

The Water Jet Guided Laser, Technology Overview and Case Studies

Ben Mason¹, Helen Elkington¹, Sundar Marimuthu¹

1- The Manufacturing Technology Centre, Coventry, CV7 9JU, UK

Corresponding author: Ben.Mason@the-mtc.org

The Water Jet Guided Laser is a unique processing technique, with equal capacity to process hard and soft materials alike. The Water Jet Guided Laser focuses a laser into a pressurised, laminar water jet to provide unparalleled quality and material processing capabilities. By containing the laser energy within a hair-thin water jet, divergence is eliminated and cut taper minimised. This also enables thick materials to be cut, which are typically challenging to cut through using conventional lasers. The water jet also cleans and cools the cut, leaving no spatter, burr, or heat affected zones.

The MTC have an extensive track record in utilising the Water Jet Guided Laser on various materials including metals, ceramics, and composites. This presentation will introduce the working principle of the Water Jet Guided Laser, including its benefits and weaknesses. The utility of the Water Jet Guided Laser technique to industry will then be demonstrated through a series of case study examples. These will include prototyping of electric machines, processing high-temperature materials, and cutting of cutting tool inserts.