**Ariane 6: fire in the hole**

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| Image | Text |
| 10:00:00:00**Music:** Rocket Launch, Asset ID: SBA-347502444 ©storyblocks**Image:*** Ariane 6 full stage engine hot-fire test: Bird’s eye views from critical Ariane 6 hot-fire rehearsal - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup
* Hot-fire test of Ariane 6 core stage on launch pad – 5 September 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/ArianeGroup (4shots)
* Hot-fire test of Ariane 6 core stage on launch pad – 5 September 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/ ArianeGroup
* Ariane 6 first launch animation with twin boosters – 23 November 2023 ©ESA (3 shots)
 | **Throughout the sweltering summer of 2023 and well into autumn, teams working on Europe’s upcoming flagship rocket, Ariane 6, have been tirelessly conducting the test campaign which will culminate in the first launch this year of Europe’s newest launcher.** |
| 10:00:24:24**Music:** Galaxy On Fire, Asset ID: SBA-347170455 ©storyblocks | **Ariane 6: fire in the hole** |
| 10:00:25:14**Image:*** ARIANE 6 LONG HOT FIRE TEST - Gantry doors opening and rollback- 23 November 2023 - Europe’s Spaceport, French Guiana ©ESA/M.Pedoussaut/Zetapress
* Test removal of mobile gantry -June 2023 - Europe’s Spaceport in French Guiana ©ESA/S.Corvaja, ESA/M.Pédoussaut/Zetapress (3shots)
* Ariane 6 long duration hot-firing test - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA (4shots)
* Ariane 6 full stage engine hot-fire test: Bird’s eye views from critical Ariane 6 hot-fire rehearsal - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup
* Hot-fire test of Ariane 6 core stage on launch pad – 5 September 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/ArianeGroup (11shots)
* Ariane 6 nighttime wet rehearsal -october 2023 – Europe’s Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup/Optique video du CSG-S. Martin (2shots)
* ARIANE 6 LONG HOT FIRE TEST - Gantry doors opening and rollback- 23 November 2023 - Europe’s Spaceport, French Guiana ©ESA/M.Pedoussaut/Zetapress
* Ariane 6 full stage engine hot-fire test - Excitement builds as Jupiter counts down to Ariane 6 hot fire - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup (4shots)
* Ariane 6 full stage engine hot-fire test - Ignition, fire and clouds: all the views of Ariane 6 hot-fire test - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup
* Ariane 6 full stage engine hot-fire test: Bird’s eye views from critical Ariane 6 hot-fire rehearsal - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup
 | **At the start of the summer the mobile gantry of the Ariane 6 launchpad at the Europe Spaceport in Kourou was rolled back, revealing Ariane 6. This was part of the preparations for what would eventually culminate in a series of hot-fire tests of Ariane 6’s brand new Vulcain 2.1 engine.** **First, launch system tests were performed including core-stage tank filling operations and a series of procedures to verify interactions between the Ariane rocket and the launch pad.****On the 5th of September another launch system test was performed including a countdown, with its grand finale being Ariane 6’s Vulcain 2.1 engine firing for about 4 seconds. And October saw a full-scale wet rehearsal on the launchpad at night but the pièce de résistance was still to come.** **On the 23rd of November a team of ArianeGroup, France’s space agency CNES, and ESA completed a full launch countdown rehearsal which ended with an 7 minute trial of fire for the Vulcain 2.1 engine which roared into life.**  |
| 10:01:41:17* Trial by fire for Ariane 6’s upper stage – 1 september 2023 – DLR, Lampoldshausen, Germany ©ESA/Arianegroup/DLR - Hill Media (9shots)
* Ariane 6 first launch animation with twin boosters – 23 November 2023 ©ESA (3 shots)
 | **Meanwhile in Germany at the DLR test site in Lampoldshausen, the Ariane 6 upper stage is going through its own hot fire tests. At this specially constructed test bench the new reignitable Vinci engine and the complete upper stage are being put through their paces.** **This new generation engine will offer Ariane 6 the versatility required of a modern launcher and, alongside its modular design, the ability to launch a plethora of missions in the years to come.** |
| 10:02:10:00* Ariane 6 full stage engine hot-fire test: Bird’s eye views from critical Ariane 6 hot-fire rehearsal - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup
* Ariane 6 full stage engine hot-fire test = Vulcain roars, clouds plume and teams focus in major test for Ariane 6 - 23 November 2023 - Europe's Spaceport in French Guiana ©ESA/CNES/Arianespace/ArianeGroup
* Ariane 6 hot-fire timelapse - 23 November 2023 - Europe’s Spaceport, French Guiana ©ESA/M.Pedoussaut/Zetapress
 | **As 2023 comes to a close, Ariane 6 is well on track towards its inaugural launch next year. It will mark the start of a new era in European spaceflight while continuing the mighty impressive Ariane legacy** |
| **10:02:28:02** | **ESA OUTRO** |
| **10:02:39:14** | **END** |
| **10:00:00:00** | **BR001** |
| * Interview: Tony Dos Santos, August 2023 - Europe’s Spaceport, Kourou, French Guiana ©ESA
 | **Soundbites - Tony Dos Santos:** **Deputy Combine test manager for the Ariane 6 Combined Test launch campaign, ESA - English** |
| 10:00:05:00 | My name is Tony de Santos and I'm deputy Combine test manager for the Ariane 6 Combined Test launch campaign. |
| 10:00:16:09 | So the combine test is organized by combining the Ariane 6 facilities. So the ground segments with the first elements out of the production line in Europe of Ariane 6 the first stage at. This stage are here already or indeed. The launch complex is ready for the combined test. What we did is all the integration: mechanical integration, fluidic integration and ... integration of the launcher with the ground. Five September, ignition of the engine for 4 seconds and beginning of October, ignition for 500 seconds.  |
