Propulsion System Test Battery

What is an electric propulsion test stand?
Development of an electric propulsion test stand that collects high-fidelity data of motor, inverter, and battery system efficiencies; thermal dynamics; and acoustics independent of manufacturer reported values will improve understanding of electric propulsion systems to be used in future aircraft.

What is the airvolt electric propulsion test stand?
The Airvolt electric propulsion test stand still needs to resolve issues relating to EMIand will begin collecting data on these systems. Data collected using the stand will be used to aid in more complex architectures,and in developing strategies and processes for integrating and instrumenting these systems on aircraft.

Why is incremental testing important for electric propulsion systems?
Incremental testing of sensors and software,paired with incremental integration and testing can lead to a more successful final product. Electromagnetic interferenceis an issue that needs to be investigated in depth and mitigated in the early stages when dealing with electric propulsion systems.

Why is electric propulsion important?
As battery and motor technologies advance,the realm of powered flight is expanding to include electric propulsion. It is beneficial to gain a better understandingof such propulsion systems from electrical,aerodynamics,and structural perspectives.

How does a multirotor vehicle propulsion system work?
Abstract: Multirotor vehicles propulsion systems are based on the assembly of a (usually fixed pitch) propeller with an electric motor,powered by a battery pack. Resulting endurance and range performance of the vehicle are thus heavily constrained by the capacity of the battery pack.

What is an example of distributed electric propulsion?
For example,NASA's experimental X-57 all-electric aircraft,which uses lithium batteries to run electric motors for 14 propellers and is focused on examining the effects of distributed electric propulsion is expected to fly soon.

In this paper, we describe a combined monitoring and prognostics architecture that can continuously monitor all components of the electric propulsion system with respect to safety and performance properties as well as state of charge and rest of useful life for the battery.

o Need high voltage lithium batteries with intrinsic propagation prevention and passive thermal management o Establish motor/inverter ground and flight test program o Design crew interface and human factors approach to manage workload for complex propulsion systems o Pathfinder for aircraft electric traction system standards. Lessons ...

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There are many types of batteries that can be used for electric aircraft propulsion, the right one is obviously based on the mission and requirements of the aircraft. Typically, Lithium-Ion (Li-ion) ...

In contrast to fuel-operated aircraft, electric battery-operated propulsion system poses specific problems, such as, the remaining battery power does not linearly decrease and cannot be measured directly. In this paper, we describe a combined monitoring and prognostics architecture that can continuously monitor all components of the electric ...

Based on the principles of power matching and energy matching, a sizing and evaluation method for the hybrid-electric propulsion system was proposed. The full-electric propulsion system of a VTOL aircraft was transformed into a hybrid-electric propulsion system. The ground tests and flight tests were carried out. To comprehensively evaluate the ...

A test bench was developed to measure propeller thrust and torque and all relevant electrical parameters. The results obtained from the measurements are then used to validate elementary models of the propeller, providing the premises for estimating propeller aerodynamic parameters, fundamental for physically consistent vehicle sizing at a ...

In this paper, we describe a combined monitoring and prognostics architecture that can continuously monitor all components of the electric propulsion system with respect to safety ...

In this paper some preliminary experimental results on a Zebra battery based propulsion system for urban bus applications are presented. The tests were carried out using a laboratory 1:1 scale ...

Distributed electric propulsion is a leading architecture for measurable CO2 reduction on large commercial aircraft - regional, single aisle, and twin aisle. Success Criteria: Sub-system and ...

Developers of electrical propulsion systems are exploring innovative technologies and approaches to improve battery performance and safety for aviation

Distributed electric propulsion is a leading architecture for measurable CO2 reduction on large commercial aircraft - regional, single aisle, and twin aisle. Success Criteria: Sub-system and component prototyping and testing at elevation - 2 kV, 1 MW, 20 kRPM drive tests Research on thermal management system design is integrated in of the project.

systems required to support the batteries. Considerations on the weight, volume, and cost of a maritime battery system of today and tomorrow are included. The energy consumption for various . operations and routes of large ocean-going vessels is considered in "Energy demands for battery-electric propulsion", along with the potential for

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DOI: 10.2514/6.2017-4867 Corpus ID: 115818138; Design and Bench Test of a Fuel-Cell/Battery Hybrid UAV Propulsion System using Metal Hydride Hydrogen Storage @inproceedings{Gong2017DesignAB, title={Design and Bench Test of a Fuel-Cell/Battery Hybrid UAV Propulsion System using Metal Hydride Hydrogen Storage}, author={Andrew Gong and ...

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There are many types of batteries that can be used for electric aircraft propulsion, the right one is obviously based on the mission and requirements of the aircraft. Typically, Lithium-Ion (Li-ion) batteries are used but even among Li-ion there are several types that can bring various advantages and disadvantages to an aircraft propulsion system.

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