

Abstract Deliverable 7.1

Report on fibreglass sensor integration including prototypes

Deliverable 7.1 outlines the initial phase of work on developing dedicated optical fibre metal coatings and integrating such coated optical fibres into metal and composite materials. Key components, including optical fibre selection, protective coatings, and embedding processes, are discussed. The report details the methodology for integrating optical fibres into 3D-printed metal (Al, Fe, Ni-based) and CFRP structures, addressing challenges like fibre damage during integration. Results show successful integration using wire-based directed energy deposition (wDED) and automated tape laying (ATL).

Future work will focus on optimizing integration parameters, investigating sensing properties of embedded fibres and addressing cross-sensitivity between strain and temperature measurements. The ultimate goal is to leverage the potential of optical fibre sensors in high-performance multi-material applications.