A novel manufacturing chain for low cost 3D textile reinforced polymer composites

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Keywords: manufacturing chain, 3D textiles, textile reinforced composites, hybrid yarn.

Abstract. The project 3D-LightTrans aims to create a highly flexible manufacturing chain for the low cost production of integral large scale 3D textile reinforced polymer composite parts. In a novel approach, multi-material semi-finished fabrics made of hybrid yarn are formed to deep draped pre-fixed multi-layered and multifunctional 3D-textile pre-forms. These are then efficiently processed into the final composite part by thermoforming. This paper presents the results achieved by the project consortium during the last three years, including the development and optimization of the individual processes for prototype production, with a focus on two selected automotive end products, and the adaption of equipment for industrial scale manufacturing.