STRUCTURAL HEALTH MONITORING SYSTEM

A low-cost, multi-channel early warning active structural health monitoring system using piezoelectric sensors

Benefits

- Low cost
- Portable, robust and time-efficient
- Suitable for extreme conditions and massive structures
- The application will enable the development and instigation of programmed preventative maintenance of structures.

Potential applications

- Infrastructure
- Mining Engineering
- Geotechnical Engineering
- Civil Engineering
- Oil and gas industry
- Machinery and equipment.

Technology overview

This Structural Health Monitoring (SHM) platform technology is specifically designed for applications in harsh environments and for large scale structures. It was developed using a low-cost electronic circuit that measures in analogue form, the current and its phase difference to the applied voltage, through a piezoelectric transducer (PZT). By using it in conjunction with an analogue to digital converter (ADC) outputs of the PZT are captured. Major advantages are:

- Provides low-cost instrumentation for active SHM;
- Activates and reads multiple sensors (e.g. 100 or more) simultaneously;
- Works over a wide frequency range from 10 KHz to 1 MHz.
- Achieves 99% accuracy
- Does not require the use of an expensive commercial impedance analyser.
- Simplifies real-time monitoring and prediction of:
  - surface and body crack development dynamics
  - environmental damage development
  - damage zone development dynamics.
- Can be incorporated into early warning systems.
- Easy to set up and use.

Opportunity

We are seeking a commercial partner with interest in participating in the next stage of development i.e. wireless technology development and commercialisation.

IP status

Patent pending.

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FURTHER ENQUIRIES

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