

Real-time Crack Detection and Monitoring

- Full Scale Fatigue Test / Laboratory tests
- No need to repeatedly stop test for crack inspection
- Modular system -up to 16 channels per vacuum source
- Crack detection capability to less than 1mm
- Sensors can operate in pressurised environments
- Live Data streaming software (NetSIM) included.
- Remote live monitoring from PC (up to 16 channels)
- Digital and Analogue outputs.
- Alarm levels can be set to trigger action (e.g. stop test)



Full Scale Fatigue Tests:

It is common in the aerospace industry to establish the fatigue life of component or whole structure with a fatigue test. Traditionally, key areas are strain gauged and the test is stopped periodically for inspection of fatigue critical areas. This is time consuming and risks the undetected initiation of cracks.

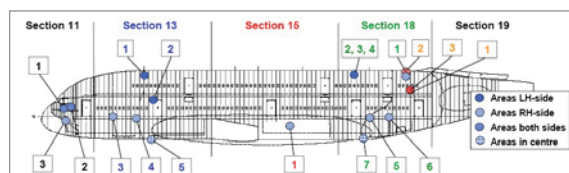
By applying a network of CVM™ sensors to these fatigue critical areas, the initiation of cracks as small as 0.5mm can be immediately detected and the test can be stopped automatically.

A380 FSFT - Dresden, Germany

Airbus has installed over 100 sensors on the A380 FSFT and are continuously monitoring through a network of SIM8's for the onset of crack initiation.

The same time saving methodology has been employed on sub-assembly fatigue tests such fuselage 'barrel' tests and wing tests by other manufacturers.

Sensors can be made in any shape or size and have even been made to fit between lap joints to detect the onset of tiny cracks in the faying surface of these riveted joints. Furthermore, the sensors work on most materials including aluminium, carbon composites and other common structural materials.



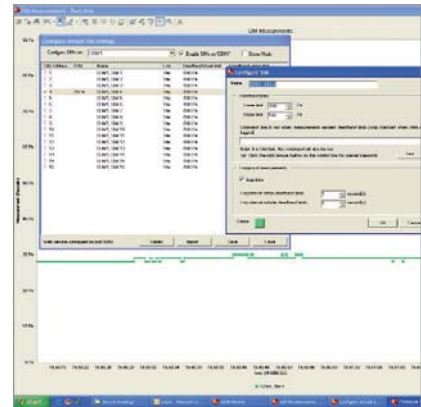
Components of the CVM™ Lab system:



Kvac5 - Constant Vacuum source



SIM8 - Pressure Differential device



NetSIM software

CVM™ requires a constant vacuum source relative to ambient. The Kvac5 operates from an external 12V DC supply (AC mains converter supplied) and an output socket makes the same power available to drive SIM8 units. The whole package is contained in a robust case with a secured sealed cover for safe and convenient transport. (Dimensions 270 x 250 x 178 mm).

Transducers in the SIM8 are able to detect minute flows which are caused by surface cracks breaching the sensor or sensors to which it is pneumatically connected. A pressure transducer samples at 3.6 kHz and outputs a rolling average at 1Hz throughput. This output pressure is displayed on the SIM8 LED screen and outputs a real-time data stream to a PC. An alarm can be set at a trigger pressure limit. There is also an analogue output which can be used to initiate an action such as stopping the test. (Dimensions 120 x 95 x 65 mm)

Microsoft Windows compatible application, NetSIM, allows real-time communication with a network of up to 16 SIM8 modules with display and data handling functionality. Dead-banding is used to allow long-term tests to be recorded without producing exceedingly large data files, whilst still logging specific events. 32Mb RAM, 20Mb free disk space, SVGA graphics controller, 8 x CD ROM, 1 available RS232 Serial Port.



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