

Implications of the US DOT Notice of Proposed Rule Making on Micro Fuel Cell Technology

October 14, 2010

Background

October 2007: International Civil Aviation Organization adopts key allowances for fuel cell technology (*effective 1 January 2009*)

1. Cargo transport allowances for all fuel cartridge types
 - a. Fuel cell cartridges containing flammable liquids, corrosive substances, water reactive substances, hydrogen in a metal hydride, and liquefied flammable gases
2. Passenger cabin exception to enable consumers to carry fuel cell powered devices on board

The US DOT harmonized with all substantial aspects of the 2007 international rulemaking through its HM 215J series rulemaking in late 2008

Background

October 2009: International Civil Aviation Organization adopts additional allowances for fuel cell technology (to be *effective 1 January 2011*)

1. Limited quantity exception provisions for all fuel cell cartridge types
 - a. Allowance granted based on stringent safety and performance requirements imposed on cartridges as standalone articles
 - b. Enables use of more cost effective packaging
 - c. Provides for smoother and cheaper distribution of fuel cell cartridges worldwide
2. Checked baggage allowance, to permit consumers to carry spare fuel cell cartridges in their checked baggage, in addition to the passenger cabin
 - a. Allowance granted following completion of fire testing, demonstrating fuel cell cartridges would pose no additional risk in the cargo hold
 - b. Provides necessary flexibility, in particular for cartridges containing liquids in light of security measures
 - c. Granted for all fuel cell cartridge types except water reactive substances

US DOT Notice of Proposed Rulemaking HM 215K¹

The Hazardous Materials (HM) 215 Series rulemakings are dedicated to US harmonization with international regulations, including the UN and ICAO

- The stated goal of HM-215K is to maintain alignment of the Hazardous Materials Regulations with International requirements and federal law
- Policy favours the harmonization of domestic and international standards for hazardous material transportation since it facilitates international trade and enhances safety

¹ HM215K published in the August 24, 2010 Federal Register, beginning at page 52070

HM 215K – Fuel cell related provisions

The US DOT has proposed to harmonize with most of the new ICAO provisions related to limited quantity exceptions by air and checked baggage allowances for fuel cell cartridges, with two key exceptions

1. Exclusion of fuel cell cartridges containing water reactive substances, hydrogen in metal hydride, and liquefied flammable gases from the limited quantity exceptions by air
 - a. Economic implications for distribution of these technologies within the US compared to the rest of the world
 - b. Added logistical complexity related to distribution of such cartridges
2. Exclusion of fuel cell cartridges containing hydrogen in metal hydride and liquefied flammable gases from checked baggage allowance, in addition to exclusion of cartridges containing water reactive substances
 - a. Could result in confusion of consumers, challenges to international mobility

HM 215K – Fuel cell related provisions

The NRPM cite the exclusions as a 'risk-based regulatory amendment'; however, no accompanying risk analysis has been provided

- Fire testing by the US FAA has demonstrated that all types of fuel cell cartridges do not pose an additional risk in the event of a fire²
- All cartridges subject to stringent performance requirements to ensure packaging integrity
 - 1.2 metre unpackaged drop test (1.8 m for hydrides)
 - Internal pressure testing
 - Fire and hydrogen cycling testing for hydrides
 - Conformance with IEC PAS 62282-6-1 for passenger cabin and checked baggage allowances

² Reference DOT/FAA/AR-09/53 – Preliminary Investigation of the Fire Hazard Inherent in Micro Fuel Cell Cartridges – May 2010

Opportunity for public comments

Deadline for public comments on the DOT NPRM is **25 October 2010**

- The US Fuel Cell Council will be submitting extensive technical comments on the NPRM, urging full harmonization with the ICAO Technical Instructions
- Would like to encourage any other interested parties to submit comments in support of full harmonization in advance of the commenting deadline
 - Further information can be provided upon request

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