

Green Engineering

Papers Presented at the AIAA SciTech Forum and Exposition
2022

San Diego, California, USA and Online
3 – 7 January 2022

ISBN: 978-1-7138-5387-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

The contents of this work are copyrighted and additional reproduction in whole or in part are expressly prohibited without the prior written permission of the Publisher or copyright holder. The resale of the entire proceeding as received from CURRAN is permitted.

For reprint permission, please contact AIAA's Business Manager, Technical Papers. Contact by phone at 703-264-7500; fax at 703-264-7551 or by mail at 34922 Uwytkug'Xcmg{'Ftkxg.'Uwyg'422, Reston, VA 20191, USA.

TABLE OF CONTENTS

HYDROGEN FUELS AND RENEWABLE ENERGIES

A Review of Storage Mechanisms for Hydrogen Economy.....	1
<i>Mehrin Chowdhury, Ala Qubbaj</i>	
Investigation of Ammonia-Hydrogen Mixture as a Green Fuel for Jet Engines Using a Wave Reformer.....	10
<i>Pejman Akbari, Colin D. Copeland, Stefan Tüchler, Alison M. Ferris, David F. Davidson, Ronald K. Hanson</i>	
Development and Testing of the Flight Control System for a Tethered Wing	29
<i>Yufei Zhu, Rikin Gupta, Azwan Aris, Taewoo Nam</i>	
Feasibility Study of a Serial Hybrid Electric Powertrain for a Light Sports Aircraft.....	43
<i>Madeline McQueen, Ahmet E. Karatas, Eda Demir, Gotz Bramesfeld, Osvaldo Arenas</i>	
Recent and Projected Trends in Global Civil Aviation Fleet Average NOx Emissions Indices.....	58
<i>Flávio D. Quadros, Mirjam Snellen, Irene C. Dedoussi</i>	

HYBRID AND GREEN PROPULSION

A Reconfigurable Ducted Turbine Array Concept for Renewable Flow Energy Harvesting.....	68
<i>Onur Bilgen, Roger Wang, Yue Cao, Nazim Erol, Xin Shan</i>	

HYDROGEN AND GEOENGINEERING

Conceptual Design of a Shape-Changing Airship for Persistent Stratospheric Operations.....	85
<i>David G. Watters, Christian V. Rice, Don C. Bingaman, James L. Mace, Mark Holly, Thomas G. Almeida, Matthew G. Watters</i>	
Fuel Cell Hybrid-Electric Aircraft: Design, Operational, and Environmental Impact	97
<i>Anna E. Scholz, Johannes Michelmann, Mirko Hornung</i>	

Author Index