

## **Detecting Hidden Fires On Aircraft Using Thermal Imaging Cameras**

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As of June 2017 the Federal Aviation Administration (FAA) reported 18 incidences of lithium battery fires onboard aircraft and in airports. In 2016 there were 31, with 16 in 2015, and nine in 2014. This is not to ignore the separate and recurring incidences of overheating and smoke from installed systems in the cabin and cockpit. Flight attendants are the first responders in the closed aircraft environment where fire poses a most serious threat, which they must address with finite time and resources. Personal electronic devices (PED), digital flight bags, entertainment systems and the move towards electric flight control aircraft are balanced against a few crew, a few extinguishers, possibly smoke hoods and no tools but their hands and what utensils may be found in the galley to defeat an on-board in-flight fire. This is no longer the threat of a lit match or a smouldering cigarette.

This project, funded by the National Research Council Canada (NRC), included a series of tests focussed on the safety problem of detecting and locating hidden fires on commercial aircraft. The project was executed in collaboration with the Ottawa International Airport Authority (OIAA) Emergency Rescue Service (ERS). The majority of tests were performed on the OIAA ERS's Boeing 737-200 training aircraft. Current training instructs aircraft cabin crews to attempt to find the location of hidden fires, say behind a fuselage liner or in an overhead bin, by using the back of their hand to feel for a hot spot. This process is likely problematic being inaccurate and slow during a fire event when rapid, accurate response is required and limited quantities of firefighting agent are available. The project objective was to demonstrate the use of low cost, hand-held thermal cameras for this hidden fire detection task, which could increase overall safety by allowing cabin crews to quickly locate hidden fires with higher levels of accuracy.