



Dynamic Beam Laser Laser Welding in E-Mobility Applications

Christian Dini – Civan Lasers Europe





About Civan Lasers

Manufacture of Fiber Lasers based on Coherent Beam Combining (CBC)

- All core technologies in house with more than 50 patents
- Over 200 Employees do all manufacturing in-house, 4500 m²



2008

Established



2012

1kW



2016

5kW



2018

14kW



2021

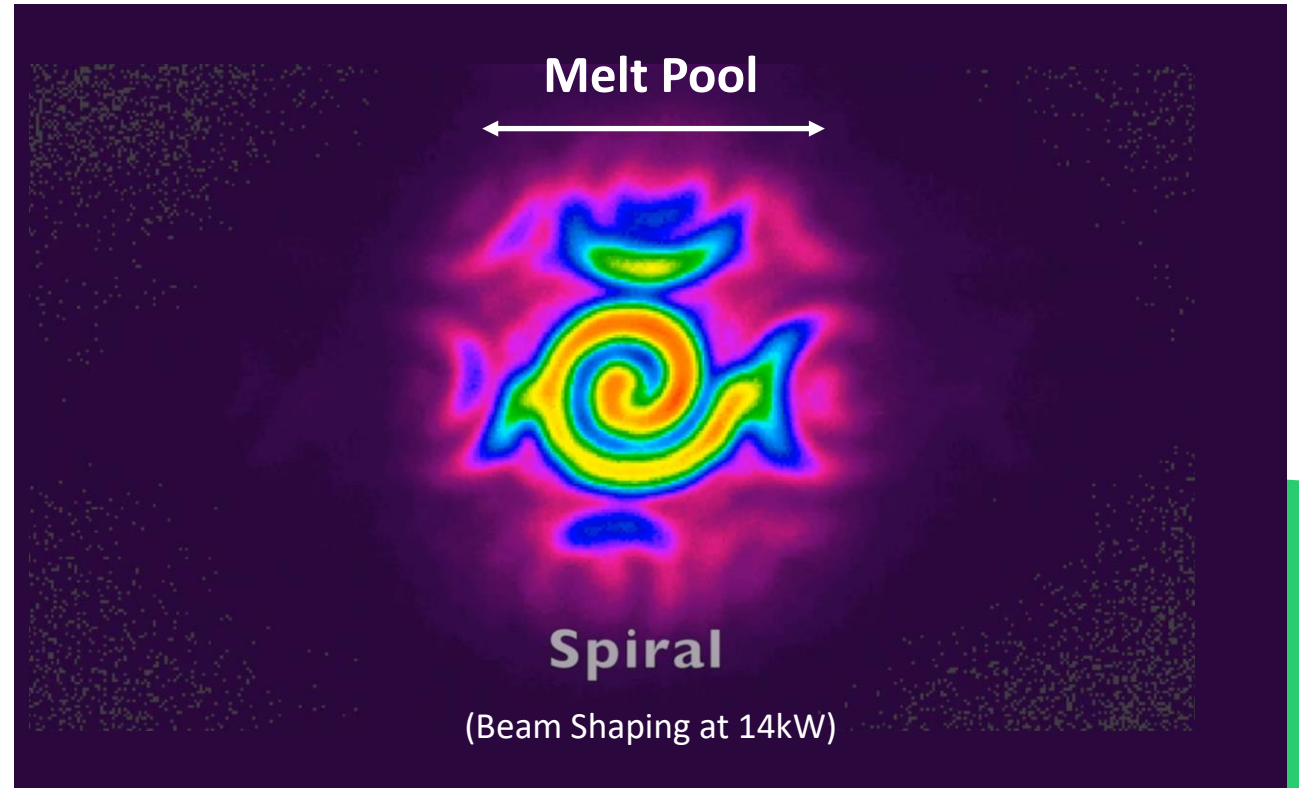
100kW

Dynamic Beam Laser

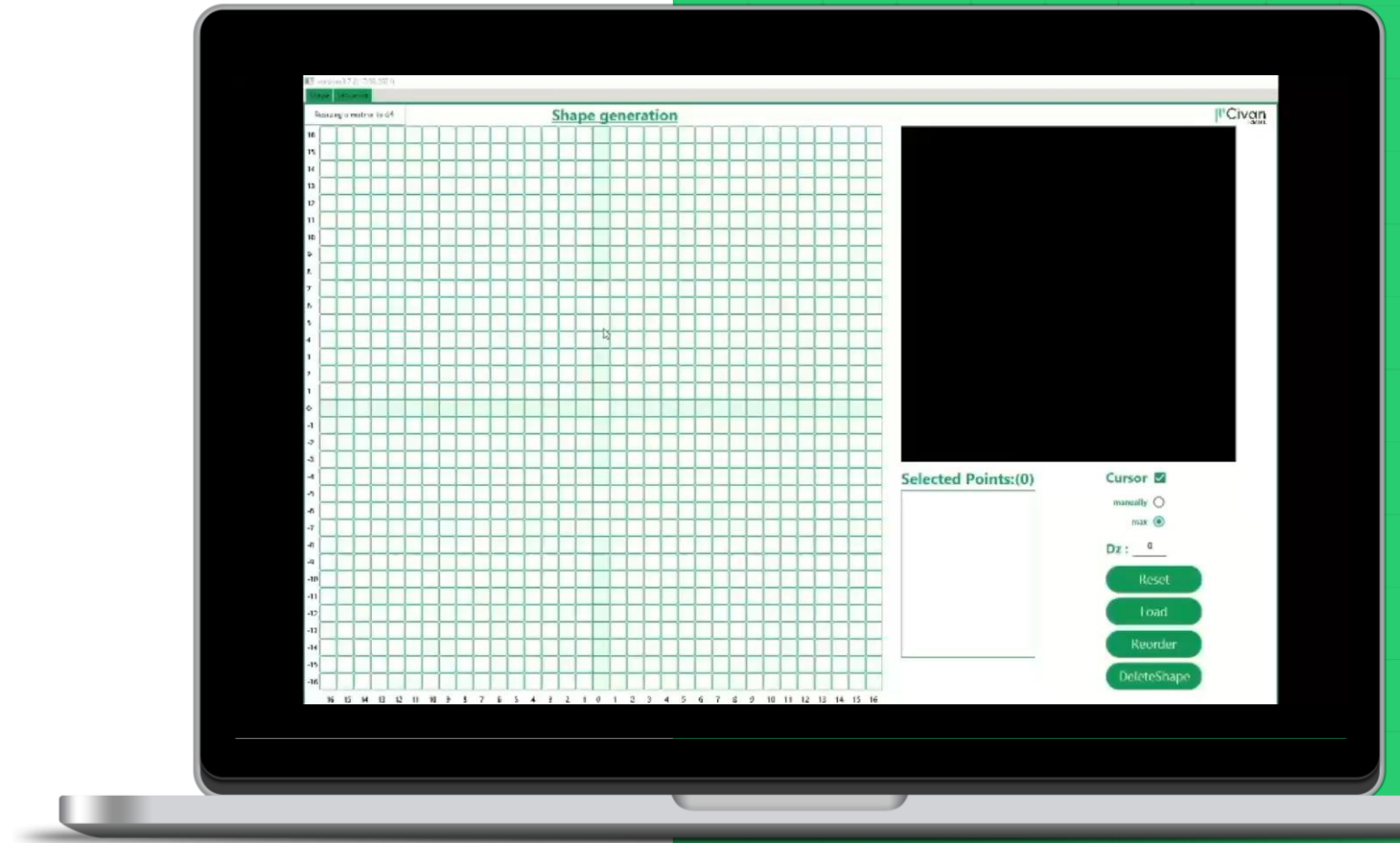
Features:

- 01 Dynamic Beam Shaping
- 02 Control of Shape Frequency
- 03 Shape Sequence
- 04 Focus Steering

