

Ground Test Facility P5

DLR Site Lampoldshausen



Brief description

The P5 test stand is one of the two largest test facilities for cryogenic rocket propulsion in Europe. It was built as part of the ESA Ariane 5 development programme and was commissioned in 1990.



Goals

1990-1998: Vulcain® engine development and flight acceptance tests

1999-2004: Vulcain®2 engine development and flight acceptance tests

2006-2016: Flight-accompanying ARTA (Ariane Research & Technology Accompaniment) tests

Since 2018: development and qualification tests Vulcain®2.1 engine



Applications

The P5 test stand enables ground tests on complete cryogenic propulsion systems under simulated flight conditions, at full thrust and at partial and overload. The maximum test duration for an engine with 1,300 kilonewtons of thrust is approximately 10 minutes.

Perspectives

In the "Prometheus" project, DLR engineers are working closely with the French space agency CNES and ArianeGroup to be able to test a demonstrator engine in the 1,000-kilonewton thrust class with methane and liquid oxygen on the P5 test facility.



Involved

European Space Agency ESA



Facts and figures

Engine: Vulcain®, Vulcain®2, Vulcain®2.1

Fuel: liquid hydrogen 600 m³

Oxidizer: liquid oxygen 200 m³

Test condition: ground tests

Test duration: up to 750 seconds

Thrust absorption:

max. 4,000 kilonewtons

Test rate: 1 test per week



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