

Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

Sub-Committee of Experts on the Transport of Dangerous Goods

25 November 2011

Fortieth session

Geneva, 28 November – 7 December 2011

Item 3 (e) of the provisional agenda

Electric storage systems: miscellaneous

Containerized Lithium ion Battery Systems

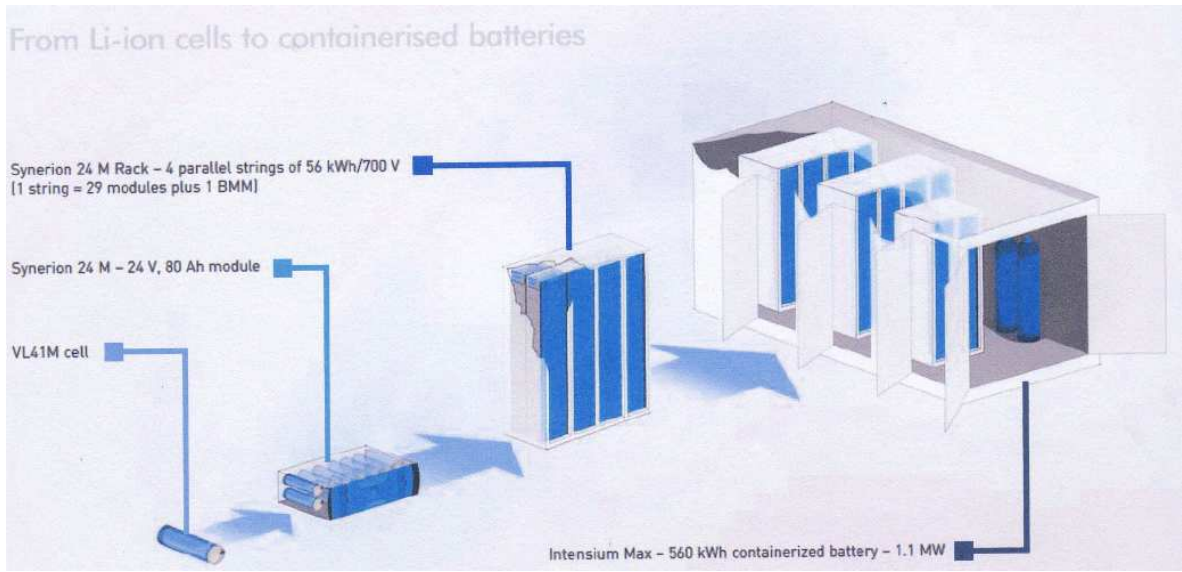
Transmitted by The Rechargeable Battery Association (PRBA)

