

SPACE PROPULSION SYMPOSIUM (C4)  
Interactive Presentations (IP)

Author: Mr. Nicholas Mason-Smith  
Monash University, Australia, nick.masonsmith@gmail.com

Mr. Joel Weightman  
Monash University, Australia, joel.weightman@monash.edu

Mr. Dominic Tan  
Monash University, Australia, dominic.tan@monash.edu

Mr. Marcus Wong  
Monash University, Australia, marcus.wong@monash.edu

Mr. Marten Jurg  
Monash University, Australia, marten.jurg@monash.edu

Mr. Graham Bell  
Monash University, Australia, graham.bell@monash.edu

AN ADDITIVELY-MANUFACTURED CNG/GOX AEROSPIKE ROCKET ENGINE: TEST RESULTS,  
PERFORMANCE AND ANALYSIS**Abstract**

An aerospike rocket engine is to be additively manufactured using selective laser melting from a commercial nickel-based superalloy. Design features enabled by additive manufacturing include multi-chamber combustion, internal lattice jacket cooling and aerospike support. The design and manufacture of the engine is the subject of another paper to be submitted for IAC2017.

The rocket engine is scheduled to be fired on May 28, 2017. This paper will review the engine test, performance and instrumentation. Dynamic measurements of engine thrust, vibration, coolant temperature, combustion chamber pressure and radiated sound will be recorded during testing and presented.

Analysis of these data will allow a critical assessment of the strengths and weaknesses of additive manufacturing with the selected material as a technique for the construction of gaseous-fuelled rocket engines.