

Development and Deployment of Laser Process in the Aerospace Sector

Clive Grafton-Reed

Rolls Royce plc, PO Box 31, Derby, DE24 8BJ

Corresponding author: Clive.Grafton-Reed@Rolls-Royce.com

With the drive to increase product efficiency and reduce product costs, the aerospace industry is looking increasingly to alternative processes. Comparisons with the traditional high volume manufacturing processes influence these considerations but often do not acknowledge the constraints which also apply.

Laser material processing offers opportunities to create new features, new assemblies and to open design constraints when applied fully but in such a highly regulated industry such as aerospace, the level of background work is significant. Robust gated processes demand that extensive proving work is completed prior to any adoption can be considered.

Rolls-Royce has worked extensively with the Manufacturing Technology Centre, Cranfield Welding Research Group and others within the SAMULET and Manufacturing Portfolio projects funded by UK Aerospace Technology Institute and Innovate UK in realising this project. Based on the success of this work significant investments have been made increasing capability in the UK aerospace manufacture.

Looking forwards, the challenge in the aerospace sector is changing more quickly than ever before. Subsequently new opportunities are arising which will require more rapid maturation of processes whilst still following the same gated process.

This paper will summarise restriction and requirements applied to bring laser welding into production for a large aero-engine component and then consider these new opportunities.