Press Release

Copper welding: TRUMPF developing high-performance, green-light laser

TRUMPF heads new ProLasKu consortium project – close collaboration between industry and research – the goal: A new, high-performance laser for more efficient production processes in copper welding

Ditzingen, June 7, 2017 – Laser and laser systems manufacturer TRUMPF has teamed up with partners from research and industry in the publicly funded ProLasKu consortium project to develop a new laser beam source that operates in the green spectrum. ProLasKu is shorthand for “Increasing the process efficiency and welding seam quality in copper laser welding using innovative systems technology.” Thomas Rettich, research coordinator at TRUMPF and head of the ProLasKu project, is clear in his goals: “The objective of this consortium project is to develop and implement a new laser system that operates in the green spectrum and lays the foundation for improved quality and energy efficiency in copper welding.”

As the trend towards electromobility and renewable energy continues to grow, manufacturers are using more and more copper – and that calls for a solution to the difficulties they currently encounter in welding this material. The green laser beam source currently being developed and tested by TRUMPF and its partners has an output power of up to 1.5 kilowatts in continuous wave operation, much more than has previously been the case. This enables a much more efficient production process in copper welding.

Green-spectrum beam source for more efficient copper welding

Currently, many industrial manufacturers use infrared lasers for copper welding tasks. The issue is that copper is highly reflective at a wavelength of 1,000 nanometers (IR), in addition to displaying high thermal conductivity. Because of this, copper reflects a large portion of the laser beam compared to other materials, and much of the energy is lost. On top of that, there is the risk of spatter in deep welding processes. In short, using an infrared laser beam presents significant challenges in terms of both weld quality and energy

efficiency. In comparison, this reflection is significantly reduced when copper is exposed to a beam source in the green light spectrum (~500 nm). As a result, green-light lasers lay the foundation for more energy-efficient and higher quality copper welding irrespective of the properties of the material surface. Spatter is also significantly reduced.

Collaboration with partners from research and industry

ProLasKu is scheduled to run for three years, and forms part of the “Efficient high-performance laser beam sources (EffiLAS)” initiative. EffiLAS centers around innovations for laser systems that are more powerful, more energy efficient and more cost effective, and enjoys the support of the German Federal Ministry of Education and Research. Since December 2016, TRUMPF has been working alongside Siemens, Temic Automotive Electric Motors and the Technical University of Munich’s Institute for Machine Tools and Industrial Management on the ProLasKu project. “This joint technology development is an ideal opportunity for TRUMPF to share its research findings and link them to user experience,” says Rettich. “The collaboration benefits both industry and universities.”

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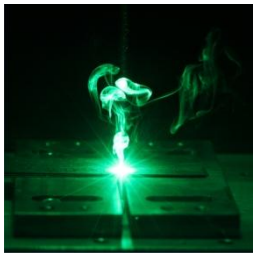
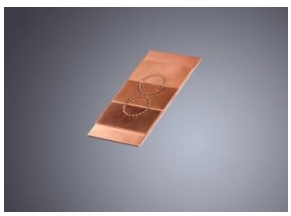


Green-light laser

Using green light, copper welding becomes more energy efficient and of higher quality, irrespective of the properties of the material surface.



Copper welding

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About TRUMPF

The high-technology company TRUMPF offers production solutions in the machine tool, laser and electronics sectors. We are driving digital connectivity in manufacturing industry through consulting, platform and software offers.TRUMPF is the world technological and market leader for machine tools used in flexible sheet metal processing, and also for industrial lasers.
In 2015/16 the company – which has more than 11,000 employees – achieved sales of 2.81 billion euros. With over 70 subsidiaries, the TRUMPF Group is represented in nearly all the countries of Europe, North and South America, and Asia. It has production facilities in Germany, France, Great Britain, Italy, Austria, Switzerland, Poland, the Czech Republic, the USA, Mexico, China and Japan.

For more information about TRUMPF go to www.trumpf.com

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