

STONEPLACING

Improve qualification and employability of stone placing workers by implementing a common European curriculum with the support of ICT based tools

Final Report

Public Part

Project information

Project acronym: STPLACE

Project title: Improve qualification and employability of stone placing workers by implementing a common European curriculum with the support of ICT based tools

Project number: 527876-LLP-1-2012-1-DE-LEONARDO-LMP

Sub-programme or KA: Leonardo da Vinci Multilateral Projects for Development of Innovation

Project website: <http://www.stoneplacing.com>

Reporting period: From 01/11/2012
To 30/10/2014

Report version: 1

Date of preparation: 29/12/2014

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This project has been funded with support from the European Commission.

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Executive Summary

The main *target groups* of the project are young people following courses related to stone placing in VET organizations, as well as workers following continuous training courses or just working in the placement of stone across Europe.

The general *aim* of the project is to increase the skills of workers in the field of placing stone, particularly in placing different type of floors and walls in buildings and urban environments. This contributed to increase the quality of the final work. Environmental sustainability was also targeted, by promoting the use of recyclable and eco-friendly materials.

The project was coordinated by the German Association of Stone (DNV-Deutscher Naturwerkstein Verband), highly involved in fostering the quality of the placement of stone products, as well as in the defence of life cycle assessment (LCA) of natural stone and the significant ecological advantage of the stone cover and pavement compared to other materials (eg. glass, brick) with higher environmental impact.

ATIN-*Asesoramiento, Tecnología e Investigación*, with a wide experience in coordinating EU projects, has overtake the role of management coordinator, being in charge of coordinating the different work-packages leaders and the management of the project.

Euroroc, the European Federation of Natural Stone Companies, grouped under the name "Naturstein / Natural stone" contributes in ensuring that the project's main products meet the current and real needs of the industry in Europe, and in disseminating the project's results through all national and regional associations.

The Technological Centre of Marble (Murcia), with a high technological level in stone manufacturing and placing, three different VET organizations, from Croatia, France and Sweden, have given the project the required transversal value, not only from the geographical point of view, but also gives a multi-agent character.

The methodology designed to achieve the project's objectives included the following steps:

- 1) Carrying out research consisting of collecting information regarding the existing norms and regulations in Europe on the placing of stone in buildings and public spaces, as well as for those products where no norms are defined (an important number), to find out which are the different methods and procedures used to place them in the involved countries, which represent the main stone areas across Europe. It also includes organizing a seminar with experts.
- 2) The second step was the development of the curriculum for a stone placing course, based in the needs highlighted during the research.
- 3) The third activity was to develop the multimedia materials, consisting in a Multimedia Resource Centre and Flash Cards for the placement of the most relevant products. The content of the MRC was developed based on the content of the developed course. Partners have produced the content for the course and an specialized IT company was in charge of its technical production. This course was tested through two pilot courses, one in France and one in Croatia.
- 4) The dissemination activities, considered as a key aspect of the project, performed throughout the entire project lifecycle, but more intensively after the main products were developed and made free available on the Internet. The website of the project is ***www.stoneplacing.eu***

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1. Project Objectives

The general aim of the project and the products already produced was to increase the skills of workers in the stone placement industry, particularly in placing different type of floors and walls in buildings and urban environments. Environmental sustainability was also targeted, by promoting the use of recyclable and eco-friendly materials.

The specific objectives allocated to the project, which allowed the consortium to achieve the mentioned general aim are:

- ✓ To research the most suitable placement methods for the main stone products being used across Europe, analysing the results, selecting the best practices and deciding on which ones - including the training materials - should be produced within the project.
- ✓ To make available the information about the defined best methods of placing natural stone on site, through two main multimedia tools: Multimedia Resource Centre and Flash Cards.
- ✓ Promote those placement methods that prolong the life of stone products, especially those that allow a second use (without going into the recycling chain) according to the criteria of environmental sustainability.
- ✓ Promote and disseminate the project and its products within the stone industry and VET organizations giving courses in this professional area.

The idea of the proposal has arisen from the conclusions reached at various meetings of the European Association of Natural Stone (Euroroc), aimed at solving the multiple demands of the national associations in Europe. Member companies of these associations were aware that placement has a big influence in the market of manufactured stone products: it can add extra value to the product (when it is placed following the best practices) or make it appears to be an "unsuitable" material (when the placement procedures are not appropriate).

