

SPACE PROPULSION SYMPOSIUM (C4)
Propulsion Technology (1) (3)

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LOX/METHANE THRUST CHAMBER DEMONSTRATOR- FROM SUBSCALE TO FULL SCALE
TESTING**Abstract**

Future expendable and reusable low cost launch vehicles are aiming presently for LOX/Methane as a promising propellant combination. Airbus DS (now Airbus Safran Launchers) invested in LOX/Methane engine research and technology activities featuring a demonstrator program including the design and manufacturing of a 400kN class thrust chamber and gas generator to expand the capabilities in operating reuse propulsion systems with hydrocarbon propellants. After successful testing of the subscale combustion chamber in 2007 at the P8 test facility at DLR, Lampoldshausen/ Germany, the next step is to hot fire test the full scale LOX/Methane thrust chamber assembly (TCA) on the P3.2 bench facility at DLR at sea level conditions in the 2015/16 time frame. To enable these TCA tests, the P3.2 bench had to be modified and adjusted for operation with this propellant combination. The purpose of the paper is to present the development logic from subscale to full scale, the tested hardware, test results of the subscale program and the test program for the full scale test model. The paper will highlight and conclude on the full scale test results achieved with a LOX/Methane thrust chamber demonstrator designed for rocket engine reusability as a “European First” in this category.