

A Feasibility Study on Series Hybrid-Electric Propulsion for Narrow-Body Transport Aircraft

With the ever-present effects of climate change, and relatively stagnant technological development of propulsion systems in transport-aircraft, alternative solutions must be investigated.

Using a Python simulation tool, the effects on emissions reductions through reduced fuel burn via a series hybrid-electric propulsion architecture on narrow-body transport aircraft platforms is investigated.

Results show that for 500 Wh/kg specific energy batteries, a fuel burn reduction of 30% is achievable for shorter haul missions, with more diminishing returns for longer haul missions.

However, the power requirements in flight would exceed current and even future battery discharge rate limits.

If flight profiles and transport aircraft operations could be adapted, there is potential for even more benefits as battery chemistries and battery pack designs become more optimized.

