**Ariane 6 upper stage test bench**

**The DLR German Aerospace Center in Lampoldshausen, Germany, is where rocket engines for Europe’s new Ariane 6 launch vehicle are being tested and qualified. Several of the facilities on site have been modified for Ariane 6 and a new facility will soon test the launcher’s complete upper stage, simulating as far as possible the conditions it will experience in flight. With testing and development at full pace, Ariane 6 is taking shape for its maiden voyage**.

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| 10:00:00 | | ESA leader | |  |  |
| 10:00:10 | | Title: **Ariane 6 Upper Stage test bench** | |  |  |
|  | * Aerial DLR Lampoldshausen site, Germany – summer 2018 – DLR * EXT. DLR Lampoldshausen main building, Germany -Jan 2019 – ESA (2 shots) * EXT. Ariane 1 Launch, Kourou, French Guiana – Dec 1979 – Euronews * EXT. Ariane engines test, DLR Lampoldshausen, Germany – unknown date – DLR (2shots) * INT. Airane 6 mock-up DLR Lampoldshausen main building, Germany -Jan 2019 – ESA * EXT. P4 test facility DLR Lampoldshausen, Germany -Jan 2019 – ESA (2 shots) | | In the forests of Lampoldshausen, near Stuttgart lies the German Aerospace Agency’s Institute of Space Propulsion. Over the last 40 years nearly all the liquid propulsion engines of every version of the Ariane launch vehicle have been tested here and ESA’s new Ariane 6 is no exception.  With its maiden flight in sight, many of its components are being checked here. To accommodate this new vehicle, several of the test facilities have been modified. | |  |
| 10:00:41:09   * EXT. DLR Lampoldshausen main building, Germany -Jan 2019 – ESA | | **ITW Anja Frank: Head of Test Facilities Department, DLR Lampoldshausen**  “So for the moment we have the P4.1, which is a high altitude test facility where we have made already the development and qualification testing of the Vinci engine. And we have the P5 which is currently testing the main stage engine, the Vulcain 2.1 for the Ariane 6 and we are now in the process of receiving, of accepting the new test facility for the upper stage which is called the P5.2.” | |  |  |
| 10:01:05:01   * Aerial. P5.2 Test bench, DLR Lampoldshausen, Germany – Summer 2018 – DLR (2shots) * INT. P5.2 Test bench, DLR Lampoldshausen, Germany – Jan 2019 – ESA * INT. Control room, DLR Lampoldshausen, Germany – Summer 2018 – DLR (3 shots) * EXT. Ariane 6 Vulcan 2.1 engine test, DLR Lampoldshausen, Germany – Summer 2018 – DLR * INT. Ariane 6 VINCI engine, DLR Lampoldshausen, Germany – Summer 2018 – DLR (2 shots) * Animation. Ariane 6 dual launch, engine re-ignition – 2018 – ArianeGroup (4 shots) | | This P5.2 facility is new and has been specially built to test Ariane 6’s upper stage. It looks like a launch pad, complete with different floors in a tower, similar to the ones at Europe’s Spaceport in French Guiana. Operations inside this facility are monitored from a central control room. After final preparations, a countdown marks the start of the test, just like an actual rocket launch.  The Ariane 6 upper stage incorporates the Vinci re-ignitable rocket engine. This re-ignition is a key feature adding versatility to Ariane 6 missions. While this engine has already been hot fire tested, it is essential to also understand the overall behaviour of the whole upper stage before Ariane 6’s maiden flight. | |  |  |
| 10:02:00:03   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Pier Domenico Resta: Ariane 6 Launch System Architect Manager, ESA**  “in the development of a launch system you want to test the stages in the closest conditions to the flight one. So we want to have a real stage test and not just an engine test, which is performed in another test bench close by here.” | |  |  |
|  | 10:02:17:21   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA (2 shots) * Animation. Ariane 6 dual launch, upper stage flight – 2018 – ArianeGroup (2 shots) * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA * EXT. Ariane launch pad construction, Kourou, French Guiana – 2018- ESA (3shots) * Animation Ariane 6 engine – unknown date – ArianeGroup * INT. Ariane 6 Vulcain 2.1engine, DLR lampoldshausen, Germany – Summer 2018- DLR | | At the Ariane 6 upper stage test stand, all aspects of the flight are simulated, such as the preparation of the stage (like fuelling or draining of its tanks) and also the flight itself. It is important to know how the upper stage behaves when the Vinci engine is running.  The upcoming launch of Ariane 6 generates a lot of activity here in Lampoldshausen but also in factories and research centres all over Europe and of course in Kourou, where a massive launch pad is being built.  For the development of Ariane 6, the approach is new: design and manufacturing are done almost in parallel. An important task for ESA and European industry. | | |
