

COMBINATION
OF NON-CONTACT,
HIGH SPEED
MONITORING AND
NON-DESTRUCTIVE
TECHNIQUES
APPLICABLE TO **LASER**
BASED MANUFACTURING
THROUGH A SELF-
LEARNING SYSTEM

www.combilaser.eu

35%

PRODUCTIVITY
INCREASE

COMBILASER 

CONTACT

info@combilaser.eu

www.combilaser.eu

Project Coordinator

Mrs. Tanja Mohorič

E: tanja.mohoric@hidria.com

T: +386 5 375 6616

M: +386 41 636 582

Project office

Mr. Ivan Kosmač

E: ivan.kosmac@hidria.com

T: +386 5 37 56 689

M: +386 31 355 357

Mr. Rok Podobnik

E: rok.podobnik@hidria.com

T: +386 8 202 8016

M: +386 31 868 341

INNOVATIVE
SOLUTIONS
FOR FUTURE
LASER - BASED
MANUFACTURING



»This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 636902.«

Topic: FoF-01-2014: Process optimisation of manufacturing assets

ABOUT THE PROJECT



The COMBILASER project presents a great advance with respect to the current state of the art in laser based manufacturing. Challenges linked to defect formation in welding and cladding process will be addressed via an integrated information and communication technology framework.

THE PROJECT SOLUTION COMBINES

- Innovative monitoring techniques and their fusion with non - contact and non-destructive techniques (laser ultrasonic and active thermography).
- Active control techniques with the self - learning module which can be considered as a pioneering and ground - breaking approach.



VISION

"The COMBILASER project presents a pioneering approach combining all aspects of defect avoidance in welding and cladding processes in an integrated information and communication technology framework."

The vision of the partners of the COMBILASER project is to create a solution that will, in conjunction with three applied case studies, serve as a model for different branches of European laser-based manufacturing industry, namely: automotive, aeronautic / aerospace, railway, and electronics capital goods among others. The proposed solution addresses the increasingly demanding standards and regulations in manufacturing processes related to laser welding / laser melting as well as laser cladding.

By integrating the industrial laser process with a seamless set up and a self-learning module, the COMBILASER project aims to minimize human expert intervention and in doing so to create an autonomous process optimization loop for new applications. When taking into account the ever changing market requirements and increased manufacturing flexibility demands from customers, the COMBILASER project will create a solutions that can act as an industrial driver in the production of many different, high technology products.

PROJECT OBJECTIVES

Productivity increase of about **35 %** in gas valve repairing process due to required re-works reduction (cladding layer and base material cracking avoidance).

Faster development of the new generation of **pressure sensor glow plug** thanks to the avoidance of cracking appearance using the developed self - learning system.

Reduction of time - to - market of new flame device sensors **by at least 45 %** thanks to acquired knowledge in previous product manufacturing thanks to self - learning system.

Reduction of scrap parts and waste in new pressure sensor (for glow plugs) manufacturing processes of up to a **50 %** through laser welding monitoring and process parameters control.

Decrease in flame sensor defective parts up to **75 %** thanks to the continuous increase in laser beam welding process knowledge.

Zero failure parts delivered to the customers in all of the use cases making use of in - line advanced non - destructive testing to 100% of manufactured parts.

PROJECT PARTNERS



The COMBILASER project consortium is composed of 12 partners from 7 different European countries:



Hidria Aet d.o.o., Slovenia



IK4-LORTEK, Spain



Laser Zentrum Hannover e.V. (LZH), Germany



Research Center for Non Destructive Testing GmbH, Austria



The University of Sheffield, United Kingdom



Laserline Gesellschaft für Entwicklung und Vertrieb von Diodenlasern GmbH, Germany



Orkli Sociedad Cooperativa, Spain



Talleres Mecánicos Comas, S.L.U, Spain



Mondragon Assembly SA, France



4D Ingenieurgesellschaft für Technische Dienstleistungen GmbH, Germany



Cavitar Oy, Finland



SiEVA d.o.o., Slovenia