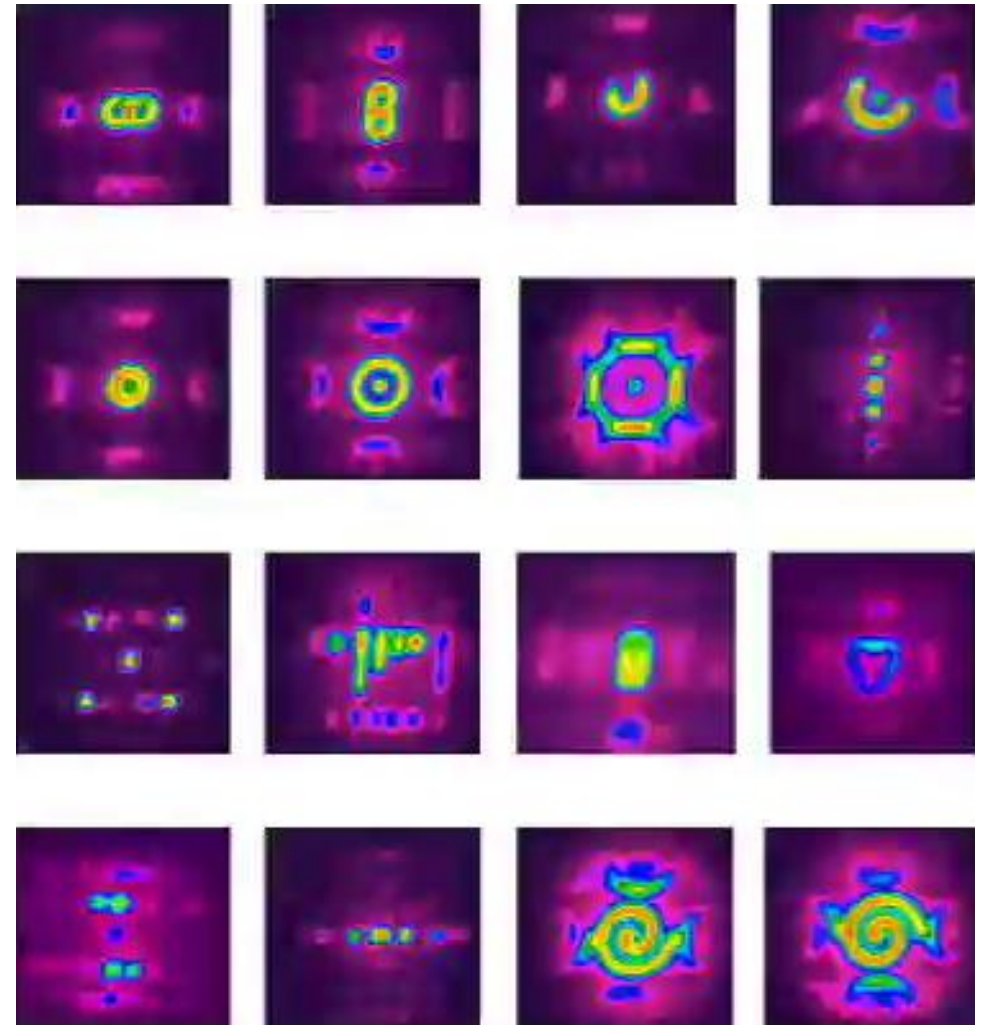
High Power, Fast, Reliable



Design New Beam Shapes With Software

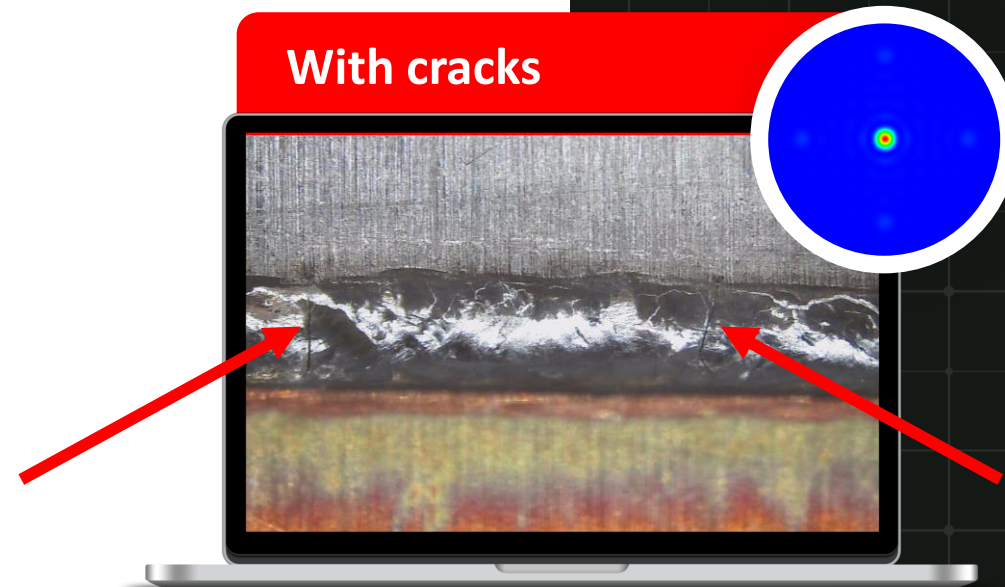


Create Unlimited Arbitrary Shapes



Transverse cracking - Beam shape influence