The project has collected and produced information and training materials to allow agents in the field to improve the quality of the stone placing works. VET organizations have now available a quality, up-to-date material to improve their skills and competences in stone placing techniques across Europe, as well as some easy-to-use materials (Multimedia Flash Cards) to bring to the site and give them information on how to place the most common stone product (cubes, stone for facades, pavements, etc.)

2. Project Approach

The methodology designed to achieve the project's objectives included FOUR main steps:

1. The project started by carrying out a research on the existing norms and regulations in Europe on stone placing in buildings and public spaces. For those products where no norms are defined (an important number) the consortium found out which are the different placing methods and procedures used the involved countries, which represent the main stone areas across Europe.

The research activities performed have highlighted important information regarding the placing methods in use across Europe. There are EU and national regulations for a relatively small number of products, but for those without regulations there are codes of practices in percentage large percentage of countries. The consortium have widely discussed those methods where the codes of practice differ in the different countries involve. These discussions have also been brought to the seminar attended by technicians in stone placing from the different countries involved. Finally they came to a common proposal for the method to be included in the multimedia products.

2. The second step was the development of the curriculum for a "stonemasonry placing course" to be implemented in the European VET organizations. The implementation of this training course has been promoted during the project.
3. A third step has consisted in developing the required multimedia materials for implementing the course, consisting in a Multimedia Resource Centre (MRC) and Flash Cards. This phase includes three main milestones:
 - To collect and develop training material for the MRC, which facilitates the online and in-the-classroom learning; and for the Flash Cards, which facilitates the placement of the main stone products on site.
 - The IT development of the training material for the Resource Centre and Flash Cards, using multimedia resources: drawings, animations, pictures, etc.
 - The implementation of two pilot courses, one in France and one in Croatia, which outcomes have been gather in a common report.

Partners have searched for suitable materials to support the training ha in the involved countries, but had finally they have to develop themselves the whole content for the Multimedia Resource Centre due to the lack of quality and modern materials. The found material were used only as a base for the development of the multimedia content, only the pictures were incorporated into the Gallery section. However, partners have made available in the site a place where any material made available by other organization can be uploaded to the site.

The Flash Cards, besides made available directly on the site, have been incorporated to the MRC, under Placing Techniques.

4. The last step was the dissemination of the project and its products and results. Even if dissemination activities have been performed during the whole lifetime of the project, they have been particularly intense once the main products were already developed, in order to make them available to the main stakeholders in the field, particularly the stone industry, VET organizations and authorities. A dissemination report is included on the final report, explaining the main activities produced.

Regarding quality control, the consortium include a partner whose main task is ensuring that the project was implemented according to that which was stated in the application, and also that the quality of the products developed follow the required quality standards. Also an external evaluation of the main products of the project was produced, in order to get an external view of their strong and weak points.

3. Project Outcomes & Results

Under Stoneplacing project, the following products and results have been developed:

- 1) Sheets with the different placing methods used for placing the main stone products. These sheets state whether the methods proposed in the norms are approved by EU, or by national regulations or codes of practices. Where the methods differ in the involved countries (a small number) - partners in the projects have widely discussed which was the best method and proposed it for inclusion in the project. This discussion was brought also to the seminar held in Germany with experts from different countries represented, in order to get further opinions thereof. Environment protection was also taken into consideration for selecting the placing method where regulations have not yet been published. These sheets were an internal document for being the base for the development of the curriculum and the MRC and Flash Cards.
- 2) Report with the defined skills, competences and knowledge required for placing the stone products. This report compiles the main skills and competences required for properly performing the stone placing methods selected for inclusion in the multimedia materials. This report was incorporated to the Curriculum, as an introduction to it, due to being the base for its development. It has been promoted in the European organizations giving courses in this professional field.
- 3) Stone Placing Course Curriculum. It was developed to meet the needs of students in initial vocational training and workers in continuous training in European countries. This curriculum is included on the Web Site of the project, and it was disseminated in schools where stone related specialities are taught, and also by the European companies' associations and other organizations giving continuous training courses.

The curriculum includes the placement of the most common stone products and the complementary works related to placing the stone, such as preparing mortars or preparing the joining.

- 4) The website for the project (www.stoneplacing.com). It was produced at the beginning of the project, but was continuously updated, particularly after the development of the MRC, in order to be adapted for holding the course, as well as for incorporating elements from the course into its graphic and making those designs totally matching.

