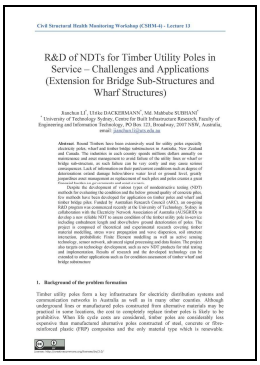

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R&D of NDTs for Timber Utility Poles in Service – Challenges and Applications (Extension for Bridge Sub-Structures and Wharf Structures)

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Round Timbers have been extensively used for utility poles especially electricity poles, wharf and timber bridge substructures in Australia, New Zealand and Canada. The industries in each country spends millions dollars annually on maintenance and asset management to avoid failure of the utility lines or wharf or bridge sub-structure, as such failure can be very costly and may cause serious consequences. Lack of information on their past/current conditions such as degree of deteriorations or/and damage below/above water level or ground level, greatly jeopardises asset management as replacement of such piles and poles creates a great financial burden on governments and asset owners.

Despite the development of various types of nondestructive testing (NDT) methods for evaluating the condition and the below ground quality of concrete piles, few methods have been developed for application on timber poles and wharf and timber bridge piles. Funded by Australian Research Council (ARC), an on-going R&D program was commenced recently at the University of Technology, Sydney in collaboration with the Electricity Network Association of Australia (AUSGRID) to develop a new reliable NDT to assess condition of the timber utility pole in-service including embedment length and above/below ground deterioration of poles. The project is composed of theoretical and experimental research covering timber material modelling, stress wave propagation and wave dispersion, soil structure interaction, probabilistic Finite Element modelling as well as active sensing technology, sensor network, advanced signal processing and data fusion. The project also targets on technology development, such as new NDT products for trial testing and implementation. Results of research and the developed technology can be extended to other applications such as for condition assessment of timber wharf and bridge substructure.

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