

IAF SPACE PROPULSION SYMPOSIUM (C4)
Liquid Propulsion (1) (1)

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LIQUID THROTTLEABLE ENGINE UTILIZING HIGH-TEST PEROXIDE - GREEN STORABLE
PROPULSION SOLUTION FOR FUTURE SPACE TRANSPORTATION**Abstract**

The paper presents the being-developed technologies enabling deep throttling of the liquid rocket engine (LRE) utilizing the mixture of high-test peroxide (HTP) of 98% concentration and ethanol. The demonstrator shall allow to reduce the thrust down to 10% of the nominal value (5 kN, Sea Level). The throttling is realized by two independently actuated cavitating mass-flow regulatory valves. Due to the HTP catalytic chamber's utilization there is no need for any additional ignition device in the combustion chamber to ignite nor sustain the combustion process. The combustion performance is also adjusted, apart from the thrust values, by the actuated movable fuel pintle injector. The paper presents the up-to-date status of the development of the demonstrator including crucial technologies' tests results, which should be considered as future building blocks in green storable propulsion for numerous applications,

i.e., recovery boosters, planetary or lunar landers, kick-stages. The activity named Throttleable Liquid Propulsion Demonstrator (TLPD) is a part of the Future Launchers Preparatory Programme of European Space Agency.