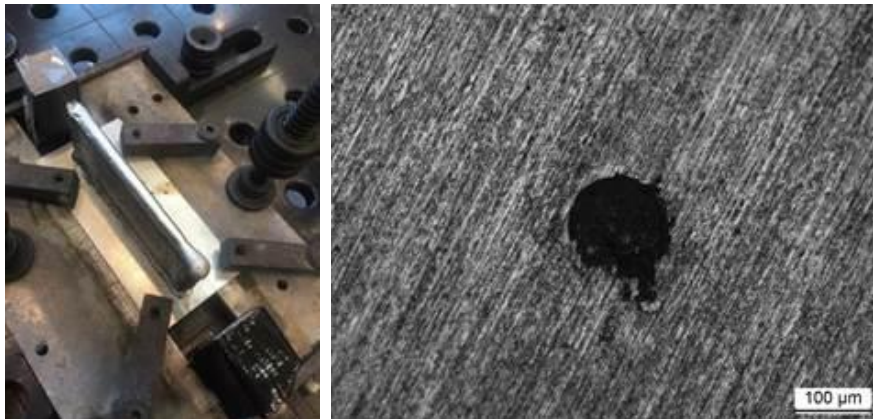



LORTEK, INPHOTECH and INOCON are making remarkable progress with the integration of optical fibre sensors in aluminium parts printed by DED additive manufacturing processes




Close collaboration between the three partners has allowed the development of a first strategy to embed optical fibre sensors in **Wire and Arc Additive Manufacturing (WAAM)** walls preserving the integrity of the fibre. INPHOTECH is currently testing the sensing capability and the feasibility of doing distributed measurement along the length of the embedded fibres. INPHOTECH has been in charge of the design of the metallic coating of the optical fibres to provide thermal shielding properties required to withstand the temperatures during the metal deposition process. LORTEK has defined the process to avoid breakage of the fibre during fibre integration. INOCON is currently analysing benefits of combining **WAAM and Atmospheric Plasma Powder Deposition (APPD)** for facilitating the fibre integration process.

This solution will enable to bring the concept of **Structural Health Monitoring (SHM)** into play in aluminium metal parts. Embedded fibre optic sensors will be able to monitor strain and temperature of critical components, providing data for SHM. This will allow new predictive maintenance strategies lowering the safety margins, reducing the part's weight and reducing maintenance costs.





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