

SOLID PROPULSION FOR EUROPEAN LAUNCHER



Investigation of pressure oscillations in solid boosters remains an important topic for the European launcher Ariane 5. Having 20 years of experience in scientific investigation on pressure oscillation using cold flow model, the VKI EA department has joined the ACEP project within an ESA contract under the guidance of EUROPROPULSION and AVIO (Italy).

The knowledge of VKI in cold flow investigation of pressure oscillation has made VKI a key partner in this project.

The VKI cold flow facility has been designed to cope with the main features of the ARIANE 5 booster configuration. The other partners of the contract are ASTRIUM, CNES and SME.

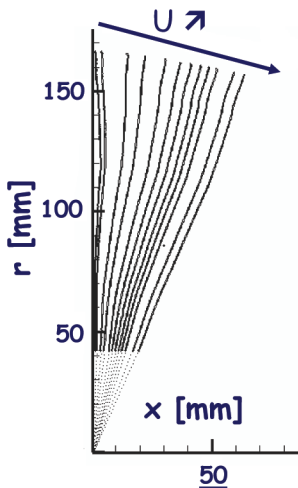
In the similar subject of cold flow investigation inside solid propulsion booster, a new experimental has been constructed to characterize the deformation of the thermal protection TP.

A TP at the size of the future Demonstrator (real PTF of the Demonstrator) has been manufactured by AVIO and is currently tested at VKI. The deformation of the PTF and the downstream flow field is studied relies upon the use of laser based and non intrusive optical measurements techniques.

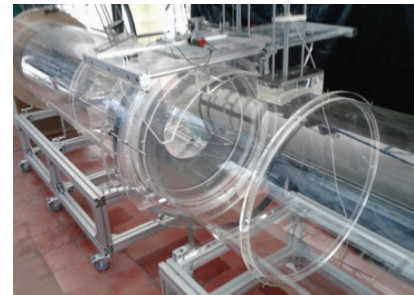
The study is performed in the FLPP program of ESA and the partners are EUROPROPULSION, AVIO, SPS and SME.



VKI PO facility



Measured TP deformation



VKI A5 booster demonstrator



LES Simulation of vortex shedding behind the deformed PT



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