CARRIAGE OF LITHIUM BATTERIES

The Issue

Lithium batteries are now the most widely used energy source in portable consumer electronic devices such as mobile phones, laptop computers and tablets. They are also becoming the power source of choice for aircraft equipment such as the main aircraft battery, emergency locator transmitters, cockpit voice recorders and flight data recorders, and other applications such as defibrillators, e-bikes and motor vehicles.

Lithium batteries are categorised based on their chemistry:

Lithium metal: lithium metal cells and batteries contain metallic lithium in the anode and are typically a non-rechargeable or primary battery. Testing by the FAA Technical Center has identified that Halon, which is the fire suppression agent used in Class C aircraft cargo compartments, is unable to suppress a fire involving large quantities of lithium metal cells.

Lithium ion: lithium ion cells and batteries contain no metallic lithium; instead the lithium is present in an ionic form in the anode and cathode. Lithium ion batteries are a rechargeable or secondary battery. FAA testing has identified that Halon is capable of suppressing a fire involving lithium ion batteries.

All lithium batteries are classified as dangerous goods and with both a stored energy and a flammability hazard, potentially pose a risk when transported in cargo, mail and passenger baggage. The significant and increasing volumes of lithium batteries in transport creates the potential for dangerous goods incidents or accidents if not packaged and handled in accordance with regulatory requirements.

Based on incident data available from the FAA, airlines and postal authorities, many shippers of lithium batteries are unaware of the regulatory requirements, or wilfully fail to comply with these requirements, which increases the likelihood of fires from untested (including counterfeit) lithium batteries or from improperly prepared consignments. The incidence of undeclared and non-compliant shipments of lithium cells/batteries are a concern and pose a significant risk to flight safety.

IATA’s Position

Lithium Metal Batteries

The ICAO Dangerous Goods Panel adopted a prohibition on the carriage of lithium metal batteries packed on their own (UN 3090) as cargo on passenger aircraft effective 1 January 2015.

With respect to the ongoing carriage of lithium metal batteries (UN 3090) on cargo aircraft, each operator must conduct a risk assessment that considers and evaluates the additional hazards and inherent risks to their operation, associated with the carriage of lithium metal batteries. Having conducted the risk assessment the operator must identify, consider and evaluate available risk mitigation actions to determine if these actions are able to mitigate the risks posed by lithium metal batteries in cargo to a level deemed to be acceptable to the operator.
All Types of Lithium Batteries

There must be greater involvement by civil aviation authorities and designated postal operators to address the significant risk to air transport posed by undeclared and non-compliant shipments of lithium batteries in cargo and mail. These authorities must fulfil their ICAO Annex 18 responsibilities to ensure that all parties in the supply chain comply with the regulations for the transport of lithium batteries by air.

IATA, supported by the Dangerous Goods Board and Safety Group and working through the ICAO Airworthiness, Operations and Dangerous Goods Panels will develop and implement incremental safety improvements that will reduce the risk posed by lithium batteries in cargo, mail and passenger baggage on passenger and all-cargo aircraft.

The Solution

IATA believes that the way to mitigate the risk posed by lithium batteries in cargo, mail and passenger baggage, declared and undeclared, is through a multi-layered approach to reduce the risk to an acceptable level. This approach identifies the opportunities to reduce the risk of lithium batteries causing an incident on board an aircraft as well as ways to minimise the impact should an incident occur. Specific risk mitigation actions include:

- Requesting ICAO to mandate that civil aviation authorities conduct surveillance, oversight, and where necessary enforcement in accordance with the principles set out in ICAO Annex 18 of all entities involved in the transport of lithium batteries, in particular of shippers, freight forwarders, ground handling agents and designated postal operators;
- Proactive engagement with shippers, forwarders and passengers to increase their awareness of the risks associated with lithium batteries when not carried in compliance with the Regulations;
- Identification and development of revisions to the air transport regulations for lithium batteries that will directly enhance safety, either through the ICAO Dangerous Goods Panel into the Technical Instructions, or directly into the IATA Dangerous Goods Regulations;
- Work with the packaging industry and regulatory authorities on the development of enhanced packagings that provide additional fire resistance;
- Development of recommendations to operators on additional controls that can be implemented by operators at the point of cargo acceptance;
- Revision of the training for ground staff, flight crew and cabin crew to address lithium batteries;
- Consideration of the use of fire containment covers and/or fire resistant containers.

These risk mitigation actions have been expanded upon in the document “Lithium Batteries – Risk Mitigation Guidance for Operators”.

In addition, IATA will explore the possibility of the development and implementation of a dangerous goods incident database to which all IATA member airlines will be invited to submit their dangerous goods incident reports. The purpose of the dangerous goods incident database would be able to obtain a better understanding of the source / cause of incidents involving lithium batteries and consequentially to then identify, develop and implement additional risk mitigation actions.
The Benefits

Mitigating operational risks is one area in IATA’s Six-Point Safety Strategy. Mitigating the operational risks posed by lithium batteries in cargo, mail and passenger baggage through strategic implementation of the actions described above improves safety within the aviation industry. As identified, lithium batteries are vital in today’s society and are widely used across many different business sectors, including aviation and healthcare. Air transport is critical to the speedy delivery of products and facilitating the safe transport of these products supports the global economy rather than forcing a circumvention of the regulations as the only possible method of transporting these critical commodities.