

How LF Edge's Alvarium and EVE projects help to securely and accurately monitor the Carbon Footprint in the world's first BioGas Plant

PROJECT  ALVARIUM


EDGE VIRTUALIZATION
ENGINE

CHALLENGE

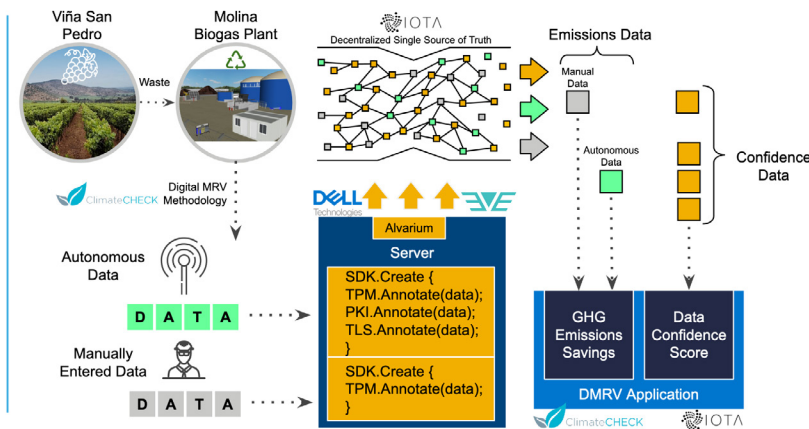
With nearly 30 billion devices in the world and more than 2.5 million apps, the delivery of accurate data is becoming increasingly challenging. This is especially true within the climate industry, as many organizations have trouble accurately tracking their carbon footprint and quantifying trust in data delivered from devices to applications. Therefore, the audits of these emission measurements are often slow, subjective, and expensive.

A biodigestion energy and composting facility at the VSPT Wine Group in Chile needed a solution to process data from sensors measuring water, solids, gasses, and anaerobic digestion processes to provide continuous, real-time and trustworthy insights into the facility's carbon footprint.

This use case addresses the challenge of "certifying" an emission reduction statement to ensure emission statements are accurately measured. Together with [Dell Technologies](#) and [ZEDEDA](#), [the IOTA Foundation](#) and [ClimateCHECK](#) addressed this issue by leveraging [Project Alvarium's](#) Data Confidence Fabric (DCF) framework and [Project EVE's](#) ability to bring cloud computing to remote edge locations.

SOLUTION

Digital MRV + Alvarium Operations



With support from the Canadian and Chilean governments, **the group developed a Digital Measurement, Reporting and Verification (DigitalMRV) platform to improve data confidence and trust in the VSPT wine group's carbon footprint.**

VSPT wine group has the **world's first BioGas Plant** that uses harvest waste as its only fuel. The BioGas plant is run by Bio-E in Molina, Chile and Project Alvarium is used to annotate all inputs and generate a methane emission reduction statement. The plant's aim is to supply the winery with electric and thermal energy using its own organic waste.

The BioGas plant harnesses 1MWh power and will provide the Viña San Pedro winery with 60 percent of its energy consumption. This is equivalent to the average energy consumption of 3,200 homes in one month. This has helped the wine group create some of the first **certified carbon-neutral wines** as well as earning sustainability and organic certifications.

The Digital MRV approach sends all data across Project Alvarium's DCF built on the IOTA Tangle. This diagram shows the process of gathering this input data (manual and automated), running it through a Dell server running Project Alvarium code, and then storing the results in a ledger (the IOTA Tangle).

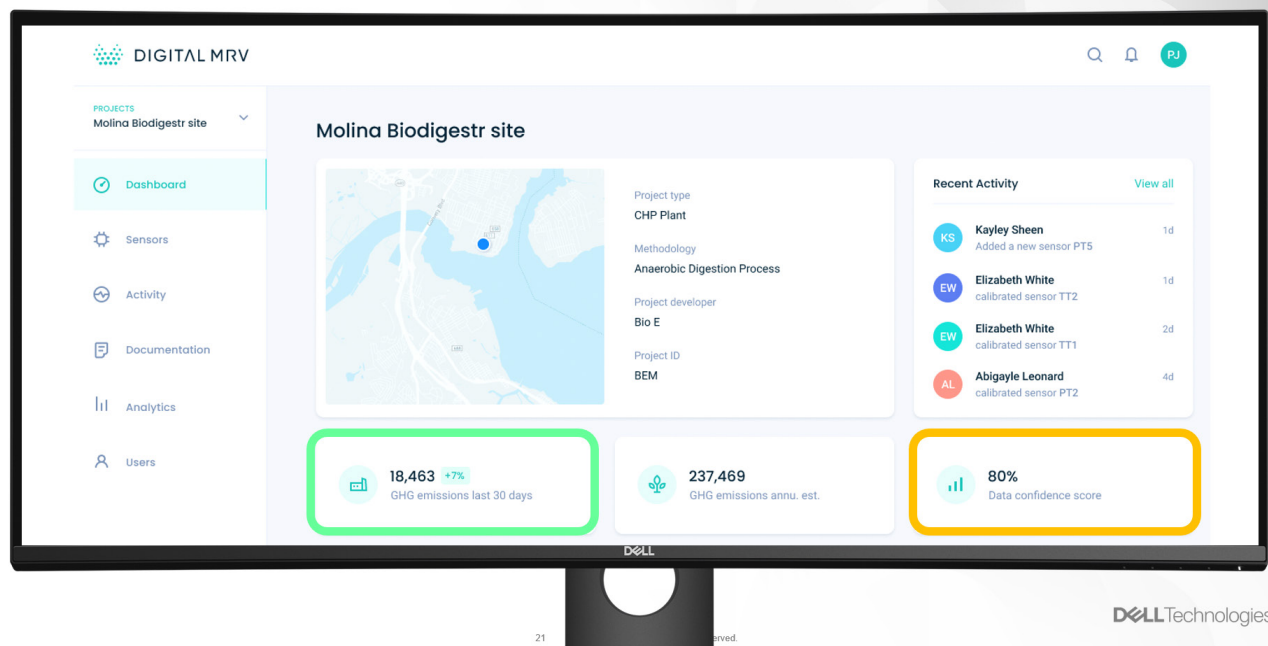
A Dell server with EVE pre-installed was shipped to the site where it was connected to the Internet. Thereafter, the applications (Alvarium, IOTA) were managed by their respective project teams, and the Dell server bare metal was secured and remotely configured and controlled over the secure EVE API (using the commercial SaaS EVE Controller offered by ZEDEDA).

For the first time ever, a Data Confidence Fabric was built and deployed using actual hardware in a real-world environment. The solution greatly improves Bio-E's ability to understand how different innovations impact carbon emissions, lowering barriers on carbon credit issuance and improving investment in sustainable technologies. This in turn helps investors and organizations increase transparency and accuracy in reporting, avoiding incorrect reports and reimbursements.

The result? Accelerated funding opportunities, with lower risk for investors, drive new innovation to power action against climate change.

Neither Alvarium/IOTA application developers nor EVE device management personnel supporting this project were needed to be on-site at the remote biodigester plant in Molina, Chile. The DigitalMRV application digitizes this entire process, delivering previously unattainable levels of efficiency, accuracy and transparency. **In practice, this reduces an MRV process that used to take between 24-48 months to complete to just 4-6 weeks.**

Digital MRV dashboard



The dashboard shows that an emission reduction statement (circled in green) is accompanied by a Data Confidence Score (circled in gold).



Get involved

If you're interested in getting involved in Project Alvarium and Project EVE, you can find the communities on the [LF Edge Slack](#) channels #eve and #alvarium (and related channels).