飛行中電池起火引發飛安疑慮

歐文 譯

旅客為了使用各種3C產品而帶上飛機的鋰電池已對飛安構成愈趨嚴重，但鮮少報導的危險。

目前仍無法取得有關飛行中電池發生問題頻率的綜合數據，但專家表示每年全球各大航空公司遭遇數十次飛行中機艙內電池悶燒，冒煙，甚至燃燒的嚴重案例。

僅就美國而言，聯邦航空總署網站列出了過去10年中客機所發生的17次重大事件，其中包括去年9月一架從芝加哥到聖路易斯的美國航空公司客機在途中手提行李艙內發生火警，並進行緊急降落，所幸無人受傷。

每年全球生產超過13億個充電電池，許多旅客固定攜帶多組3C產品進入機艙，飛安專家同意這種潛在麻煩正逐步上升。

隨著電池組電量愈來愈強，萬一手提行李艙內某個電池開始升溫或某個裝置不經意滑進座位袋子裡突然開始冒煙或悶燒，這會形成更大的挑戰。

這類事件對航空業界構成一種新興的重大飛安問題。根據聯合國所屬之國際民用航空組織的頂尖飛安專家Nancy Graham表示:「電池是個大問題，而且與其有關的飛行中機艙意外事件確實是個重大議題。」

她說道:「我們尚無足夠資料來作出長期政策決定，業界必須協助我們瞭解及評估有那些風險。」

本週美國運輸部針對各類鋰電池之航空運輸頒佈新的標準，內容包括包裝要求及已受損或準備回收之電池的保障作為。

然而，這項規則並未回應飛行員工會領袖所提要求，亦即對美國國籍貨運飛機可攜帶電池及手機之數量作出限制。美國管理機構不允許客機貨艙內載運鋰電池，但其他許多國家則沒有這方面限制。

管理單位在部份即將於明年初生效的規定中接受了業界立場，並放棄原先之建議方案，內容包括更嚴格的包裝標籤要求、生產品管查核確認、及鋰電池歸類為危險品等。

根據業界官員表示，谷哥公司許多高階主管認為這項新興威脅相當真實並已迅速採取行動。這些官員表示，該公司最近為負責載運主管的行政專機配備可攜式的耐火鋁質套筒。

名為PlaneGard的防護裝備中包括了手套、一個護目鏡及一套防止毒煙漫佈的器具，以保護旅客及組員免於過熱電池之風險，並藉由將水注入密封容器內協助滅火。

其他公司先前提供了一些防護系統，但Highwater公司夥伴Michael Gilchrist表示:「這現在絕對是一個火紅的話題。」他說，公司正與各航空公司及企業機隊討論，並表示:「我們看到這個議題獲得非常大的關注。」

谷哥拒絕評論。

飛安人士說電池危害風險很少獲得報導，而且很少有航空公司在旅客安全須知卡中或空服員的簡報中突顯這個議題的重要性。

法國航空、國泰航空及大西洋維京航空公司係少數做的最徹底的航空公司，它們警告機組員，提供防護裝備或明確警告旅客潛在風險。

航空公司已轉向注意電池問題，但尚無因電池起火而造成商用飛機墜毀之案例。

航空公司失事調查人員有時甚至介入這類事件。2010年12月一架從美國亞特蘭大飛往巴黎Atlanticto的法航波音777飛機在3萬8千呎高空時商務艙發生一起火警，起因為一顆電池卡進座椅後被壓碎，並起火燃燒。法國政府當局針對此一意外事件提出正式報告。

這類事件可能會促使修訂消防程序。目前為止，焦點著重於讓溫度達華氏1000度的燃燒電池保持在一個地方。但許多航空安全專家現正思考新系統是否應該成為改變的理由。

一位美國航空總署發言人表示：「隨著新科技的引

進，我們會更新消防及防火指導。」

這位發言人說新型滅火系統仍在初期發展中。航空總署持續與國際民航組織、其他管理機構及業界代表合作，共同處理包括與個人電子裝置有關之各種飛機火災威脅。

機艙事件之追蹤特別困難。目前尚無任何適用於整個業界的既定程序，可據以追蹤掌握行動電話、手提電腦、平板電腦或許多電子裝置之類似電池失效情況。這與機上娛樂遊戲系統發生過熱情況時可以獲得追蹤不同。

目前美國和國際飛安文件要求在使用海龍(Halon)滅火劑將火撲滅後，用水澆熄過熱電池，並指示機組員避免撿起或移動電池。專家共同認為絕不可用冰來冷卻燃燒或悶燒中的電池，因為這會有絕緣作用和增加爆發的可能性。

根據獨立飛安專家表示，國泰航空負責從中國大陸運送大量電池至世界各地，其貨運及客運航班之安全計劃在航空業界廣受肯定。這家以香港為基地之航空公司在網站上告知旅客檢查其攜帶鋰電池是否符合聯合國檢測規格標準。另外，該航空公司要求放在託運行李箱的備用電池必須作好免於受損或短路保護。

國泰航空安全部門總經理於2013年4月舉行的航空界大會簡報中報告說，當月澳洲兩個城市間的區間航班上有一隻手機熱到發紅而且開始冒煙。根據他的簡報資料，這隻手機最後在飛機降落後不久即被丟到機艙地上。

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In-flight battery fires stir safety questions

Andy Pasztor

LITHIUM batteries that power the ubiquitous electronic devices passengers take on-board planes pose an increasing, but little-publicised fire hazard.

