

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

Flare Gas Recovery System Designer MCP

Design and validate industrial gas recovery systems with precision.

Flare Gas Recovery System Designer MCP provides the engineering math needed to design FGR systems. Your AI client uses this MCP to size compressors, check gas compositions, predict recovery efficiency, and run financial feasibility models for industrial gas capture projects.

A+ Quality Score 100/100

flare-gas

compressor-sizing

gas-recovery

carbon-reduction

industrial-design



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.

Flare Gas Recovery System Designer MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to handle the heavy lifting of Flare Gas Recovery (FGR) design. Instead of manual calculations, you give your AI client the gas composition and flow data, and it handles the technical specs. You'll use it to determine exactly what kind of compressor hardware you need to manage specific gas volumes. It also checks if your chemical mixtures are actually processable before you commit to a design. Beyond the hardware, the MCP helps you justify the project to stakeholders by calculating how much gas you can actually save and whether the payback period makes sense. It's built to help you minimize carbon penalties by optimizing how much gas you capture instead of flaring it.

Core Capabilities

01 — Equipment Sizing

Your agent calculates the specific power and flow capacity required for compressors.

02 — Chemical Validation

The AI checks gas mixtures to ensure they are processable.

03 — Efficiency Modeling

Your client predicts gas capture rates based on technical constraints.

04 — Financial Analysis

The MCP runs payback period and feasibility math for FGR projects.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/flare-gas-recovery-system-designer — connect your AI agent in three steps.

- 01 Connect your preferred MCP-compatible client to Vinkius.
- 02 Provide gas composition or flow data to your AI agent.
- 03 The agent calls the specific engineering tool needed for the task.
- 04 Receive technical specs, efficiency estimates, or financial data instantly.

Connect your AI client to Vinkius and start running engineering calculations immediately.

Built For

This MCP is built for engineers working in oil, gas, and heavy industrial sectors.

Process Engineer

Hands off gas compositions and flow rates to get equipment specifications.

Project Manager

Uses the MCP to run economic feasibility checks for new recovery installations.

Sustainability Engineer

Calculates gas recovery to reduce carbon penalties and flaring emissions.

What Changes When You Connect

- 01 Reduces manual calculation errors in compressor sizing.
- 02 Provides rapid financial feasibility checks for FGR designs.
- 03 Validates gas chemistry before hardware selection.

04 Quantifies potential gas savings to support carbon reduction goals.

Real-World Applications

Compressor Selection

Input gas volume and pressure to get specific power and size requirements.

Composition Verification

Confirm that a specific methane and ethane mix is valid for processing.

Project Justification

Run economic models to see if a recovery system pays for itself.

Capture Optimization

Estimate how much gas can be recovered to minimize flaring.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_compressor_requirements	This tool determines the physical equipment specs needed to handle your specific flare gas volume.
02	calculate_economic_viability	This tool evaluates if your proposed FGR design makes financial sense based on costs and savings.
03	estimate_recovery_efficiency	This tool predicts the actual amount of gas you can save given your technical constraints.
04	validate_gas_composition	This tool checks that your gas mixture is chemically valid and physically capable of being processed.

See It in Action

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

U What compressor do I need for 5000 m3 of gas with 90% methane and 10% ethane at 5 bar?



The required compressor will have a flow capacity of 5000 m3, a required power of 125 kW, and an estimated size of Medium-Scale.

U Is a gas composition of 0.5 methane and 0.5 ethane valid?



Yes, the composition is valid with a molecular weight of 16.04 g/mol.

U What is the payback period for a system costing \$200,000 that saves \$50,000 annually?



The payback period for the system is 4 years.

Frequently Asked Questions

01 What can this MCP do for flare gas design?

It handles compressor sizing, gas composition validation, recovery efficiency estimation, and economic feasibility calculations.

02 Which AI clients can use this MCP?

You can use this MCP with any compatible client like Claude, Cursor, Windsurf, or VS Code.

03 Can I use this to check if a gas mixture is processable?

Yes, the `validate_gas_composition` tool checks if your mixture is chemically valid and physically processable.

04 Does it help with carbon reduction?

Yes, by helping you optimize gas capture and minimize flaring, it assists in reducing carbon penalties.

05 How does it handle economic calculations?

The calculate_economic_viability tool evaluates the financial feasibility of your proposed FGR design.

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>"flare-gas-recovery-system-designer": { "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

Flare Gas Recovery System Designer 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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Server ID	01a099ba-c6ae-70df-b6cc-43cb49f1b2a1
Platform	Vinkius Cloud for AI Agents
Endpoint	https://edge.vinkius.com/{token}/mcp

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