

Ariane 6's core engine completes qualification tests

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Artist's view of the configuration of Ariane 6 using four boosters (A64). Credit: ESA - D. Ducros

Ariane 6, Europe's next-generation launch vehicle, has passed another key development milestone. Its Vulcain 2.1 liquid-fueled engine has now completed its qualification testing, which means combined tests can now begin.

The main stage Vulcain 2.1 engine will deliver 135 t of thrust to propel Ariane 6 in the first eight minutes of flight up to an altitude of 200 km.

A review last week marked the culmination of two Vulcain static firing test campaigns over 15 months on two demonstration models in test facilities at the DLR German Aerospace Center test facility in Lampoldshausen.

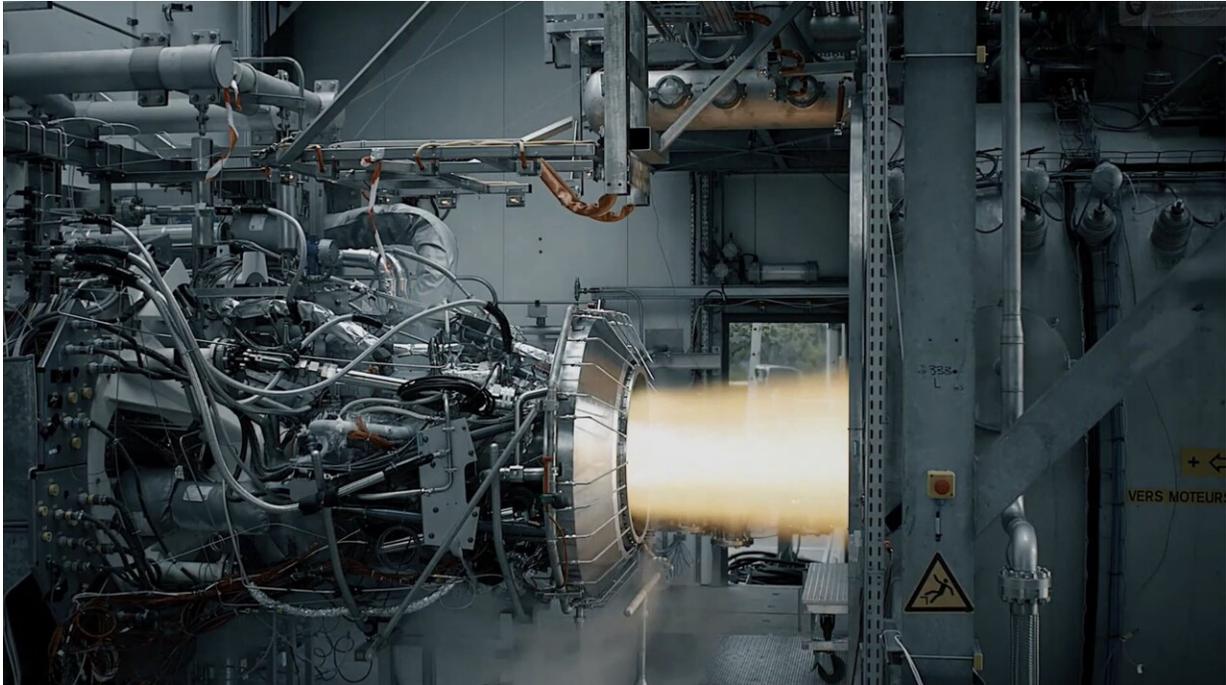
The final qualification static firing test of Vulcain 2.1 in July lasted almost 11 minutes (655 seconds). This completed a total of 13,798 seconds of operation, or nearly four hours with a controlled engine, using Ariane 6 flight actuators to gimbal the engine.

"These very positive results confirm the functional and mechanical behavior of Vulcain 2.1. The upcoming combined tests will qualify Ariane 6 subsystems at stage and launcher level," commented Guy Pilchen, ESA's Ariane 6 launcher project manager.

The engine will be refurbished for dynamic and vibration tests. Combined tests using a fully representative main stage at Europe's Spaceport in French Guiana, will finally qualify the Ariane 6 core stage for [flight](#).



On 28 January 2019, the first qualification model of the P120C solid-propellant motor, in the configuration for Vega-C, was static fired on the test stand at Europe's Spaceport in French Guiana. Credit: European Space Agency



Vinci is the re-ignitable engine of the upper stage that increases the operational flexibility of Ariane 6 and ensures that the engine safely deorbits at the end of the mission. This engine was successfully tested more than 140 times and reignited multiple times in succession in near vacuum to complete its qualification. The final qualification test took place on 12 October 2018 on the PF52 test bench at ArianeGroup's Vernon site, bringing a total of more than 14 hours of operation. Credit: ArianeGroup

Completion of the Vulcain 2.1 and Vinci qualification tests represent a major step forward in the Ariane 6 development.

The qualifying tests for the Vinci re-ignitable [engine](#), which will power the launcher's upper stage, were completed in October 2018. Vinci will be integrated with the complete upper stage for tests at Lampoldshausen.

The next step for large propulsion systems is the static firing in French

Guiana of the final qualification model of Ariane 6's P120C solid fuel booster. This [test](#) will define the acceleration profile for the launcher and will consequently allow engineers to pursue the preparation of the upcoming flights.

Provided by European Space Agency

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