

Application Case History – Noise

Subject: Continuous Web-accessed Continuous Noise Measurement System

Author: Rob Brauch, Business Unit Manager, Casella CEL Inc.

Guardian™ Systems by Casella integrate continuous noise measurement with weather data and other parameters for real-time alert messaging at a sensitive redevelopment project - on an island paradise.

Continuous monitoring of noise at industrial facilities has been elevated to a completely new level with Casella's Noise Guardian™ and Boundary Guardian™ monitoring systems – now, when noise rises above acceptable levels, real-time alerts are being delivered by text message and email to those who need to know and can take appropriate action. In addition to gathering and reporting the noise levels continuously, Guardian systems automatically send data to a secure website for retrieval by authorized staff.

Typical applications include perimeter monitoring at industrial facilities in or near developed areas, or those that have had newer residential property development nearby, causing noise complaints by residents and community organizations. Other uses include monitoring near mining, drilling and fracking operations and gas transmission facilities, both for regulatory compliance or in response to demands of the surrounding community. In all cases, the ability to monitor, record and even identify all of the noise sources present, 24 hours a day for indefinite periods of time, provides facility operators, contractors, and remediation firms the secure, archived information they need to prove compliance with local ordinances or EIS requirements as well as knowing that if they are out of compliance they will receive instant notification.

Some of the more unusual applications for this system include construction and demolition projects where the site is in a developed and environmentally sensitive location. One recent example is in the famous Waikiki Beach area of Honolulu Hawaii, where an older structure is being razed to make room for a new multi-story shopping mall - and while this area is already densely inhabited and known for its tourism and bustling nightlife, the additional noise created by the demolition and construction process will need to be monitored continuously for a two-year period. Ten specific locations around the perimeter of the project were selected for erecting Casella's Guardian systems with all ten measuring noise – and of those ten, four units measure total suspended particulate (TSP) and one of those systems also has wind speed and wind direction sensors with output integrated directly into the data stream.

One of the primary considerations in selecting the Casella Noise Guardian and Boundary Guardian systems for this very sensitive project was the extremely rugged packaging and continuous data acquisition capability; coupled with the ability to include wind speed, wind direction and even real-time particulate monitoring alongside the noise level data with multiple sites all reporting back to a secure server allowing access to the data 24/7. The sound level measurement capability built into the Noise Guardian and Boundary Guardian units satisfies and exceeds local requirements for accuracy and calculation of important environmental metrics like L10, L50 and L90, as well as hourly Leq data, and also provides detailed time-history data that can illustrate noise fluctuations by time of day and activity level onsite. The instrument can also use its internal memory to capture 'forensic noise data' - if the

Application Case History – Noise

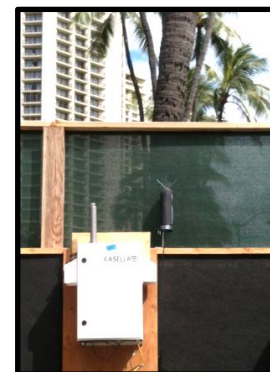
decibel level exceeds a pre-set threshold, the system automatically records a .wav file of the sound itself, thereby giving the Project Manager the ability to ‘hear for himself’ and thus identify the source of the offending sounds.

Managing and accessing the large volume of data that are produced when running a continuous monitoring operation can be daunting, but with Casella’s Dataview 24/7, the data are easily accessed in a simple on-screen view, at any time, from virtually any PC, tablet, or smartphone, with a simple, secure login. Formatted reports are easily generated with user-defined time periods, with as much or as little detail as might be appropriate. Data can be easily superimposed onto a high-resolution map of the site, and also exported to third party positional interpolation programs for detailed exposure modeling.

Most important, the Casella systems send real-time alerts to the secure servers that then in turn can push these alerts out to any or all designated personnel or other stakeholders as needed. This gives the Project Manager and Safety Health and Environmental manager, as examples, the ability to be notified instantly if undesirable levels of noise (or dust) are being generated at the site. Countermeasures can then be applied and work modified until levels are brought back to within acceptable limits. This proves invaluable especially when projects are being carried out in densely populated or otherwise sensitive areas.

The Guardian systems were selected for this project not only because they provide the all data that is needed in real time, but because they are well-protected from feeling the effects of the tropical weather conditions they will encounter over the life of the project; plus, they were very easy to install and commission - and routine maintenance is minimal. The remote cellular communications are very reliable and the ability to access reports and get real-time alerts is incredibly useful in keeping ahead of any possible concerns or complaints from the surrounding community. It is expected that this technology will be useful at many other similar projects in the future.

In creating the Guardian series of products, Casella draws upon over forty years of noise and dust instrumentation development experience and well more than 100 years of meteorological expertise – and as part of IDEAL Industries, Inc., Casella has a presence on six continents that allows for local support with a personal touch, built upon its global business infrastructure and comprehensive technical expertise to ensure excellent data integrity, in turn delivering clear and useful monitoring results for a reliably high-quality noise monitoring project outcome.



Casella Boundary Guardian on Project Site