



ELECTRIFIED AIRCRAFT PROPULSION (EAP)

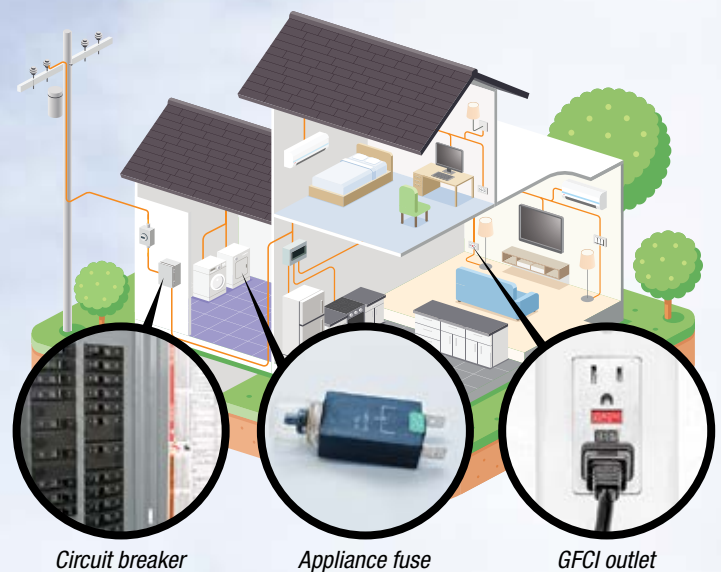
Fault Management: Power Tripping

An electrical safety system that is lightweight, energy efficient, and quick to respond is crucial to protect the integrity of an electrified aircraft managing huge amounts of power.

What is fault management?

A house has circuit breakers, appliance fuses, and ground-fault circuit interrupter (GFCI) outlets all designed to detect an overload or electric short and “trip,” or shut off. This stops the flow of electricity to or from a certain area until the problem can be corrected.

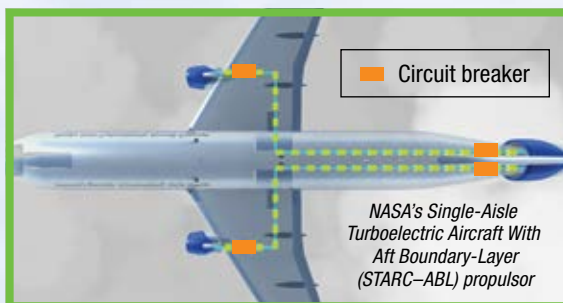
On an electrified airplane, circuit breakers are distributed throughout the plane as part of a fault management system that detects any electrical issues and takes action to protect the motors, batteries, and other electrical parts.



Circuit breaker

Appliance fuse

GFCI outlet



NASA's Single-Aisle
Turboelectric Aircraft With
Aft Boundary-Layer
(STARC-ABL) propulsor

CHALLENGE:

Develop circuit-breaking devices that are...

- Strong enough to stop **megawatts** of energy
- Able to respond in **100 microseconds** or less
- **10 times lighter** than anything yet built

Why is a fault management system important?

A fault management system protects sensitive equipment and the entire aircraft from dangerous electric currents. EAP research is advancing this technology with faster response times, increased efficiency, and the altitude capability to enable electrified aircraft propulsion on the megawatt scale.

To learn more, visit www1.grc.nasa.gov/aeronautics/eap/.