Advanced Materials Research Group
project summary

Project Title	Fibre laser cutting
Researcher	Majid Hashemzadeh Email 1: epxmh3@nottingham.ac.uk Supervisors: Dr. Katy Voisey, Prof. John Powell, Prof. Graham McCartney
Project Summary	Laser cutting has become one of the most reliable advanced manufacturing technologies for industrial productions, and has undergone many improvements since the beginning in the1970s. The recent development of high power, high beam quality fibre lasers has introduced a new rival for the traditional CO_2 lasers to the laser cutting market. However, the wavelength and beam characteristics of the fibre lasers are very different from CO_2 lasers. Current research is based on increasing understanding of the fibre laser cutting process. The most common metal to be cut by laser is thin mild steel sheet using oxygen or nitrogen as an assist gas. The characteristics of oxygen and nitrogen laser cutting of mild steel were investigated. To start the cut, basically the laser pierces a hole in the workpiece from where the cut proceed. Our research on the nitrogen and oxygen laser piercing has introduced a new method to improve the start-up piercing in oxygen laser cutting. In literatures, there is a published study that says the specific point energy can directly compare the welds generated by different focused laser diameters with different laser parameters. The final section of the current research examines if this theory is relevant to the fibre laser cutting. Figure: Showing an oxygen-fibre laser cutting (1500W, 6000mm/min, 2bar oxygen).