

# LOKI-PED: Safe use of laptops and co. on airplanes

## Fast Facts

**Duration:** 08/2022 – 12/2025

**Funding call:** European Union's Horizon Europe research and innovation programme

**Funding Institution:** European Union Aviation Safety Agency, EASA

### Consortium:

- Fraunhofer Institut for High-Speed Dynamics, Ernst-Mach-Institut, EMI, Freiburg
- Fraunhofer Institut for Building Physics, IBP, Holzkirchen
- Airbus Operations GmbH, Bremen

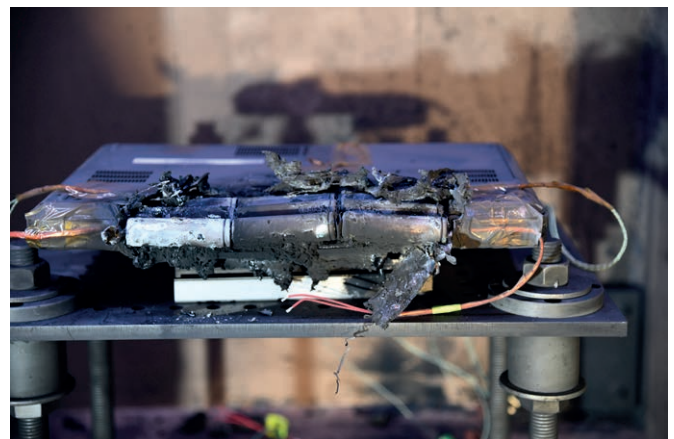
### Links:

- [www.loki-ped.de](http://www.loki-ped.de)
- [Flight Test Facility – Das Fluglabor des Fraunhofer IBP - Fraunhofer IBP](#)
- [LOKI-PED — Lithium Batteries Fire/Smoke Risks in Cabin EASA \(europa.eu\)](#)

## Motivation

Many passengers carry their portable electronic devices (PEDs) with them during the flight. Jamming in the seat or overheating during charging can cause the lithium-ion batteries in the PED to heat up and inflate, releasing hot, toxic and flammable gases. Such events can endanger the safe operation of the flight and the health of passengers and cabin crew. The amount of heat and gas released depends heavily on the energy content of the batteries.

PEDs on board are currently limited to 100 watt hours. Current laptops come very close to this limit. It can be assumed that this will be exceeded in the future by new battery technologies. Therefore there is a need to scientifically evaluate the guidelines and measures for risk minimisation.



*A laptop damaged by thermal runaway.*  
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## Objectives and procedure

As part of the LOKI-PED project, the Fraunhofer Institutes for High-Speed Dynamics, Ernst-Mach-Institut, EMI, and Building Physics IBP are working together with Airbus Operations GmbH. The consequences of smoke and fire caused by PED are being investigated using high-performance test stands such as the Fraunhofer EMI battery test centre, an A320 mock-up for cabin fire tests and the Fraunhofer IBP flight laboratory. The experiments are the basis for numerical simulations and the subsequent risk assessment.



*A laptop burns during the thermal runaway.*  
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## Innovations and perspectives

Passengers and cabin crew as well as airlines and regulatory authorities will benefit from the results of the project. In addition to suggestions for changes to regulations, important findings on additional safety measures such as fireproof bags can also be expected.



*A320 mockup of Fraunhofer IBP. © Fraunhofer EMI*

### In cooperation with



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