**SIMONET Newsletter**

**1. National Composites Network**
**Report on "Technology Gap Review of Composites in the UK Oil and Gas industry" available on NCN web site: www.ncn-uk.co.uk.** Extract from this report:
"Quality control and damage is a key issue. The material is known to contain sub-critical damage modes such as micro-cracks in the matrix when subjected to out-of-design envelope events such as impact. There fore, inspection methods are required to identify damage tolerance after such events. The inspection methods are not necessarily considered robust enough. Advances have been made in the use of ultrasonics and laser shearography for composite inspections. In addition, composite materials lend themselves to embedded sensor such that real time structural health monitoring can be considered".

**2. Sensors Knowledge Network, Location & Timing**
**Extract from web site: www.sensorsktn.com**

## Surveying using GNSS

One of the first applications for GNSS was surveying. Very high precision measurements were being made on GNSS signals as early as the late 1980's when niche markets like surveying could use GPS signals (at a time when there was not sufficient coverage for 24 hour navigation).

For many surveying applications, GNSS has the advantage over normal surveying techniques that the GNSS stations do not have to be inter-visible. As a result large scale projects can be undertaken, and even monitored remotely, without human intervention. The relative positions of the starting point for the Channel Tunnel were determined using GPS.

In Surveying using GNSS techniques it is normal to measure RELATIVE positions rather than absolute positions. These relative positions can be at the centimetre level, and sometimes at the millimetre level, using measurements on the GNSS carrier waves rather than on the signals used for navigation. These 'highest of precision' receivers also use dual frequencies to reduce the effects of the ionosphere. Today there are many applications using these techniques in Surveying, Agriculture and Geophysics.

At one end of the scale there are permanently mounted reference stations in areas of plate tectonic activity, which measure the smallest movement of the plates relative to each other. This can then be used to predict earthquake activity. At the other end of the scale a GNSS receiver can be used on a construction site to mark out the alignment of a road prior to construction, or locate a newly built feature for subsequent marking on a map.

GNSS surveying techniques have also been used off-shore in the marine environment for the positioning and monitoring of oil rigs, and used in geophysical surveys.

**3.New web site ISHMII http://www.ishmii.org/**
(International Society for Structural Health Monitoring of Intelligent Infrastructure) which is a non-profit organization of leading structural health monitoring institutions. The site provides links to structural health monitoring guidelines, e.g. Canadian, French, US, SAMCO and ISO.

**4. European Association on Structural Assessment Monitoring and Control (SAMCO)** this Association follows on from the European funded network. See **www.Samco.org** for more details.

***5.*** **Design manual for roads and bridges: Vol. 3 Highways structures: inspection and maintenance. Section 1 Inspection. Part 7 Advice notes on the non-destructive testing of highway structures (BA86/06).** This UK Highways document issued August 2006 contains guidance on using a number of techniques which include impact-echo; sonic transmission and tomography for masonry bridges; ultrasonic transmission and tomography for post-tensioned concrete bridges; electrical conductivity; ground penetrating radar (GPR) and acoustic emission.
See: **http://www.standardsforhighways.co.uk/dmrb/vol3/section1/ba8606.pdf**

**6. Forthcoming International Workshop on Structural Health Monitoring. September 11-13, 2007, Stanford University, Stanford, CA.**
Topics include: Sensor and Actuator Development, Signal Processing/Diagnostics/ Prognostics, Modeling/ Simulations/ Design Optimization, Integrated Health Management and Applications.
For details see: **http://structure.stanford.edu/index.htm**

**7. State of the Art Review – Structural Health Monitoring: A SMART-MAT Report produced by Qinetiq .** This includes chapters on optical fibre sensors, electrical sensors, data analysis and SHM of structures. See:
http://amf.globalwatchonline.com/epicentric_portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/AMF/smartmat/locked_SHM%20SMART_mat%20v12.pdf