Comprehensive data on how often there are problems with the batteries in flight aren't available but experts say that each year, carriers confront several dozen serious, in-flight instances of smouldering, smoking or even burning batteries inside aircraft cabins worldwide.

In the US alone, the Federal Aviation Administration's website lists 17 significant incidents on passenger planes in the past decade, including an American Airlines jet that had a fire in an overhead compartment last September and made an emergency landing en route from Chicago to St. Louis. There were no injuries.

With more than 1.3 billion rechargeable batteries manufactured annually around the globe and many travellers routinely bringing multiple personal devices into aircraft cabins, safety experts agree the potential for trouble is escalating.

As power packs grow more powerful, they present greater challenges if something starts heating up in the overhead bin or some device casually slipped into the seat pocket suddenly begins to spew smoke or fumes.

Such events constitute one of the big emerging safety questions facing the industry. "Batteries are a big deal" and airborne cabin incidents involving them "clearly are big issues," according to Nancy Graham, the top safety official at the International Civil Aviation Organization, an arm of the United Nations.

"We don't have enough data" yet to make long-term policy decisions, she said, adding that "industry needs to help us understand and measure what the risks are."

This week the US Department of Transportation issued new standards for air-cargo shipments of various types of lithium batteries, including packaging requirements and safeguards for power cells that have been damaged or are headed for recycling.

The rule, however, stops short of imposing limits advocated by pilot-union leaders on how many batteries or cellphones can be carried on a US cargo aircraft. US regulators don't allow lithium batteries to be shipped in the cargo holds of passenger jets, but many other countries permit such packages.

As part of the rule — slated to go into effect early next year — regulators embraced industry positions and dropped earlier proposals for more-stringent package-labelling requirements, verification of manufacturing-quality controls and classification of lithium batteries as hazardous goods.

Among the senior ranks of Google executives, according to industry officials, the emerging threat was considered real enough to prompt swift action. The company, these officials said, recently moved to equip jets that fly its executives with portable, fire-resistant aluminium sleeves.

Dubbed "PlaneGard," they also include gloves, a visor and a system to keep toxic fumes from spreading — all designed to protect passengers and crew from overheating batteries and help extinguish fires by pumping water into the sealed receptacle.

Other companies previously offered protective systems, but Michael Gilchrist, a Highwater partner, said "it's certainly a red hot topic now." He said the company is talking to airlines and corporate fleets, adding "we have seen a tremendous amount of attention."

Google declined to comment.

Safety advocates say battery hazards are underreported and few carriers highlight the topic in passenger-safety cards or during briefings by flight attendants.

Air France, Cathay Pacific and Virgin Atlantic are among the handful of airlines that have gone the furthest to alert crews, provide protective equipment or explicitly warn passengers about potential risks.

Airliners have been diverted for battery problems, but there is no case of a commercial aircraft crashing due to a battery fire.

Sometimes, even airline-accident investigators get involved. French authorities issued a formal incident report about a fire in the business section of an Air France Boeing 777 in December 2010, while it was cruising at 38,000 feet across the Atlanticto Paris from Atlanta. A battery was crushed and burst into flames after getting jammed in a seat mechanism.

Such events could prompt revised firefighting procedures. So far the focus has been on keeping burning batteries, which can reach 1,000 degrees Fahrenheit, in one place. But many air safety experts now are considering if the new systems warrant changes.

An FAA spokeswoman said “we will update our firefighting and fire prevention guidance as new technologies become available.”

The FAA also said that the new fire-suppression systems were still early in the development process, and the agency continues to work with ICAO, other regulators and industry representatives to “address the threat of aeroplane fires, including those associated with personal electronic devices.”

Keeping track of cabin events is particularly tough. Unlike cases of in-flight entertainment systems heating up, there aren’t any established, industrywide procedures for tracking similar battery malfunctions related to mobile phones, laptops, tablets or the many devices they power.

After a fire is put out using a Halon extinguishing agent, current US and international safety documents call for dousing overheated batteries with water, and instruct crew members to avoiding picking the batteries up or moving them. Experts agree ice should never be used to cool a burning or smouldering battery, because it will serve as insulation and increase the likelihood of a flare-up.

Cathay Pacific, which ships huge volumes of batteries out of China, has what is widely regarded as the industry’s most extensive safety programs for cargo and passenger flights, according to independent safety experts. The Hong Kong-based carrier, among other things, tells passengers on its website to check if their carry-on lithium batteries meet UN test specifications. For spare batteries packed in checked-in luggage, the airline requires them to be protected from damage or short-circuits.

In an April 2013 presentation to an industry conference, Cathay’s general manager of corporate safety reported a cellphone “was so red hot it started smoking” earlier that month on a regional airline flight between two Australian cities. The device “had to be dropped to the floor of the cabin shortly after landing,” according to his PowerPoint presentation.

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