

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Launch Vehicles in Service or in Development (1)

Author: Mr. Daniel de Chambure  
European Space Agency (ESA), France, Daniel.de.Chambure@esa.int

ARIANE 5 ECA ADAPTATION AND ARIANE 5 ES LAUNCHER PREPARATION FOR GALILEO  
FOC

**Abstract**

With the Ministerial Conference 2014 decision of implementing Ariane 6 launcher as from 2020, Ariane 5 ECA launcher exploitation has to be maintained and continued until at least 2024. In view of the tightening of the conditions of the market for launch services, overall costs of exploitation and the evolution of the mass of the satellite, an increase in the capacity in double launch of Ariane 5 ECA by lengthening the fairing volume and bringing its performance larger than 10,000 kg of payload in GTO appears today as an important factor for ensuring the competitiveness of the Ariane 5 ECA launcher till its planned end of life.

With regards to the situation, ESA undertook several performance improvement plans to reach above objective. A first performance improvement plan (Performance Improvement Plan - PIP) initiated in 2009 has brought the Ariane 5 ECA launcher generic performance today up to 10 165 kg (total mass of payload including carrying structures).

A second performance improvement plan (Upper Part Adaptation - UPA) plan was undertaken end 2013 and should bring the generic performance up to 10 410 kg beginning 2017 while increasing the payload available volume under the fairing.

A third plan beyond 2016 which will mainly consider fairing volume increase aspects is under consideration.

In parallel, the Ariane 5 ES launcher with re-ignitable upper stage, used for the ATV missions is being adapted for the deployment of the Galileo FOC constellation with three planned flights which will be the last ones of the ES version. This launcher adaptation included the development of a dispenser for carrying and separating 4 Galileo S/Cs, the redesign of the VEB structure for mass saving purpose thanks to loads decrease compared to ATV mission and some electrical and thermal modifications of the launcher for the long duration ballistic phase. This program initiated in 2012 is very challenging in terms of planning with regards to the first launch foreseen now in 2016.

This paper will address the different performance and fairing volume improvement plans for Ariane 5 ECA and then focus on the development and qualification of Ariane 5 ES for Galileo FOC mission.