

KINEMATRICS, INC. ANNOUNCES PRODUCT OFFERINGS

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Kinematics, Inc. of Pasadena, California, introduces the third generation of OASIS system solution products designed to meet post-Earthquake Building Occupancy Resumption Assessment needs. OASIS is a hardware and software system solution product that provides real-time, on-line monitoring for continuous evaluation of structural integrity in response to an earthquake.



From the Past and into the Future:

First Generation

The first generation of the OASIS system was introduced at the 1994 EERI Annual Meeting. Since then, Kinematics & Agbabian Associates has successfully implemented the OASIS system solution product in projects such as the:

- Rama IX Bridge, Bangkok, Thailand (1994-present)
- [Namhae Bridge, South Korea](#) (1996)
- Peninsula Hotel, Bangkok, Thailand (1997)
- Suez Canal, Egypt (1999)

Second Generation

A second generation of OASIS was introduced in 2003. It incorporated the highest resolution digitizer of that time, the Q330, at ultra low-power consumption (3-channels of acquisitions/GPS, 24-bits @~0.5W) while offering real time monitoring capabilities. An example of this implementation was carried out at [the Bill Emerson Memorial \(Cape Girardeau\) Bridge](#), MO project.

Third Generation

The third generation of OASIS is a flexible structural monitoring system providing for the collection and processing of acceleration, velocity, displacement, and inter-story drift data implemented for building monitoring. The processed data can be stored, further processed, transmitted or used to alert interested personnel in a number of ways.

The system comprises three major components: Sensor, Multi-Channel Data Acquisition system, and Monitoring, Display & Alarm system.

The system mathematically derives velocity, displacement, and optionally inter-story drift from acceleration inputs to the digitizers. This information can be used to alert on-site personnel through

audible and/or visual alarms as well as notify off-site personnel via file transfers or e-mail messages that can be customized from executive summaries all the way through full raw data sets and processed parametric information.

Application:

The new generation of OASIS has found an ideal application in a post-earthquake building occupancy resumption assessment (pEQ BORA). Soon after an important earthquake, a city's inspection is required to resume occupancy of a building. In such cases, a real-time monitoring of the building's response to earthquake shaking and further estimation of the displacement drift at critical points will provide key information to the responsible engineer in the decision making process. It aids in the decision of whether or not to resume occupancy of that building or if a detailed inspection is required.

For this application, the new OASIS for pEQ BORA offers four vital functions, as follows:

1. In-situ and remote, real-time alerting using onscreen imaging, light and audible alarms
2. Data acquisition as a high dynamic range accelerograph
3. Remote control and display of system functions
4. Long-term health monitoring

Among the benefits that the new OASIS for pEQ BORA brings are the following:

- Ideal for critical structures, vital lifeline applications
- Highly flexible
- Expandable through networking
- High resolution
- Continuous data transmission and display

The OASIS system is highly customizable, including:

- The number of sensor inputs
- Detailed control of operational parameters
- Modular architecture allowing for added capabilities as needed
- Provision for end users or systems integrators to write their own software extensions to the system

Specifically, the OASIS system allows for:

- Triggered recording based on inter-story drift, acceleration (threshold or STA/LTA triggering), or a combination of both with channel voting to allow sophisticated control of the trigger point
- Remote command/control
- Remote "pull" of recorded data via an integral (optional) FTP Server
- "push" of data into a customer's remote FTP server of recorded data
- Generation of e-mail messages when significant events, such as an event trigger, occur

System Components Highlights:

Implementation of the Sensor Subsystem depends on the type of structure and specifics of the monitoring and is primarily for acceleration, but it could also include a wide variety of sensors, such as:

- Acceleration
- Differential GPS
- Displacement Transducers
- Wind
- Temperature



- Strain
- Tilt/deflection
- Other

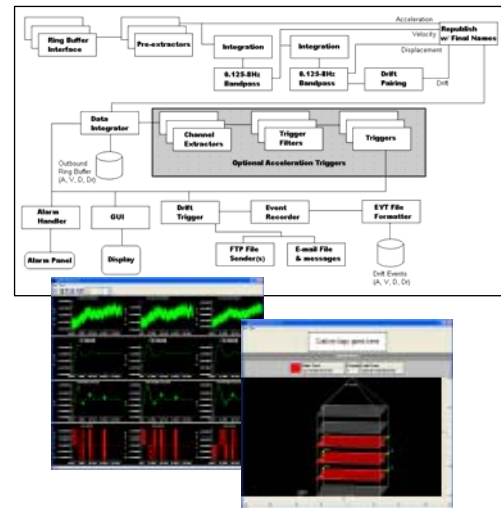
With respect to the Data Acquisition Subsystem, three major Kinometrics' family products can be used as follows:

- The new Rock Platform, Granite - High Dynamic Range, IP Aware, Communication Centric Multi-channel Recorder with up to 24 channels at 130 dB dynamic range. Granite is expected to be available by Fall 2007.
- The well-known Quanterra's Q330 – Ultra Low-Power High Resolution Network-Aware System in modules of 6 channels at 135 dB dynamic range to make up data acquisition blocks of up to 36 channels. Q330's are used along with the SLATE, a rugged, ultra-low power Rock platform field processor.
- The Altus Family – High Dynamic Range, Multi-channel Recorders. Mt. Whitney for up to 18 channels and K2 for up to 12 channels systems at 114 dB dynamic range. Also for this family of products, SLATE is required to implement OASIS and due to limitations on the number of channels that can be streaming in real time out of the recorders, the implementation of OASIS is based on a set of customer-selected number of sensor channels, not all of the sensors physically deployed.



Some of the Monitoring Software Subsystem highlights are:

- Data collection and computation of velocity, displacement, drift and response spectra from acceleration data
- Real-time monitoring, Display & Alerting based on user-selectable drift ratios, including the display of the structure with color-coded alarm/alert levels
- Remote command/control of sensor & data acquisition through TCP/IP
- Execution of user-supplied Windows executable (or batch file) for further analysis, and more...



See [OASIS for pEQ-BORA](#) for more information