PROJECT PROFILE

Vibration and Deflection Monitoring for LNG Facilities

New England and New York

Automated Motorized Total Station (AMTS) surveys LNG tank for settlement every two hours during construction, at costs significantly less than weekly survey crew

Project Highlights

- Monitoring of Heavy Construction and Demolition Vibrations
- Automated Monitoring and Notification System Sends Email and Text Alarms
- Solar Powered at Remote Locations
- Daily and Weekly Reports
- Meets Class 1 Division 1 and 2 Hazard Requirements
- Visual Warning Beacon
- Secure Online Data Management and Accessibility
- Data Interpretation

Challenge: Vibration and deflection monitoring of liquefied natural gas (LNG) tanks and associated facilities are critical when construction or demolition is occurring nearby. With state-of-the-art technology, GZA enhances the delivery – and reduces the cost – of these instrumentation services to power sector clients.

Solution: Traditionally, monitoring such facilities was costly, requiring a full-time field engineer or weekly surveys; if vibration threshold levels were breached, relaying information was time-consuming. GZA now establishes remote, automated collection of continuous vibration and deflection data. Data is uploaded automatically at set intervals (typically every hour) through a cellular connection to a secure website which offers ready access to current and historical data and graphically displays project information. Designated project personnel have access to the data, and GZA issues weekly or daily summary reports to the team. The system also issues alarm warnings via email and/or text message if pre-designated vibration and settlement threshold levels are breached: a lower-level warning alarm notifies the site contractor to review ongoing construction activities and adjust procedures so vibration levels do not increase; if an exceedance alarm is triggered, the contractor is to stop work and develop mitigation measures which are reviewed and approved by the design team prior to work continuing.

Benefits: GZA provides continuous vibration and deflection monitoring services of critical power structures for a fraction of the cost of the traditional manual monitoring and site surveys. The data, collected remotely, is securely stored and can be readily accessed 24/7 by designated project personnel. The instruments can also be placed in hazardous areas, and they meet specific Class 1 Division 1 and/or 2 requirements. Additional remote services include piezometers, noise, dust, and stress and strain monitoring.

Intrinsically safe solar-powered vibration monitors

Blast demolition of a bridge near monitored LNG tank