Study Project in the field of Hybrid-Electric Propulsion Technology in Aviation

Contact person: Akilan Mathiazhagan, Email: akilanmathi.btu@gmail.com

Airflow resistivity, pressure drop analysis of hybrid cellular structures

Hybrid Election Propulsion (HEP) is becoming an emerging field in the aerospace industry on account of its contribution towards reducing transport emissions. HEP system architectures are sophisticated and encompasses several thermal components. Heat Exchangers are an important component of HEP architecture and contribute significantly towards temperature moderation. Heat exchangers in HEP system architectures have relatively sophisticated heat transferring components to allow for higher heat transfer and facilitate better cooling. The current task would focus on the airflow resistivity and pressure drop testing of hybrid cellular structures.

Overview:

- Supervision and assistance in airflow resistivity testing of hybrid cellular structures
- CAD modeling, e.g. SolidWorks, NX, etc. to design test specimens
- Simulations for fluid flow analysis and theoretical analysis, with post processing
- Post-processing of experimental results from airflow resistivity testing, analysis of regression curves and correlation development.
- Further simulations implementing the results on some prototype heat exchanger designs to test the performance and further pressure drop analysis
- Implementing the developed correlation in 0D models and integrating it with custom system level Thermal Management System tool developed at the chair
- Required supervision would be provided by respective PhD students.