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HIGHLY THROTTLEABLE PROPULSION FOR FROG-H: A GREEN TECHNOLOGICAL LEAP

Abstract

FROG-H, managed by CNES, addresses the imperative for rapid advancement in reusable launcher technologies, aimed at bridging the gap between Europe and the global space community. Working in close collaboration with ESA, the French Space Agency enlisted Lukasiewicz – ILOT to pioneer the Propulsion System for the FROG-H platform. Key objectives included employing safe, storable, and efficient propellants (High Test Peroxide was chosen), alongside a robust, simple-to-operate blowdown monopropellant system with high throttleability (ranging from 150 N to 1.6 kN). Leveraging the ILR-33 Amber rocket's legacy, Lukasiewicz – ILOT developed both the feeding system and the engine.

This paper offers a comprehensive overview of the FROG-H project, shedding light on its current status while delving into the initial studies and subsequent developmental phases of the propulsion system and its subsystems. Furthermore, the paper presents the outcomes derived from the rigorous qualification campaign conducted on the engine, feeding system, and the integrated propulsion setup, providing valuable insights into their performance and readiness for deployment.