

SPACE PROPULSION SYMPOSIUM (C4)
Propulsion Systems II (2)

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DEMONSTRATIONS TECHNOLOGIES ACTIVITIES FOR NEW GENERATION LAUNCHER SOLID
FIRST STAGE**Abstract**

Significant activities have been performed in the way of reinforcing solid propulsion grain as a promising solution concerning first stage and strap-on boosters for PPH version for Next Generation Launcher. Although it's actually too early to set out in any details the technologies building block of the future large solid rocket motor, different preliminaries design concept are not only evaluated, but also maturation technologies activities have been engaged to reach Technology Readiness Level of 6 around 2015/2016 at the same time. Among them, SNPE Matériaux Energétiques is involved in the frame of two main programs of technologies demonstration with CNES's support. One is particularly focused to evaluate technological breakthrough concerning continuous mixing process for solid propellants for casting very large solid rocket motor grains in state of vertical mixer. Such solution will cut costs and significantly reduce production-related hazards, moreover that accelerate production rates. The second one is coupling experimental subscale motor bench firing test and computation fluid dynamics to take into account in the preliminary phase of designing motor, thrust oscillations aspect to compare different solutions of design grain and propose adequate solutions to master and limit this aspect. The general view of the activities presented in this paper can be take as a baseline in a new approach concerning the capability and the applicability of solid propulsion as a promising solution for large solid fist stage for NGL.