BIMclay Project

IMPROVE TECHNIFICATION AND LCA QUEALIFICATION OF WORKERS IN CEREMIC SECTOR WITH THE SUPPORT OF BIM APPLICATIONS

INTELLECTUAL OUTPUT 3.

TECHNICAL CONCLUSIONS OF THE SEMINAR IN MADRID, February 15th, 2019

CONTENT

INTRODUCTION

This seminar has been used as the presentation of the BIMclay project to professionals in Madrid (Spain) and as an official presentation of the IO3 corresponding to the "Online Resource Centre (ORC) of BIMclay".

The purpose of this seminar, in addition to being used as an official presentation of the project, is to collect information from the event attendees, who are experts in the different fields of ceramic sector. After the research in the project is performed, the different collecting placing systems was analysed and discussed, highlighting the strong and weak points of each of the systems used in every country, as well as their adaptation to the current situation and needs of the demand of clay products market.

Surveys were used as a means of collecting information, to take advantage of the feedback from experts to be used as validation of the event and the project.

At the entrance to the event, each of the attendants was given a survey. The survey was conducted voluntarily, obtaining a great response from the attendants who showed a high percentage of participation.

The workshop had a total of 22 on-site attendants and 25 online attendants. Apart from these, all participants of the meeting held the previous day attended this event.

The feedback from experts' will be used to make a methodology to be applied for coming courses and contents. A special focus will be done in the discussion of the different clay placing systems, with the organisation of round tables covering different topics. Experts in ceramic sector will attend this event and participate in the round tables.

At the end of the interventions scheduled in the agenda, Elena Gracia (Hispalyt) moderated a round table discussion with the consortium members and the professionals who are experts in ceramic in the fields related to the project.

AGENDA

Friday, 15th **Seminar. Place: Hispalyt Conference Room. C/ Orense, 10, 2nd floor, offices 13-14, 28020 Madrid (Spain)**

AUDIENCE

Manufacturers of ceramic products and professionals in the building sector: Designers and Project Managers (Architects, Quantity Surveyors and Engineers), Developers, Builders, Architecture Students, etc.

SCHEDULE

12:00 h. Welcome and presentation of the BIMclay project
HISPALYT. Elena Gracia

12:10 h. Objectives and results of the BIMclay project
CTM. David Caparros

12:40 h. Life Cycle Assessment and sustainability of the ceramic products
CTCV. Marisa Almeida
HISPALYT. Elena Gracia

13:00 h. Implementation of BIM technology in ceramic sector

- **BIM objects of ceramic products and systems and BIM building Hispalyt**
  HISPALYT. José Luis Valenciano
- **PIM Muralit. The prescription tool for ceramic partition walls in BIM**
  AGOIN Architecture y Management. Esteban Martín
- **BIM Consulting**
  24StudioBIM. José Troya

14:00 h. Round table

ENROLLMENT

Registration for the Conference, both in person and by videoconference, must be made through the **Contact** form on the **Hispalyt website,** selecting **the date of the Conference under "Type of consultation".**

ORGANISED BY

HISPALYT - Asociación Española de Fabricantes de Ladrillos y Tejas de Arcilla Cocida (España)

APICER - Asociación Portuguesa de la industria cerámica (Portugal)

CTM - Centro tecnológico del mármol, la piedra y materiales (España)

CTCV Centro tecnológico de cerámica y vidrio (Portugal)

iED - Instituto del desarrollo del emprendimiento (Grecia)

Contents of the Seminar:

"Improvement of technology and qualification in LCA with the support of BIM applications".

Objectives and results of the BIMclay project

BIMclay is an Erasmus+ project financed by the European Union, and its objective is the **development of a multimedia tool linked to BIM technology, which serves to train workers in the sector in the most advanced and ecological techniques for placing ceramic products.**

The BIMClay project is the result of the merger of the following three lines of action:

- Building Information Modelling (BIM)
- Life Cycle Assessment (LCA)
- Methodologies for the placement of ceramic products.

For the development of the project, a transnational consortium has been set up, made up of five organisations from different countries of the European Union:

1. Portuguese Association of the Ceramic Industry, APICER (Portuguese)
2. Ceramic and Glass Technology Centre, CTCV (Portuguese)
3. Business Association for Research of Marble, Stone and Materials Technology Centre, CTM (Spain)
4. Hispalyt – Spanish Association of Manufacturers (Spain)
5. Institute for the Development of Entrepreneurship, iED (Grece)

Through this project, the commitment of Hispalyt and the European ceramics sector to modernization and innovation, as well as their commitment to the environment, is demonstrated.

