



Summary of Performance GORE® Cover and Negative ASP

W.L. Gore & Associate’s “GORE® Cover System” experience gained through installations in more than 150 plants in more than 20 different countries world wide. In total, more than 3.0 million tons of organic wastes are treated in sites with annual throughput capacity of 2,000 to 200,000 tons.

In 2003, GORE® Cover System was evaluated to quantify the performance versus an existing negatively aerated static pile. At that time of the test, the site processed 250,000 tons per year under negative air. Additionally, the same site also has a GORE® Cover system processing up to 40,000 tons per year. For comparative purposes the mix ratio is 4:1 by volume or 1:1 by weight of green to food waste was by purpose mixed at an equal ratio to make the technology comparison.

Description of existing operations on site at the time of this evaluation:

Feedstock	System	Characteristics
Yard Waste and Pre consumer food	Static Pile + Negative Aeration Enclosed tipping	Expensive to Operate High energy use Moderate odor
Yard Waste Pre-and post consumer food waste Commercial, source separated	GORE® Cover System Oxygen controlled Positive Aeration Enclosed Tipping	Less expensive to Operate Low energy use Lowest odors Clear Storm water and leachate separation Easy to expand Higher quality product Higher temps for PFRP

	Operation GORE® Cover	Operation NEGATIVE ASP
Input:	40.000 t/y	210.000 t/y
Pretreatment:	Shredding	Shredding
Active Composting:	Active: 12 heaps Curing: 4 heaps	Active: 7 heaps Curing: 12 heaps
After-treatment:	Screening	Screening

Comparison of time required to meet finished compost:

	GORE® Cover	Negative ASP
Initial Placement	30 days	15 days
Second Placement	15 days	15 days
Third Placement	15 days	15 days
Aging	30 days	270 days
Total Treatment Time	90 days	305 days





Critical Observations

The technology upgrade on site to the GORE® Cover system utilized existing structures and developments of the existing and previously developed site.

The GORE® Cover technology is more cost efficient than the existing negative aeration system; the GORE® Cover process uses significantly less energy to produce the same product. **Energy consumption will be reduced up to 10x.**

The GORE® Cover finished compost is available to sell within 8 to 12 weeks as opposed to 7 to 12 months in the case of the negative ASP. This allows the overall storage pile volumes to be decreased at the site saving considerable space.

One additional point of focus is on the reduction of odor, VOC and ammonia. Not only are the odor, VOC and ammonia releases substantial in the negative air system; it also indicates that nitrogen, a component of ammonia, is lost in the negative air system thus not being reintroduced into the finished product. **By using the GORE® Cover up to 90% of the odors are reduced, up to 95% VOC emission reduction is achieved and ammonia is practically non-detectable** which means much higher percentage of ammonia is fixed into beneficial nitrogen compounds that end up in the final compost product being sold rather than released to the atmosphere. **Nitrogen values in the GORE® Cover finished compost has increased from 50% to 100% compared with negative air system.**

Microbial activity in the compost is very important. After **only a short aging of GORE® Cover material the microbial diversity in 8-12 weeks in Gore is comparable to 9-month-old compost from the negative air system.**

One added benefit of the system was the ability to increase the temperature of the process up to 180 degrees F to deal with pathogen issues and readily breakdown compostable product. That temperature increase should have NO effect on the microbial diversity. **After testing finish product it was concluded that the diversity was not affected.**

The GORE® Cover decreases the impact of rain/snow events. This region can get up to 54 inches of rain per year. On some rainy days with 1 to 2 inches in a 24-hour period would cause the negative air system issues and the piles can go anaerobic. **The GORE® Cover keeps unwanted moisture off the piles thus the system works better and is more productive because of not needing to deal with adverse climate effects.** Conversely for very dry late summers were no moisture falls for months. It is important to have the **GORE® Cover maintain the moisture in the piles and requires less water added between movements of the material.**

The site gets high winds in the winter, gust up to 70 mph. **The GORE® Cover stayed on during these events and also reduced litter around the site by staying under the cover.**