Project Information Sheet

Stone Technology for Eco-efficient Production (STEP)

Programme area:	Sustainable building products
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Website:	www.step-stone.eu
Benefits (max. 150 characters incl. space):	New eco-efficient technology based on microwave energy for continuous reinforcement of marble flat products. Waterborne resins with no VOC emissions.
Keywords:	Stone, thermosetting resin, reinforcement, energy efficiency, microwave heating.
Sector:	Green Business, Buildings
Type of solution	Technology for industrial process
Duration:	01/09/2013 – 29/02/2016
Budget:	1,396,720.00 € (EU contribution: 50%)
Contract number:	ECO/12/333123/SI2.656529

Summary

The implementation of a new eco-efficient technology for the natural stone sector is the main objective of the STEP project. It will allow overcoming important limitations related to the conventional heating processes: energy costs, low production ratios and emissions of volatile organic compounds. The production chain of natural stone flat products involves, amongst others, a drying stage followed up by the application of conventional resins (epoxy and unsaturated polyester) on the stone surface before the curing stage with conventional ovens. The eco-innovations come from the substitution of both the conventional heating systems (drying and curing) and the solvent-based resins (toxic and irritating) by one single curing process based on an open and continuous microwave oven and waterborne resins which avoid the need for a previous drying stage. Consequently, significant benefits in terms of energy saving, material efficiency, productivity and improvement in the health and safety conditions for workers is achieved. The consortium is formed by industrial technology specialists, leading natural stone manufacturers (Spain, Greece) and experienced research organizations.

Expected and/or achieved results

- High energy saving (80%), high processing efficiency (curing time below 10 min) and high costs reduction (50%) when compared to the conventional drying and curing systems.
- Total reduction (100%) of VOC emissions to the environment (atmosphere and factories) by avoiding the use of solvent-based resins.
- New segment market for sustainable construction products with low embodied energy based on a rational use of the natural resources.
- The number of potential natural stone processing lines with capacity to invest in high technology machinery is around 400 in the EU-27 and up to 1700 at worldwide level.

The information sheet will be published in the Eco-Innovation website. The EACI reserves the right to edit the information sheet for content and length