

M C P S E R V E R

N O C O D E

C L O U D H O S T E D

Gas Cycling Efficiency Engine MCP.

Get precise reservoir performance metrics through your AI client.

Gas Cycling Efficiency Engine is a specialized engineering MCP designed for condensate reservoir management. It gives your AI agent the ability to calculate sweep efficiency, track gas dilution, and quantify condensate recovery. Instead of manual math, you use your preferred AI client to run complex reservoir performance models and operational summaries instantly.

A+ Quality Score 100/100

reservoir-engineering

gas-cycling

condensate

petroleum

efficiency



The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest
managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.

— Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256

Encryption at rest

Ed25519

PKI vault signatures

24h TTL

Ephemeral session keys

V8 Isolate

Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT`https://edge.vinkius.com/{token}/mcp`

Claude



Cursor



VS Code



Windsurf



Grok



Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

06 — Honeypot Trap System

Phantom credentials are injected into isolated environments. If a honeypot is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1)
Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

Get started at cloud.vinkius.com — connect your AI agent in under 60 seconds.

Gas Cycling Efficiency Engine MCP

4 tools available

Cloud-hosted on Vinkius

You can now bring reservoir engineering math directly into your AI workflow. This MCP gives your agent the specific tools needed to evaluate how effectively injected gas displaces hydrocarbons in condensate reservoirs. Instead of jumping between spreadsheets and modeling software, you can ask your AI client to run calculations on sweep efficiency or fluid composition changes.

When you're managing gas cycling operations, you need to know if your injection strategy is actually working. This tool lets you measure how much contact you're getting with the reservoir volume and how much the injected gas is diluting your produced fluids. It turns your AI from a text generator into a technical partner that can quantify total condensate yield and provide high-level operational overviews. It's built for engineers who need fast, accurate calculations without leaving their coding or chat environment.

Core Capabilities

01 — Sweep Analysis

Your agent uses this to check how well injected gas moves through the reservoir.

02 — Composition Tracking

The AI calculates how injected gas impacts produced fluid purity.

03 — Yield Quantification

Your agent determines the total condensate recovered from the process.

04 — Operational Summaries

The AI generates high-level overviews of gas cycling performance.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/gas-cycling-efficiency-engine — connect your AI agent in three steps.

- 01
- Connect your AI client to Vinkius.
- 02
- Select the Gas Cycling Efficiency MCP from the catalog.
- 03
- Input your reservoir data into your AI chat.
- 04
- The agent calls the specific calculation tool needed.
- 05
- Receive the calculated results directly in your conversation.

You connect the MCP to your AI client and start asking technical questions.

Built For

This MCP is built for petroleum engineers managing gas injection projects.

Reservoir Engineer

Uses the MCP to run quick sweep and recovery calculations during model iterations.

Production Engineer

Monitors gas dilution and fluid composition changes via the AI client.

Asset Manager

Requests high-level performance summaries to evaluate project success.

What Changes When You Connect

- 01
- Moves reservoir math from spreadsheets into your AI chat interface.
- 02
- Provides immediate feedback on gas dilution and sweep efficiency.

03 Quantifies condensate recovery without manual formula entry.

04 Centralizes operational performance reviews in one place.

Real-World Applications

Optimization Loops

Run multiple sweep efficiency scenarios to find the best injection strategy.

Recovery Forecasting

Estimate total condensate yield based on current sweep and dilution metrics.

Fluid Composition Monitoring

Check how much injected gas is diluting your produced stream in real time.

Performance Audits

Generate a summary of the entire cycling operation to check against targets.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_dry_gas_dilution	This tool measures how much the injected gas changes the composition of your produced fluids.
02	calculate_recovery_factor	Use this to find the total amount of condensate you've successfully recovered during the cycling process.
03	calculate_sweep_efficiency	This tool determines how much of the reservoir volume the injected gas is actually contacting.
04	evaluate_cycling_performance	This provides a high-level summary of your entire gas cycling operation.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U What is the expected recovery factor for 1,000,000 units of condensate with a sweep efficiency of 0.7 and a dilution factor of 0.8?



The total volume recovered is 560,000 units, resulting in a recovery factor of 0.56.

U Calculate the sweep efficiency for a reservoir with a heterogeneity factor of 0.3, an injection rate of 500, and a permeability map of {'zone1': 100, 'zone2': 150}.



The calculated sweep efficiency is 0.78 with a contact ratio of 0.82.

U How much will the injected gas dilute the reservoir gas if the mixing ratio is 0.5 and the injected gas is 95% methane?



The dilution factor is 0.45, resulting in a produced gas purity of 0.92.

Frequently Asked Questions

01 What kind of reservoirs is this MCP for?

It is specifically designed for evaluating gas cycling in condensate reservoirs.

02 Which AI clients can I use with this MCP?

You can use any MCP-compatible client like Claude, Cursor, or Windsurf.

03 Do I need to host the MCP myself?

No, Vinkius hosts and manages the MCP for you. You just connect and use it.

04 Can the AI calculate recovery factors?

Yes, the tool includes a specific function to quantify total condensate yield.

05 How does it handle gas dilution?

The MCP includes a tool to measure the impact of injected gas on produced fluid composition.

Go Live in 60 Seconds

Get your connection token from cloud.vinkius.com, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

https://edge.vinkius.com/[TOKEN]/mcp

CLIENT	WHERE TO CONFIGURE
 Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
 Cursor	Settings → Features → MCP Servers → "+" Add New MCP Server" → Type: SSE → Paste endpoint
 VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add <code>"gas-cycling-efficiency-engine": { "url": "..." }</code>
 Windsurf	MCP Settings → <code>mcp_settings.json</code> → Add endpoint URL
 ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
 Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

Ask ChatGPT

Ask Claude

Ask Perplexity

Ask Gemini

Ask Grok

READY TO CONNECT

Gas Cycling Efficiency Engine is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and
start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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DOCUMENT INFORMATION

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Platform	Vinkius Cloud for AI Agents
Endpoint	https://edge.vinkius.com/{token}/mcp

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