| 10:02:59:18   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Pier Domenico Resta: Ariane 6 Launch System Architect Manager, ESA**  The difficulty of Ariane 6, the challenge of Ariane 6 is also given by the schedule. And we know that we have… a little bit more than five years to build the whole launch system and to qualify the whole launch system. And this is a real interesting kind of challenge that we have because we have to coordinate, synchronise, make many developments at the same time. | |  |  |
| 10:03:26:18   * Aerial. Ariane launch pad construction, Kourou, Frenh Guiana – 2018 – ESA * INT. Ariane 6 Vulcain 2.1engine test, DLR lampoldshausen, Germany – Summer 2018 – DLR (2 Shots) * Animation Ariane 6 Launch – unknown date – ESA * Aerial. Ariane launch pad construction, Kourou, Frenh Guiana – 2018 – ESA * INT. Ariane 6 Vulcain 2.1engine, DLR lampoldshausen, Germany – Summer 2018- DLR (2shots) * INT. Control room, DLR Lampoldshausen, Germany – Summer 2018 – DLR (2 shots) * Animation. Ariane 6 dual launch, Flight – 2018 – ArianeGroup | | Despite this tight schedule, the many parallel builds and developments, ESA and industry accepted the challenge to develop this launch system in only 5 years. Today Ariane 6 is scheduled for its maiden launch in 2020.  From Kourou to Lampoldshausen the development of Ariane 6 continues at full speed in order to offer a competitive launch vehicle for the commercial market while at the same time securing Europe's independent access to space | |  |  |
| **10:04:11:03** | | **B-ROLL** | |  |  |
| 10:04:11:03   * EXT. DLR Lampoldshausen main building, Germany -Jan 2019 – ESA | | **ITW Anja Frank: Head of Test Facilities Department, DLR Lampoldshausen – English**   * History of Ariane engine test at lampoldshausen site * The challenges of Ariane 6 development for the Lampoldshausen test facilites | |  |  |
| 10:05:01:02   * EXT. DLR Lampoldshausen main building, Germany -Jan 2019 – ESA | | **ITW Anja Frank: Head of Test Facilities Department, DLR Lampoldshausen – German**   * What is being tested at Lampoldshausen * History of Ariane engine test at lampoldshausen site * The challenges of Ariane 6 development for the Lampoldshausen test facilites | |  |  |
| 10:06:22:21   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Pier Domenico Resta: Ariane 6 Launch System Architect Manager, ESA - English**   * History of the test bench, how it came to be * Why test the entire upper stage * Ariane 6 tests planned for 2019 * Importance of parallel developments in a tight schedule * Rethinking the development logic for Ariane 6 | |  |  |
| 10:09:05:05   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Pier Domenico Resta: Ariane 6 Launch System Architect Manager, ESA - French**   * Why build the P5.2 test bench * Importance of testing the entire upper stage * Role of ESA in the development Araine6 * Ariane 6 tests planned for 2019 | |  |  |
| 10:12:05:03   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Pier Domenico Resta: Ariane 6 Launch System Architect Manager, ESA - Italian**   * Why build the P5.2 test bench * Ariane 6 tests planned for 2019 * Parallel development of Ariane 6 | |  |  |
| 10:15:26:05   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Denis Rebuffat: Ariane 6 P5.2 Development Lead Engineer, ESA – English**   * P5.2 similar to a launchpad * Testing of the flightphase possible at P5.2 test bench | |  |  |
| 10:16:20:00   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Denis Rebuffat: Ariane 6 P5.2 Development Lead Engineer, ESA –French**   * What happens at the P5.2 test bench * P5.2 complex as a launchpad | |  |  |
| 10:18:28:12   * INT. P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **ITW Gerard Kruehsel: Ariane 6 Test Bench Development and Engineering Department, DLR Lampoldshausen - German**   * Purpose of the P5.2 test bench * Challenge of designing the test bench in parallel with the upper stage * Test bench ready for ariane 6 | |  |  |
| 10:19:46:09   * P5.2 test facility, DLR Lampoldshausen, Germany -Jan 2019 – ESA | | **GV’s P5.2 test facility**  **DLR Lampoldshausen**  **January 2019**  **ESA** | |  |  |
| 10:24:11:18   * INT. Control room, DLR Lampoldshausen, Germany – Jan 2019– ESA | | **GV’s test facilities controlroom**  **DLR Lampoldshausen**  **January 2019**  **ESA** | |  |  |
| 10:25:41:18   * P5.2 Test bench, DLR Lampoldshausen, Germany – Summer 2018 – DLR | | **GV’s P5.2 test facility**  **DLR Lampoldshausen**  **2018**  **DLR** | |  |  |
| 10:27:25:00   * P4 Test bench, DLR Lampoldshausen, Germany – Summer 2018 – DLR | | **GV’s Vinci test at DLR Lampoldshausen**  **2018**  **DLR** | |  |  |
| 10:28:45:18   * Animation. Ariane 6 dual launch – 2018 – ArianeGroup | | **Animation Ariane 6 Dual Launch**  **2018**  **ArianeGroup** | |  |  |
| 10:29:56:23 | | **Space 19 outro** | |  |  |
| **10:30:08:20** | | **END** | |  |  |