



Lithium Batteries in Aviation: The Risk That Travels With You

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A passenger settles into his seat, plugs a power bank into the seat USB port and tucks it into the seat pocket. Forty minutes later, a crew member notices an unusual smell. The power bank is now overheating and emitting visible smoke.

This is no longer just a hypothetical situation. According to data presented at the Thermal Runaway Incident Program (TRIP) Summit in April 2026, 137 lithium battery thermal events occurred on board aircraft in 2025.

Approximately 90 per cent occurred on passenger flights, involving everyday consumer electronics such as phones, power banks and laptops.

As air travellers carry more battery-powered devices, understanding how thermal incidents occur, develop and can be addressed is an important part of managing the associated risks.

The Everyday Devices Behind the Risk

Lithium batteries are able to store a large amount of energy in a compact package. When a battery is damaged, defective, overcharged or exposed to excessive heat, it can begin overheating uncontrollably in a process known as thermal runaway. A thermal runaway battery may become unusually hot, emit smoke and toxic fumes, catch fire or, in severe cases, explode. What makes these incidents particularly challenging is that the battery may continue to deteriorate and reignite even after the visible flames have been extinguished.

The latest TRIP data showed that power banks overtook e-cigarettes in 2025 as the device most frequently involved in in-flight thermal incidents. As power banks are commonly used during flight, their carriage and use warrant specific attention. Passengers should follow their airline's requirements on the use of power banks and keep them visible and accessible. If tucked away in a bag or overhead compartment, a developing thermal event may go undetected.

Why Location Matters

While the type of device involved matters, where an incident occurs can be equally important in determining its consequences.

Research conducted under the European Union Aviation Safety Agency's LOKI-PED project examined the consequences of lithium battery fires and smoke in different areas of the aircraft, including the passenger cabin, galley and flight deck. It found that the consequences and operational challenges can vary depending on where an incident occurs. An incident in the passenger cabin may be detected and attended to more readily, while smoke or fire in the galley or flight deck could be more difficult to manage and have more serious consequences for the safe conduct of the flight. This is why airlines develop response procedures tailored to different areas of the aircraft.

Beyond a Ban: Managing the Risk, Not Just the Hazard

Given the risks associated with lithium batteries when they fail, a reasonable question is: why are passengers still allowed to carry them on board?

The answer lies in how aviation manages risk. Not every hazard can be eliminated, especially when it involves technology that has become part of everyday life. The question is therefore not simply whether a hazard can be prohibited, but whether doing so would actually reduce the overall risk. A blanket ban on carrying lithium batteries in the cabin may seem straightforward,



but it could push more batteries into checked baggage, shifting the risk to an environment where it is far harder to detect and manage. A thermal runaway event in the cabin is serious, but it is more readily detected and managed. By contrast, if the same event occurs in the cargo hold, access for direct physical intervention is more limited. This is why regulations require spare batteries and power banks to be carried in the cabin rather than checked in, not because the cabin is a safe place for a battery fire, but because it is a more manageable environment should an incident occur.

The approach is therefore based on layered risk management: carriage restrictions, quantity and capacity limits, passenger awareness measures, crew procedures, onboard firefighting equipment and occurrence reporting, with each measure addressing a different aspect of the risk. No single measure is sufficient on its own.

Importantly, this framework is not static. Occurrence data and research help regulators and industry understand how risks are changing and whether existing controls need to be strengthened or adjusted. The rise of power banks as the leading incident category illustrates how new data can shape industry priorities and safety measures.



What Passengers Can Do

The aviation industry has invested significantly in understanding and managing the risks associated with lithium batteries. Airlines have developed detailed procedures, trained their crew and equipped aircraft to respond to battery-related incidents. Passengers also have an important role in recognising potential problems early and alerting the crew. Knowing what to look for is the first step. A device may feel unusually warm, emit an unfamiliar smell, show slight swelling in its casing or produce a faint wisp of smoke. These early warning signs matter because prompt action can prevent the situation from escalating.

One often overlooked risk arises when a device slips between aircraft seats. The instinct may be to retrieve it immediately, but moving or adjusting the seat can crush or damage the battery, creating a potential fire hazard in a confined and difficult-to-reach space. If a device falls between the seats and becomes trapped, do not move the seat. Leave the device in place and alert the cabin crew for help. The same principle applies to any device that looks, smells or feels unusual. Rather than waiting to see if it gets worse, inform the crew immediately.

Following airline requirements on the carriage and use of power banks is a good starting point. Passengers can also take a few simple precautions:

- 1. Only use batteries, chargers and power banks from reputable manufacturers
- 2. Do not use devices that are damaged, swollen or have previously overheated
- 3. Keep spare batteries protected from physical damage and away from metal objects such as keys or coins
- 4. Do not charge power banks on board
- 5. Keep electronic devices visible and accessible whenever they are in use
- 6. If anything seems wrong, inform the cabin crew immediately

These measures may seem simple, but they matter in a confined environment at altitude, where access may be limited and the crew may be occupied with other duties. Early awareness can help prevent a minor incident from developing into a more serious event.

A Shared Responsibility

Lithium batteries have transformed the way we travel, powering the devices that keep us connected, productive and entertained throughout a journey.

Yet familiarity can breed complacency. Everyday devices, such as a power bank in your jacket pocket or a mobile phone left charging in a seat pocket, are among those most frequently implicated in in-flight thermal incidents.

Managing this risk requires a layered approach. As regulators and industry continue to refine the controls in place, passengers too have a part to play by following carriage requirements, recognising warning signs and alerting the crew promptly when something seems wrong. Together, these layers of protection help ensure that the devices we carry with us every day remain useful travel companions and do not develop into safety hazards.



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