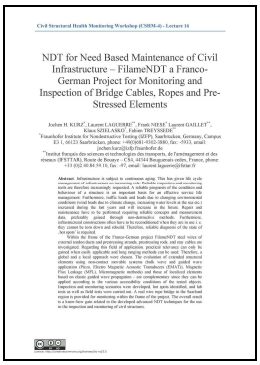

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NDT for Need Based Maintenance of Civil Infrastructure – FilameNDT a Franco-German Project for Monitoring and Inspection of Bridge Cables, Ropes and Pre-Stressed Elements

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Infrastructure is subject to continuous aging. This has given life cycle management of infrastructure an increasing role. Reliable inspection and monitoring tools are therefore increasingly requested. A reliable prognosis of the condition and behaviour of a structure is an important basis for an effective service life management. Furthermore, traffic loads and loads due to changing environmental conditions (wind loads due to climate change, increasing water levels at the sea etc.) increased during the last years and will increase in the future. Repair and maintenance have to be performed requiring reliable concepts and measurement data, preferably gained through non-destructive methods. Furthermore, infrastructural constructions often have to be reconditioned when they are in use i. e. they cannot be torn down and rebuild. Therefore, reliable diagnosis of the state of, hot spots is required.

Within the frame of the Franco-German project FilameNDT steel wires of external tendon ducts and prestressing strands, prestressing rods, and stay cables are investigated. Regarding this field of application, practical relevance can only be gained when easily applicable and long ranging methods can be used. Therefore, a global and a local approach were chosen. The evaluation of extended structural elements using non-contact movable systems (bulk wave and guided wave application (Piezo, Electro Magnetic Acoustic Transducers (EMAT)), Magnetic Flux Leakage (MFL), Micromagnetic methods) and those of localized elements based on elastic guided wave propagation – are complementary since they can be applied according to the various accessibility conditions of the tested objects. Inspection and monitoring scenarios were developed, hot spots identified, and lab tests as well as field tests were carried out. A real wire rope bridge in the Saarland region is provided for monitoring within the frame of the project. The overall result is a know-how gain related to the developed advanced NDT techniques for the use in the inspection and monitoring of civil structures.

Доклад. Конференция по мониторингу технического состояния гражданских сооружений (CSHM-4), «Системы мониторинга технического состояния сооружений, обеспечивающие продление срока службы сооружений». Ноябрь, 2012. Берлин. Германия.

Ключевые слова:

Содержание