

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 Lift Design Optimization MCP

Get precise engineering calculations for artificial lift optimization.

Gas Lift Design Optimization MCP gives your AI client the engineering math needed to manage gas lift systems. It handles the heavy lifting for calculating unloading sequences, determining optimal injection depths, and predicting how much more fluid you'll produce after optimization. You can also use it to generate mechanical requirements for your tubing string assembly.

A+ Quality Score 100/100

gas-lift

artificial-lift

petroleum-engineering

well-design

production-optimization



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 Lift Design Optimization MCP

4 tools available

Cloud-hosted on Vinkius

You can now bring specialized petroleum engineering math directly into your AI workflow. This MCP provides the specific tools your agent needs to design and refine gas lift systems without you having to manually run complex calculations. Instead of jumping between spreadsheets and legacy software, you can ask your AI client to determine the exact vertical spacing for valves or find the best depth to inject gas to drop bottomhole pressure.

When you're planning a well, you can use it to design the mechanical configuration for your mandrels and valves. If you need to justify a change in the field, the MCP can estimate the increase in fluid volume you'll see once the injection is optimized. It turns your AI agent into a technical partner that understands tubing diameters, fluid gradients, and injection pressures, allowing you to move from initial design to production prediction in a single conversation.

Core Capabilities

01 — Unloading Calculations

Your agent calculates the vertical spacing for gas lift valves.

02 — Depth Optimization

The AI finds the injection depth that maximizes bottomhole pressure reduction.

03 — Production Forecasting

Your client predicts fluid volume increases from optimized injection.

04 — Mechanical Design

The tool generates mechanical requirements for mandrel and valve configurations.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/gas-lift-design-optimization — connect your AI agent in three steps.

- 01 Connect your preferred MCP-compatible client like Claude or Cursor to Vinkius.
- 02 Provide your well parameters like productivity index, pressure, and fluid density to your AI agent.
- 03 The agent calls the specific tool needed for your calculation.
- 04 You receive precise engineering data like valve spacing or production increases.

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

Built For

This MCP is built for engineers managing artificial lift operations in the oil and gas industry.

Petroleum Engineer

Hands off well design parameters to the AI to get rapid valve spacing and depth results.

Production Engineer

Uses the tool to forecast production gains from gas lift adjustments.

Field Operations Manager

Checks mechanical requirements for tubing string assemblies.

What Changes When You Connect

- 01 Reduces manual calculation time for valve spacing and unloading sequences.
- 02 Provides direct mechanical requirements for mandrel setups.
- 03 Quantifies expected production gains from gas lift changes.

- 04** Identifies optimal injection points to maximize pressure reduction.
-

Real-World Applications

Well Unloading Design

Calculate the exact spacing for valves to ensure a successful unloading process.

Pressure Management

Find the best depth to inject gas to lower bottomhole pressure effectively.

Production Optimization

Predict how much more fluid you will produce after adjusting gas injection.

Equipment Planning

Get the mechanical specs needed for mandrel and valve configurations.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_unloading_sequence	This tool calculates the vertical spacing required between gas lift valves to successfully unload a well.
02	design_mandrel_configuration	Use this tool to get the mechanical requirements for your specific mandrel and valve setup.
03	estimate_production_increase	This tool predicts the additional fluid volume you will produce as a result of your gas lift optimization.
04	optimize_injection_depth	This tool identifies the most effective depth to inject gas to maximize the reduction in bottomhole pressure.

See It in Action

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

- U** Calculate the valve spacing for a well with a productivity index of 2.5, tubing diameter of 3.5, casing diameter of 7.0, injection pressure of 1500, and initial fluid density of 0.45.



The unloading sequence requires 4 valves with spacings of [500, 450, 400, 350] meters, reaching a total unloading depth of 1700 meters.

- U** What is the optimal injection depth if the available pressure is 2000, the fluid gradient is 0.4, and the bottomhole pressure is 5000?



The optimal injection depth is 5000 meters with an estimated pressure at depth of 2000.

- U** Estimate the production increase for a current rate of 1000 bpd, a productivity index of 1.5, and a pressure reduction of 500.



The new production rate is 1750 bpd, representing a 75% increase.

Frequently Asked Questions

01 What can this MCP do for gas lift design?

It calculates valve spacing for unloading, identifies optimal injection depths, predicts production increases, and provides mechanical requirements for mandrels.

02 Which AI clients can use this MCP?

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

03 Do I need to host the MCP myself?

No, Vinkius hosts and manages the MCP for you. You just connect your client and start working.

04 Can it help with production forecasting?

Yes, it includes a tool to estimate the additional fluid volume produced as a result of gas lift optimization.

05 Is this for petroleum engineering specifically?

Yes, the tools are specialized for gas lift optimization and artificial lift design in petroleum engineering.

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-lift-design-optimization": { "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 Lift Design Optimization 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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