Mission Statement

For more than 40 years our intent has been to provide our clients with information which characterizes the wellbeing of their assets. We do this via both numerical modeling and collecting operational data, or, ideally, a combination of the two.

Sometimes these projects are long term, such as the monitoring oil and gas pipelines, offshore production platforms or transmission towers. At other times the monitoring phase may last only a few milliseconds, as with a pipeline burst test.

In all cases, our mission is to provide the client with results which enable them to operate and react with greater safety, efficiency and understanding. We earn repeat business by protecting personnel, environment and assets.

Iain Weir-Jones, Chairman, Ph.D., P.Eng., FGS.

Company Overview

The Company was founded in 1971 to provide specialized structural and geomechanical monitoring and testing services to the resource and transportation sectors. The Company’s capabilities subsequently expanded into the areas of data processing and testing system design, and the application of this expertise has been extended considerably in the fields of structural integrity monitoring for heavy structural, energy, and offshore systems.

The Company has its headquarters in Vancouver and has been active in projects in 55 countries. We also maintain an office in Fort McMurray, Alberta, the heart of the oil and gas industry in Canada.

The Company offers comprehensive end-to-end solution planning, implementation, and analysis capabilities. 90% of our clients typically retain the Company on a project basis in order to characterize a problem, develop a solution, and evaluate its effectiveness.

ShakeMonitor is part of The Weir-Jones Group's Reduced Carbon Footprint suite of solutions for the reduction of environmental impact due to the potential catastrophic effects of a seismic event, or via the long term structural monitoring of a given asset.

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**Introduction**

The Weir-Jones Group’s [ShakeMonitor™](#) is a system which automatically computes natural frequencies of structures and then analyses the real-time vibrational data to identify any anomalous responses which may be caused by seismic or other significant disturbances.

Using the original design drawings, a finite element model (FEM) of the structure is created and then used to produce a baseline model – including a structural reliability study – in order to identify responses outside normal modal shapes. Data is available in real-time and is stored for subsequent analysis. [ShakeMonitor™](#) delivers reliable data autonomously on a continuous basis to monitor modal characteristics and key structural performance indicators.

**Application**

[ShakeMonitor™](#) generates a real-time quantitative assessment of how a structure responds to environmental disturbances by observing vibration, tilt, torsion, settlement, uplift, and seismic activities.

[ShakeMonitor™](#) communicates structural performance information to multiple clients off and on-site and produces alarm notification and warning at the onset of an anomalous situation.

[ShakeMonitor™](#) can be configured remotely as well as locally.

**Quality Built In**

**Repeatability**
Sensors are designed and calibrated to provide reliable data sets for further processing, and for many years of trouble free operation. The Weir-Jones Group has more than forty years experience implementing structural integrity monitoring systems.

**Flexibility**
Data Acquisition Units and communication platforms are designed to interrogate various types of field sensors over shielded cable, fibre optical, wireless, or Ethernet communication lines.

**Serviceability**
System maintenance and/or repair can be carried out by replacing components without disabling the entire system. Failed components are replaced quickly and easily with minimal possibility for error.

**Survivability**
Enclosures are constructed for indoor or outdoor use in order to provide protection for both the equipment and personnel.

**Deliverables**

Qualitative condition and periodic inspections have long been employed to assess the condition and behaviour of structures under adverse conditions. Over the last two decades, [ShakeMonitor™](#) has evolved into a state-of-the-art, turn-key solution providing highly accurate, repeatable, cost-effective Structural Health Monitoring for a wide variety of structures. The functionality of [ShakeMonitor™](#) is based on the following assumptions:

- All materials and structural configurations will ultimately fail. The question is when and under what conditions.
- Structural damage assessment requires a reference point to provide a comparison between two structural states.
- Sensors only measure physical parameters, while algorithms predict the possible structural response.
- The accuracy and resolution requirements of a Seismic Integrity Monitoring System define its design and operational characteristics. [ShakeMonitor™](#) fulfills all functional requirements.

**Benefits**

[ShakeMonitor™](#) provides real-time information about structural health, together with an archival record of seismic inputs and the response of the structure. The advantages of the [ShakeMonitor™](#) approach as follows:

- Highly accurate, repeatable monitoring throughout the structures lifecycle
- Detection of settlement, tilt and other long term changes, as well as the monitoring of seismic events
- Eliminates the need for expensive post-incident surveying
- Ability to integrate alarm responses into other infrastructure systems
- Low fixed and recurring-cost, with predictable TCO

Over 80% of [ShakeMonitor™](#) components are designed and built in-house. [ShakeMonitor™](#) offers the following additional benefits:

- [ShakeMonitor™](#) provides reliable assessment on performance of newly built structures
- [ShakeMonitor™](#) reduces cost of periodic structural inspection
- [ShakeMonitor™](#) is capable of being installed in remote areas working autonomously without external power supply and other urban environment resources
- [ShakeMonitor™](#) is an intrinsically flexible solution that is employed on a wide variety of structures, such as nuclear power plants, hydropower plants, bridges and communication towers as well as residential and commercial buildings
- [ShakeMonitor™](#) is essentially maintenance free. MTBF exceeds 25 years based on continuous operation
- [ShakeMonitor™](#) can be installed and commissioned temporarily to monitor critical structures adjacent to construction zones or it can be permanently commissioned in order to maximize the service life of your property
- [ShakeMonitor™](#) provides Earthquake Early Warning for multiple clients as an optional feature