Beam shape can eliminate transverse cracking in dissimilar metals welding

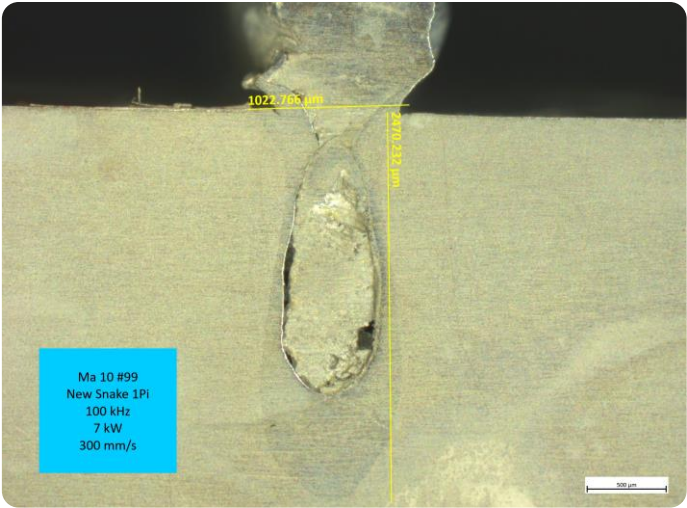


Schape Frequency - Impact on Weld Quality

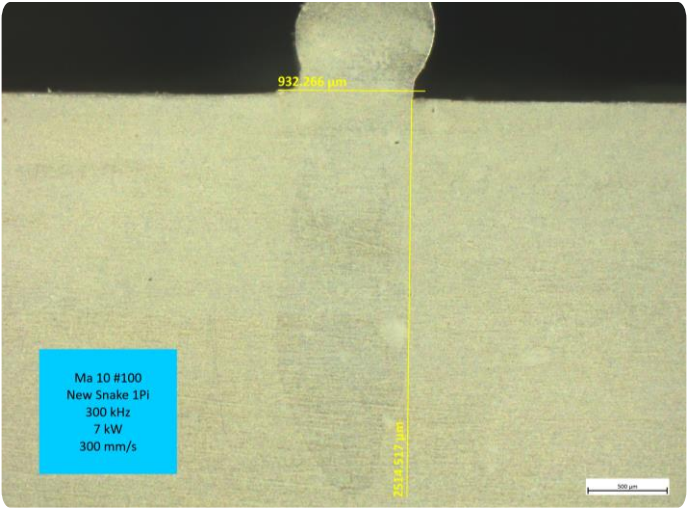
