

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

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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PROJECT PARTNERS



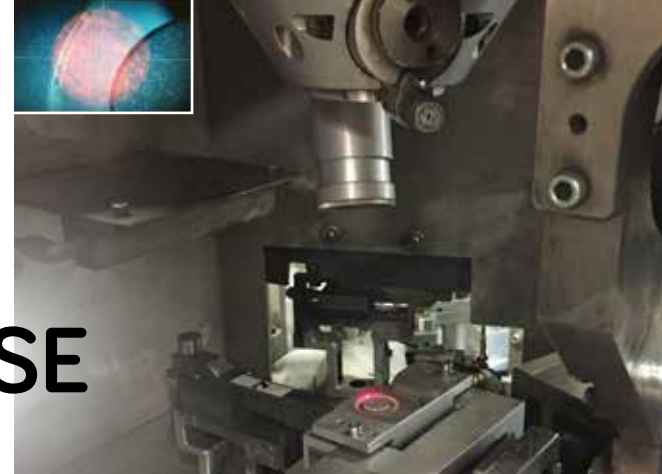
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COMBILASER 

PRESENTATION OF PROJECT RESULTS



ORKLI USE-CASE



TMCOMAS USE-CASE



HIDRIA AET 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.

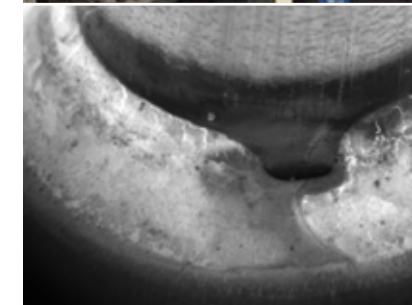
In the case of white and capital goods industry, COMBILASER project offered a breakthrough in the flame sensor device manufacturing process for a major manufacturer Orkli, who is a part of the Mondragon worker cooperative. The high demanding standards of this industry established very challenging requirements in the quality of these products. Thanks to COMBILASER approach, a better understanding of the process was gained as well as a useful tool for diagnosis. In the near future, the implementation of the developed system in real production will allow the elimination of manual verification process and above all, the delivery of non-defective parts to the final customers.



COMBILASER SOLUTIONS

**Self-Learning System
integrated with:**

- Post-weld inspection
system



COMBILASER SOLUTIONS

**Self-Learning System
integrated with:**

- Spectral signal monitoring
- Melt-pool diameter
measuring system



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.

