

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

FSRU Design Suite MCP

Technical sizing and operational modeling for LNG infrastructure.

FSRU Design Suite MCP gives your AI agent the math and logic needed to design Floating Storage and Regasification Units. It handles the heavy lifting for sizing LNG storage volumes, rating regasification equipment, and selecting mooring systems based on environmental conditions. You can also run operational profiles to check if a design meets annual gas delivery targets.

A+ Quality Score 100/100

fsru

lng

maritime-design

energy-infrastructure

regasification



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.

FSRU Design Suite MCP

4 tools available

Cloud-hosted on Vinkius

You can now bring specialized maritime and LNG engineering logic directly into your AI client. This MCP provides the specific formulas and methodologies required to size Floating Storage and Regasification Units (FSRU) accurately. Instead of manually calculating volumes or equipment ratings, you tell your agent your import requirements and environmental constraints, and it handles the technical sizing.

Your agent uses this MCP to determine how much LNG you need to store to maintain a safety buffer between deliveries. It also calculates the necessary regasification equipment rating to ensure you meet sendout demands, even when accounting for weather or maintenance downtime. For structural stability, the MCP helps you select the right mooring type for specific wave and wind conditions. It's a practical way to move from rough requirements to a preliminary technical design within your existing coding or chat environment.

Core Capabilities

01 — LNG Storage Sizing

The agent calculates the exact liquid volume needed based on delivery frequency and safety buffers.

03 — Mooring Selection

The MCP identifies mooring types and structural requirements for specific sea states.

02 — Equipment Rating

Your agent determines regasification capacity requirements to meet specific sendout rates.

04 — Reliability Modeling

Your agent assesses annual gas delivery reliability by factoring in downtime and weather.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/fsru-design-suite — connect your AI agent in three steps.

- 01 Connect your AI client to the Vinkius-hosted MCP.
- 02 Provide your design parameters like sendout rates or wave heights.
- 03 The agent invokes the specific tool needed for the calculation.
- 04 Receive technical sizing and stability results directly in your chat.

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

Built For

This MCP is built for engineers working in maritime design and energy infrastructure.

LNG Engineers

They hand off storage and regasification requirements to the agent for rapid sizing.

Maritime Architects

They use the agent to check mooring stability against environmental data.

Energy Analysts

They use the operational profile tool to model gas supply reliability.

What Changes When You Connect

- 01 Calculates storage volumes using specific safety buffer parameters.
- 02 Adjusts equipment ratings based on weather and maintenance downtime.
- 03 Matches mooring systems to specific wave and wind conditions.

04 Provides a summary of annual gas delivery capability.

Real-World Applications

Preliminary FSRU Sizing

Quickly estimate LNG storage and regasification needs during the early design phase.

Supply Reliability Analysis

Model how weather downtime affects the ability to meet annual gas demands.

Environmental Stability Checks

Verify if a chosen mooring system can handle specific wave heights and wind speeds.

Equipment Specification

Determine the exact regasification rating needed to maintain a constant sendout rate.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_regasification_capability	This tool determines the equipment rating needed to hit your specific sendout targets.
02	calculate_storage_capacity	Use this to find the required liquid LNG storage volume for your FSRU.
03	design_mooring_system	This tool selects the appropriate mooring type and calculates structural strength needs based on environmental data.
04	evaluate_operational_profile	This tool summarizes how well an FSRU can meet annual gas demands by factoring in weather and maintenance.

See It in Action

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

- U** Calculate the required LNG storage for a daily sendout of 500 units with deliveries every 14 days and a 3-day safety buffer.



The required storage volume is 8,500 units, with a safety reserve of 1,500 units.

- U** What mooring type is needed for a site with 5 meter significant wave height and 25 knot wind speed?



A Turret Mooring system is required to maintain stability in these environmental conditions.

- U** Determine the regasification equipment rating for a 400 unit sendout rate with 0.1 weather downtime and 0.05 maintenance downtime.



The required equipment rating is 470.59 units to ensure a 400 unit sendout rate is met given the 85% availability.

Frequently Asked Questions

01 What can this MCP calculate for FSRU design?

It calculates LNG storage capacity, regasification equipment ratings, mooring system requirements, and operational reliability profiles.

02 How does the MCP handle weather downtime?

The evaluate_operational_profile tool uses weather downtime to assess the FSRU's ability to meet annual gas demands.

03 Can I use this with Cursor or Claude?

Yes, you can connect this MCP to any MCP-compatible client including Claude, Cursor, and Windsurf.

04 Does this tool help with mooring stability?

Yes, the `design_mooring_system` tool determines the appropriate mooring type and structural strength needed for specific environmental conditions.

05 How is regasification capacity determined?

The `calculate_regasification_capability` tool determines the required equipment rating to meet your target sendout demands.

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>"fsru-design-suite": { "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

FSRU Design Suite 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	<code>https://edge.vinkius.com/{token}/mcp</code>

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