

BAMOCRY: A MODULAR TEST BENCH FOR NEWSPACE ACTORS AT ARIANEGROUP FACILITY IN VERNON

Gabriel DUFRAISSE

ArianeGroup, Vernon, France
gabriel.dufraisse@ariane.group, www.ariane.group

ABSTRACT

For more than 40 years, numerous rocket engines and space subsystems have been tested at Vernon tests site. In particular, this facility has been the pillar for the liquid propulsion of the Ariane launchers since the beginning of this Program in the 70s. It was used to test the Viking engines and stages in development and production for Ariane 1 to 4. Regarding cryogenic propulsion, the Vernon test site has tested the HM7B engines of the Ariane upper stages, and all version of the Vulcain engines of the Ariane 5 and 6 lower stages for the past 40 years. As the Ariane program is moving to the Ariane 6 launcher, this facility now hosts the tests for the Vulcain 2.1 and Vinci engines. And it is also preparing the next generation of Ariane launchers, with the implementation of the new PF20 test facility for the Themis TIG demonstrator and its Prometheus engine.

In the past few years, some new actors have emerged in the European space business. These new actors, sometimes referred as the European “NewSpace”, are pushing new products “micro or mini launchers” to answer to the need for launch to orbit of smaller payloads (with respect to what was commonly launched by the Ariane launchers). In order to develop and qualify these launchers, the NewSpace actors will need to test their rocket engines and stages. In the frame of the “France Relance Program” which aims at boosting the restart of the French Industry following the Covid-19 crisis, CNES and ArianeGroup have decided to complete the current Vernon facility with a modular test bench that will be able to answer this need. This test bench is called BAMOCRY (“Banc MODulaire CRYogénique”).

This paper explains how the BAMOCRY test bench was designed and manufactured, what are its main characteristics and possibilities, and how it can help NewSpace actors to test their space propulsion. The paper will also address the progress of the project and future milestones, as well as the potential for further increments and applications.