



ELECTRIFIED AIRCRAFT PROPULSION (EAP)

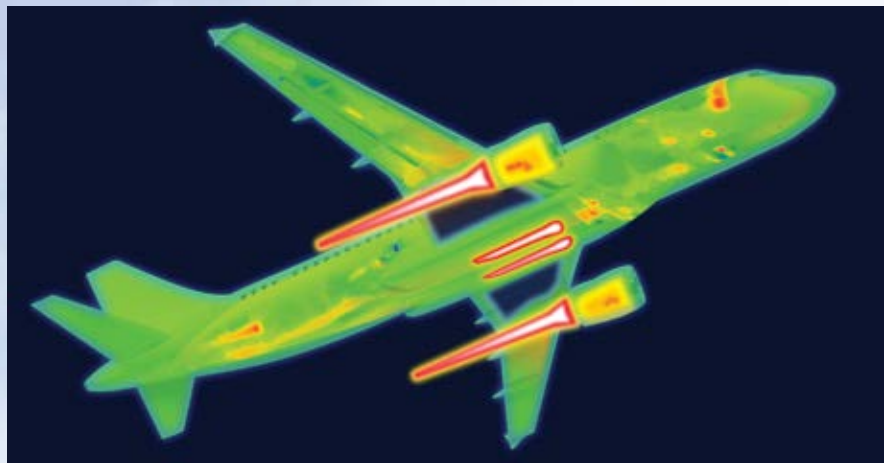
Thermal Control: Beating the Heat

Electric aircraft produce a lot of low-temperature waste heat. New advances in thermal technology are helping to manage this through recovery, routing, and recycling.

What types of waste heat are found on an electric aircraft?

EXERGY

in simplified terms is a measure of how useful energy can be. High-exergy waste heat is more readily available and useful than low-exergy waste heat.



High-exergy waste heat (shown here in red) is emitted from the turbofan core, and low-exergy waste heat (shown in green) is distributed nearly everywhere else on the aircraft.

From trash to treasure

New thermal energy conversion technology uses acoustic waves to change the temperature of low-exergy waste heat and convert it to high-exergy heat that can be distributed throughout the aircraft and reused for other purposes.



Heat can be delivered throughout the aircraft using thermoacoustic and heat pipe tubes.

How does thermal management help?

Fast, efficient, and lightweight aircraft require a dynamic thermal recycling system. Thermal management technology reuses heat to improve fuel efficiency and system reliability.

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