

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

# Custody Transfer Metering MCP

Design high-accuracy fluid measurement systems following API MPMS standards.

Custody Transfer Metering MCP gives your AI agent the specialized engineering logic needed for oil and gas measurement. It handles everything from selecting the right metering technology to calculating correction factors and performing uncertainty analysis, all while strictly adhering to API MPMS standards.

**A+** Quality Score 100/100

api-mpms

metering

fluid-dynamics

precision

uncertainty-analysis



# The connectivity layer between AI and the world's software.

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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

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## 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

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## 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

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## 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](https://cloud.vinkius.com) — connect your AI agent in under 60 seconds.

# Custody Transfer Metering MCP

4 tools available

Cloud-hosted on Vinkius

You can now bring professional-grade fluid measurement engineering directly into your AI client. This MCP provides the specific mathematical frameworks and standards required for custody transfer applications. Instead of manually checking API MPMS compliance, you can task your agent with selecting the right meter for a specific flow rate or calculating the necessary multipliers to adjust raw readings to standard conditions. It handles the heavy lifting of quantifying system error through uncertainty analysis and ensures your hardware meets certification requirements by checking prover accuracy. Whether you are designing a new measurement skid or verifying an existing setup, this MCP ensures your calculations stay within the rigorous tolerances required for high-stakes fluid transfers.

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## Core Capabilities

### 01 — Technology Selection

Your agent picks the best meter type based on your flow and uncertainty targets.

### 02 — Standardized Calculations

The MCP applies API MPMS standards to all correction factor math.

### 03 — Error Quantification

Your agent runs uncertainty analysis to find the total system error.

### 04 — Hardware Verification

The tool checks if your prover meets the precision needed for meter certification.

# One Click on Vinkius — From Prompt to Execution

Available at [vinkius.com/en/ai-agent-connect/custody-transfer-metering](https://vinkius.com/en/ai-agent-connect/custody-transfer-metering) — connect your AI agent in three steps.

- 01 Connect your preferred MCP-compatible client to Vinkius.
- 02 Provide your measurement parameters to your AI agent.
- 03 The agent calls the specific tool needed for the calculation or selection.
- 04 The MCP executes the math or analysis using API MPMS logic.
- 05 Your agent delivers the precise result or recommendation to you.

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

## Built For

This MCP is built for engineers working in the oil and gas sector who need to automate complex measurement calculations.

### Metering Engineers

They use the MCP to design measurement skids and verify system accuracy.

### Flow Computers Specialists

They use the tool to validate correction factors and standard condition adjustments.

### Quality Assurance Technicians

They use the MCP to confirm that provers and meters meet certification standards.

## What Changes When You Connect

- 01 Calculations follow API MPMS standards automatically.
- 02 Reduces manual error in uncertainty and correction factor math.
- 03 Speeds up the meter selection process for new projects.

**04** Provides instant verification of prover and meter compatibility.

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## Real-World Applications

### **New System Design**

Use the MCP to select the right meter and calculate expected uncertainty for a new custody transfer skid.

### **Volume Correction**

Quickly adjust raw volume readings to standard conditions using precise multipliers.

### **Compliance Auditing**

Verify that your existing measurement setup and provers meet required precision standards.

### **Error Budgeting**

Perform a full uncertainty analysis to understand the total error in a measurement chain.

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# 4 Tools Available

| #  | TOOL                         | DESCRIPTION                                                                                                 |
|----|------------------------------|-------------------------------------------------------------------------------------------------------------|
| 01 | calculate_correction_factors | This tool calculates the specific multipliers required to adjust raw fluid readings to standard conditions. |
| 02 | select_meter                 | Use this to identify the most suitable metering technology for your specific application requirements.      |
| 03 | perform_uncertainty_analysis | This tool provides a full breakdown of the total measurement error for your entire system.                  |
| 04 | verify_prover_accuracy       | This tool checks if a specific prover has the precision needed to certify a meter.                          |

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## See It in Action

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

**U** What meter should I use for crude oil with a flow rate between 100 and 500 units and a target uncertainty of 0.001?



The recommended technology is a Coriolis meter, which provides a suitability score of 0.95 for this specific application.

**U** Calculate the corrected volume for 1000 cubic meters at 25 degrees Celsius, 10 bar pressure, and 850 kg/m<sup>3</sup> density.



The corrected volume is 1005.42 cubic meters, using a correction factor of 1.00542.

**U** Is a prover with 0.0005 uncertainty sufficient for a meter requiring 0.001 uncertainty?



Yes, the prover is compliant with a safety margin of 0.0005.

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## Frequently Asked Questions

**01 Does this MCP follow industry standards?**

Yes, all calculations and logic follow API MPMS standards for oil and gas measurement.

**02 What kind of AI clients can I use with this?**

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

**03 Can I use this to select a meter?**

Yes, the select\_meter tool identifies the best metering technology for your specific application.

**04 How does it handle measurement error?**

The `perform_uncertainty_analysis` tool provides a full overview of the total system error.

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**05 Is the hosting managed?**

Yes, Vinkius hosts the MCP and manages all credentials so it is ready to use immediately.

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# Go Live in 60 Seconds

Get your connection token from [cloud.vinkius.com](https://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                                                                                          |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|  <b>Claude AI</b>  | Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint                              |
|  <b>Cursor</b>     | Settings → Features → MCP Servers → "+" Add New MCP Server → Type: SSE → Paste endpoint                     |
|  <b>VS Code</b>  | Ctrl/Cmd+Shift+P → "MCP: Add Server" → add <code>"custody-transfer-metering": {<br/>  "url": "..." }</code> |
|  <b>Windsurf</b> | MCP Settings → <code>mcp_settings.json</code> → Add endpoint URL                                            |
|  <b>ChatGPT</b>  | Settings → Tools & plugins → Add MCP server → Paste endpoint                                                |
|  <b>Gemini</b>   | 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

# Custody Transfer Metering is live on Vinkius Cloud.

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Get your connection token, paste it into your AI agent, and  
start building. No SDK. No deployment. Just results.

**Start at [cloud.vinkius.com](https://cloud.vinkius.com) →**

[vinkius.com](https://vinkius.com) · [support@vinkius.com](mailto:support@vinkius.com)

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