
Economic Commission for Europe**Inland Transport Committee****Working Party on the Transport of Perishable Foodstuffs****Eightieth session**

Geneva, 24-27 October 2023

Item 5 (b) of the provisional agenda

Proposals of amendments to ATP:**new proposals**

17 October 2023

English

Guidance document on electrically driven equipment**Transmitted by the Chair of the Informal Working Group — Approval System****Introduction**

1. As stated in paragraph 7 of the report of the Informal Working Group on the approval System, it was suggested to draft a Guidance document to help with the change to fully electrical driven refrigerating units.
2. The guidance tends to give advice to the key-role players such as for the users and their obligations, the approval authorities and the testing stations.

Proposal**For a Guidance document to be published on the website of the UNECE.****Guidance document on electrically powered thermal appliances on transport equipment.**

3. This guideline intends to help the various stakeholders in production, approval and use of electrically powered equipment. This guideline had been approved by the Working Party on the Transport of Perishable Foodstuffs (WP.11), dealing with the ATP.
4. Continuously, uninterrupted, cooling (or heating) shall be guaranteed for the safe conditions of the perishable foodstuffs carried by a supply of electrical energy. Only for limited periods of time this provision may not be met (i.e. switching for vehicle power to grid power) etc.
5. Sources of electricity are very diverse. Batteries, either shared with the drive system of the vehicle or dedicated spring to mind, but also for example hydrogen-fuel cells, generator sets, E-axles (trailers), super-capacitors, solar panels or the grid (when stationary) can be used.
6. It is foreseen that more than one source need to be applied to guarantee continuous operation.
7. It is strongly advised to have at least a buffer battery, or super-capacitor on each equipment, to level out shortages and surplus of available electrical energy. The electrical energy that may be contained in this buffer should be sufficient energy to have at least one hour maintaining the temperature for the particular class of equipment. For trailers and containers where vehicle based batteries or fuel cells are not always available a separated buffer battery and an option to connect to the grid should be applied.

8. In addition to an electrical driven mechanically appliance a fixed eutectic system, or similar system, of some capacity may be applied to be charged when parked by the grid, supporting the appliance working during carriage. The capacity of this alternative subsystem may be deducted from the electrical power needed during transport. Direct use of dry-ice inside the load space shall not be applied.

For users

9. Article 4 of the ATP addresses the consignor or carrier to select and use the transport equipment that the temperature conditions prescribed in the said annexes (2 and 3) can be complied with throughout carriage and take appropriate measures concerning the temperature of the foodstuffs carried, (and expected ambient conditions) and icing/re-icing or other necessary operations (refilling/recharging).

10. When anticipating a transport operation, including possible delays, overnight stops or carriage by other means as transport (trains/ferries), the consignor/carrier shall guarantee continuous cooling or heating during the whole journey by determine the energy need.

11. For trailers or containers depending on sources of electricity of drawing/carrying vehicles the energy demand of the transport equipment and available capacity of the source on the truck shall be matched. In principle trailers or containers shall always have an option for connecting to the grid.

Approving and certification (issuing ATP certificates)

12. When approving equipment and issuing ATP certificates not only the energy demands of the insulated body and the capacity of the thermal appliance and shall be "dimensioned" (matched), but also the given options of supplying electrical energy.

13. For vehicles that are complete, including the propulsion system or its own electrically energy supply subsystem, it shall be assured that the energy supply is sufficient to maintain the temperature in the equipment. For systems that may function at the same time the capacities may be combined (e.g E-axle and solar panels). In addition to this systems that maintain the temperature without electricity (at time of carriage) such as, for example, eutectic systems may also be taken into account in the dimensioning.

14. For equipment depending on the supply by a towing or carrying vehicle (trailer/container), let's call them incomplete, this shall be clearly indicated on the ATP certificate. "Incomplete" trailers or containers, without a sufficient energy supply, shall have a connection to the grid as a minimum and for trailers a buffer battery is recommended.

15. In case the inverter is not tested with the thermal appliances, its suitability shall be checked.

For testing stations

16. As usual the insulated body and thermal appliance shall be tested. However, the battery need not be a part of this approval as this is to be seen as to be a separate module.

17. Inverters converting voltage from the grid or battery to the correct value for the electric compressor drive etc. may be part of the approval of the thermal appliance. If the inverter is used for different supplies, voltages/DC-AC, the performance shall be checked for each mode. The Brand, type and output capacity shall clearly be stated in the report if applicable.

18. At the request of a manufacturer, batteries may be tested for performance. In the European Union it should be reminded that a battery regulation is in place.

For manufacturers assembling equipment.

19. Care shall be taken in assembling a thermal appliance and its power source and power source components (inverters) that sufficient capacity is provided to run the equipment as intended for the particular class.

20. Unless a vehicle battery guarantees a one hour normal function (maintaining class temperature) of the thermal appliance, a buffer battery is strongly advised to store energy from fuel-cells, solar panels, E-axles etc.

21. Performance of components of the electrical energy power system shall be certified, and need not be tested separately. Test reports and certificates by the vehicle manufacturer of vehicle batteries may be accepted.
