Paper ID: 49365
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IAF SPACE PROPULSION SYMPOSIUM (C4)
Propulsion System (1) (1)

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60 YEARS DLR LAMPOLDSHAUSEN – THE EUROPEAN RESEARCH AND TEST SITE FOR CHEMICAL SPACE PROPULSION SYSTEMS

Abstract

The German Aerospace Center (DLR) is the national aeronautics and space research centre of the Federal Republic of Germany. Its extensive research and development work in aeronautics, space, energy, transport, security and digitalisation is integrated into national and international cooperative ventures. In addition to its own research, as Germany's space agency, DLR has been given responsibility by the federal government for the planning and implementation of the German space programme. DLR is also the umbrella organisation for one of Germany's largest project management

The DLR site at Lampoldshausen with approximately 300 employees by now was founded in 1959 by space pioneer Professor Eugen Sänger to act as a test site for liquid rocket engines. The site went into operation in 1962.

Since 2000 the DLR site Lampoldshausen is home of the Institute of Space Propulsion and all research activities and experiments related to rocket test beds, launchers as well as chemical orbital propulsion systems. The Institute's ongoing work focuses on fundamental research into the combustion processes in liquid rocket motors and air-breathing engines for future space transport systems. Propellant development, synthesis and testing to replace hydrazine-based blends for satellite and orbital propulsion applications is another major research subject. One of DLR's key roles in Lampoldshausen is to plan, build and operate test beds for space propulsion systems on behalf of the European Space Agency (ESA) and in collaboration with the European space industry. DLR has built up a level of expertise in the development and operation of altitude simulation systems for upper-stage propulsion systems that is unique in Europe. As part of the Ariane 5 Plus programme, for example (a joint programme operated by ESA and the French space research agency CNES), DLR Lampoldshausen was tasked with building the P4.1 altitude simulation test bed. Lampoldshausen was also responsible for performing development tests on the future upper-stage propulsion system VINCI.

In this article an overview over the history of the DLR site Lampoldshausen will be given and current research activities as well as future perspectives regarding the current dynamic changes in the space sector will be presented and discussed.