

Advances of high-brightness fiber laser for material processing.

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The fiber laser is known as a well-established tool for many material processing applications such as cutting, welding, marking, drilling and cleaning. Especially the cost and performance benefit of IPG's fiber lasers gives a competitive edge to customer's series production. The ongoing challenge of cost reduction leads laser and beam delivery component supplier in the same direction. One efficient approach is to improve process results by using NIR fiber laser as a low cost series product from IPG Laser GmbH. Another option is to increase the throughput by upgrade available laser power without compromises in the beam quality.

Within that presentation we concentrate on advances in high-brightness fiber laser in cw and pulsed operation. Results and benefits in applications as copper welding, high speed foil cutting and large area cleaning will be shown.

As example the copper welding with NIR light sources is seen as a challenge. The high reflectivity leads to issues at the start of process and the low surface tension and viscosity of copper causes a high sensitivity for sputter ejections especially at low and mid welding speeds. Solutions of these challenges are going to be presented.