



ANNOUNCING THE FIRST COMPREHENSIVE PROACTIVE & REACTIVE INDUSTRIAL & COMMERCIAL EARTHQUAKE MONITORING SYSTEM!

EARTHQUAKE SAFETY SYSTEMS INC. (ESS) and **QUAKELOGIC INC.** have teamed up to design the first hybrid earthquake monitoring system that combines the advance warning capability afforded by the USGS ShakeAlert Earthquake Early Warning (EEW) broadcast signal, advanced p-wave analysis algorithms generating a predicted Modified Mercalli Intensity, multi-



algorithm voting, multiple distributed sensor voting and selectable filter response (nominally flat or ANSI/ASCE/SEI 25-16) for site specific peak ground acceleration (PGA) monitoring that addresses insurance carrier mandates, code-compliance, etc.

The result is a **robust system** that provides both regional monitoring (USGS EEW broadcast) and site-specific monitoring using real-time P-wave analytics and PGA exceedance. There is no alarm unless 2 out of 3 analytical methods indicate an event. This system is **especially suited to owners that are highly averse to false positive alarms** but want early warning capability.

PROACTIVE PHASE

The touchscreen sub-system receives both regional EEW broadcast signals and site-specific strong motion data from its own sensors. The LCD display, vertical light bar and audible annunciator deliver continuously updated warning information to operators. If the system receives the USGS EEW signal before seismic waves reach the owner's site, then the display reflects that information. If the owner is in the 'blind zone' the system will analyze the first few seconds of the earthquake (P-wave) and project the intensity and S-wave arrival time. Relay outputs are also available to initiate an automated EEW response (signal owner's PA system to broadcast a pre-recorded message such as "Earthquake! Drop, Cover, Hold").



- USGS EEW Broadcast alarm
- Pd algorithm (P-wave displacement)
- STA/LTA algorithm
- PGA comparison
- 2-out-of-3 algorithm voting
- MMI expected shaking intensity
- Countdown to strong shaking
- Earthquake event data
- Event log
- Data forwarding /FTP uploading
- Visual and audible annunciators
- Seismic controller/PA signaling

REACTIVE PHASE

ESS' Master Seismic Controller (MSC-series) has served industrial and commercial facilities for over 30 years with a proven track-record in response to many real strong motion events. The MSC provides seismically qualified power and circuit protection for the touch-screen early warning system. Additionally, the MSC directly powers & controls a broad spectrum of pneumatic, hydraulic, electric or solenoid actuated valve assemblies. If the owner has opted for EEW-based protection, then the MSC performs a logical 'OR' operation with the alarm signal from the EEW sub-system and immediately strokes the owner's valves to the 'safe' position (open or close) in response to the USGS or P-wave algorithm declared event. Alternatively, to lower the risk of false positives, the MSC can perform a logical 'AND' operation with the 'proactive phase' sub-system- before stroking the owner's valve(s) closed. Finally, the systems can be operated independently with the EEW signal providing advance warning to personnel and the MSC separately performing site specific 2/2 or 2/3 voting with a variety of sensor configurations (i.e. standard flat response, ANSI/ASCE/SEI 25 response, etc.).



- USGS EEW logical 'AND/OR' operation
- Multiple sensor voting
- ANSI/ASCE/SEI or standard response
- Multiple actuator circuit protection
- Multiple actuator power & control
- 24 Vdc system backup power
- Intrusion alarm
- Bypass Alarm
- Valve Open / Close status
- Remote Seismic Trip / PLC signal
- Power & sensor fault alarms
- Blocking/vent valve sequencing
- CA DSA Certified, UL marked
- ...and more

If you already own an MSC-series Master Seismic Controller with a 24 Vdc UPS (indoors or outdoors), there are retrofit options. There are also options for those who just want the advanced early warning sub-system. Email or give us a call to discuss your application.

[TO OWN ONE OF THESE ADVANCED WARNING SYSTEMS, CONTACT US NOW!](#)

EARTHQUAKE SAFETY SYSTEMS, Inc., Rod Merrill, General Manager, +1-951-543-2121, rod@eqsafetysys.com or info@eqsafetysys.com, www.eqsafetysys.com

QUAKELOGIC Inc., Dr. Erol Kalkan, P.E., +1-916-258-3736, sales@quakelogic.net, www.quakelogic.net