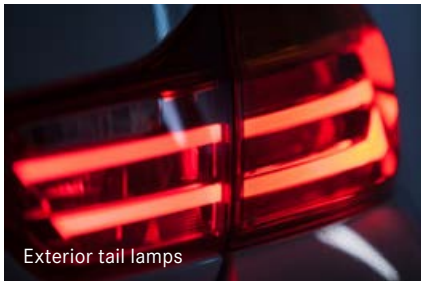
Laser Plastic Welding of Largest Components

LPKF PowerWeld 3D 8000

- Achieve fastest cycle times with laser welding
- Optimize weld zone dimensions with smallest possible welding ribs
- Large 3D working field of 1000 x 750 mm and 400 mm in height
- Part tolerance compensation via controllable servo engines and active toolings
- Laser power from 400 – 1600 Watt

Electric vehicle energy storage

Interior dashboards


Exterior tail lamps

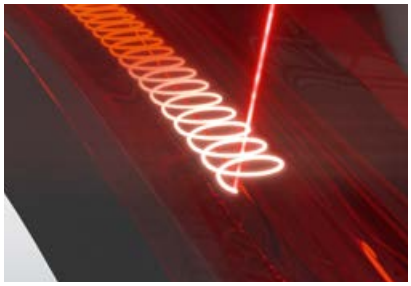
Laser Plastic Welding in a New Dimension

LPKF PowerWeld 3D 8000 is a high-performance welding system for large (3D) components up to 1000 mm x 750 mm using an innovative fibre laser with LPKF Wobble-Weld Technology. Remarkable is the clamp force range with up to 20 kN bottom up – achieved by eight individual controlled servo engines. The welding system can handle height differences of up to 400 mm, as well as controlling the welding process with an integrated melt travel monitoring system.

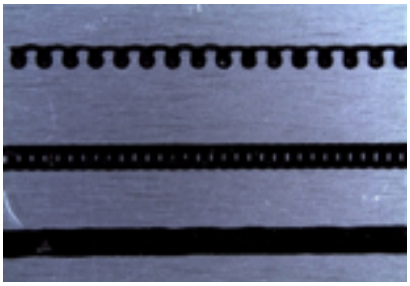
The LPKF PowerWeld 3D 8000 is designed for the series production of large plastic components, which for example are increasingly used in the automotive sector: Battery modules for EV applications, interior components like dashboards and tail lights.

A unique feature of this system is the welding process: Together with the quasi-simultaneous welding method, additional amplitudes are superimposed onto the laser beam orthogonal to the feed direction.

This allows easy adjustment of the weld seam width between 1 mm and 5 mm – which have a particularly homogeneous temperature distribution. This leads to a very short cycle time, and a robust process. Eight independent servo drives for clamping can compensate for local tolerances during welding. The system is capable of welding large components with maximum dimensions of 1000 mm x 750 mm x 400 mm (X/Y/Z), and the quality is safeguarded by melt travel monitoring.



The Wobble-Weld function ...



... produces a homogeneous weld seam

Battery module

LPKF PowerWeld 3D 8000

Laser class	1
Laser parameters	Power: 400 W, spot size 1 mm with option of achieving beam sizes of 1–5 mm by oscillating the spot
Clamping pressure range	Single clamping: up to 20 kN; double clamping: 2 x up to 10 kN
Max. welding area (W x D x H)	1000 mm x 750 mm x 400 mm
Welding machine dimensions (W x D x H)	2200 mm x 1700 mm x 3600 mm
Power supply / compressed air	400 V, 32 A / 4.5 –10 bar input
Weight	~ 3500 kg
Options	TherMoPro for advanced process control, Multi-laser package (with up to 1,6 kW laser power), active tooling (for tolerance compensation and part flexibility), double clamp module, hand scanner / DMC reader

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LPKF Service & Support

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Photos may also show optional accessories. Specifications subject to change without prior notice.

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