

Seismic Earthquake monitoring system for Algerian Dams



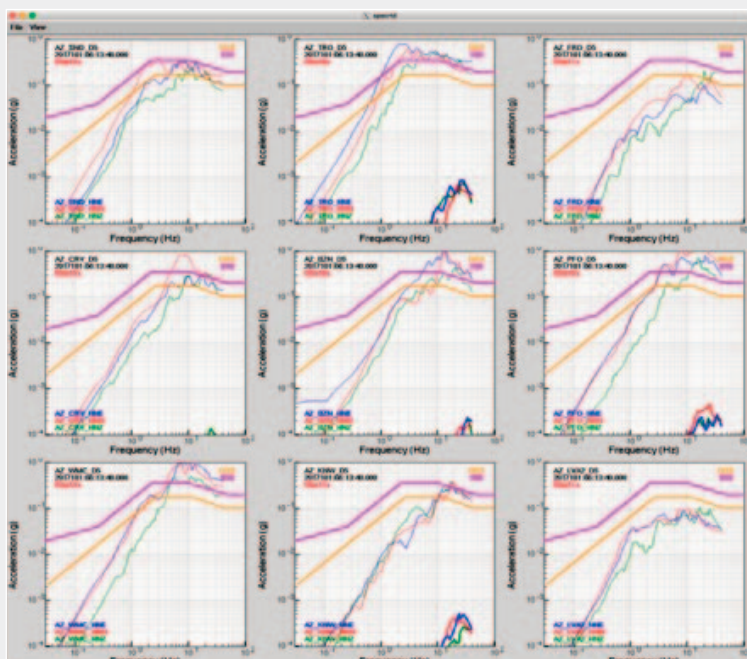
The high-performance, compact, and cost-effective Etna2 accelerographs were interconnected to create strong-motion networks for real-time data services such as rapid analysis and notification.

CASE STUDY



The National Agency for Dams and Water Transfer (ANBT) manages 75 dams in Algeria, dams with about 70% water reserve reaching 4.5 billion cubic meters thanks to heavy rainfall in recent years. Kinematics was chosen to provide an Earthquake Monitoring solution, connecting distributed IP-base Strong Motion Accelerograph (SMA) in real-time to the dam control rooms using Kinematics' iDAM platform.

The system is designed to meet the objectives of Seismic Dam Monitoring and Alerting. The iDAM SMA stations are equipped with an Etna2 accelerograph and housed in a NEMA4 enclosure. Fibre optic cables connect the SMA to the dam control room. These connections assure fast data speeds and interference-free connection throughout the dam, up to the control room. Moreover, the Etna2 has built-in relays to report local alarms in case of acceleration threshold exceedance and/or State-of-Health (SOH) conditions. The system is designed to work 24/7 year after year.



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CASE STUDY

The state-of-the-art Seismic Monitoring System was installed at the Barrage Oued That and the Barrage Soubella dams with WAN connection to the ANBT Data Centre in Algiers. There, a sophisticated processing tool calculates in real-time earthquake response spectra to generate alarms instantly in case of exceedance of operator-defined demand spectra.

MULTI SENSOR INTEGRATION

Instrumentation and software were integrated into a multi-sensor multi-location seismic network that produces high-quality real-time data.

SYSTEM FLEXIBILITY AND SCALABILITY

There are four monitoring points at each dam, the Crest, Foundation, Abutment, and the Free-Field. More stations and dams can easily be added to this [iDAM](#) implementation in future phases of the instrumentation project.

ENGINEERING SERVICE

The engineering services include system design and integration, factory acceptance test, training, and installation support.

DATA RETURN

[Etna2](#) accelerographs, synchronized with a timing accuracy of <1 microsecond, connected by fibre optic cables, assure more than 99% data return.

