

## **TECHNOLOGY DEVELOPMENT TO ENABLE IN-SITU RESOURCE DERIVED FUEL UTILIZATION AND TRANSFER**

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OrbitFab has been working to develop a disaggregated, on-orbit propellant supply system that is compatible with propellants generated from In-Situ Resource Utilization (ISRU). The focus of early work has been an International Space Station (ISS) Experiment, Project ‘Furphy’, launched aboard SpX 16 and SpX 17. These tests demonstrated water propellant handling and transfer between two separate ISS flight articles in late May 2019, culminating with resupplying the ISS with the water.

The second major project undertaken by Orbit Fab has been the design, prototyping and test of a spacecraft docking and fluid transfer mechanism. This enables the movement of ISRU generated Water, Hydrogen Peroxide and other storable propellants, pressurants and similar, as first announced on April 24<sup>th</sup> of this year. Since announcement, RAFTI has undergone further testing and will soon ship to its first customers.

This presentation describes the technical work undertaken on Furphy. This will include the first discussion of results from our trials of flexible toroidal tanks for use with storable propellants in microgravity conditions. It goes on to discuss the Fuel/Docking solution the “Rapidly Attachable Fluid Transfer Interface” (RAFTI). The future test and demonstration plans for these technologies are put into context in order to enable to distribution of ISRU derived fluids throughout the solar system to various stakeholders.