

The COMBILASER project  
is a European research project,  
co-financed by the  
European Union Horizon  
2020 framework  
research programme.

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Project partners succeeded in creating a new production process by integrating an industrial laser process (welding and cladding) with a seamless Self-Learning System. This system, which represents the heart of the COMBILASER project, creates an autonomous process optimization loop for new applications to be applied in the production of many different, high technology products.

The breakthrough solution of the COMBILASER project lies in the combination of the Self-Learning System with Monitoring and Non-destructive testing technologies.

#### COMBILASER WAS APPLIED TO THE FOLLOWING USE-CASES:

- Automotive industry
- White and capital goods industry
- Oil & gas industry

## PROJECT INFORMATION

### Project title:

Combination of non-contact, high speed monitoring and non-destructive techniques applicable to LASER Based Manufacturing through a self-learning system

### Programme:

H2020-FoF-2014

### Topic:

FoF-01-2014

Start and end date of the project: 01.01.2015 - 31.12.2017

Project value: 3.439.420,00 EUR

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COMBILASER Project

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Combilaser project

## PROJECT PARTNERS



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COMBILASER

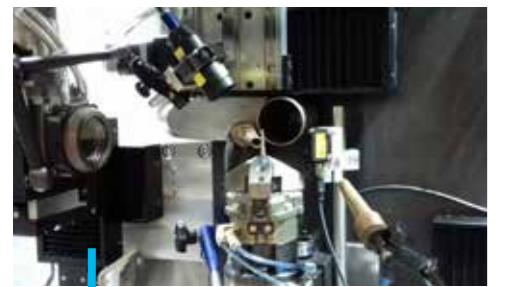
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# PRESENTATION OF PROJECT RESULTS

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## HIDRIA AET USE-CASE

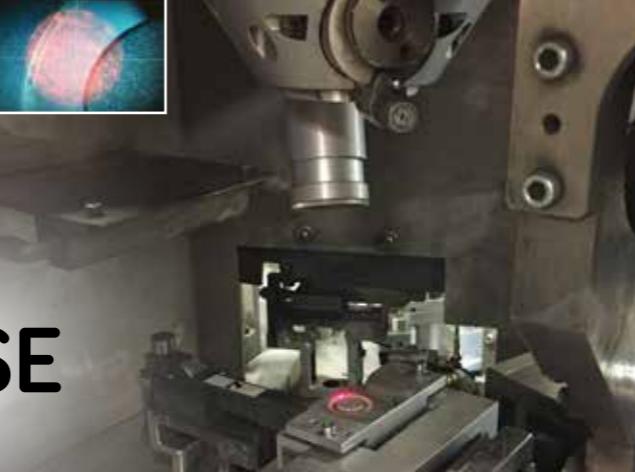
### COMBILASER SOLUTIONS

**Self-Learning System  
integrated with:**

- Spectral signal monitoring
- Melt-pool diameter measuring system



## ORKLI USE-CASE

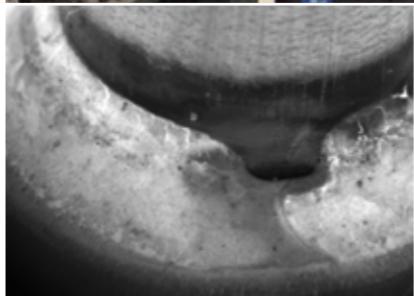


This industrial use-case has seen project solutions being applied to a manufacturing process of the HIDRIA OPTYMUS pressure-sensor-glow plug. The COMBILASER project gave this Tier-1 automotive supplier significant advantage and uptake in welding technologies. The state-of-the-art solution gave the company an advanced diagnostics tool in form of a Self-Learning-System. The COMBILASER solutions will in the future be applied to manufacturing processes related to internal combustion engine and hybrid electrification drivetrain parts.

### COMBILASER SOLUTIONS

**Self-Learning System  
integrated with:**

- Post-weld inspection  
system



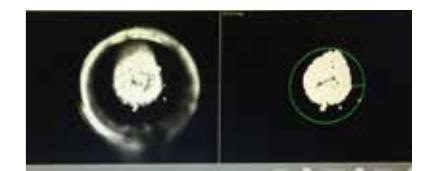
## TMCOMAS USE-CASE



### COMBILASER SOLUTIONS

**Self-Learning System  
integrated with:**

- Laser Power  
control system.



In addition to laser welding processes, the COMBILASER approach was also addressed for additive manufacturing and more precisely for the oil and gas industry. TMCOMAS represents a small European company operating in a highly specific market. The developed system proved to be an optimum tool for closed-loop process control applied to laser power control management. The self-learning concept served also as a tool for optimizing process parameters which leads to a considerable productivity increase. The implementation of the system in real production will undoubtedly serve for rising product reliability.