

## Bioenergy anaerobic digestion

Kanadevia Inova updates *Bioenergy Insight* on its US activity

# Alternative revenue streams and lower operating costs: why the US beverage industry counts on AD technology

**V**olatile energy supplies, rising commodity prices and end consumers who are increasingly concerned that their consumer goods are produced in a CO<sub>2</sub>-neutral and sustainable manner, to name just three aspects that are becoming more and more important for a wide range of industries. US wine producers and distilleries are also looking for holistic solutions for processing their biogenic waste into energy and other valuable resources.

### A global success story

Since Kanadevia Inova's Kompogas® Dry Anaerobic Digestion (dry AD) technology first saw the light of day on a Swiss balcony back in 1992, it has been installed more than 100 times at sites all over the world.

At the end of 2018, the company made the leap to North America with the construction of a Kompogas



The Kompogas dry AD plant in San Luis Obispo is one of the most advanced installations of its kind in the US

plant in San Luis Obispo (SLO), California in the US. This was an important milestone for the state, and not just because it involved diverting organic waste from landfills and generating green energy.

Unlike various other biogas projects in California, which either did not materialise

in the development phase, were never connected to the grid or simply failed to get up and running properly, the plant in San Luis Obispo is considered a success story – thanks primarily to close cooperation between the project developers and plant operators with

local politicians and waste management and energy supply companies, as well as the active involvement of the local community and regional businesses. Even today, five years later, the plant is still one of the most advanced in the US. Since its commissioning





The Booker Noe distillery expansion will supply 65% of the distillery’s energy requirements through anaerobic digestion of stillage

the regular organic waste tends to be drier and less abundant in autumn, the residues from pressing the grapes and producing the wine contribute a great deal to the stable operation of the plant.

“The material we get from the wineries is very high in sugar. This gives the production of biogas a real boost,” explained Joe Pype, site manager at KompoGas SLO LLC.

“The press residues are mixed with the remaining green waste from curbside collection, helping ensure stable biogas production all year round.”

**Distilleries: better energy efficiency and lower CO2**

at the end of 2018 the SLO facility has processed over 131,550 metric tons of green waste from households, businesses, and agriculture. In the thermophilic AD process, the digestate is completely sanitised. In an on-site combined heat and power unit the biogas obtained is then transformed into electrical energy – over 11.12 million kWh/a since 2018 – and fed into the power grid. The nutrient- rich compost serves as fertiliser for local agriculture and as soil enrichment for local winegrowers.

“The quality of the compost from the KompoGas plant is better than the fertiliser from dairies or landfills,” explained Jean-Pierre Wolff, owner of Wolff Vineyards and Board Member of the Coastal San Luis Resource Conservation District.

“The reason for these differences in quality is the compost’s composition. A facility like the one in San Luis Obispo processes heterogeneous biogenic waste streams, which results in a product with more biomass and therefore greater microbial activity.”

The microbes play an important role when it comes

to soil and plant health, as they have a positive impact on nitrogen fixation, phosphorus solubilisation, suppression of pathogens, and decomposition leading to soil aggregation. Wolff Vineyards processes around 200 metric tons of solid fertiliser directly at the foot of the vines in the autumn post-harvest,

but also as soil enrichment between the individual vines.

**Vineyards: giving and taking**

California wineries are grateful consumers of compost, but also important suppliers of feedstock, especially between the end of August and the beginning of September. As

It is not only wineries that benefit from Kanadevia Inova’s advanced biogas technologies. Booker Noe, and ultimately Beam Suntory, is currently expanding its production facility in Boston, Kentucky. On behalf of 3 Rivers Energy, Kanadevia Inova is building a wet AD plant with an integrated gas upgrading



The feedstock is high in sugar and supports the stable production of biogas during the dry season. Vineyards deliver their pressing residues (Source/ Wolff Vineyards)



system.

From 2025, up to 1.03 million metric tons of distillery stillage will be treated every year in a total of eight 9,000 m3 fermenters. In the downstream pressure-less amine scrubber gas upgrading facility, the biogas will be cleaned, compressed, and then fed back into the production cycle as the energy carrier biomethane.

