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[Vega's Second Stage Engine Completes Testing](#)

Zefiro23 booster engine behaves as expected

Vettore Europeo Di Generazione Avanzata, or Vega for short, is an expendable launch system developed by the European Space Agency and the Italian Space Agency. It is designed to carry satellites with masses between 300 and 2,000 kilograms into space and insert them into polar and low Earth orbits. It consists of three solid rocket booster stages, namely P80 - the first stage, Zefiro23 and Zefiro9, and a liquid upper stage, AVUM. **Engine testing** Last Thursday, the Italian Space Agency completed the test for the Zefiro23 booster, the second stage of the launcher, at Salto Di Quirra Inter-force Test Range, Italy. The test began at 13:15 CET with the ignition of the solid rocket booster which reached a thrust of 930 kN - 95 tons of force - only after 14 seconds of operation. After the 75 seconds scheduled for the test, the Zefiro23 stage consumed all of its 24 tons of propellant, that burned with an average temperature of 3000 Kelvin. **Test confirms expectancies** According to data collected during the test, the combustion chamber pressure and the thrust generated by the Zefiro23 booster confirm the predictions. Additionally, Avio engineers executed high amplitude thrust vector changes to test the stage and see how it would behave in a critical situation. Also, the nozzle anomalies experienced with the Zefiro9 were eliminated by implementing modifications to the nozzle design. Head of the Design Department at Avio's Space Division, Francesco Betti stated: "The success of this test demonstrates the soundness of the design and rewards the enormous efforts of the team that has worked on the project." For further inspection, the Zefiro23 engine is to be transported to the Avio facility at Colleferro. **Two more to go** Two of the three solid rocket boosters of the Vega launcher have been tested and achieved qualification, the Zefiro23 and P80. "The teams of Avio, ELV, SABCA APP and of the Integrated Programme Team of ESA, CNES and ASI did a great job. This success paves the way for the Vega maiden flight," said Stefano Bianchi, head of the Vega Programme at ESA. The Vega launcher measures 30 meters in height, could weigh up to 137 tons when fully loaded and is supposed to make its first flight by the end of this year.