

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

Flotation Clarification System MCP.

Get precise technical calculations for juice clarification processes.

Flotation Clarification System MCP provides the technical math needed for juice manufacturing. It calculates gas flow rates, treatment times, and flotant doses while comparing the cost of flotation against traditional gravity settling. You can also verify juice parameters for safety and pull physical constants for nitrogen or air to ensure your process stays within operational limits.

A+ Quality Score 100/100

juice-clarification

flotation

process-engineering

manufacturing

economics



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.

Flotation Clarification System MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to handle the heavy lifting for juice clarification math. Instead of manual calculations, your AI client can determine the exact physical parameters needed for a specific batch, including gas flow rates and treatment times. It handles the physics of the process by providing gas properties like density and rise velocity for nitrogen or air.

Safety is built into the workflow. You can check if your juice characteristics fall within realistic processing limits before you start a run. If you are deciding between different clarification methods, the MCP compares the efficiency and cost of flotation against standard gravity settling. This helps you make data-driven decisions about equipment requirements and economic efficiency without jumping between spreadsheets.

Core Capabilities

01 — Parameter Calculation

Your agent calculates gas flow, treatment time, and flocculant doses for specific juice batches.

02 — Gas Physics Data

The AI pulls physical constants for nitrogen or air to ensure accurate bubble calculations.

03 — Economic Modeling

Your client compares the cost and time efficiency of flotation against gravity settling.

04 — Safety Validation

The MCP checks juice characteristics against realistic processing limits to ensure operational safety.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/flotation-clarification-system — connect your AI agent in three steps.

- 01
- Connect your MCP-compatible client to the Vinkius hosted MCP.
- 02
- Provide your juice batch details or gas type to your AI agent.
- 03
- The agent calls the specific tool to run the physics or economic math.
- 04
- Receive precise technical outputs like flow rates, times, or cost comparisons.

Connect your AI client to Vinkius to access these industrial calculation tools instantly.

Built For

This MCP is built for professionals managing liquid clarification in food and beverage manufacturing.

Process Engineers

They use the MCP to calculate precise equipment requirements and operational parameters.

Plant Managers

They use the tool to compare the economic efficiency of different clarification methods.

Quality Control Technicians

They use the validation tools to ensure juice parameters stay within safe processing limits.

What Changes When You Connect

- 01
- Reduces manual math errors in gas flow and dose calculations.
- 02
- Provides instant physical constants for nitrogen and air.
- 03
- Compares flotation costs against gravity settling for better decision making.

04 Validates juice parameters to maintain safe processing limits.

Real-World Applications

Batch Setup

Calculate the exact gas flow and treatment time needed for a new batch of juice.

Safety Auditing

Verify that juice characteristics are within safe limits before starting a clarification run.

Process Optimization

Determine if switching from gravity settling to flotation will save time and money.

Gas Selection

Retrieve density and rise velocity data for nitrogen to refine bubble calculations.

4 Tools Available

#	TOOL	DESCRIPTION
01	get_flotation_requirements	This tool calculates the specific physical parameters, like gas flow and treatment time, needed to run a flotation unit for a juice batch.
02	get_gas_properties	Use this to pull physical constants for nitrogen or air to use in your process calculations.
03	get_settling_comparison	This tool compares the cost and efficiency of using flotation versus traditional gravity settling.
04	validate_juice_parameters	This tool checks if your juice characteristics are within safe and realistic limits for processing.

See It in Action

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

U Calculate the requirements for 5000 liters of juice with 5% solids and 90% target clarification using nitrogen.



For 5000 liters of juice, the required gas flow rate is 12.5 L/min, the treatment time is 45 minutes, and the required flotant dose is 250 grams.

U What are the properties of nitrogen for bubble calculations?



Nitrogen has a rise velocity of 0.25 m/s and a density of 1.165 kg/m³.

U Is flotation better than settling for 10000 liters if flotation costs 50 and settling takes 120 minutes?



Yes, flotation is recommended as it provides significant time savings compared to gravity settling.

Frequently Asked Questions

01 What can this MCP calculate for juice manufacturing?

It calculates gas flow rates, treatment times, flotant doses, and economic comparisons between flotation and settling.

02 Can I use this with Claude or Cursor?

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

03 How does it help with economic decisions?

It compares the efficiency and cost of flotation against traditional gravity settling to show time and money savings.

04 Does it provide gas properties?

Yes, it provides physical constants like density and rise velocity for gases like nitrogen or air.

05 Is there a safety component?

Yes, the validation tool checks if juice characteristics are within safe and realistic processing limits.

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>"flotation-clarification-system": { "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

Flotation Clarification System 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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