

## Radial Welding With a System

### LPKF laser technology for optimal joining of cylindrical plastic components

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**The component shape plays an important role in the production process. Joining of plastic parts with rotationally symmetric or cylindrical geometries presents challenges that LPKF can easily overcome with a specialized laser system. The latest generation of the LPKF InlineWeld 2000 securely joins round or oval cylindrical parts. Developed for automated production lines, it can also be operated as a standalone system in a production or laboratory environment.**

The LPKF InlineWeld 2000 uses a radial welding technique. The system is made up of a welding head with a powerful laser source and a swivel arm. The arm moves the laser beam around the component with a fast rotational motion. The laser beam selectively generates an exact and reliable weld seam along the joint. During the welding process, the component remains in a fixed position.

The joining results satisfy the highest demands regarding function, performance, and appearance. The material surrounding the welding contour is not affected by the joining process; it remains hygienically clean and free of particles. Laser-welded components are thus primarily used in the automotive industry and in biomedical engineering applications, but they can also be found in nearly all other areas: SCR lines, components for thermal management, and medical devices such as blood glucose sensors or tubing and valve systems are just a few examples.

LPKF developed the new InlineWeld 2000 as a member of the InlineWeld family especially to meet variant-rich customer needs in terms of component dimensions and design. The well-thought-out modular structure of the system delivers a high degree of flexibility. Thanks to a new adjustment concept and the ease of exchange of components, a wide variety of diameters and weld seams can be processed with the same system with very short setup times: cylindrical components, oval components, or components with specific geometries can all be joined with this technology.

Depending on the intended weld seam geometry, it may be necessary to exert a clamping pressure on the component. The LPKF InlineWeld 2000 offers various options for this. For a press fit between components, no pressure input is required. Conical designs or connections with mating tabs require application of a pressure. The InlineWeld 2000 covers an extremely wide range of clamping forces to ensure optimal results for virtually every welding task. Parameters can be easily designed and changes to the parameters can be made quickly via the system software.

The quality of the radial welding process is ensured inline through integrated pyrometer control. Thus, reproducible part quality is guaranteed, even with high production throughputs. The high process speed and the quality of the joints make the LPKF InlineWeld 2000 an economical solution for joining the types of plastic parts mentioned here.



**Fig. 1:** The radial welding system LPKF InlineWeld 2000 produces reliable joints between rotationally symmetric components.



**Fig. 2:** Components such as these beverage containers can be reliably welded with the laser in the LPKF InlineWeld 2000 radial welding system.

### **About LPKF**

LPKF Laser & Electronics AG manufactures machines and laser systems used in electronics fabrication, medical technology, the automotive sector, and the production of solar cells. Around 20 percent of the workforce is engaged in research and development.