01 7 kW

02 300 mm/s

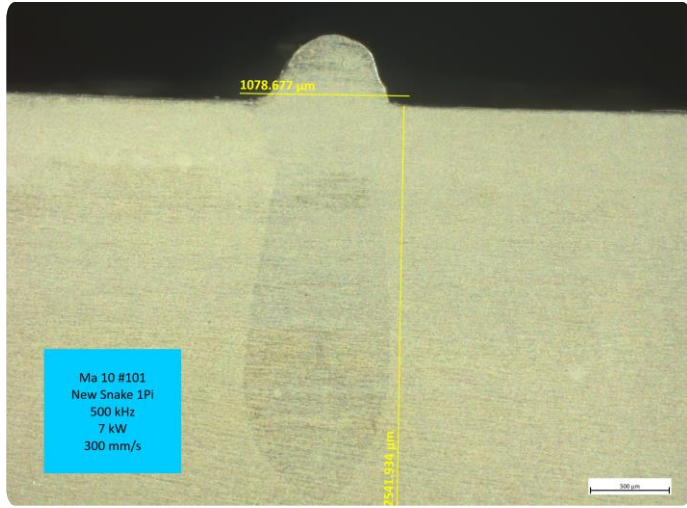
Overlap of Al-3003 2 mm on Al-3003 2 mm



100 kHz



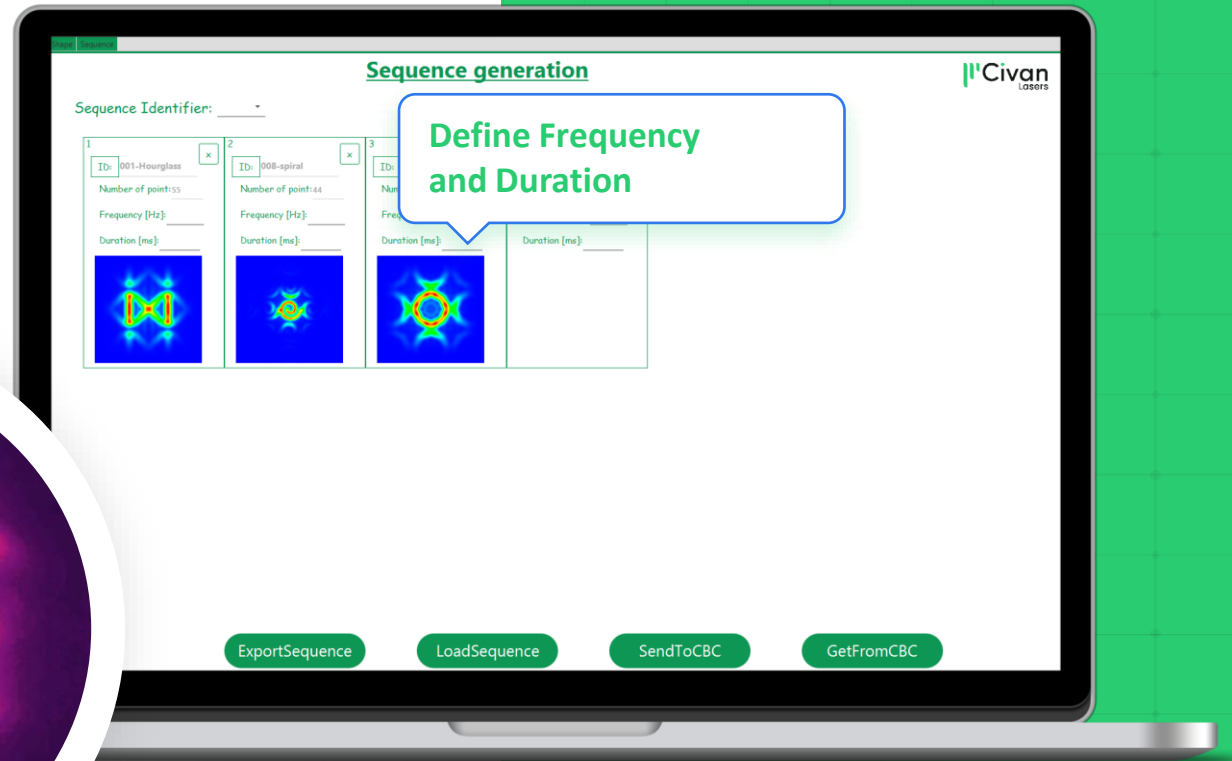
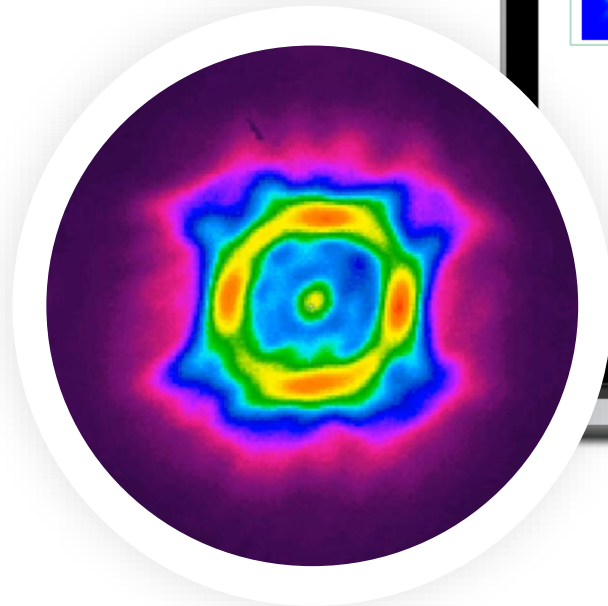
300 kHz



