

# LH2 TURBINE

## VULCAIN AND VULCAIN 2 ENGINES



The LH2 turbine is a 2-stage transonic turbine that powers the liquid hydrogen pump of the Vulcain engine of the Ariane 5 launch vehicle. As a GG-cycle engine, the Vulcain uses hydrogen-rich gases to power its turbines.

For the upgraded version, the Vulcain 2 powering the Ariane 5 ECA launcher, the LH2 turbine is of similar configuration but develops more power, operating at higher speed and pressure.

**VOLVO AERO**

# CHARACTERISTICS OF THE LH2 TURBINE

## Vulcain

Type	2-stage axial, transonic
Power rating	7.4 – 15.5 MW
Speed	28 500 – 36 000 rpm
Inlet pressure	52 – 105 bar
Outlet pressure	2 – 6 bar
Inlet temperature	760 – 950 K
Blade meanline diameter	0.24 m

## Vulcain 2

Type	2-stage axial, transonic
Power rating	9.9 – 20.4 MW
Speed	31 800 – 39 800 rpm
Inlet pressure	60 – 122 bar
Outlet pressure	4 – 7.5 bar
Inlet temperature	770 – 960 K
Blade meanline diameter	0.24 m

## Volvo Aero responsibility

Volvo Aero has been subcontracted by Snecma since 1985 for the LH2 turbine and its derivatives.

Volvo Aero is responsible for turbine development, manufacture and qualification. This includes the development of test facilities, materials testing in a hydrogen atmosphere, aerothermal and mechanical design and advanced measuring techniques.

## Similar assignments

- LOX turbine for the Vulcain and Vulcain 2 engines powering the Ariane 5 launcher.
- Turbines for the Vinci engine of the Ariane 5 upper stage.
- Turbine blades integrated with the disk (blistk) to drive the turbopumps of the Viking 4, 5 and 6 engines of the Ariane 4 launcher.

## Volvo Aero Corporation

Volvo Aero develops and manufactures components for aircraft and rocket engines with a high technology content in cooperation with the world's leading producers. Service and maintenance are an important part of our operations. The company offers an extensive range of products, including

sales of spare parts for aircraft engines and aircraft, sales and leasing of aircraft engines and aircraft, and overhaul and repair of aircraft engines. Volvo Aero also develops and services gasturbines for propulsion and power generation.

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