SANITSER

Newsletter 03-15

Progetto Europeo LIFE+ SANITSER

Sanitaryware production: use of waste glass for saving energy and resources

Progress of the Project (from 01/03/2015 to 31/03/2016)

Sanitser project, realized with the contribution of the Life financial instrument of the European Community, started on July 1st, 2013 and will end on March 31st, 2017. Below a short account of our activites starting from March 1st, 2015.

Technical activities

Pilot plant development and start-up stage has been completed for all partners. The pilot plant for waste SLG and other raw materials preparation has been optimized, with a view to higher volumes to be provided for the pre-industrial tests. In particular these modifications have been provided for the optimization of the silo transportation system, the rationalization of the aspiration system and the reduction of wear of some parts of the plant. The pilot plant for glaze preparation has also been fine tuned in its final configuration, with the installation of a dust aspiration system.

Gemica identified the final formulation of the glaze, containing again boric glass, which will be used during industrial tests and optimized if necessary on the basis of their results.

Selected glaze contains more than 15% of recycled glass, that allows to greatly reduce the amount of zinc oxide in the formulation and therefore the price of the glaze. The same has also been prepared in 4 different colours (orange, blue, light blue and pink) and with an additive containing TiO2 , to make it anti-bacterial and self-cleaning.

This glaze will be used during industrial tests to obtain different products in different colors and with anti-bacterial and self-cleaning properties.

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Figure 1 – Washbasin produced using slip SANITSER 13 and glaze PSI-109 with anti-bacterial additive

Figure 2 – Washbasins produced using slip SANITSER 13 and coloured glaze PSI-109

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Tests with the Sanitser 13 slip, about 43% of which is made up of recovered materials, continued. Overall, about 60 pieces without defects have been cast and produced, with a percentage of 80% of the total, while 5% corresponds to broken pieces, and 9% to pieces with products with various defects.

The components used in the formulations allowed to reduce the firing temperature from 1230-1250°C (traditional cycle) to 1150-1170°C.

Figure 3 – Pieces made with SANITSER 13 and glaze PSI-109

The pieces obtained during the pilot plant tests were analyzed in collaboration with the University of Milan, on these samples the study focused on the glazed surfaces and in particular:

- Origin of a defect found in the process of casting: black coating
- Phase compositions that developed upon heating in the different glaze formulations (Sample PSI 97-100-101-202-103-104-105-106);
- Bulk chemical composition, morphology of micro-structures in reference glaze samples PSI 97 and 103;
- Spatial elemental homogeneity in reference glaze samples (PSI 103-97).

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Results achieved

Slip and glaze are compatible with one another and processability, durability and compliance with statutory requirements have been confirmed:

- The dilatometric coefficients of the body and glaze are higher than the coefficients values found in a standard VC and in a standard glaze, but in agreement with each other. Values obtained are in compliance with the norm UNI 4543 and SANITSER 13 body shows more resistance to bending compared with a standard VC body (+11%);
- Shrinkage is comparable to the standard values of a vitreous china. Measurements on fired pieces of the dimensions of the connections have been made, which were found to comply with European Standard;
- The water absorption values are consistent with those required by the norm EN 997 and UNI 4543.

Monitoring environmental impact: LCA

The goal and scope definition was carried out with the definition of system boundaries of the studies; questionnaires for data collection were prepared and distributed among the partners to collect information related to raw materials production and production process. Questionnaires filled in By Minerali Industriali were analysed.

Web-based tool for data collection

LCE designed a web tool whose main objectives are to gather LCA quantitative information from each partner involved in the project, to evaluate environmental performances related to raw materials, slips and glazes used for sanitary ware production and compare environmental performances related to different sanitary wares. The environmental database, containing the environmental impacts of the main aspects of the Life Cycle Assessment of the sanitary ware (raw materials, energy and emissions) were built and inserted in the tool.

Social LCA

LCE carried out a detailed analysis of the guidelines of Social LCA (Setac – Guidelines for Social Life Cycle Assessment of Products) together with the following activities:

- Map of the processes inside the system boundaries of the study and geographical identification of them
- Identification of Social Topic, Stakeholder and indicators

- Preparation of specific questionnaire for data collection
- Drafting of the final report

Dissemination

Pubblications and events

On December 9th, 2015 it was held the presentation of the Project Life Sanitser at the ITIS school of Civita Castellana. The third grade classes of the Art School and ITIS and a fourth grade class of the Art School with Chemical address attended the event. The participants were about a hundred students accompanied by their teachers. After an introduction by the Dean Prof. Chericoni, G.E.M.I.C.A., Se.Te.C. and Minerali Industriali presented the project to the students, illustrating the activities of each company for its realization.

Figure 4 – Presentation of Project SANITSER at ITIS in Civita Castellana

On December 11th, 2015 the event "Project LIFE+ SANITSER – presentation of first results" was held held in Civita Castellana. In this occasion project progress was presented by Se.Te.C., G.E.M.I.C.A. and Minerali Industriali for professionals of the sector.

On October 20-21-22-23 2015, SETEC has partecipated to the fair CERAMITEC 2015 in Munich, where they exposed and disseminated informative materials about the SANITSER project.

Materials related to the events were disseminated through the website of the project.

Networking

Project Life Greensinks LIFE12 ENV/IT/000736: on the 11th of March 2015 all partners attended the meeting with DELTA srl which is coordinating beneficiary of the LIFE project Greensinks, whose purpose was to produce a sink made entirely using recycled materials.

Project Life FRELP LIFE12 ENV/IT/000904: on the 25th of September 2015 Minerali Industriali attended the seminar about life project FRELP Full Recovery End of Life Photovoltaic . The project has the aim to recycle the exhausted photovoltaic panels.

Project WINCER ECO/13/630426/WINCER: On the 23rd of February 2016 M.I. attended to Technical commitee meeting as a partner, verbally updating other partners about the progress of the SANITSER project. The next meeting of Wincer will be on the 7th of June 2016, also during that meeting M.I. will provide updates on recent developments.

Project Life DIGITALIFE – LIFE13 ENV/IT/000140: Se.Te.C. had preliminary contacts to establish collaboration on the use of TiO2 in ceramic products. Next meeting is expected within June 2016.

Next steps:

Pre-industrial and industrial tests are about to start and are expected to be finished by October 2016.

In our website www.sanitser.eu, in the new section "Project Results", all the news about the progress on the pre-industrial and industrial tests planned for the coming months will be available : stay tuned!

Between March and June 2016 Se.Te.C. will host other open days for students from Civita Castellana. On the 7th and 11th of April 2016 4 classes of High School of Civita Castellana has already visited Se.Te.C.