

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
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DEVELOPMENT OF A CRYO-DOCK FOR REFUELING IN LOW EARTH ORBIT

Abstract

This presentation will provide details on the development of Cryo-Dock(TM), the world first commercial cryogenic propellant depot in low Earth orbit. Cryo-Dock is designed to service spacecraft stages and orbital transfer vehicles with high energy LOX/LCH4 propellants thru a standardized, automatic umbilical. Leveraging off the successful demonstration of the Cryogenic Fluid Management technologies during the LOXSAT mission, Cryo-Dock will feature full control of the cryogenic propellants in microgravity including long term zero boil off storage and zero loss chill down and transfer of the cryogenic propellants. This capability will enable a new era of sustainable space transportation where spacecraft refueling and reuse dramatically lower the cost of transportation in the inner solar system. This presentation will present the current Cryo-Dock design concept as well as a concept of operations for orbital refueling for a variety of mission architectures.