| 10:00:59:20 | What's important also to mention is that the facilities for Ariane 6 are totally qualified. We had this qualification announced in July this year and the handover, the official handover from CNES to ESA of these facilities. So we are fully operational for the combined test.  |
| 10:01:23:21 | First is Ignition of the engine for 4 seconds and collect all the data in order to allow the next step. The next step is the ignition of the engine for 500 seconds. So the duration of the flight itself for this engine and this we will do it for the first time. So it's really the engine and the stage will work together for the first time for 500 seconds. Then after this test, we will need some test what we call degraded test. Degraded test is in case of we we know what to do is everything is prepared in advance. Then, of course, we will get the real launcher coming from Europe, the first launcher for the maiden flight. And we will prepare this one for the first launch campaign and the first flight of Airane 6. |
| 10:02:24:13 | So the combine test named loading is really what the name is. Fueling the launcher with hydrogen, oxygen, but also all the gases Helium, nitrogen in order to prepare this launcher for a real flight. So during this phase is where we have to prepare, of course. Because hydrogen and oxygen are really cold -250 degrees. So you will have to prepare all the pipes and the tanks. You cannot put like this for many mechanical reasons and also inert all the pipe because hydrogen with oxygen this explosive, so you have to eliminate all the oxygen. This is the preparation. Then you have to fill in the at the maximum the tanks, in order to have full capacity, full performance of the launcher and then ignite the engine with the propellant, all the system electrics, the electrical system inside the stage. Ignite the engine the same way it will do for the for the for the first flight. |
| 10:03:41:02 | So the hotfiring test, is a test, is the same as the short firing test, but this time the duration will be 500 seconds. So the duration of the flight itself, this kind of test is what we call a stage test. It will be the first time the engine will be operated by the stage. I mean the onboard computers, the real tanks, the real pipes, the real valves. So what we will do during this test, in addition to comparing to the short firing test is really the flight itself in fact. We will qualify the engine with the stage. |
| 10:04:29:24 | So these tests are very important because during this tests we will collect all the data during this test. And these data are really important to validate what we did. The design, it will be used by the design authorities. Both on the launcher and on the ground. This data will validate the design. Or also can be used to improve this design. |
| 10:05:01:08 | Of course these tests are difficult because rocket science is very tricky, but in addition, it implies to to have many people on board. You have to recreate the launch campaign. So we have, of course, the people inside the control centre. But you will have the design authorities, all the industrials around in order to prepare both launcher but also the ground segment. But you are interfaced with also the launchrange, so all the telemetry, safety, radar, ect. etc. So it implies an organisation to be put at really the test. |
| 10:05:45:00 | So at the beginning of the Ariane six program we took time in order to, to collect the best experience both on the ground and on the launcher in order to operate this launcher easier and less expensive. So if you compare Ariane 5 to Ariane 6 on ground sites: the integration is horizontally and then you put vertically and assemble it. This is really less expensive for the buildings, because we have flat buildings and so less consumption in the energy and easy to operate. On the launcher side is the same design but they simplified. By example for the tanks, on the Ariane 5, you have two tanks with a common interface. This is of course better for, uh, the, the performance because it's light. But you have to operate both the tanks at the same time in order to maintain a certain pressure. On the Ariane 6 is two separate, separated tanks so it's easier to produce less expensive and easier to operate on the ground here.  |
| 10:07:03:20 | So at the beginning of Ariane 6, we decided to take time and collect the best experience we had in the past, both on the ground and the launcher. So, for example, on the ground side is the use of the mobile gantry integration, that is horizontal. On the launcher side is the same design as Ariane 5. The engine, the vulcain, is the same one but improved and upper stage with a new engine that can be both perfomance and is reignitable. And the design was simplified inside the launcher. Less cost for to produce it and less operation here for the launch campaign. |
| 10:07:49:07 | So Ariane 6 was designed for 12 launch per year. More than Ariane 5 was designed for five, six maximum seven launch per year. So it will require for the European Spaceport to be more flexible in terms of dates and also to accommodate Ariane 6 with the existing launcher Vega that also have 3-4 launch per year. So it requires two to be modernised and more flexible. |
| 10:08:24:11 | So Ariane 6 is 12 launch per year. If you compare Ariane 5 was 5-6. If you combine this 12 launch per year with Vega and the addition of 3-4 launches per year. You have 16 launches per year. So more than the double off activities for this year's for the European Spaceport. |
| 10:08:48:17 | So the next step for Ariane 6, is of course the combined test short firing test, hot firing test, degraded case, is mounting the specimen. Then we will receive the new launcher that we will operate here in the first launch campaign and then the maiden flight.  |
| 10:09:19:14 | **END** |
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