The works to be developed in the BIMClay project will be available at the end of 2019 and are as follows:

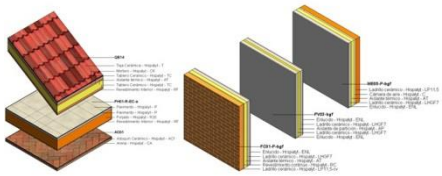
- Sustainable tile installation methods.
- Installation videos of ceramic products integrated in a BIM plug-in and with LCA information.
- On-line teaching platform for professionals.

Life Cycle Assessment and sustainability of ceramic products

It is common to associate the concept of sustainability with ceramic products, without delving into the reasons that lead to this association of concepts. The use of ceramic materials in buildings from antiquity to the present day is one of the indicators of equilibrium in terms of the environmental, social and economic aspects of this type of material, fundamental requirements for considering a product to be "sustainable".

Responding to the demand from administrations and consumers for information on the environmental performance of products on the market, APICER and Hispalyt have developed the Life Cycle Analysis (LCA) and the type III environmental label, known as the Environmental Product Declaration (EPD), of the different ceramic products, demonstrating in a clear and rigorous manner that they offer the utmost respect for the environment.

More information in the Sustainability section of Hispalyt's website



Implementation of BIM technology in ceramic sector

Hispalyt works to be at the forefront of the sector and given that the BIM methodology is revolutionizing the way of working in construction, has recently published a BIM library of ceramic solutions, which has 97 facades, 16 interior vertical partitions, 26 partitions, 6 interior horizontal partitions, 26 roofs and 2 exterior cobblestone floors.

In addition, it has developed the Hispalyt BIM Building from which it is possible to see in a real and practical way the integration of Hispalyt ceramic solutions in an architectural project in BIM.

Finally, the Muralit BIM Add-in developed under the PIM (Prescription Information Model) methodology should be highlighted, which is an application for Revit that allows choosing the optimum ceramic partitioning solution for each project, clearly showing the advantages of Muralit's solutions.

More information in the BIM Objects section of Hispalyt's website.

The Seminar was attended by professionals of recognised prestige who were part of a Table of Experts, where they first told about their experiences in relation to ceramic sector and BIM from a business point of view.

All the presentations of the Seminar will be uploaded to the BIMclay platform so that they are accessible and can serve as training and information materials related to the BIMclay project to all interested parties in the website of the project:

http://www.bimclay.eu

A brief description of all interventions carried out during the Seminar as well as significant conclusions of each presentation are explained below.

1. DESCRIPTION OF THE SEMINAR. INTELLECTUAL OUTPUT O3

1.1. Presentation of the BIMclay project. Elena Gracia (HISPALYT)

Ms. Elena Gracia presented the project, which included the main and resulting aims, activities carried out and results in the short and long term, also she presented the consortium and the importance of each of the partners, dividing its origin into three different areas vital to the achievement of the objectives. These are associations, companies and research centres.

She said that the motivation behind the BIMclay project is the consideration that clay products are one of the most sustainable building materials, despite the changes in technology and design over the years, is the main building material for different works: building facades, exteriors Pavements, interior pavements, interior walls, and so on.

She explained the different tools used to the correct development of the project: BIM (Building Information Modelling) and LCA (Life Cycle Assessment), with the aim of achieving the main objectives and complete all tasks of the BIMclay project, which are as follows:
Selection and compilation of information on the most advanced and sustainable techniques for laying ceramic products.
Placement videos of ceramic products in a BIM plug-in and with the information of their LCA.
On-line platform dedicated to teaching professionals.

Presentation available in "*APENDIX I. Presentation of Elena Gracia*".

1.2. Objectives and results of the BIMclay project. David Caparrós (CTM)

PhD David Caparrós began its speech talking about the tasks and its description and the expected results, which are:

O1. Establishment of common learning outcomes on clay placing methods, Life Cycle Assessment (LCA) and relative regulations.

O2. BIMclay multimedia materials. New interactive BIM-leaning methods.

O3. Online Resource Centre (ORC).

David began by talking about the need for new didactic materials for the training of workers in the ceramics sector. He made a note to comment that at the entrance to the seminar a form had been given to the assistants to evaluate the day and that it would be very useful if they gave it at the exit completed, because it was very important to have a feedback and to be able to improve the weak points of the project.

