

SPACE PROPULSION SYMPOSIUM (C4)
Propulsion Systems I (1)

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VULCAIN X TECHNOLOGICAL DEMONSTRATION RESULTS AND PERSPECTIVES

Abstract

The intent of this paper is to provide an overview of the VULCAIN X technological demonstration program results and perspectives at mid 2011. The VULCAIN X demonstration program, based on the LOX/LH2 VULCAIN 2 engine, is defined to perform both systems and sub-systems demonstrations of new propulsion technologies developed in the frame of RT programs. The main targets are cost reduction, robustness and life time duration. The main steps of the program initiated in 2005 are : • Sub-systems tests demonstration on a power-pack system GPX (TPX + GGPX + VGCE+ Health Monitoring System) to characterize and validate the limitations of the different sub-systems in 2009-2010 • System demonstration (NEX) on ARTA Vulcain 2 test campaign in 2009 The different Demos X have been tested during 2009-2010. The Hydrogen turbo-pump TPX, the gas generator GGPX, the electrical hot gas valve VGCE, the DIADEM Health Monitoring System have been tested in an integrated powerpack configuration. The sandwich nozzle extension NEX has been tested on ARTA 8 Vulcain 2 test campaign. At the end of this fire testing phase, the above mentioned technologies, resulting from 2005—2010 Vulcain X program effort, paves the way for Next Generation Launcher main stage propulsion and is a contribution to Staged Combustion Rocket Engine Demonstrator (SCORE-D) within Future Launcher Preparatory Program (FLPP). The publication will focus on the major achievements of the testing campaign of the different Demos X.during the 2009-2010 period, The VULCAIN X program is managed by the Centre National d'Etudes Spatiales (CNES) and involves several European partners.