

Advanced Forming of Complex Shapes - Targeted at Launchers

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The objective of this program is to develop, manufacture and test structural tank demonstrators for launcher missions, manufactured by applying novel and advanced forming technologies in which a central cylindrical and domes are produced by different manufacturing technologies. The material selected for the development is aluminium AA2219 alloy. The forming technologies selected for this program aim at reduction of the number of manufacturing steps, mass reduction as well as waste reduction with associated gains in cost and lead-time, and performance improvements. The structure of the project is divided into manufacturing of the integrally stiffened cylinder centre section as a separate task. In parallel a development of several techniques is investigating the forming of the domes. Multiple technologies were trade-off (e.g. Magnetic Pulse Forming, Hot Deep Drawing, Hot Stretch Forming and Super Plastic Forming) with two selected for demonstration. A subsequent phase soon to be approved, the selected dome technology will then be used to produce a breadboard demonstrator of the full tank according to Advanced Near Net Shape processes. This presentation will show the progress of the project as it is near the end of the first phase, will address the next steps and discuss some of the challenges encountered.