

Innovation Test Facility P3

DLR site Lampoldshausen



brief description

In June 1964, work began on the second stage of expansion of the test site, with the construction of the P3 test facility for testing ELDO engines. The P3 and P4 test facility complexes were built in Lampoldshausen between 1964 and 1966 and represent the most modern altitude test stands, which are still regularly maintained today.



goals

Testing of demonstrator engines for new technologies, for example: combustion chambers, fuel combinations, nozzles, ignition processes, valve developments and other engine components.



applications

- Technology development of the engine model ETID for the the heavy lift rockets of the next generation, such as the Ariane 6
- Combustion chambers tested: HM60 (Vulcain), Vinci (capacitive and regenerative), Romeo, ETID

perspectives

- Further development of necessary technologies for the fuel combination methane and liquid oxygen
- Integral part of the development of engines within the framework of the European Ariane program



involved

European Space Agency ESA,
ArianeGroup



facts and figures

Storage tank LH2: 50 m³
Storage tank LOX: 30 m³
Drive tank LH2: 12 m³, 400 bar
Drive tank LOX: 4.5 m³, 350 bar
Pressure LH2: 30 m³, 800 bar
Pressure LOX: 21 m³, 800 bar
Water tanks: 52 m³, 28 bar
Pressure Water: 6 m³, 800 bar
Nitrogen: 16 m³, 320 bar
Hydrogen: 4 m³, 320 bar

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Further development of the Ariane 6 engines

The Ariane 6 upper stage will be powered by the Vinci engine, which was qualified in 2018. Work is already on going to further develop the engine: the new engine model ETID (Expander-Cycle Technology Integrated Demonstrator) completed its first burn tests in June 2018 at the P3 test facility. Experts from the European Space Agency ESA, the aerospace company ArianeGroup and DLR are working together on this project. The campaign involves a total of 20 tests, each with a burn duration of 120 seconds. The engineers are testing three different configurations. These differ, for example, in the manufacturing processes for the thrust chamber, ignition system, nozzles and valves. The P3.2 test facility is designed to test and optimize combustion chamber types for current and future space engines under realistic conditions (rocket upper stages in vacuum and rocket main stages under ground conditions).

