

Special Conditions for the installation of a PED charging trolley
Applicable to Large Aeroplanes, with ATLAS galley installed

Introductory Note:

The hereby presented Equivalent Safety Finding has been classified as an important Equivalent Safety Finding and as such shall be subject to public consultation, in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

Statement of issue

The installation of a Personal Electronic Device (PED in this context are all battery powered tablet computer) stowage and charging Trolley into ATLAS galley installations of large aeroplanes is considered.

This trolley installation will include special stowage compartments that are intended to recharge PED batteries when the PED is stowed inside.

Recent experience with lithium-based batteries, that are the main power supplies to PED, has shown that there is an increased fire risk associated to the charging and storing of such batteries.

Some of the significant safety issues regarding the use of these types of batteries, noted by the other users of this technology, are described in the following paragraphs:

Overcharging

Li-Batteries in general are significantly more susceptible to internal failures that can result in self-sustaining increases in temperature and pressure (i.e. thermal runaway) than their Ni-Cd and lead-acid counterparts. This is especially true for overcharging which causes heating and destabilisation of the components of the cell which can cause the formation of highly unstable metallic lithium which can ignite resulting in a self-sustaining fire or explosion. Certain types of Li batteries pose a potential safety problem because of the instability and flammability of the organic electrolyte employed by the cells of those batteries. Due to the higher amount of electrolyte in larger batteries, the severity of thermal runaway increases with increasing battery capacity.

Overdischarging

Discharge of some versions of the Li cell beyond a certain voltage can cause corrosion of the electrodes of the cell resulting in loss of battery capacity that cannot be reversed by recharging. This loss of capacity may not be detected by the simple voltage measurements commonly available to flight crews as a means of checking battery status, a problem shared with Ni-Cd batteries.

Flammability of Cell Components

Unlike Ni-Cd and lead-acid cells, some types of Li cells employ, in a liquid state, electrolytes that are known to be flammable. This material can serve as a source of fuel for an external fire in the event of a breach of the cell container.

Special Condition D-xx - Installation of a PED charging trolley **Applicable to Large Aeroplanes, with ATLAS galley installed.**

To ensure that the installation of PED stowage and charging compartment in aircraft cabin will not create an unacceptable safety hazard, EASA is introducing additional requirements detailed below .:

1. Each PED stowage/ charging station must be designed to prevent the propagation of a fire starting from a PED to adjacent compartments containing other PEDs.
2. It must be demonstrated that a fire originating from a PED stowed in the PED stowage/charging station is detected and extinguished before it can propagate to other PEDs or it can create any hazard (smoke, toxic gases, explosions, etc.) to cabin occupants.
3. Each station must be limited to the maximum battery capacity or to the specific PED that will be allowed inside.
4. A manual or automatic shutdown of the electrical power supply must be provided and usable in case of smoke or fire detection at the PED stowage / charging station.