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# Potential application of Laser Solid Forming Technology for fabrication of breeding blanket

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### ABSTRACT

To solve the fabrication of breeding blanket with complex structure, LSF (Laser Solid Forming) as a novel technology is proposed. The fabrication process of U-shaped first wall (one of components in breeding blanket) by LSF was shown. To verify the feasibility of LSF being applied in fabrication of breeding blanket, experiments based on CLF-1 (one of Reduced Activation Ferritic/Martensitic (RAFM) steels) by LSF (which is assigned as LSFed CLF-1 in this paper) is performed. The preliminary results show that main chemical composition is almost not changed from forgings of CLF-1 to LSFed CLF-1. As-deposited LSFed CLF-1 has high tensile strength, anisotropy and low ductility. However LSFed CLF-1 after proper heat-treatment can achieve homogenized structure, fully martensite phase, better tensile strength (ultimate tensile strength is 848 MPa) and comparable ductility (elongation is 17.3%), which suggests the possibility that LSF can be applied in fabrication of breeding blanket.

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