

SPACE. Following an initial batch order for 30 Ariane 5 launchers in 2004, Arianespace ordered a new batch of Ariane 5 ECA launchers from EADS Astrium last June. The Safran Group plays an active role in the success of the European launcher, with several companies supplying key systems and equipment.

SAFRAN, THE POWER BEHIND ARIANE 5

“Ariane 5 is one of the most successful launch vehicles on the market today,” says Jacques Serre, Vice President and General Manager of the Space Engines division at Snecma, part of the Safran Group. By 2009, Snecma will have delivered all engines for the 30 Ariane 5 launchers in the original “PA” batch order by Arianespace. The new “PB” order will then take over, with 35 more Ariane 5 launchers in the heavy-lift ECA version. “We signed a Memorandum of Understanding with EADS Astrium, the industrial prime contractor, at the Paris Air Show this summer,” adds Serre. “Our aim is to ensure the continued supply of rocket propulsion systems for five more years starting in September 2009. The contract should be officialized by March 2008.”

Safran is involved in the Ariane 5 program at several levels, through four companies: Snecma Propulsion Solide, in charge of the MPS solid rocket motors (SRM), Snecma, in charge of the cryogenic engines (fueled by liquid hydrogen and liquid oxygen), Techspace Aero, producer of the launcher’s

control valves, and Labinal, supplier of the wiring harnesses.

“Snecma is a cryogenic rocket engine systems integrator,” notes Jacques Serre. “We’re in charge of the propulsion systems on the liquid-propellant stages, including the HM7B engine for the upper stage and the Vulcain 2 engine for the main stage, along with all equipment needed for engine control and fuel supply.”

Industrial teaming

On the Vulcain engine in particular, Snecma coordinates the work of a number of leading European companies: EADS Astrium’s Ottobrunn plant in Germany provides the thrust chamber; Volvo Aero Corporation of Sweden supplies the nozzle and turbopump turbines; and Avio of Italy makes the liquid oxygen turbopump. The electrical harnesses for the engine, featuring fire-resistant thermal protection, are supplied by fellow Safran Group company Labinal. “We also make the harnesses for the cryogenic main stage,” adds Michel Allard, sales & marketing director at Labinal. This stage includes eight cryogenic valves provided by Techspace Aero, the Group’s Belgian subsidiary. According to



ARIANE 5 PROPULSION

UPPER STAGE

Snecma
HM7B cryogenic engine
Snecma Propulsion Solide
Titanium helium tanks

MAIN STAGE

Snecma
Vulcain 2 cryogenic engine
Techspace Aero
Cryogenic valves
Labinal
Electrical harnesses for stage and engine

BOOSTERS

Europropulsion
(50/50 joint venture, Safran and Avio):
MPS solid rocket motor
Snecma Propulsion Solide
MPS nozzle

Michel Gruslin, head of space programs at Techspace Aero, “These valves are used to inject the liquid hydrogen and oxygen, and control the mixture ratio of these two cryogenic propellants.”

The huge solid-rocket motors, or boosters, are “developed and produced by an equally-owned subsidiary of Avio and Safran, called Europropulsion,” notes Michel Dutrop, head of the space propulsion group at Snecma Propulsion Solide, Safran’s solid propulsion specialist. Snecma Propulsion Solide’s Bordeaux plant makes the solid booster nozzles using advanced thermostructural composite materials capable of standing up to exhaust temperatures exceeding 3,000°C. In addition, Snecma Propulsion Solide produces the titanium tanks for the liquid helium used for control and pressurization of the upper stage.

The ninth launcher in the PA batch order will lift off in November 2007, while the first launcher in the follow-on PB order is scheduled to lift off from the Guiana Space Center (Kourou, French Guiana) in the second half of 2010. ■

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