

SUCCESS STORY

WIRELESS MONITORING OF A LANDFILL IN NEW JERSEY, USA

COUNTRY:

United States of America

SECTOR:

Environmental Monitoring

PROJECT TYPE:

Landfill Monitoring

MAIN PRODUCT:

Loadsensing | The Wireless Monitoring System

Challenge

The Municipal Sanitary Landfill Authority (MSLA) 1D Landfill is located just off the New Jersey Turnpike, in the Town of Kearny, NJ. In 2017, the New Jersey Department of Environmental Protection (NJDEP) authorized remedial actions to cap and contain pollution at the landfill site.

The work has been organized into two main actions: 1) leachate control to mitigate contamination of surface water and groundwater; and 2) landfill capping to control gas emissions, prevent direct contact with contaminated materials, and reduce leachate generation.

The project needed to ensure the stability of the structure by monitoring the pore water pressure and lateral movement within the soil during the construction of an impermeable cap over the landfill.

Solution

To ensure stability, pore water pressure and lateral movement within the soil are required to be monitored during construction, which is anticipated to last up to two years.

Worldsensing's distribution partner, Specto Technology, provided their customer Vibranalysis Inc. with Loadsensing data nodes that were connected to chains of digital in-place inclinometers and vibrating wire piezometers installed within the soil of the landfill.

Loadsensing uses LoRa: a long-range, low-power wireless technology used by IoT networks worldwide. It has a proven range of up to 15 kms or 9 miles and a battery life of up to 10 years, has proven to be robust (IP67), is easy to install and significantly less expensive than using cables and manual monitoring.

Loadsensing uses a star network topology which has a longer range than mesh networks, is not affected by radio signal obstructions, does not need repeaters or network planning and is not critical path dependent.

Landfills pose potential environmental and health hazards in a community if they are not properly maintained. Loadsensing, the wireless monitoring system, was installed in a landfill in New Jersey to monitor the construction that will help contain the landfill so that no runoff pollutes the nearby waterways.

ADVANTAGES

- Real-time, long-range wireless monitoring of sensors
- Easy to install even on the most remote parts of the landfill structure
- No need for tedious and expensive cabling

Benefits

Landfills are still among the most common waste management methods in most cities and the use of advanced technologies may help mitigate the environmental and health risks. Although leachate control and treatment are considered as standard procedures for maintaining landfills, the use of wireless monitoring helps landfill operators to have a real-time view and time series of pore water pressure and horizontal displacement in depth during the construction. This, in turn, helps them to immediately implement remedial actions to prevent water contamination and pollution.

“Our customer needed to cover a landfill area of nearly 2 miles, and although they required solar powered gateways, they needed data nodes that did not require constant maintenance. We selected the Loadsensing wireless data acquisition system due to its long-range radio, low power consumption, easy implementation and ability to read multiple types of sensors.”

Edmund Kirby

General Manager & Co-Owner
Specto Technology



Figure 1:

The Loadsensing digital node can easily connect in-place inclinometers (IPs) on a chain in a hole or excavation to the internet.



Figure 2:

Loadsensing actual installation



Find out more:

www.worldsensing.com

Get in touch:

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