

PRESS RELEASE

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High power fiber 500W laser source with adapted wavelength for polymer welding developed in the frame of the European project POLYBRIGHT

The fact that most polymers possess high laser radiation absorptivity at longer wavelengths in the infra-red spectral range is well known. However, commercially available laser sources emitting at these wavelengths have not been available until recently. In order to extend the limits of polymer welding, laser producer IPG Laser GmbH, located in Burbach/Germany aims within the frame of the European POLYBRIGHT project to further develop such laser sources and to enhance their optical power output. After two years of the project a new laser source with an optical power of 500 W has been developed: an Erbium multimode fiber laser (ELS-500) emitting at 1567 nm.

The first two laser sources that have been developed for the European POLYBRIGHT project supplied 120 W of single mode output power at 1567 nm and 1940 nm. Those sources are currently in use to evaluate absorption behavior of different polymers for additive-free welding applications.

If welding applications with 1567 nm approach to industrial use, more power and bigger spot sizes are needed in order to overcome demands for positioning accuracy. Furthermore, “tophat” beam profiles are wanted in order to get similar results on the spot size area during welding processes.

To achieve these demands, IPG Laser GmbH developed a new laser source called ELS-500. This source combines several single mode Erbium fiber lasers and feeds their outputs into a single 200 µm diameter multimode fiber.



Figure 1:
500 W Erbium fiber laser system ELS-500, emitting at $\lambda=1567\text{nm}$

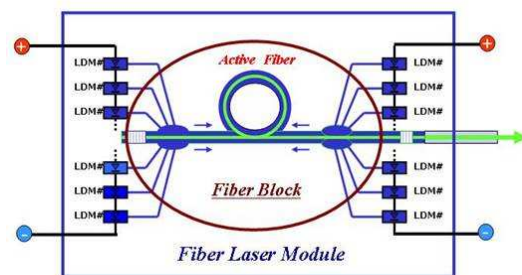


Figure 2:
Typical layout for a diode pumped fiber laser

POLYBRIGHT project: general information

POLYBRIGHT, the FP7 project on extending the process limits of laser polymer welding with high-brilliance beam sources, started in October 2010 with 18 partners from 9 countries. The aim of the project is to develop high power high brilliance lasers with new wavelengths between 1500 and 1900 nm which are adapted to the absorption properties of polymers. The EC has allocated € 6.6 mio of public funding to this project with an overall budget of € 10.2 mio. www.polybright.eu

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