (CEng) or the vehicle manufacturer or an equivalent professional engineer/body to certify the following

- Substantiation that the designed axle loading and gross vehicle weight limits of the “modified vehicle” are not exceeded
- Substantiation that the passenger seating capacity is not affected
- Declaration of alterations to be made to any vehicle components not directly related to the conversion
- Declaration that the modification would be monitored and supervised by a RPE/CEng and strictly follow the modification plan agreed with the original vehicle manufacturer or EC technical service, if applicable.

(v) **Other Technical Information required for approval**

- Technical information/specification of electrical system and design of the electrical protection in relation to the electrical system of the hybrid / pure electric vehicle
- Diagram and general description of the essential electrical/control parts and explanation of their functions.
- Schematic diagrams showing the connection between all modified and additional instruments / component, and original instruments (including OBD).
- Schematic diagram of the braking system of the vehicle before and after the alteration
- Technical details of the distribution of the loading of the vehicle before and after the alteration
- Description of electrical safety features and protection measures incorporated into the vehicle and charging system
- Operating characteristics of the electric motor (torque and power curves)
- Information and specification of the batteries and charging system. Indication of charging status and the state of charge of the batteries at the driving enabled mode. (battery status indicator is mandatory)
- Indication of maximum speed, gradeability, fuel consumption, efficiency, range per full charge (including their methods of measurement, which should be traceable to an industrial standard or an international/national automotive regulation).
- Maintenance requirements – Maintenance manual covering the electrical system, including circuit diagrams.
- Testing report on the modified vehicle regarding the functional safety and protection against electric shock with reference to ECE R100 or equivalent standards

3. In general, for an approval application, irrespective of whether it is an original electric vehicle or an altered electric vehicle, the vehicle must comply with all provisions in Road Traffic Ordinance (Cap 374) and its subsidiary legislations. Please also refer to the latest version of the Vehicle Construction Approval Requirements for Electric Vehicles.

4. After evaluation of the documents, TD will arrange vehicle examination to ascertain compliance with the Road Traffic (Construction and Maintenance of Vehicles) Regulations and Road Traffic (Safety Equipment) Regulations after TD is informed of the completion of the vehicle alteration. If the vehicle is found to be roadworthy for use on roads in HK, it may be allowed to be registered and licensed, subject to any other relevant regulatory requirements.
5. For enquiries on the above approval requirements, please contact the Vehicle Safety and Standards Division, Transport Department.

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Vehicle Safety and Standards Division
Transport Department

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