

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

Delayed Coking Unit Design MCP

Build precise refinery unit specifications and operational schedules.

Delayed Coking Unit Design MCP provides specialized engineering calculations for refinery residue conversion. Your AI client uses this tool to determine product mass distribution, size coking drums, set up multi-drum operational timelines, and evaluate the risk of shot coke production based on feed properties.

A+ Quality Score 100/100

petrochemical

refinery

thermal-cracking

coking

unit-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.

Delayed Coking Unit Design Tool MCP

4 tools available

Cloud-hosted on Vinkius

You can now run complex delayed coking unit (DCU) design calculations directly through your AI client. This MCP handles the heavy lifting for residue conversion modeling and unit sizing. Instead of manually running separate spreadsheets, you tell your agent the feed density, viscosity, and temperature, and it returns the expected mass distribution. You can also use it to size physical equipment or map out how a multi-drum setup will cycle through operations. It also acts as a safety check by evaluating the likelihood of shot coke formation, helping you avoid operational hazards before they happen in the field.

Core Capabilities

01 — Yield Modeling

Your agent calculates product mass distribution from specific residue feeds.

02 — Equipment Sizing

The AI determines necessary drum diameters and heights for specific feed rates.

03 — Operational Scheduling

Your client generates timelines for multi-drum unit operations.

04 — Risk Assessment

The tool evaluates the probability of shot coke formation based on feed properties.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/delayed-coking-unit-design-tool — connect your AI agent in three steps.

- 01 Connect your client like Claude or Cursor to the Vinkius catalog.
- 02 Provide feed properties or design requirements to your agent.
- 03 The agent calls the specific engineering tool in the MCP.
- 04 You receive calculated yields, dimensions, or risk assessments in your chat.

Connect your AI client to Vinkius to access these engineering tools instantly.

Built For

This MCP is built for refinery engineers and petrochemical designers who need to model thermal cracking processes.

Process Engineer

Uses the tool to model residue conversion and product yields.

Unit Designer

Uses the tool to calculate physical drum dimensions for new installations.

Operations Manager

Uses the tool to plan drum cycles and assess coke quality risks.

What Changes When You Connect

- 01 Automates mass distribution calculations for residue feeds.
- 02 Provides precise drum geometry based on feed rates and cycle times.
- 03 Identifies shot coke risks using density and temperature inputs.

04 Generates operational timelines for multi-drum setups.

Real-World Applications

New Unit Design

Calculate the necessary drum volume and diameter for a new DCU installation.

Operational Planning

Create a cycle schedule for a multi-drum setup to maintain continuous operation.

Feedstock Analysis

Predict naphtha, gas oil, and diesel yields when switching to a new residue feed.

Hazard Mitigation

Check if specific temperature and density combinations will trigger shot coke production.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_yields	This tool determines the expected mass distribution of products from a specific residue feed.
02	design_drum_geometry	Use this to calculate the required physical dimensions for coking drums.
03	generate_cycle_schedule	This tool provides the operational timeline for a multi-drum DCU setup.
04	assess_coke_risk	This tool evaluates the likelihood of producing shot coke and the resulting quality profile.

See It in Action

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

U What are the expected yields for a residue with density 0.95, viscosity 15, and sulfur 2.5 at 490 degrees Celsius?



The expected yields are: coke yield of 45%, naphtha of 20%, gas oil of 25%, and diesel of 10%.

U Calculate the drum dimensions for a feed rate of 500 tons per day with a 0.4 coke yield and a 12-hour cycle time.



The required drum dimensions are a diameter of 4.5 meters and a height of 12.0 meters, providing a total volume of 765 cubic meters.

U Is there a high risk of shot coke if I use a residue with density 1.05 at 510 degrees Celsius?



Yes, the risk level is High, and there is a significant operational risk due to the high density and temperature combination.

Frequently Asked Questions

01 What can this MCP calculate for a refinery?

It calculates product yields, drum dimensions, operational schedules, and shot coke risks.

02 How do I use this with Claude or Cursor?

You connect your client to the Vinkius platform once, and the tools become available as functions for your agent to call.

03 Can it help with shot coke prevention?

Yes, the `assess_coke_risk` tool evaluates the likelihood of shot coke based on your feed density and temperature.

04 Does it support multi-drum unit scheduling?

Yes, the `generate_cycle_schedule` tool provides operational timelines specifically for multi-drum DCU setups.

05 What kind of residue data is needed for yields?

You can provide density, viscosity, sulfur content, and temperature to get expected mass distributions.

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>"delayed-coking-unit-design-tool": { "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

Delayed Coking Unit Design Tool 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

INDEPENDENT PLATFORM DISCLAIMER

Vinkius is an independent platform and is not affiliated with, endorsed by, sponsored by, verified by, or otherwise authorized by Delayed Coking Unit Design Tool. All third-party trademarks, logos, and brand names are the property of their respective owners. Their use in this document is strictly for informational purposes to identify service compatibility and interoperability.

DOCUMENT INFORMATION

Generated	September 2026
MCP Server	Delayed Coking Unit Design Tool MCP
Server ID	01a09703-4423-716d-9d31-5e81ecd004af
Platform	Vinkius Cloud for AI Agents
Endpoint	https://edge.vinkius.com/{token}/mcp

LICENSE & USAGE

This document is generated automatically by the Vinkius PDF Engine. Content reflects the MCP server configuration at the time of generation and may change as updates are deployed. For the most current information, visit vinkius.com/en/ai-agent-connect/delayed-coking-unit-design-tool.