

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

Floating Roof Tank Designer MCP

Automated API 650 Appendix C compliant tank engineering.

Floating Roof Tank Designer MCP handles the heavy lifting for storage tank architecture. It allows your AI client to run precise calculations for seal systems, drainage, and environmental stability while strictly adhering to API 650 Appendix C standards.

A+ Quality Score 100/100

tank-design

api-650

storage-tanks

structural-engineering

oil-and-gas



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.

Floating Roof Tank Designer MCP

4 tools available

Cloud-hosted on Vinkius

You can now bring specialized petroleum engineering expertise directly into your AI workflow. This MCP provides the specific mathematical tools needed to design floating roof storage tanks that meet API 650 Appendix C requirements. Instead of manually running stability checks or seal sizing formulas, you let your agent handle the technical heavy lifting.

Your agent uses these tools to determine the best roof architecture for a specific tank size and liquid density. It calculates the necessary primary and secondary seal configurations to ensure containment. It also assesses whether a design can withstand local wind and seismic risks to prevent tilting or submergence. Finally, it handles the drainage math to ensure rainwater doesn't compromise the roof's structural integrity. This turns your AI client into a specialized engineering partner for oil and gas storage projects.

Core Capabilities

01 — Architecture Selection

Your agent picks the right roof type for the tank's dimensions and contents.

03 — Stability Assessment

Your agent checks for risks from wind and seismic activity.

05 — Standard Compliance

All calculations follow API 650 Appendix C guidelines.

02 — Seal Configuration

The AI calculates primary and secondary seal requirements for containment.

04 — Drainage Planning

The AI determines drain capacity to manage rainwater weight.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/floating-roof-tank-designer — connect your AI agent in three steps.

- 01 Connect your preferred client like Claude or Cursor to the Vinkius platform.
- 02 Provide your tank parameters, such as diameter and liquid density, to your agent.
- 03 The agent invokes the specific MCP tools to run the required API 650 calculations.
- 04 Review the technical outputs for roof type, seal specs, or stability margins.

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

Built For

This MCP is built for engineers working in the oil, gas, and chemical storage sectors. It helps professionals move from high-level requirements to technical design specs quickly.

Storage Tank Engineer

Uses the MCP to automate repetitive API 650 calculations and stability checks.

Structural Engineer

Hands off the initial roof architecture and drainage sizing to the AI.

Project Manager

Uses the tool to verify that design parameters meet safety standards.

What Changes When You Connect

- 01 Reduces manual calculation errors in API 650 Appendix C compliance.
- 02 Speeds up the initial design phase for floating roof architectures.

- 03

Provides immediate stability assessments for wind and seismic loads.
- 04

Automates the sizing of seal systems and drainage capacities.

Real-World Applications

Initial Tank Sizing

Determine the best roof type for a new tank based on diameter and liquid density.

Seal Specification

Generate the exact primary and secondary seal widths needed for volatile products.

Safety Auditing

Check if an existing roof design can handle specific wind or seismic risks.

Rainwater Management

Calculate the necessary drain capacity for tanks in high-rainfall areas.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_seal_system	This tool identifies the specific primary and secondary seal configurations required for your tank design.
02	design_roof_drainage	Use this to determine the capacity and placement of roof drains so rainwater doesn't cause weight accumulation.
03	evaluate_environmental_stability	This tool assesses if a roof is at risk of tilting or submerging during wind or seismic events.
04	select_roof_type	This tool picks the most appropriate floating roof architecture based on your tank's specific configuration.

See It in Action

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

- U** Recommend a roof type for a 30m diameter tank storing liquid with a density of 850 kg/m³ and a max wind speed of 40 m/s.



For a 30m diameter tank with a product density of 850 kg/m³, a pontoon roof is recommended with a stability margin of 1.45.

- U** What seal system is needed for a 20m diameter tank with high volatility product using a pontoon roof?



A high-performance mechanical seal system is required, featuring a primary liquid-tight seal and a secondary vapor seal with a total width of 0.6 meters.

- U** Calculate the drainage requirements for a double-deck roof with a 25m diameter and 50mm/hr rainfall intensity.



The design requires 4 flexible hose drains with a total capacity of 120 liters per minute to prevent weight accumulation.

Frequently Asked Questions

01 Does this MCP follow specific industry standards?

Yes, all calculations and design recommendations follow the API 650 Appendix C standards.

02 What AI clients can I use with this MCP?

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

03 Can it help with wind and seismic stability?

Yes, the evaluate_environmental_stability tool assesses the risk of roof tilting or submergence due to wind and seismic events.

04 How does it handle rainwater accumulation?

The design_roof_drainage tool determines the necessary capacity and placement of drains to prevent weight buildup.

05 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.

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>"floating-roof-tank-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

Floating Roof Tank 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

Generated	September 2026
MCP Server	Floating Roof Tank Designer MCP
Server ID	01a09bcc-18a3-7351-a595-d43b725c1a8a
Platform	Vinkius Cloud for AI Agents
Endpoint	<code>https://edge.vinkius.com/{token}/mcp</code>

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