Short Term Scientific Mission, COST Action TU0904 – Scientific Report

Reference code: COST-STSM-ECOST-STSM-TU0904-150113-031496

Beneficiary: Bilotta Antonio, University of Naples - Federico II - D.I.ST. - Department of Structural Engineering (Napoli, Italy)

Host: Martin Gillie, University of Edinburgh

Period: from 16/06/2013 to 23/06/2013 Place: Edinburgh (United Kingdom)

The STSM was aimed to continue the fruitful partnership between the Department of Structural Engineering (DIST) of the University of Naples Federico II, which the applicant is affiliated to, and the School of Engineering of the University of Edinburgh.

The collaboration concerns the study of fire behaviour of concrete members reinforced with FRP bars. The activity consists in both experimental tests, carried out at the Laboratories of the University of Edinburgh (BRE center for Fire Safety Engineering), and numerical simulations. Experimental and numerical results will contribute to increase the confidence in the use of FRP-RC members also in civil structures for which fire is an event that cannot be ignored, as well as parking lots and industrial structures. Moreover, they allow a scientific background to be created, in order to update the international codes concerning the design of concrete structures reinforced with FRP bars in place of traditional steel reinforcement (e.g. Italian, Canadian and American Standards).

The applicant has been working with the research group of Edinburgh to contribute the (a) execution of tensile test for FRP bars at high temperature (b) interpretation of the results of pull out tests at high temperature. The applicant made available the experience matured in participating in some fire tests on concrete slabs reinforced with internal GFRP bars, previously carried out in Italy within a research project of the University of Naples (scientific team leaders, prof. Gaetano Manfredi and prof. Emidio Nigro). Moreover, he learnt a lot about interpretation of test results through using a software for Digital Image Analisys.

The applicant has come to agreements for continuing the collaboration with host institution, to evaluate the thermo-mechanical behavior of FRP-RC members in fire situation. The results will be finally published on international peer reviewed journals, in full agreement with the dissemination purpose of the COST action.

Napoli, 23.06.2013 Antonio Bilotta