The website, besides holding the multimedia products, served also as a dissemination means. The publicity performed always refer to the website, bringing as many visitors as possible. In this respect is also important to highlight that a wide dissemination has been performed on the Internet, in order to make the website becoming popular in the stone industry sector and in VET organizations giving courses in stone.

- 5) Multimedia Resource Centre (MRC), which main aim is to support the implementation of the produced Stone Placing Course. It uses multimedia resources: drawings, animations, pictures, texts, etc. This material is extremely important in the sector, due the stone industry not having modern materials.
- 6) Multimedia Flash Cards. Here we can find more immediately information with these 3D animations that represent graphically the same procedures that we must use on the reality. They contain subtitles to help users understand how to place the most common stone products.

The content of the Multimedia Cards was developed by the teachers and professionals from the consortium organizations, and the IT production was carried out by IT specialized companies, under the supervision of AtinServices, who have a broad experience in the coordination of the development of IT based training tools.

These cards are freely available on the website of the project and can be used online, directly, or downloaded to a smart phone. They can be used in the smart phones. Companies can use them when sending their workers to place the stone products.

4. Partnerships

The German Association of Stone (DNV-Deutscher Naturwerkstein Verband), coordinator of the project, is highly involved in fostering quality placement of stone products, as well as in the defence of life cycle assessment (LCA) of natural stone and the significant ecological advantage of the stone cover and pavement compared to other materials (e.g. glass, brick) with a higher environmental impact.

In order to facilitate management of the project, AtinServices has entered the consortium and management coordinator. This company has a large experience in the coordination of projects, some of them related to natural stone. It is located in Galicia, a Spanish region with high volume of extraction, processing and placing / installation of granite. They brought a high expertise in the development of multimedia tools for education to the project. AtinServices was in charge of the general coordination of the project and the multimedia products.

Euroroc, the European Federation of Natural Stone Companies, grouped under the mark "Naturstein / Natural stone" has played an important role in the project. The objective of this federation was to coordinate issues of common interest, find solutions and defend the interests of European national associations of stone companies within the European institutions. In this project they were providing an important support in ensuring that the main project's products (curriculum, Multimedia Resource Centre and Flash Cards) meet the current and real needs of the industry in Europe, and disseminating the project's results through all national and regional associations.

In the same direction, the Technological Centre of Marble (Murcia) works with the same interests and provides highly technical knowledge to the project, bringing to the project the knowledge of the most important marble areas in Europe, both for quarrying companies and manufacturing companies. This region produces the most sold marble in the world, called, Crema Marfil.

For all training aspects in the project, three different levels of educational institutions with prior experience in the development of educational materials were taking part in the project: Institute de la Pierre- Compagnons du Devoir (France), which has already developed different training materials related to the stone carving and placing in France and which is playing an important role within the project ensuring that the approach and content meet the needs of students in initial vocational education and training; Stenforsaskolan (Sweden), bringing to the project the knowledge of Danish stone companies, big producers of granite, which represent the reality and needs in Scandinavia, an important area for granite production; and Klesarka Skola, located in a region of Croatia where limestone is the most important economic resource. It is the only Croatian school giving courses in natural stone dressing. Finally, Concept Consulting has monitored and controlled the work progress and products, following the accomplishing of the activities by involved partners, and supervised the quality of the project's development as a whole.

The whole consortium of the project gave the products a high value of their content and use, also working hard on the future uses of the tool.

5. Plans for the Future

Inside this project, four aspects ensure the future sustainability of the project:

1. The content of the products being based in real needs of the stone industry. This is ensured because of the content being developed on the basis of the results of the performed research, because of consortium kept relation during the project with several organizations involved in VET and finally, because of the important and transversal knowledge and competences of the partners in the project.
2. A wide dissemination of the project and its result is other aspect that ensure the sustainability of the project, and its use by the target groups. The target group and potential end-users have been involved in the project from the beginning and during the complete duration of the project. Industry associations participating in the project (Euroroc and DNV), together with Technological Centre for Marble (CTM), with a big link with the stone companies in the area. Educational and training organizations involved (Klesarska, Oistragoinge, Le Compagnons du Devoir) were the link with VET organizations at different levels. AtinServices was in charge of the dissemination of the project via the Internet and to the numerous partners it has been working with in other projects related to the stone sector.
3. The ordinary activity of some of the partners involved in the project will play also an important role in the sustainability of the project. Euroroc takes part continuously in Trade Fairs, seminars, congresses, working groups, etc. DNV keep a continuous contact with the stone industry in Germany and with the schools giving courses related to stone, mainly due the dual system of VET in the country. CTM is in close contact with local stone industry because of its ordinary activity and also takes part in stone fairs, seminars, international projects, etc. The schools in the project, all of them have an important international activity, namely Klesarka Skola and Les Compagnon du Devoir. Atin is continuously coordinating EU projects, and frequently in stone related areas.

