



Turning Organic Waste into a Governed, Monetizable Data Asset

How Phaseshift gives biogas and renewable natural gas operators a unified data foundation across distributed digester sites, gas upgrading, environmental attribute generation, and multi-stakeholder reporting.

THE CHALLENGE

Renewable natural gas developers operate a fundamentally distributed business. Digester sites are co-located with dairy farms, food waste generators, wastewater facilities, and agricultural operations, each with its own footprint, feedstock profile, and operating partners. Every site produces a complex data stream: feedstock intake, digester biology, gas production and composition, upgrading performance, pipeline injection metering, and truck logistics for off-site feedstock movement.

The operator's obligations extend far beyond running equipment. Environmental attribute pathways, RFS D3 RIN generation, LCFS carbon intensity scoring, state renewable gas programs, all require defensible, auditable data from feedstock origin through molecule injection. Farm partners expect reliable operations and transparent reporting. Gas offtakers, lenders, and environmental attribute buyers each require different slices of the same underlying dataset. Regulators require traceability that can withstand third-party verification.

Most fleets carry a patchwork of vendor portals, site-level PLCs, lab spreadsheets, and manual reporting workflows. Data is fragmented across digester control systems, gas upgrading skids, RNG injection meters, and feedstock logistics platforms. This fragmentation slows operations, inflates reporting costs, introduces audit risk, and leaves the commercial value of the underlying data unrealized.

THE APPROACH

Phaseshift is a hardware-agnostic, edge-to-cloud industrial data platform that unifies the full biogas value chain. It ingests operational data from every digester, upgrading system, injection point, and feedstock workflow, normalizes it into a consistent and governed structure, and makes it continuously available for operations, compliance, commercial reporting, and downstream analytics. One platform across every site, every feedstock partner, every offtake relationship.

EDGE-TO-CLOUD INGESTION

Secure data collection from digester PLCs, gas upgrading skids, injection metering, flare systems, and feedstock logistics into a governed private cloud, regardless of vendor or protocol.

DATA NORMALIZATION

Unified tag naming, consistent units, and a standardized time-series structure across every site and every feedstock stream, from farm-based manure digesters to industrial food waste facilities.

REAL-TIME + HISTORICAL

Live streaming telemetry for digester health and gas quality, plus durable historian retention for pathway verification, warranty support, trend analysis, and regulatory audit trails.

MULTI-STAKEHOLDER ACCESS

Governed interfaces for internal operations, farm partners, gas offtakers, environmental attribute buyers, lenders, and third-party verifiers, each served from the same source of truth.

THE TRUST LAYER

Renewable natural gas sits at the intersection of energy, agriculture, waste management, and environmental markets. That intersection is where scrutiny concentrates. Pathway approvals, carbon intensity calculations, and environmental attribute generation are only as credible as the operational data beneath them. A missing reading, an unverifiable tag, or an unexplained gap in feedstock logs can delay verification, invalidate credits, or erode the commercial value of an entire project.

Operators need a data layer that does more than store telemetry. It must enforce governance at the point of ingestion, preserve a complete and defensible operational record across years of digester operation, and present consistent evidence to every stakeholder that touches the asset, from agricultural partners through gas utilities, carbon credit buyers, lenders, and regulators.

Phaseshift is an American company purpose-built for critical infrastructure data. It provides the governed, auditable, and transparently managed data foundation that environmental markets and infrastructure lenders expect, without displacing the operator's own engineering, compliance, or commercial teams.

THE OUTCOMES



Fleet Visibility

Unified operational view across every digester, feedstock partner, and injection point



Defensible Attributes

Auditable data trail supporting RIN, LCFS, and state program verification



Production Insight

Normalized foundation for yield, uptime, and digester performance analytics



Operational Lift

Faster remote diagnostics, reduced site visits, and earlier intervention on upsets



Rapid Onboarding

New sites activated without per-project integration projects or custom pipelines



Commercial Upside

Monetizable reporting and transparency for offtakers, credit buyers, and lenders

"In renewable gas, the molecule is only half the product. The other half is the data trail proving how it was made, where it came from, and what it is worth. Operators who treat that data as a first-class asset build a durable advantage."

