

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

Bottling Line Changeover Optimizer MCP

Reduce downtime and quantify the cost of product transitions.

Bottling Line Changeover Optimizer MCP applies SMED methodology to your beverage production data. It helps you identify exactly how much downtime costs and where you can shave minutes off your changeover process by converting internal tasks to external ones.

A+ Quality Score 100/100

smed

bottling

production-optimization

downtime-calculation

manufacturing-efficiency



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.

Bottling Line Changeover Optimizer MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to turn vague production delays into hard economic data. If you manage a beverage bottling line, you know that every minute the machines sit idle during a product switch, money is leaking out of the facility. This MCP uses Single Minute Exchange of Dies (SMED) principles to help you pinpoint those leaks. You can model how different crew sizes affect your speed or assess how much more complex a transition becomes when you switch from small screw cap bottles to large crown cork containers. Instead of guessing why a changeover took too long, you can use these tools to identify specific tasks that should be handled before the line even stops. It's about moving from reactive troubleshooting to proactive planning based on the physical realities of your equipment and packaging.

Core Capabilities

01 — Downtime Costing

Your agent calculates the exact dollar amount lost during production transitions.

02 — SMED Analysis

The AI identifies tasks that can be performed while the line is still running.

03 — Complexity Modeling

Your agent estimates transition times based on physical bottle and cap attributes.

04 — Labor Impact Modeling

The AI predicts how adding or removing crew members changes the changeover speed.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/bottling-line-changeover-optimizer — connect your AI agent in three steps.

- 01 Connect your MCP-compatible client to Vinkius.
- 02 Provide your production data or specific transition details to your agent.
- 03 The agent calls the necessary tools to run SMED or cost calculations.
- 04 Review the calculated costs, durations, or optimization opportunities.

Connect your client to Vinkius and start running production math immediately.

Built For

This MCP is built for professionals managing high-speed liquid packaging environments.

Production Managers

They use the tool to justify staffing levels and equipment upgrades.

Operations Analysts

They use it to model the economic impact of different production schedules.

Plant Engineers

They use it to identify technical bottlenecks in the changeover process.

What Changes When You Connect

- 01 Quantifies the financial impact of production delays.
- 02 Identifies specific tasks to convert to external work.
- 03 Models the relationship between crew size and speed.

04 Predicts transition difficulty based on packaging specs.

Real-World Applications

Cost Justification

Calculate the exact cost of a slow changeover to build a business case for new tooling.

Scheduling Prep

Estimate how long a shift will be interrupted when switching between different bottle sizes.

Staffing Optimization

Determine if adding an extra person to the crew actually reduces downtime enough to pay for itself.

Process Improvement

Use SMED analysis to find ways to prepare tools before the line stops.

4 Tools Available

#	TOOL	DESCRIPTION
01	get_changeover_metrics	This tool calculates the total estimated duration and the specific economic cost of a single changeover event.
02	calculate_labor_efficiency	Use this to determine how changing your crew size will impact the total duration of a changeover.
03	analyze_smed_opportunities	This tool identifies specific tasks you can move from internal to external to reduce your total downtime.
04	evaluate_product_transition	This tool estimates the complexity and base duration of a transition by looking at bottle size and closure types.

See It in Action

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

U Calculate the cost for a changeover from Product A to Product B with a line speed of 5000 units/hour and 3 tasks.



The total changeover duration is 45 minutes, resulting in a downtime cost of \$3,750.00.

U How much time can I save if I move the 'Tooling Swap' task to be an external task?



By converting the 'Tooling Swap' to an external task, you can achieve a potential time savings of 25 minutes.

U What is the complexity of switching from a 500ml screw cap bottle to a 1L crown cork bottle?



The transition has a high complexity score due to changes in both bottle size and closure type.

Frequently Asked Questions

01 What is SMED?

SMED stands for Single Minute Exchange of Dies. It is a methodology used to reduce the time it takes to complete a changeover between different products.

02 How does this MCP help with downtime?

It identifies tasks that can be moved from internal to external, which reduces the time the machine is actually stopped.

03 Can I use this with Claude or Cursor?

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

04 Does it account for different bottle types?

Yes, the tool evaluates transition complexity based on physical attributes like bottle size and closure types.

05 How does crew size affect the results?

The labor efficiency tool models how the number of people on a crew impacts the total duration of the changeover.

06 How does this tool help reduce downtime?

It uses `analyze\_smed\_opportunities` to identify internal tasks that can be moved to external preparation, reducing the time the line is actually stopped.

07 Can I account for different crew sizes?

Yes, you can use `calculate\_labor\_efficiency` to determine how adding more personnel affects the optimized changeover duration.

08 What factors influence the complexity score?

The `evaluate\_product\_transition` tool calculates complexity based on changes in bottle size, closure type, and labeling systems.

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>"bottling-line-changeover-optimizer": { "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

Bottling Line Changeover Optimizer 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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