Preface

This volume of Key Engineering Materials comprises of peer reviewed papers presented at the 4th Asia-Pacific Workshop on Structural Health Monitoring held on 5th – 7th December 2012 at the RACV Club, Melbourne, Victoria, Australia. These papers were assessed on the basis of technical originality and significance in relation to both research into and applications of structural health monitoring SHM technologies.

With increasing worldwide emphasis on asset sustainability, there is a trend toward Condition-Based Maintenance (CBM) approaches, and the broader approach of Reliability-Centred Maintenance (RCM). These approaches require the knowledge of the structural condition through diagnostic systems which detect and monitor damage or health of the structure and/or prognostic systems which predict the future health of the structure. Therefore, SHM provides a critical capability for these approaches and involves the rapid interrogation of the structure, generally using structurally integrated transducers, to diagnose the current state of its health.

Structural Health Monitoring is multi-disciplinary. For it to be successfully developed and implemented, in a reasonable and practical timeframe, requires constructive interaction between a diverse spectrum of academics, researchers and, original equipment manufacturers (OEMs) and end-users, such as civilian and military operators. The academics and researchers are necessary to develop and demonstrate the SHM technology and systems, whilst establishing detection system sensitivity, reliability and confidence levels. The task of the OEMs and end-users is to define the problem, establish the requirements and the practical limitations, and to assist in developing the business case for such technologies. These interactions will enable the 'technology pull' required to facilitate rapid implementation of the technologies rather then relying on the more problematic 'technology push'. The 4th Asia-Pacific Workshop on Structural Health Monitoring endeavours to bring together academics and researchers, and end-users from Europe, Asia, North and South America, and Australia to facilitate this interaction.

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