MCure

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http://www.mcure-fp7.eu/

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SUMMARY DESCRIPTION OF THE PROJECT CONTEXT AND THE MAIN OBJECTIVES.

MCure project has been initiated by the 4 SMEs from different European countries who are all committed to participating in the successful research, development and subsequent demonstration of an efficient curing system in order to improve the quality and curing time of concrete constructions and repairs. This research addresses wide concerns in construction sector as over 50% of expenditure in the EU construction sector is on repair of existing structures rather than on new build. The focus is chosen but is not limited to concrete, because the primary material of construction requiring repair in EU is concrete.

In terms of economic figures, the annual cost of repair of reinforced concrete structures in Western Europe is in excess of €5 billion, a problem which is likely to be even greater in Eastern Europe. Wide scale research undertaken by EU FP5 project CONREPNET 2004 showed that 25% of structure owners are unhappy with the performance of the repair within five years after the rehabilitation of reinforced concrete structures; 75% are dissatisfied within ten years. This has generated a requirement to deliver more durable and effective repairs to concrete structures. To meet this requirement, this MCure project will scientifically develop a novel accelerated curing approach which will improve the durability, accelerate the curing and consistency of concrete repairs, independent of climatic environment. It will be an energy and time efficient curing system. It will make more efficient use of resources, especially in harsh winter weather conditions due to the system robustness and the effectiveness of the technology in all kinds of weather. This approach will improve the productivity and competitiveness of SME repairs contractors. This technological approach will involve advancements in the fields of remote moisture sensing and concrete compressive strength.

Background trials performed in laboratory and field trials performed at the location of end user company Heizmann has validated the technical concept and the market opportunity. Within this project, a team of scientist and engineers at Fraunhofer IGB together with project partner ERS has designed, developed and integrated a MCure-prototype which includes an optimum energy coupling mechanism, a driving system to repair materials and a moisture sensor developed by META. In parallel, a team of scientist and engineers at Sheffield Hallam University (SHU) conducted initial investigations in laboratory and identified the optimum process parameters. The initial findings have been cross verified with integrated MCure prototype with various microwave powers on cube samples of various repair materials having different volumes at site of Heizmann. The company Uvasol disseminated the results to companies involved in relevant sector and coordinated with RTDs to published selected non-confidential results.

It is expected that within five post project years, MCure will generate at least 215 new jobs in EU and additional revenues of over€28 million for the SMEPs.

The research leading to these results has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n°605664

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