Dilution strategies in laser cladding

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A number of different cladding strategies are used in order to explore how spatial variation of dilution can be modified and optimised. Both single track clads and multiple overlapping clads are deposited. Multiple dilution measurement techniques, including geometrical and chemical methods, are used to explore the range of results that the different techniques produce.

Stainless steel 316 powder is clad onto mild steel substrates using a 2 kW fibre laser. The powder feed is coaxial with the vertically incident laser. Cladding is done under an argon protective atmosphere. Deposited clads are sectioned and examined using optical microscopy.

The results presented are used to generate guidelines for cladding strategies.