Introduction

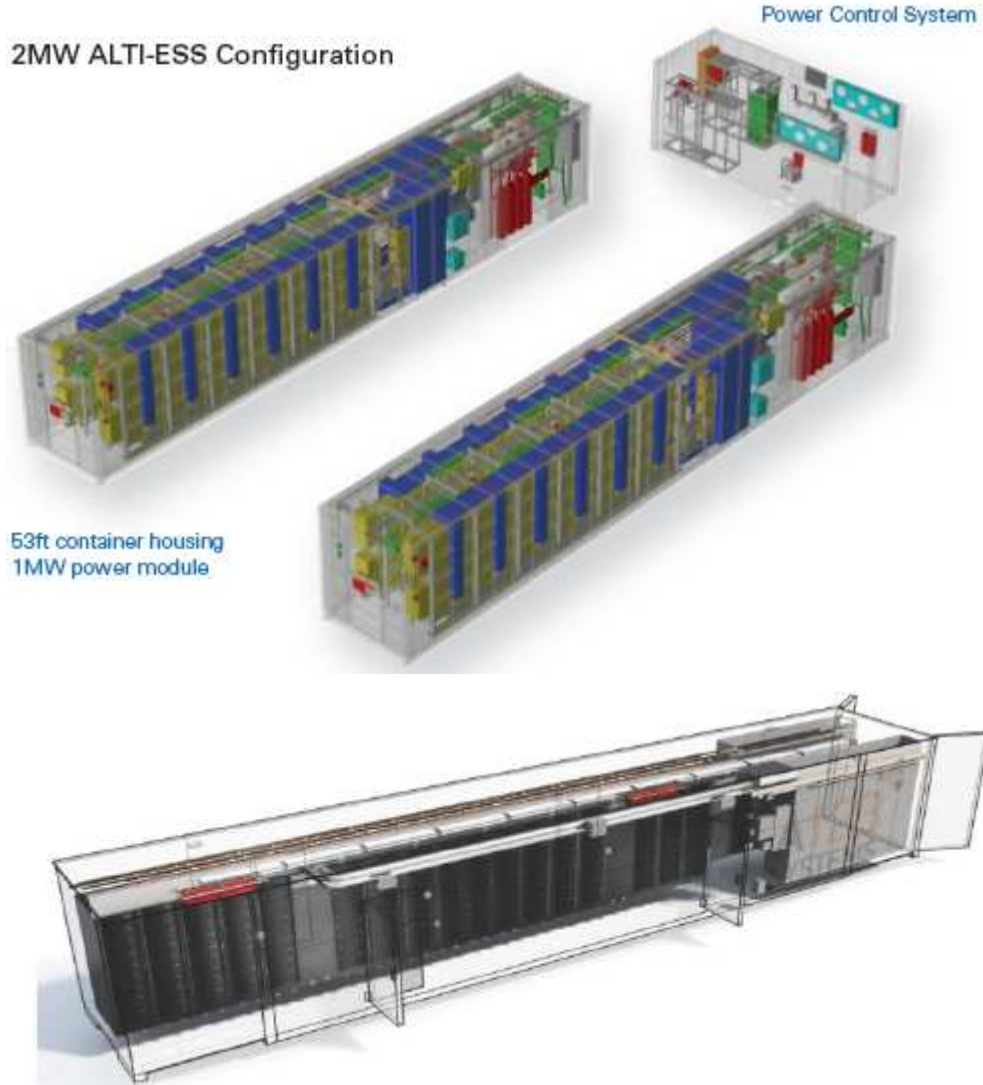
1. This Sub-Committee is well-aware of the proliferation of lithium ion batteries in consumer and industrial applications that has occurred over the past ten years. As a result of this proliferation and the changes in lithium ion battery technologies, the Sub-Committee has made numerous changes to the lithium ion battery Packing Instructions and Special Provisions in the Model Regulations and the testing requirements in the UN Manual of Tests and Criteria.
2. This paper provides the Sub-Committee with information on the use and transport of containerized lithium ion battery systems and request comments from the Sub-Committee on whether amending Packing Instruction 903 (P903) is necessary to accommodate the transport of these systems. Depending on the comments received from the Sub-Committee, PRBA may file a proposal for consideration during the 41st session of the Sub-Committee that includes proposed changes to P903.

Containerized Lithium ion Battery Systems

3. Several PRBA members in Europe and the United States manufacture large, containerized lithium ion battery systems (assemblies) that are designed to provide support for the electrical grid. This support includes, but is not limited to, an increase in the grids' ability to integrate more renewable energy, a reduction in renewable output power volatility and optimizing renewable power performance.
4. Several schematic drawings of containerized battery systems are shown on page 2. The first drawing is a good example of how one of the containers is assembled:
 - Cells are assembled into modules;
 - 29 modules are connected to form 1 “string” with a battery management module (BMM);
 - 4 parallel strings are placed in a “Rack”; and
 - Racks are assembled into a 1.1 megawatt (MW) battery system inside a container.



2MW ALTI-ESS Configuration



5. The batteries in the racks are secured to prevent short circuit, accidental operation and significant movement during transport and the racks are securely and permanently fastened to the structure of the container. In addition, containers used to transport the battery systems are constructed to withstand conditions normally incident to transport and provide adequate protection for the batteries.

UN Model Regulations and Containerized Battery Systems/Assemblies

6. The containerized lithium ion battery systems are offered for transport as UN3480, Lithium ion batteries. The cells and batteries (modules) in the containerized battery systems are subject to the testing requirements in the UN Manual of Tests and Criteria and packaging requirements in the Model Regulations.

7. P903 authorizes the transport of large battery assemblies (> 12 kg) with impact resistant outer casings on pallets and large equipment containing lithium ion batteries unpackaged or on pallets, which would appear to be the appropriate packaging provision applicable to these containers. Due to the unique configurations of these containerized battery systems, however, P903 may require amendments to accommodate the transport of these containers.

8. Therefore, PRBA welcomes suggestions from the Sub-Committee on whether changes to P903 are necessary for consideration during the 41st session of the Sub-Committee scheduled for June 2012.
