
Guest editorial

Special issue devoted to hybrid/electric aero-propulsion systems for military applications

Greetings to you, reader. It is with pleasure we present Vol. 92, No. 5 of the *Aircraft Engineering and Aerospace Technology (AEAT)* Journal as a special issue devoted to hybrid/electric propulsion for military aircraft. This special issue was derived from publications made at the NATO/AVT-RSY-323 Research Symposium entitled “Hybrid/Electric Aero-Propulsion Systems for Military Applications”. The symposium event, which took place in Trondheim, Norway on 07-09 October 2019, comprised 28 specially invited technical papers from 16 NATO Nations. Topic areas covered in the Symposium were: Hybrid/Electric Propulsion Systems Architectures; Electrical Energy Storage, Power Management and Distribution; Electrical Machines and Power Electronics; Integrated Thermal Regulation and Control Systems; Integrated Vehicle Design; Synergistic Aero-propulsion Technologies; and, Future Operational Applications. Together with my colleague, Dr Frank Grauer of MTU Aero Engines AG, I had the honour of serving as co-Chair. The Programme Committee had 21 members from 10 NATO Nations with industrial, governmental, research institute and academic affiliations. In general, the owner of this event, namely, the applied vehicle technology (AVT) panel is the most prominent NATO Science and Technology Organization (STO) panel and its symposia attract high-calibre researchers, vehicle designers and end users.

There exists an ever-increasing amount of international research and development emphasis upon electrification of aircraft Propulsion and Power Systems (PPS). A good measure of activity has been taking place when it concerns civilian application of hybrid/electric PPS, e.g. Vertical Take-Off and Landing (VTOL) and fixed-wing aircraft for passenger transportation, and for utility drones. Publications addressing hybrid/electric PPS for military applications occur rarely, and so, this special issue takes the initiative of addressing the shortfall.

Broadly speaking, ten technical articles subject to NATO classification of Public Release are offered, and have been sequenced in the following manner:

- 1 Jansen, R., Bowman, C.L., Clarke, S., Avanesian, D., Dempsey, P.J., Dyson, R., “NASA Electrified Aircraft Propulsion Efforts”.
- 2 Cinar, G., Garcia, E., Mavris, D.N., “A Framework for Electrified Propulsion Architecture and Operation Analysis”.
- 3 Yezeguelian, A., Isikveren, A.T., “Methods to Improve UAV Performance Using Hybrid-Electric Architectures”.
- 4 Donato, T., Ficarella, A., De Pascalis, C.L., “Energy Management-based Design of a Wankel Hybrid-electric UAV”.
- 5 Picard, B., Picard, M., Plante, J.-S., Rancourt, D., “Optimum Sub-Megawatt Electric-hybrid Power Source Selection”.
- 6 Machado, L., Matlock, J., Suleman, A., “Experimental Evaluation of a Hybrid Electric Propulsion System for Small UAVs”.
- 7 Palaia, G., Cipolla, V., Binante, V., Rizzo, E., “Preliminary Design of a Box-wing VTOL UAV”.
- 8 Fioriti, M., Vaschetto, S., Corpino, S., Premoli, G., “Design of Hybrid Electric Heavy Fuel MALE ISR UAV Enabling Technologies for Military Operations”.
- 9 Sibilli, T., Senne, C., Jouan, H., Isikveren, A.T., Ayat, S., “Synergistic Hybrid-Electric Liquid Natural Gas Drone: S.H.I.E.L.D”.
- 10 Kissoon, S., Mastropierro, F., Nalianda, D.K., Rolt, A., Sethi, B., “Assessment of the BWB Aircraft for Military Transport”.

Expressions of gratitude are conveyed to all authors listed above for their valuable and insightful contributions. In addition, appreciations are conveyed to the Programme Committee for their emphasis on quality and timely feedback during the peer review process.

In closing, on behalf of the NATO/AVT-RSY-323 Research Symposium on Hybrid/Electric Aero-Propulsion Systems for Military Applications Programme Committee, it is our express wish you find Vol. 92, No. 5 informative reading.



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