Partner organization will naturally continuously disseminate the website and course after the project lifetime, without the need of devoting special resource to it.

The strategy for the future maintenance, improvement and further development of the course will be based in the following principles:

1. The materials produced during the project will be totally free accessible in the website.
2. The rights of the project belong to the whole consortium and management coordinator is responsible for keeping active and free available the website and the produced resources.
3. The free use of these materials will be allowed to anyone interested in using them for their own interest or promoting it in front of other organization or general public, but for its commercialisation under other book or multimedia materials an agreement with consortium would be required.
4. Partners should keep continuously promoting the project among above defined target groups, mainly VET and industry organizations, using particularly the main events in the sector: stone fairs (Verona, Carrara and Nuremberg), seminars and congresses, frequently held during the fairs, stone festivals and competitions, working groups to develop standard in an EU level, etc., as well as the Internet based resources (social nets, Youtube, websites related to stone industry and education and others).
5. Consortium will keep promoting not only the use of the project results, but also that other VET organizations and industry associations continuously contribute to the project by sending resources to be uploaded to the site and make them available not only for other users, but also to their own students.
6. Promotion and dissemination activities must aim at this website become a reference for stone placing resources in Europe.

6. Contribution to EU policies

The project strengthens international cooperation among heterogeneous countries and institutions, which gives a high European value to its results. Stone manufacturing is an extremely globalized market, whereas the placement of those products still has frequently a very local approach. The European approach of this project, whose content is based on the European normative of the best European practices, contributes to create a real and effective European market for stone companies. The consortium, as already mentioned above, was also taking special care to include environmental protection regulations and practices in the materials being developed, as well as refers continuously to the safety equipment and procedures to be kept in mind when performing the placement works.

The unity of the market, since the Treaty of Rome, not only provided political integration, but the homogenization of education: As the Bologna Declaration regulates higher education, it is necessary to advance the professional standards and the continuous educational training (ECVET); our project provides common content in the various countries, facilitating the mobility of both students and workers. The mobility of workers is a fundamental right of European citizens, but in this industrial sector, without common criteria for placing of the stone or quality, this right is difficult to exercise beyond the country, which means that in the reality workers find it extremely difficult to access jobs in other countries. This is particularly important in the current economic situation, where a number of workers in construction sectors, including stone, are trying to get a job in the Central or Northern countries.

The project falls within the objectives of the LdV program, by *'contributing to the development of quality lifelong learning and to promote high performance, innovation and a European dimension in systems and practices in the field.. Also by 'supporting the development of innovative ICT-based content, services, pedagogies and practice for lifelong learning'*. The results of the project, mainly the curriculum for the placement of stone products, Multimedia Resource Centre and Flash Cards, contribute to improving the quality of the education systems and they are totally innovative ICT-based materials, produced based on a European approach by a European partnership, giving them a European dimension.

The project contributes also to *'enhance the attractiveness of vocational education and training and mobility for employers and individuals...* Stoneplacing tackles the problem by highlighting and standardizing the most suitable techniques to place the different stone products from a European approach and with a European dimension. It contributes, therefore, to enhance the mobility for employers and individuals, as well as for workers.

The Stoneplacing project also address *'to improve the quality and to increase the volume of co-operation between institutions or organisations providing learning opportunities, enterprises, social partners and other relevant bodies throughout Europe'*. The consortium built to perform the activities of the project includes the main stakeholders related to training in the stone industry, VET organizations, Technology Centres and Industry Associations in different levels and from different European areas. These two years of cooperation allowed these main stakeholders to share their knowledge and expertise, to work together in the performance of the research and in the production of the training resources, what make them to strongly enhancing cooperation between them.

The project addressed one of the priorities for EU, *'Developing Vocational Skills considering the labour market needs – New Skills for New Jobs'*. It started by researching those real needs related to the placement of the stone in the involved countries, which are in general different from those traditional ones, due to the currently used stone products and the techniques used to manufacture and place them are also different.

7. Extra Heading/Section

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