

PUBLISHABLE SUMMARY

The UV-Marking project was launched in July the 1st 2012 with the main objective of developing a new laser system in the ultraviolet wavelength used for high quality aesthetical marking in different materials (glass-ceramic, ceramic and plastics). It will demonstrate that unitary customization will be possible at the end of UV-Marking project. A new SW application will be developed so that real customers can create their own designs at home, and send them to the factory to be marked in real products. Industrialization is a must, and therefore the laser system will be integrated into an industrial process to demonstrate its feasibility in a real scenario.

With the support of key worldwide companies and academic partners, UV-Marking project has a large reach network and strong exposure to relevant players and markets. The UV-Marking consortium is formed principally by industrial partners. It covers the whole value chain of UV-laser marking with high level experienced entities. The consortium gather the principal industrial actors involved in marking: final user (BSH), laser developer (ROFIN), material and additives developers (ILVA, TORRECID, WIRTHWEIN, DATALASE), research centres expert on both material and laser giving scientific knowledge of the laser-marking process (University of Zaragoza, ICMA), and a software developer expert on industrial integration software (U-Marq).

In summary, the role of each partner is shown below.



Figure 1: CONSORTIUM

The success of UV-Marking project will provide UV-laser advantages for aesthetic marking into production of European key industries, by improving both materials and UV laser systems. The project results will introduce high flexibility as it will be possible to mark at the end of a process. This will reduce stock levels (of similar pieces only with aesthetic differences), increase marking options for customization, reduce time to market of new and modified products, improve quality, delivery time, etc.

Project content:

For the accomplishment of the objective of the project, the project has been organized into 8 different working packages as shown next:

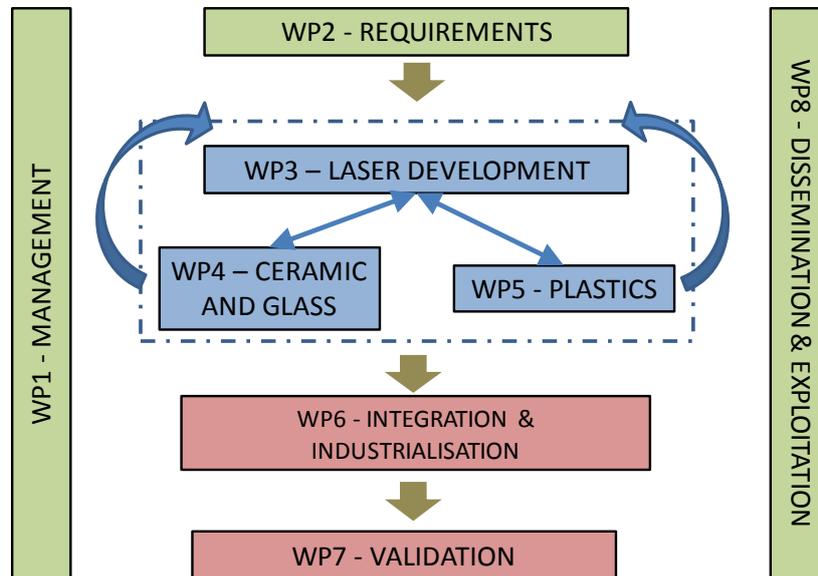


Figure 2 - WP

WP1 – Management: The project management work-package will ensure the correct administration of the entire proposal and secure the fulfilment of the project objectives within budget, quality and time schedule

WP2 – Requirements: The main objective in this WP is to establish the technical and physical requirements for the resulting UV-laser marking on plastics, ceramics and glass-ceramics.

WP3 – Laser development: This Work Package involves the study of the UV-laser and its parameters and their effect on the final process marking quality. The aim of this WP is to develop the UV-laser for industrial production by enlarging the marking area, having shorter cycle-times, and achieving a more flexible process.

WP4 – Ceramic-Glass: Key for a successful use of UV-laser in production is the understanding of the laser/material interaction: WP4 establish the research on glass-ceramic and ceramic tiles.

WP5 – Plastic: this WP establishes the analysis of the physical and chemical modifications that happen in the material composition and structure when is marked with a UV-laser.

WP6 – Integration and Industrialization: In general this WP serves as the first step from lab to industrial production.

WP7 – Validation: The most important challenge in this WP will be to demonstrate that the unitary customization is possible, by validating with real customers.

WP8 – Dissemination and exploitation: carried out different activities aimed at achieving the highest possible project impact.

Project Progress:

The 3-year UV-Marking project has already covered its first half. Very significant advances have been accomplished during the first 18 months of project, and the consortium is optimistic about achieving the expected outcomes. In accordance with the above mentioned overall project objectives during this first reporting period the consortium has progressed with achieving more than 20 deliverables and 2 milestones to the planned delivery schedule.

One aspect to be highlighted is the great collaboration between the partners, showing the advantages of working together and in close cooperation. BSH is the coordinator of the UV-Marking project, and has been in charge of the overall technical and administrative management of the project. During the first half of the project management activities have been focused in the organization of the consortium meetings (October 2012, April 2013 and December 2013), and mainly in monitoring the project progress to assure the fulfillment of the project objectives within budget, quality and time schedule. They have led the decision-making in relevant issues and they have been in charge of the communication with the European Commission.

BSH has also piloted the WP2, establishment of the global requirements, which has been the starting point of the project. During this first project period the consortium has progressed with the study of the development of the UV-laser for industrial production (WP3) studying the laser/material interaction for best results on glass-ceramics, ceramics and plastics. Rofin has led this WP in close cooperation with the relevant partners within the consortium. Main step has been to improve the laser system for optimum application results in terms of contrast, quality and speed.

In the study of UV-Marking on ceramic and glass-ceramic (WP4) mainly four partners have been involved: Ilva, Torrecid, ICMA and Rofin. Activities have been focused on the characterization of the influence of UV laser radiation on the materials, starting from standard conditions. Finally the results have been tested on prototype materials created for increase the absorption. Good results have been already achieved in ceramics, whereas the key factors of better performance of UV laser radiation on glass ceramic will require further investigations.

In the work performed in the context of WP5 (UV-Marking on plastics) four project participants are involved, namely DATALASE, ICMA, Rofin and Wirthwein, with the latter playing the coordinating role. Main steps have been the definition of plastic materials for the laser UV marking, the study of the optimal laser setting and the different testing methods and techniques used to characterise the plastic samples after UV laser marking. After the incorporation of DATALASE to the consortium in June 2013, some tasks in WP5 have suffered slight modifications with no important delays.

Not to forget are the efforts in terms of dissemination of the project made by all partners. During this first half of the project, in the framework of WP8, the project logo and other dissemination templates have been designed, several newsletters and press releases have been generated, and various diffusion material (such as panels, folders, USBs or pens) have been prepared. The website of the project (www.uv-marking.eu) has been created, and all updated public information of the UV-Marking project can be found on it (as for instance, a

project video that has been recently published). The industrial partners have disseminated the project in different fairs, tradeshows and congresses where they have participated, as well as in different newspapers. Finally, ICMA as the scientific partner, has had a very active role in dissemination activities, participating in different conferences and workshops. They have also published several articles in scientific journals.

In summary, the UV-Marking project is progressing according to schedule and significant steps have been achieved towards its final goals. In the next months, WP6 integration and industrialization will become fully operational.