

CASE STUDY: NOISE SENTINEL

NOISE MANAGEMENT AT GLOBAL RENEWABLES



GLOBAL RENEWABLES™



BACKGROUND

In 2007 Global Renewables was awarded a contract worth £2bn over 25 years to process the household waste of 1.4m people in Lancashire in the North of England.

Driven by the increasing costs and environmental damage of landfill, the contract required the construction of two Waste Recovery Parks at Farington and Thornton at an overall cost of £234M.

Each Waste Recovery Park can process up to 170,000 tonnes of Residual Household Waste into a high quality Organic Growth Media OGM.

The sites were located away from densely populated areas and only process materials for 14 hours a day, however environmental issues around odour, air quality and noise were key concerns to local residents.

As a consequence the planning consent for each Waste Recovery Park required that the sound level at the site boundary from site operations should not to exceed 50dB(A) for 30 minutes during the day and 50dB(A) for 15 minutes at night

 **Noise Sentinel**
Noise Compliance Management

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Brüel & Kjær 

NOISE MONITORING REQUIREMENTS

The planning consent for each Waste Recovery Park required the noise associated with the operation of the facility not to exceed 50dB(A) for a continuous 30 minute period during the day, and for a continuous 15 minute period during the night.

Any exceedances that are identified from the operation of the facility are reported to the Authority and a deduction applied as required.

Global Renewables determined that the priority was to find a proactive system which could identify incidents occurring and flag a warning to our operatives to take action to identify and address the incident.

"A historical reporting system is no good for our business, we need to be aware of a noise occurrence before it becomes a breach so that we can do something to stop it happening"

Gordon MacDougall
Project Director at Global Renewables

THE NOISE SENTINEL SOLUTION

Over a period of months Brüel & Kjær EMS and the local sales representative spent time with Global Renewables to clearly understand any constraints; not just with respect to the planning conditions, but their operating practices, staff availability and budget.

Monitoring levels of 50dB(A) was particularly complex in the case of the Farington Waste Recovery Park which is located on the same site as a heavy truck manufacturing plant.

An automated solution that was easy to understand by all members of staff, and the public, was of paramount importance.

Each Waste Recovery Park has a Technical Manager who is responsible for the reporting of all Environmental Issues. Management of any potential noise breaches would be done by operational monitoring staff, with no noise experience, as the environment manager may not always be available.

Noise Sentinel was identified as a perfect fit for this application.

The key challenges of this application were:

Real time monitoring driving action before noise breach occurs

- ▶ The Real Time Control App is intuitive and enables non-noise specialists to take action to ensure compliance
- ▶ Noise Monitoring is now aligned with standard operating practices within Global Renewables

Only noise from the operating plant is subject to compliance

- ▶ Audio recording can clearly identify the source and nature of the occurrence and confirm whether or not the noise source was attributed to the operation of the Waste Recovery Park.

Staff constraints

- ▶ Monitoring is unattended and automatic
- ▶ Periodic reporting is available automatically and can even be transmitted to designated people automatically.

- ▶ Being Web based, the Technical

Manager can manage both facilities from any location via the internet.

- ▶ Simultaneous use means no disruption to operational monitoring staff.

Business simplicity

- ▶ Noise Sentinel is a complete package of technology, services, support and maintenance – everything that Global Renewables needed to manage their noise compliance.
- ▶ All equipment is owned and operated by Brüel & Kjær, there's no asset depreciation to manage, no technology refresh or obsolescence to deal with.

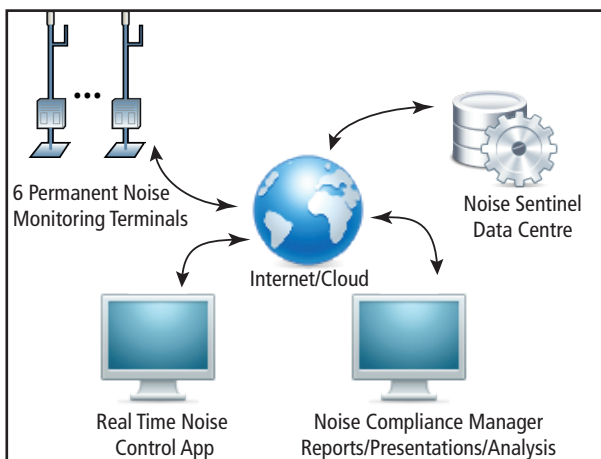
Budget constraints

- ▶ Noise Sentinel is budget efficient – it doesn't require large capital outlay and because everything is included within a fixed price fee you know exactly how much it will cost into the future.

In 2010 Global Renewables agreed a 5 year contract with Brüel & Kjær to establish and operate Noise Sentinel at each recycling plant.

Each site is equipped with 6 permanent noise monitoring terminals (NMTs) located around the perimeter of the facility. The NMTs communicate noise in real time through standard network connections to the internet. One NMT at each site is fitted with an anemometer and wind direction monitoring equipment.





From there the data is sent securely to the Noise Sentinel Data Centre where it is processed and made available to authorized users anywhere over the internet.

The Noise Sentinel Control App is always displayed live in the control room of each of the Waste Recovery Parks and is used to manage and interrogate the incidents as they arise. The Technical Manager and other key staff members can access the system remotely from any location

MANAGING REAL TIME NOISE

In the Waste Recovery Park control room, the Noise Sentinel Control App is constantly displayed on a screen mounted on the wall.

