

## **Primary Structures Made by Additive Manufacturing**

Philippe Hendrickx, SABCA, Belgium

Additive manufacturing technologies were investigated to produce primary structures for space launcher applications. The demonstration of these technologies for the manufacturing of highly loaded/mission-critical components aims at accelerating their adoption within the stakeholder community of the space industry. In this context, SABCA and Thales Alenia Space formed a consortium under ESA sponsorship in order to address this challenge. Brackets made of AlSi10Mg and Ti6Al4V were completely redesigned including topological optimization and manufactured via Laser Powder Bed Fusion (LPBF) to benefit from the design freedom enabled by AM technologies. Wire Arc Additive Manufacturing (WAAM) processing of Al2319 was also assessed to improve the technological maturity of this process and pave the way for its use in the manufacturing of large highly loaded launcher structures. Preliminary characterization and demonstrator fabrication results are presented while further experimental work is ongoing.