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TANKS AND STRUCTURES FOR THE NEW ARIANE 6

Abstract

In the frame of the Ariane 6 program, MT Aerospace AG is responsible for the design, analysis, test and qualification as well as for later series production of metallic bare tanks, tank components and the main metallic structures of the new heavy European launcher.

MT Aerospace AG has the responsibility for developing those tanks and structures which all have a strong impact on the overall launcher architecture and performance.

Increased launch rate and ambitious performance and cost requirements led to the implementation of new manufacturing processes and automated assembly technologies together with a design-to-manufacturing approach and lean processes. Cost engineering with respect to both non-recurring and recurring costs has been applied.

During the last decade, MT Aerospace AG has developed and successfully demonstrated its competences which have turned into sound heritage and are now applied for the realization of the new generation launcher Ariane 6. It includes friction stir welding applied to all aluminium tank structures, shot peen forming performed on domes and cylinder segments and automated riveting for the assembly of the structures.

This paper describes the design, technology development and industrialization status, focusing on metallic bare tanks and Inter Tank Structures for upper and main stage, Vulcain Aft Bay panels and forward and rear skirt of the Equipped Solid Rocket Motor. The main objective was to reach performance and schedule targets within costs limitations. All products have successfully passed crucial project milestones, the manufacturing of development and qualification models has been released. The release of the first flight units is under preparation.