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VULCAIN[®]2.1 ENGINE

SOLUTIONS FOR COMMERCIAL AND SCIENTIFIC PAYLOADS

- › POWERS THE ARIANE 6 CRYOGENIC MAIN STAGE
- › DERIVED FROM THE ARIANE 5 VULCAIN[®]2 ENGINE
- › TECHNOLOGY DEVELOPMENTS TO ENSURE DESIGN-TO-COST
- › QUALIFICATION IN 2019



VULCAIN® 2.1 SPACE PROPULSION

ArianeGroup is spearheading European cryogenic propulsion

World leader in cryogenic propulsion, ArianeGroup is lead contractor for the Vulcain® 2.1 propulsion system.

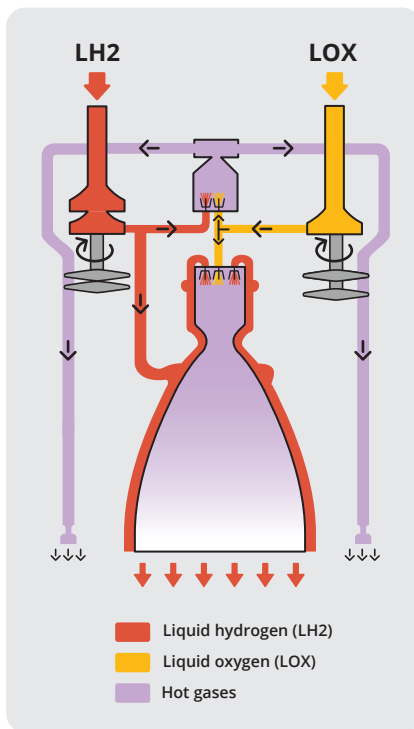
This cryogenic engine is being developed by ArianeGroup in cooperation with its European partners on behalf of the European Space Agency (ESA).

SPECIFICATIONS	
Cycle	Gas generator
Vacuum thrust (kN)	1,371
Specific impulse (s)	432
Combustion pressure (bar)	118.8
Propellants	LOX-LH2
Propellant flow rate (kg/s)	326
Mixing ratio	6.03
TP rotation speed (rpm)	LOX: 12,300 LH2: 36,500
Height (m)	3.6
Nozzle outlet diameter (m)	2.1

The Ariane main engine

The Vulcain® 2.1 cryogenic engine provides a thrust of 135 metric tons in a vacuum, equivalent to the thrust of the Vulcain® 2 engine but with major technological simplifications.

It powers the cryogenic main stage of the Ariane 6 launcher for the first eight minutes of the flight.



A new generation engine

Vulcain® 2.1 draws on recent technological developments (3D printing, SWAN nozzle, etc.) and on the proven reliability of the Vulcain® engine.

The qualification tests campaign took place from 2017 to mid-2019 on the P5 tests stand at the DLR facility in lampoldshausen (Germany) and the PF50 tests stand at ArianeGroup's site at Vernon France : The Vulcain 2.1 engine ran for 13,798 seconds, (nearly four hours).



Vulcain® 2 engine

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