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A NEW FIRING TEST CAMPAIGN ON THE 1000 N THRUST-CLASS HYPROB HYBRID ROCKET ENGINE

Abstract

A new firing test campaign is currently on-going considering the Hyprob 1000 N thrust-class hybrid rocket engine. The motor has been opportunely revised, w. r. t. the previous configuration – tested in 2019 –, to house a shorter propellant grain, based on the same specific paraffin-based fuel formulation. Main objectives are the evaluation of motor performances, affected by the fuel regression rate, and stability under different oxidizer to fuel mixture ratio (OF) and combustion chamber length. Higher OF values produced higher flame temperatures and more oxidizing environment. No major effects have been actually observed on the fuel regression rate, while an increased stress has been observed on the graphite nozzle. Firing tests are currently on-going equipping the motor with a vortex injection plate, to compare experimental results associated with different injection systems. Results will be available at the time of the congress, including numerous experimental data and numerical rebuilding.