Mr. Caparrós based his intervention on the detailed description of the tasks of the project. He presented the different studies carried out on regulations and EPDs related to the objectives of the

project. Also, David presented the basic functionalities of the BIM tool and how the information related to LCA and the 3D animations of placement of each one of the 12 selected ceramic materials will be inserted within their properties.

Finally, David talked about the ORC developed and the documents that will be added in the different sections of the BIMclay website. This ORC is available in: http://www.bimclay.eu/orc.html

Presentation available in "*APENDIX II. Presentation of David Caparrós*".

1.3. Current situation of Ceramic Sector related to LCA. Marisa Almeida (CTCV)

Ms. Marisa Almeida presented the current situation in the ceramic sector and the crucial role that sustainability plays in the outlook of the sector. Ms. Almeida spoke about ecolabels and Environmental Product Declarations and their degree of implementation in Portugal. It also addressed the different environmental products indicators and LCA as a support tools used for sustainable control of clay products, and its relative regulation. And, she also showed a series of practical examples of EPD and LCA product used in Portugal.

Marisa delved into the LCA calculation methodology, giving some input data and emissions resulting from the production of 1 ton of bricks, 1 ton of ceramic tiles and 1 m^2 of soil. On the other hand, it presented a comparison of impact categories in the case study of the m^2 of ceramic brick in three different scenarios in which the following fuels were used to cook the clay: biomass, petroleum coke and natural gas. As a conclusion, it can be said that the best results of this study, in terms of the Global Warming impact category are for biomass, followed by natural gas and, finally, coke (having twice as many emissions as biomass).

Presentation available in "*APENDIX III. Presentation of Marisa Almeida*".

1.4. Implementation of BIM technology in Ceramic Sector.

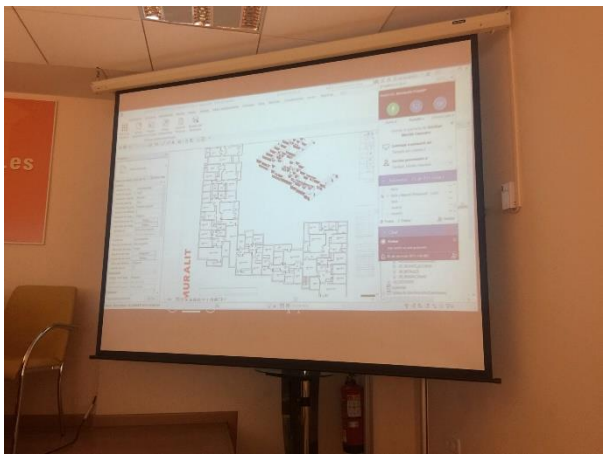
- **BIM Objects of ceramic products and systems and BIM building Hispalyt. José Luis Valenciano (HISPALYT).**

  Mr. José Luis Valenciano presented new ceramic construction systems for Passivhaus and nearly Zero Energy Buildings (nZEB) in order to solve or reduce some problems in buildings like thermal bridges, as well as some optimal solutions for facades, sloping roofs, brick walls, etc.

In that moment, more than 300 works had been carried out with the Structura system, most of them were social works. So, José Luis Valenciano's presentation focused on the ceramic industry 4.0 and digitalization in BIM.

José Luis talked about the 173 ceramic construction systems that Hispalyt have developed and are available in its website, in total there are: 97 facades, 26 party walls, 16 vertical interior partitions, 6 floors, 26 roofing and 2 paving stones. Recently, they had published 36 BIM objects of generic ceramic materials of Hispalyt.

Also, he explained how to access BIM objects and CAD details on Hispalyt website and the possibility of consulting a user manual for Hispalyt BIM objects.



Presentation available in *"APENDIX IV. Presentation of José Luis Valenciano".*

- **PIM Muralit. The prescription tool for ceramic partition walls in BIM. Esteban Martín (AGOIN).**

Mr. Esteban Martín explained the origin of the term PIM which means Prescription Information Model. This system is based on the relationship of families of materials and projects, in order to facilitate the integration of all elements in the same project. PIM was developed jointly by AGOIN and 24StudioBIM who spoke next.

At the time of the event, a building was under construction in Getafe (Madrid) in which the interior partitions had been dimensioned using the PIM system during the project phase.

- **BIM Consulting. José Troya and Carolina (24StudioBIM).**

  Mr. José commented on the real gap that exists between the creation of a project and the possibility of relating it to the families of the project and, therefore, they were developing the PIM methodology together with AGOIN. 24StudioBIM has more than 10 years of experience developing projects and is the company with more square meters of projects carried out in BIM.