500 kHz

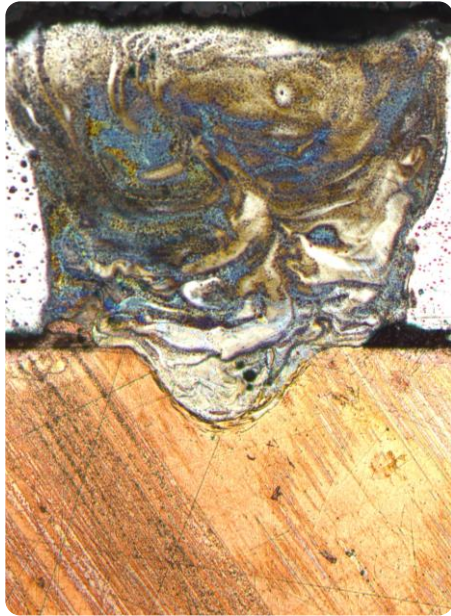
Shape Sequence

Change between beam shapes
in microsecond

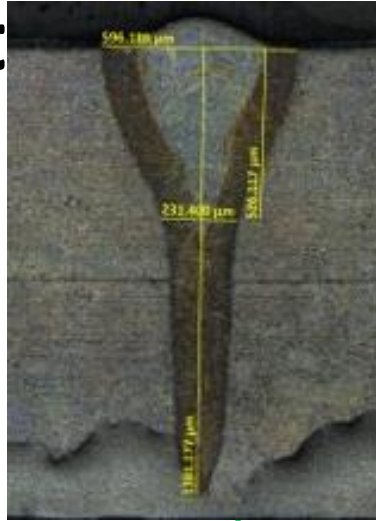


Opportunities in E-Mobility

Applications for Automot



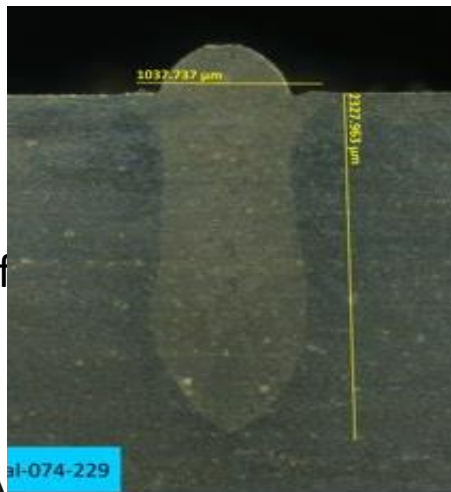
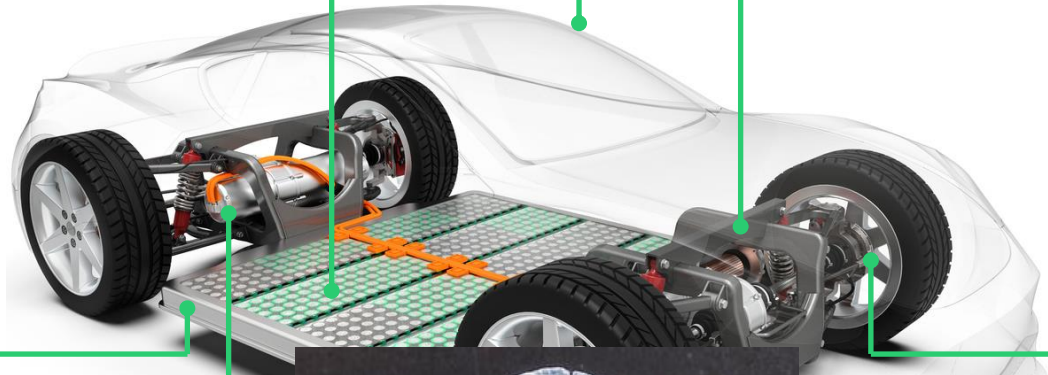
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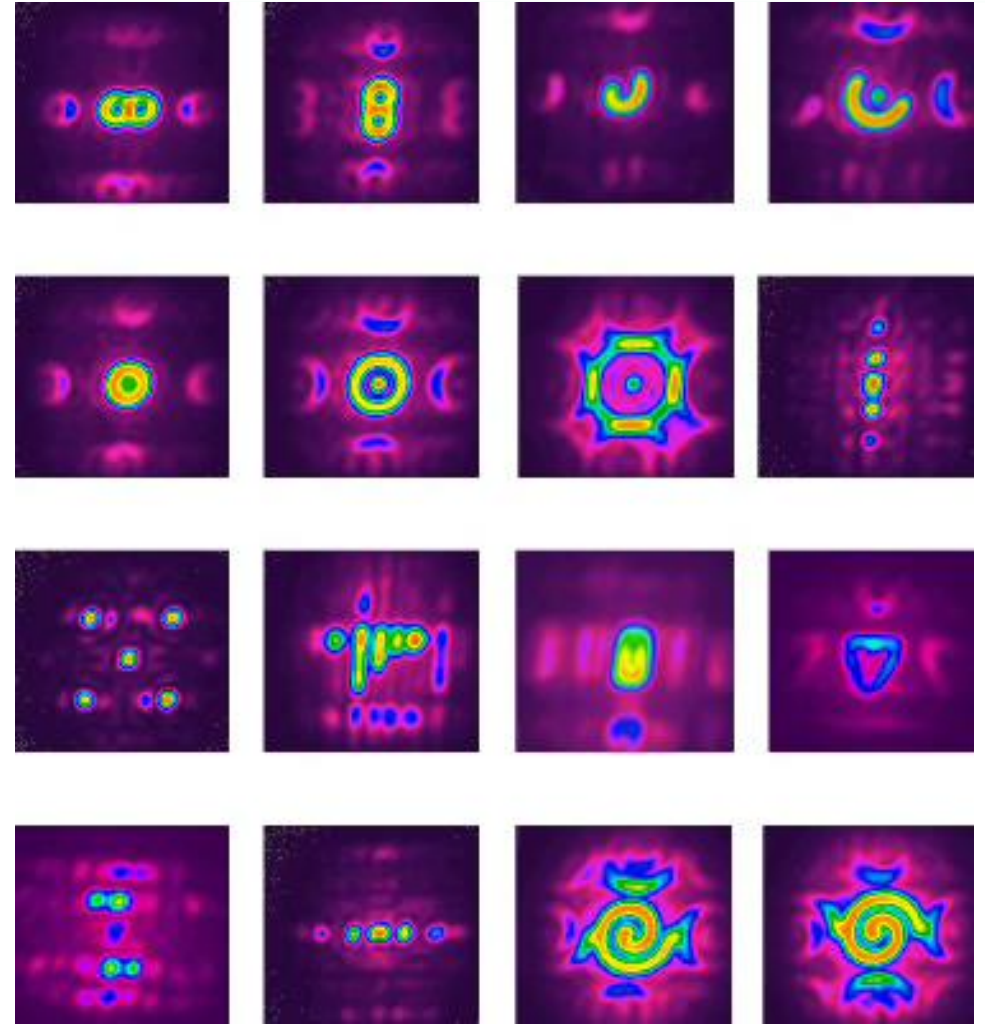
heat
single pass



Key Take Away

DBL enables a new level of control over the melt pool, including thermal gradient and flow dynamics

- High speed welding
- Crack sensitive materials
- Deep penetration welding
- Dissimilar/Coated materials
- Die Cast Aluminum





Thank You



Contact



Christian Dini
General Manager Civan Lasers Europe

Phone: + 49 175 276 1767

Mail: christian.dini@civanlasers.com

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B EURO BLECH

26th International Sheet Metal Working Technology Exhibition.

October 25 - 28, 2022
Hanover, Germany.

Booth 26-H31

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The graphic features a purple grid representing an exhibition floor plan. A green arrow points from the text 'Booth 26-H31' to a specific location on the grid. A green Civan Lasers logo is in the top right corner, and a green button with 'Visit Us >' is at the bottom.

Booth 26 – H31