THE COMMERCIAL VALUE

A unified data foundation is not overhead. It is the infrastructure that protects revenue, unlocks premium pricing, and turns compliance into a strategic capability. Biogas operators with a credible data backbone convert operational discipline directly into commercial outcomes.

PROTECTED ATTRIBUTE REVENUE

Auditable feedstock and production data defends pathway approvals, reduces verification risk, and preserves the full value of RINs, LCFS credits, and state program incentives.

PREMIUM OFFTAKE TERMS

Transparent real-time production and quality data supports long-term offtake and procurement agreements with utilities, corporates, and voluntary market buyers seeking verified low-CI gas.

LOWER OPERATING COST

Fleet-wide monitoring reduces unplanned downtime, cuts truck rolls for routine diagnostics, and concentrates engineering attention on the sites and systems that actually need it.

CAPITAL AND PARTNER CONFIDENCE

Defensible reporting accelerates project financing, tax credit transactions, investor diligence, and farm partner renewals by removing the data ambiguity that typically slows these processes.

USE CASES

DIGESTER HEALTH MONITORING

Real-time visibility into temperature, pH, volatile fatty acids, biogas composition, and loading rates across every digester, with configurable alarms for early detection of process upsets.

GAS QUALITY AND UPGRADING

Continuous monitoring of raw biogas and pipeline-quality RNG across upgrading systems, ensuring specification compliance, recovery efficiency, and methane slip accountability at injection.

FEEDSTOCK TRACEABILITY

End-to-end linkage from feedstock source and delivery to digester loading and gas production, supporting carbon intensity calculations, pathway compliance, and partner settlement.

ENVIRONMENTAL ATTRIBUTE REPORTING

Structured data feeds for RFS D3 RIN generation, LCFS reporting, state renewable gas programs, and third-party verification workflows, with complete audit trails.

PARTNER AND OFFTAKER DASHBOARDS

Governed reporting interfaces for farm partners, gas offtakers, utilities, and lenders, each seeing the slice of data their relationship requires without exposing adjacent commercial detail.

FLEET BENCHMARKING

Cross-site comparison of yield, uptime, feedstock conversion, and operating costs to surface best practices, guide capital allocation, and inform future site design.

AGENTIC OPERATIONS FOR BIOGAS

Phaseshift goes beyond passive data collection. The platform's agentic capabilities autonomously govern, correlate, and act on biogas data as it flows through the system, turning raw telemetry into operational intelligence without manual pipeline management. For distributed digester fleets, this is the difference between reacting to upsets and preventing them.

AUTONOMOUS PROCESS CORRELATION

Cross-references feedstock composition, loading rates, digester biology, and biogas output across sites to surface systematic patterns that are invisible when each site is monitored in isolation.

PROACTIVE BIOLOGY ALERTS

Continuous behavioral baselines flag early indicators of digester stress, VFA accumulation, inhibition, or foaming well before they escalate into lost production or emergency site visits.

SELF-GOVERNING ATTRIBUTE PIPELINES

Feedstock-to-injection data flows adapt automatically as new suppliers onboard, trucks reroute, or site configurations change, preserving the chain of custody that environmental markets require.

PREDICTIVE YIELD INTELLIGENCE

Correlates feedstock profiles, seasonality, and operating conditions against historical performance to forecast production, flag underperforming streams, and guide feedstock procurement decisions.

THE VALUE

Every biogas operator building a portfolio will eventually need a fleet data platform. The question is whether to build it piecemeal across projects and partners, or to deploy a proven, hardware-agnostic solution that is already purpose-built for the challenge. Phaseshift eliminates the integration tax, protects environmental attribute revenue, and provides the governance posture that renewable gas markets demand.

Phaseshift is not a replacement for the operator's own engineering, compliance, or commercial teams. It is the data backbone that makes them effective at fleet scale.

Ready to build your biogas data foundation?

www.phaseshiftdata.com