Current noise levels are displayed over an aerial photograph of the site. The current noise level, updated every second, is displayed at the position of each terminal.

Any terminal that has triggered a warning is displayed in Orange and any terminal with an exceedance condition will be displayed in flashing Red. This immediately gives the operator the location of the noise issue indicating who to contact or how to respond. Current noise levels are also shown in blue on the left hand side.

On the right hand side is a list of alerts. Noise Sentinel automatically creates an alert when levels approach the defined criteria. The alert is displayed as a red box and also triggers an email or SMS message.

When an alert occurs the operations control room operatives can immediately click on the alert to see the location and extent of the noise level.

Clicking a second button replays the audio recorded by the NMT for the alert. This enables the control room operatives to determine the nature of the noise occurrence and whether or not it was attributed to the operation of the plant.

Following an investigation into each alert, the control room operator can enter text into the alert which identifies the root cause of each incident and whether or not it represents a breach of the site planning conditions. It is possible for the system to generate an alert that an exceedance has occurred, however this doesn't necessarily represent that a breach of the planning condition has taken place. Therefore the system generates an audit trail for each event and the date and time it occurred.

If it is determined to be plant noise, then the Technical Manager can take immediate action to contact the relevant part of the facility to take action to reduce limits. Continuing to view the display will confirm when action has taken place.

"We are operating under strict noise limits, and because of the easy access to sound recordings it is possible for us to rule out breaches due to truck traffic or heavy weather conditions, in a fast and efficient way"

Gordon MacDougall
Project Director at Global Renewables



REPORTING COMPLIANCE

Global Renewables submits a monthly environmental report to the Authority. Noise Sentinel automatically fulfils the noise reporting criteria of the report.

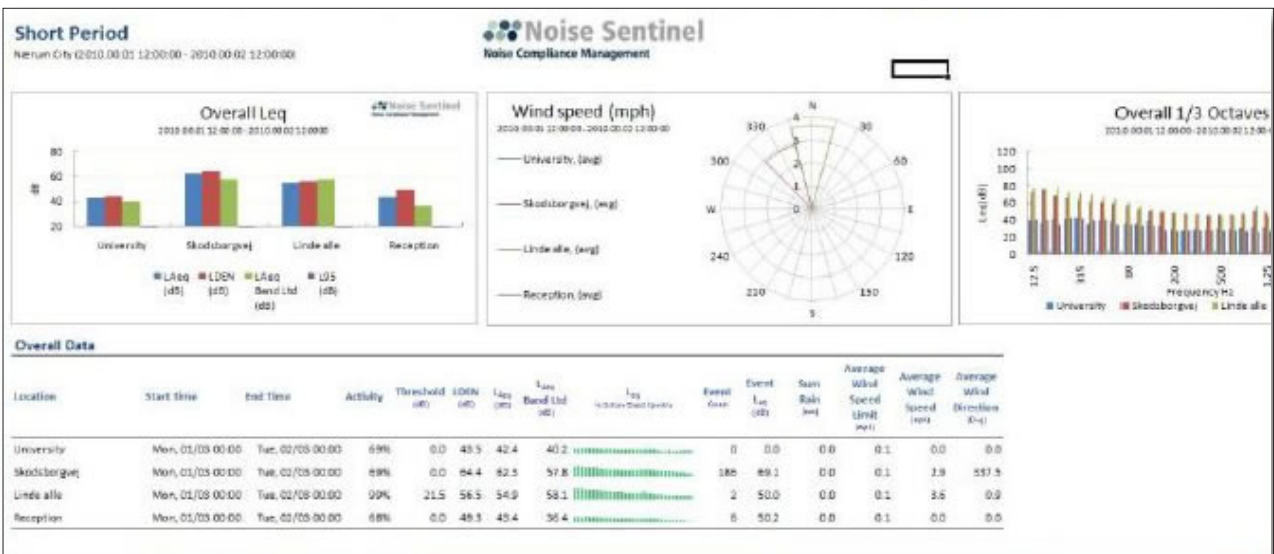
The Technical Manager for each Waste Recovery Park can access Noise Sentinel for their own facility or that of their sister site. This provides the operations team with flexibility and holiday cover for accessing the weekly report for any period or any site during the monitoring cycle.

The report includes charts of noise levels over the week as well as a list of any alerts with the details of the cause.

The reports are in Microsoft Excel format and the environment manager can annotate the reports as required before submitting them to the local authority.

“By taking away all the additional work for data handling and manual reporting, Noise Sentinel helps our team focus on our key duties and not waste time trawling through huge amounts of data”

Gordon MacDougall
Project Director at Global Renewables



PLANNED AND CORRECTIVE MAINTENANCE

An effective noise monitoring programme is not just about turning on a system and collecting data. It needs to operate continuously, unattended in a harsh outdoor environment and services are required to maximise the uptime and ensure measurements are accurate.

Noise Sentinel automatically checks the noise calibration at each monitoring position twice a day; recording the results for evaluation. In addition, once a year, each unit is visited by Brüel & Kjær to check operation and acoustically calibrate the equipment in the field. This ensures accurate measurement.

Continuous remote monitoring of the equipment status by Brüel & Kjær immediately identifies any equipment failure at each site. When necessary, Brüel & Kjær automatically sends an engineer to site, trained to rectify equipment problems and restore operation as quickly as possible – and all with the minimum of involvement from Global Renewables.

These maintenance procedures are built into the Noise Sentinel service and ensure a complete and accurate noise dataset is always available.



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