



CASE STUDY

LOCI CONTROLS INCREASES GAS-COLLECTION BY MORE THAN 30% AT A MUNICIPAL LANDFILL LOCATED IN THE NORTHEASTERN USA

Case Study Summary

Loci Controls installed hardware on 100% of the collection wells at a landfill in the northeastern United States. The objective of the 9-month field trial was to validate the performance of Loci Controls, product/service suite in the Northeast during both the winter and summer months.

Table 1: Summary of Loci Controls' performance

Location	Objective	Status
Northeastern USA municipal landfill	<ul style="list-style-type: none"> Demonstrate durability of product/service suite in harsh winter and summer climates Document increased LFG collection at full landfill level 	<p>Success: Achieved LFG collection increase of over 30%</p>

WHY LOCI CONTROLS?

With financial, operational, and environmental benefits, Loci Controls' product / service suite helps streamline and optimize facility management and gas-collection for power-plant operators and landfill owners alike.



INCREASE REVENUE

- Maximize methane gas flow
- Optimize gas-composition
- Automate real-time wellhead adjustment and data collection
- Boost plant uptime



DECREASE COSTS

- Lower labor costs for wellfield tuning and O&M
- Reduce equipment maintenance costs



REDUCE RISKS

- Reduce fugitive LFG emissions
- Prevent significant maintenance issues

Northeastern USA Municipal Landfill

Project Objectives:

- Demonstrate that Loci Controls' product/service suite could sustain operations in variable climates
- Increase gas-collection to 350 SCFM and sustain at that level utilizing Loci Controls' product/service suite, thereby providing enough gas to warrant conversion to single-engine power-generating facility

Background and Process

Loci Controls installed 20 Controllers, 30 Sentry-Ws, and 1 Sentry-H in a municipal landfill located in the northeastern United States. Approximately 90 days post-installation, Loci Controls characterized the behavior of individual wells and the wellfield as a whole to determine how changes to the operating system and environmental conditions would impact the gas production in order to tailor tuning prescription to site conditions. During this time, we initiated remote-tuning mode with gas-collection tuning decisions made by our Analytics Center staff. Part way through the trial, Loci Controls commenced fully automated gas-collection, utilizing a

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control algorithm that continually monitored gas content and made small valve adjustments to maximize CH₄ flow within gas-composition requirements (O₂ limits). Loci Controls' control algorithm simulates what an experienced landfill technician would do if he could continuously adjust and learn from the impact each change has on the individual well and full wellfield environment.

Performance and Results

Increased Gas-Collection

Since automated operations commenced, gas-collection at the landfill has exceeded the 350 SCFM rate continuously, exceeding the customer expectations for increased gas-collection at this site. In addition, Loci Controls' product/service suite operated optimally in temperatures ranging from below zero to approximately 100°F.

- Since installation of the Loci Controls system, LFG flow increased by 30% or more
- Gas-collection reached peak of 414 SCFM, an increase of over 40% from baseline gas-collection prior to implementation of Loci Controls

Figure 1: Increased LFG flow after installation of Loci Controls system

O₂ composition at a field and well level, has remained below 2.5%

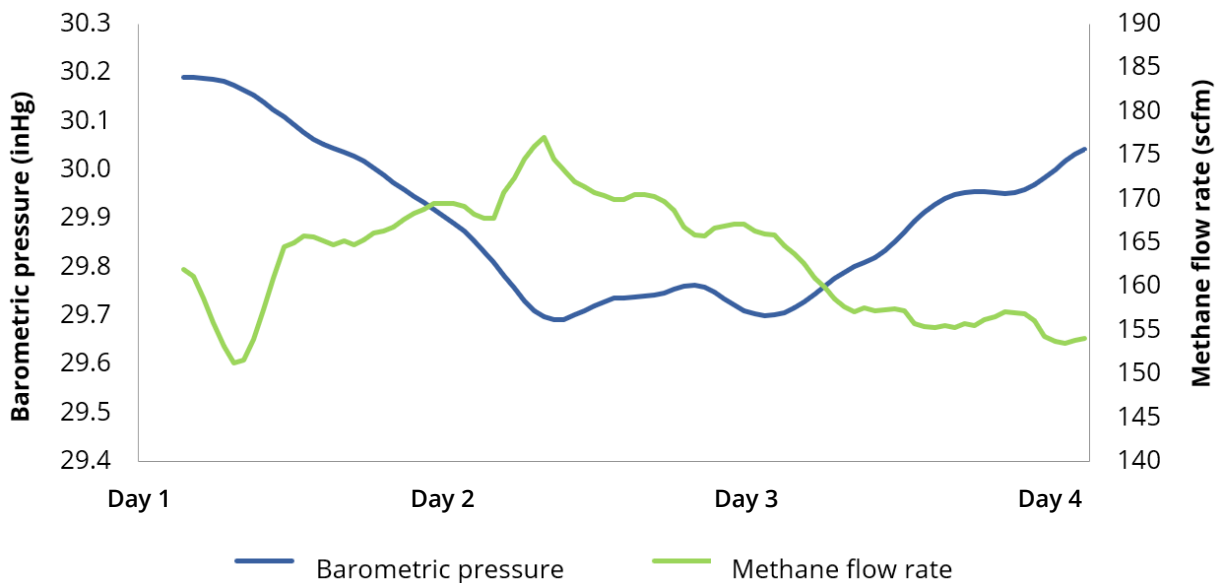


Increased Gas-Collection During Low Barometric Pressure Event

Changes in system conditions, such as available vacuum or gas-composition, variations in temperature or barometric pressure, have significant impact on the landfill gas-collection process. Our continuous monitoring system can evaluate the impact of valve adjustments in real time, and if necessary, automatically react with corresponding modifications to maximize gas flow and composition.

In mid-summer, Loci Controls' automated gas-collection increased CH₄ flow from 150 SCFM to 184 SCFM during a barometric pressure decline due to a large storm, with peak production coinciding with peak low-atmospheric pressure. Ordinarily, it would not be possible to adjust wellfield tuning manually frequently enough to create this impact. With automated tuning, however, we were able to increase CH₄ flow during this transient event caused by the low pressure weather system, resulting in over 20% gains in CH₄ flow during this time.

Figure 2: Increased methane collection at low barometric pressures utilizing Loci Controls system



Conclusion

Loci Controls' automated gas-collection has demonstrated on a sustained basis, over 30% increase in gas-collection, and CH₄ flow through continuous, algorithm-based, wellfield tuning. Additionally, the extended field trial demonstrated multiple opportunities for increased automated gas-collection and increased CH₄ flow during transient low-pressure events.