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PROJECT DESCRIPTION:

BACKGROUND

It is widely acknowledged that some of the best quality vitreous china sanitary ware comes from Europe, and in particular from Italy and Germany. The European ceramics' sanitary ware sector employs around 22 000 people directly, and has an annual turnover of €4.5 billion. The industry is characterised by the concentration of large, multinational groups, as well as by the vertical integration of small and medium-sized enterprises. The main challenges faced by the sector are related to resource use and energy consumption. In particular, environmental problems related to the production processes include:

- High consumption of raw materials coming from domestic and foreign mines and quarries;
- High consumption of energy for ceramic production processes, such as firing of vitreous sanitary ware, resulting in a significant impact in terms of CO2 emissions;
- High usage of water and domestic cleaning agents (both natural and synthetic) due to the anti-bacteria action of new glazes.

OBJECTIVES

The LIFE SANITSER project aims to revise the vitreous sanitary ware (VSW) production process by introducing relevant amounts of glass cullet from urban waste disposal into the ceramic blend formulations. The project's process innovations are designed to: i) contribute to sustainable waste management, in terms of the recovery of large amounts of glass cullet waste (soda lime glass – SLG); ii) improve the environmental performances of the ceramic sanitary ware sector by reducing CO2 emissions; and iii) reduce the consumption of energy and natural resources.

To date, little use has been made of SLG in VSW production, although its introduction would deliver significant benefits: The replacement of feldspar-like materials (by up to 40-50%), or fluxagents (up to 40-50%) with SLG would provide savings in natural resources (often imported because of their increased scarcity in Europe, so also reducing fuel and emissions for transport), as well as reducing energy consumption and CO2 emissions during production.

The introduction of SLG will also allow for a lowering of the firing temperatures by, 80-110°C (from 1230-1250°C to 1120-1150°C), and for a reduction in soaking times by 20%. The related CO2 emissions reduction will be quantified through the Life Cycle Assessment.

Expected results: By the end of the project, many of the technological hurdles hampering the introduction of SLG in VSW production should have been addressed. Some of the main expected results include:

- Proof of the technical feasibility of substituting c. 50% of feldspar, saving natural resources' and helping to preserve the landscape;
- A reduction of at least 16-18% in energy consumption, and of at least, 16-18% in CO2 emissions – achieved by lowering the ceramic firing temperatures by 80-110°C and shrinking soaking times;
- A reduction in production costs – thereby increasing industry competitiveness and promoting a shift to technology-driven manufacturing;
- Savings of 120 t of primary raw materials (feldspar, quartz) over the project life time, enabling similar amounts of SLG waste to be recycled;

- Reductions of 1.3 t of CO2 emissions by avoiding the transport of primary raw materials.

RESULTS

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ENVIRONMENTAL ISSUES ADDRESSED:

THEMES

Industry-Production - Non-metallic minerals

KEYWORDS

energy saving, waste use, glass industry, raw material consumption, industrial process

NATURA 2000 SITES

Not applicable

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BENEFICIARIES:

COORDINATOR

Minerali Industriali S.p.A.

TYPE OF ORGANISATION

SME Small and medium sized enterprise

DESCRIPTION

Minerali Industriali (MI) is an Italian company that produces and sells raw materials for glass, tiles and vitreous china sanitary ware products. Founded in 1984, it owns several mines and quarries in northern Italy and Lazio, as well as plants for the treatment of raw materials.

PARTNERS

G.E.M.I.C.A. srl, Italy Life Cycle Engineering, Italy SE.TE.C. SRL, Italy

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ADMINISTRATIVE DATA:

| | |
|-------------------|---|
| PROJECT REFERENCE | LIFE12 ENV/IT/001095 |
| DURATION | 01-JUL-2013 to 31-MAR -2017 |
| TOTAL BUDGET | 2,298,282.00 € |
| EU CONTRIBUTION | 1,075,565.00 € |
| PROJECT LOCATION | Piemonte, Valle d'Aosta, Liguria, Lombardia, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Toscana, Umbria, Marche, Lazio, Campania, Abruzzi, Molise, Puglia, Basilicata, Calabria, Sicilia, Sardegna |

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