  Ms. Carolina commented on how the BEP (BIM Execution Plan) digital prescription model affects the implementation processes in which she collaborates with different companies to help, through very intuitive processes, to speed up the process for all prescribing users. To this end, Carolina described the phases and procedures developed by 24StudioBIM for the process of implementing new BIM workflows in the company.

  Carolina emphasized the usefulness of including PIM in the pilot projects because it offers the opportunity to promote and disseminate the tool and, at the same time, allows to increase the commercial prescription of products and materials of its collaborators. It also describes the possibility of having use models so that the prescribers of the pilot projects of these new companies that are entering the BIM sector can generate cost analysis, materials, guides, different specific regulations in a fast and agile way, influencing the purchase of products from its network of collaborators and promoting them nationally and internationally.

As the agenda established, once all presentations had been finished, a round table was held, in which participants had the opportunity to express their doubts and concerns regarding the Project to seminar speakers.

Elena Gracia moderated the round table, where great and influential professionals of the ceramic sector took part and some large companies related to ceramic and clay exchanged impressions and provided solutions to meet the current needs of the sector. All this feedback will serve as a basis to all the products and results of the project.

The video of the seminar is available on the project website, in the ORC dissemination section: http://www.bimclay.eu/dissemination.html. And, in addition, in YouTube in the following link: https://www.youtube.com/watch?v=cKUk1_44eRU&feature=youtu.be.

2. NUMBER OF ATTENDEES

The total attendance to the BIMclay Seminar were 22 on-site attendants and 25 online attendants, in addition to participants of the BIMclay project:

Associação Portuguesa da Indústria de Cerâmica (APICER).

- Sílvia Machado

Centro Tecnologico da Ceramica e do Vidro (CTCV).

- Marisa Almeida
- Sandra Chambel

Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM).

- David Caparrós Pérez
- Laura Robles Martínez

Instituto del Desarrollo del Emprendimiento (iED).

- Anna Koronioti

In conclusion, the total number of attendants, who they are not linked to the organisations of the project, were 47.

For further information, please go to “APENDIX V. Attendees list (Because of Data Protection Law, this document is not available for public use)”.

3. QUESTIONNAIRE

During the seminar, a survey was distributed to consider the opinion of the attendants about the event and the BIMclay project, where the total number of surveys compiled were 10.

Next, it can be checked an example of the questionnaire provided.

For further information, please go to "APENDIX VI. Surveys compiled".

1. Overall, how satisfied were you with the event?

Please tick a box in the respective line.

Very satisfied	Rather satisfied	Neither satisfied nor unsatisfied	Rather unsatisfied	Not satisfied at all

2. To what extent do you agree or disagree with the below statements?

Please tick a box in each line.

	Fully agree	Rather agree	Neither agree nor disagree	Rather disagree	Fully disagree
Event contents were of my interest					
I feel now better informed on various aspects related to the ceramic sector					
I now better understand the benefits of the BIMclay approach					
The event supports me in strengthening my knowledge, competences and skills regarding BIM technologies					

3. To what extent did the event show the following attributes?

Please tick a box in each line.

	Fully agree	Rather agree	Neither agree nor disagree	Rather disagree	Fully disagree
Contents were clearly understandable					
Contents were interesting and motivating					
Event was well-organized and well-structured					
Overall atmosphere was pleasant					

4. Do you have any further comments and recommendations on the event? What could have been done better?

Please answer in the flip side.

4. CONCLUSIONS

The results collected through the questions reflected in the 10 questionnaires, which have been replied by attendees, are summarised below.

The answers collected for the questions are reflected in the following paragraphs:

- Most participants were either very satisfied or satisfied by the seminar.
- Most participants felt that the contents fit their interests and understood the benefits of the BIMclay project.
- Also, they found the seminar well organised and the overall atmosphere pleasant.

Some of the comments and recommendations made by the participants are summarized in the following lines:

- The visualisation of the contents should be improved.
- It wasn't necessary to mention constructive solutions in this seminar, and that the event should have only focused on BIM.

The feedback gathered through the surveys and round table, will greatly help to achieve the proposed objectives and results, as all the improvements considered will be studied to be implemented in all phases of project development.

The results of the questionnaires of this evaluation will be presented together with those of the last seminar to be held in Coimbra (Portugal) in order to make an analysis of the comments and recommendations of the attendees both events.