This will cover around 65% of the distillery’s electricity requirements and reduce greenhouse gas emissions by half. The digestion process will also produce a carbon-negative, fossil-fuel-free by-product that 3 Rivers Energy can use to produce fertiliser. This circular economy approach will result in significantly lower operating costs while also reducing the distillery’s overall carbon footprint.

**Business drivers: certificates and incentive programmes**

The SLO Kompogas plant and the Booker Noe Distillery are lighthouse projects for a US-wide approach to fossil-free energy. More and more media and environmental organisations are presenting awards to companies making



Wolff Vineyards processes around 200 metric tons of compost in their post-harvest soil enriching procedures. (Source/ Wolff Vineyards)

an outstanding contribution to the energy transition.

In the wine industry, for example, important points are awarded for the use of compost as part of SIP (Sustainability in Practice) certification and winegrowers as well as other agricultural institutions receive grants for practices that improve soil health, sequester carbon, and reduce greenhouse gas emissions in the Healthy Soils Program from the California Department of Food and Agriculture.

A lot is also happening in the distillery sector.

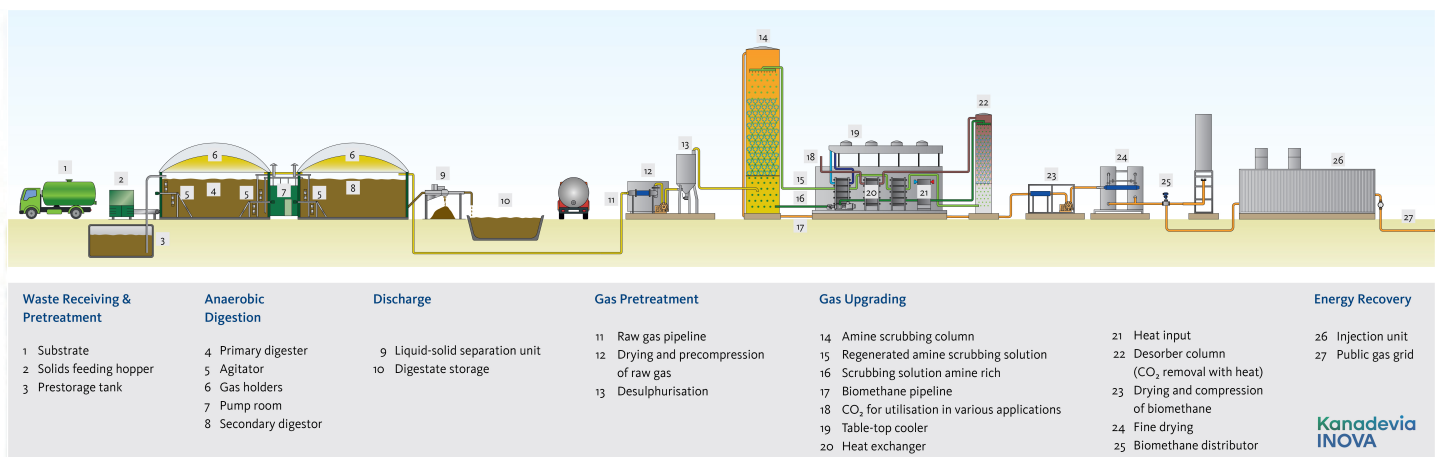
In November 2023 the US Environmental Protection Agency (EPA) awarded eight distilleries the ENERGY STAR certification, the label for energy efficiency supported by the US government.

The EPA has compiled a catalogue of almost 180 measures in categories such as “Motor Systems”, “Distilling” or “Byproducts Processing”, enabling distilleries to save energy or use it more efficiently. They include installing integrated dry and wet AD systems for processing organic production waste. At the same time,

newly introduced state and federal programmes are providing incentives for the construction of renewable energy installations.

The state, the media, and environmental associations are thus giving the topic of sustainability major publicity – publicity that can be understood by the public at large. All this should help encourage a rethink in the area of fossil-free energy to contribute to a stable and reliable energy supply.

For more information visit: [Kanadevia Inova.com/north-america](https://KanadeviaInova.com/north-america)



The distillery’s wet AD and gas upgrading facility will allow Booker Noe to cover 65% of the plant’s electricity requirements