

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

Emission Calculations for Flaring MCP

Get accurate pollutant mass data using EPA AP-42 standards.

Emission Calculations for Flaring MCP handles the math for gas flaring emissions. It uses EPA AP-42 emission factors to calculate the mass of CO₂, CH₄, N₂O, NO_x, SO₂, and VOCs. Your AI client can determine total gas flow, account for pilot gas, and generate final emission reports based on combustion efficiency.

A+ Quality Score 100/100

emissions

epa

flaring

gas

pollution



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.

Emission Calculations for Flaring MCP

4 tools available

Cloud-hosted on Vinkius

This MCP gives your AI client the specific math needed for gas flaring environmental reporting. Instead of manually looking up multipliers, you can let your agent handle the heavy lifting using EPA AP-42 standards. You can calculate the total gas flow by including pilot gas, then determine the mass of specific pollutants like CO₂ or VOCs based on your combustion efficiency. It handles the conversion from gas flow to pollutant mass for a variety of chemicals. Once the individual calculations are done, your agent can pull everything together into a single emission report. It's built to turn raw flow data and efficiency numbers into the specific mass values required for regulatory compliance.

Core Capabilities

01 — EPA Standard Compliance

Your agent uses EPA AP-42 emission factors to ensure calculations meet regulatory standards.

02 — Total Flow Summation

The AI adds pilot gas to waste gas to find the true total gas flow.

03 — Pollutant Mass Calculation

Your agent calculates the mass for CO₂, CH₄, N₂O, NO_x, SO₂, and VOCs.

04 — Automated Reporting

The AI aggregates multiple pollutant masses into a single summary report.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/emission-calculations-for-flaring — connect your AI agent in three steps.

- 01 Connect your MCP-compatible client to Vinkius.
- 02 Provide gas properties to retrieve EPA AP-42 emission factors.
- 03 Input flow rates and efficiency to calculate pollutant masses.
- 04 Request a final report to aggregate all the data.

Connect your client to Vinkius to start running calculations immediately.

Built For

This MCP is built for professionals managing gas flaring and environmental compliance. You can hand off the repetitive math and factor lookups to your AI agent.

Environmental Engineers

You provide the gas properties and efficiency, then let the agent calculate the mass of pollutants.

Compliance Officers

You use the agent to generate summary reports for regulatory documentation.

Operations Managers

You check total gas flow and emission levels against operational targets.

What Changes When You Connect

- 01 Uses EPA AP-42 factors to remove manual lookup errors.
- 02 Combines pilot and waste gas for accurate total flow.

-
- 03** Calculates specific masses for multiple pollutants in one workflow.
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- 04** Consolidates individual data points into a single report.
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Real-World Applications

Regulatory Reporting

Generate a summary of CO₂ and VOC emissions for a specific operating period.

Efficiency Analysis

Determine how combustion efficiency affects the mass of emitted pollutants.

Operational Monitoring

Calculate the total gas flow including pilot gas to monitor flare activity.

Data Aggregation

Turn a list of individual pollutant masses into a single emission report.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_pollutant_mass	This tool calculates the mass of specific pollutants released during an operation. It uses your provided flow and efficiency data to find the exact mass for a single chemical.
02	calculate_total_gas_flow	This tool finds the total volume of gas processed by a flare. It sums up the main waste gas and the pilot gas to get a complete flow rate.
03	generate_emission_report	This tool aggregates all your individual pollutant calculations. It compiles the various masses into one final summary report.
04	get_emission_factors	This tool retrieves the necessary EPA AP-42 emission factors. It provides the multipliers needed based on the specific properties of your gas.

See It in Action

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

U What is the total gas flow if the main waste gas is 500 units and the pilot gas is 5 units?



The total gas flow rate is 505 units.

U Calculate the mass of CO2 for a flow of 1000 units, an emission factor of 0.05, 98% efficiency, and 24 operating hours.



The mass of CO2 emitted is 1176 units.

U Generate an emission report with 100 units of CO2, 10 units of CH4, 5 units of N2O, 2 units of NOx, 1 unit of SO2, and 3 units of VOCs.



The total greenhouse gas mass is 115 units, consisting of 100 units of CO2, 10 units of CH4, and 5 units of N2O.

Frequently Asked Questions

01 What emission standards does this MCP use?

This MCP uses EPA AP-42 emission factors to perform all calculations.

02 Which pollutants can be calculated?

The tools calculate the mass for CO2, CH4, N2O, NOx, SO2, and VOCs.

03 Does it include pilot gas in the flow?

Yes, the `calculate_total_gas_flow` tool sums the main waste gas and the pilot gas.

04 Can I get a summary of all my data?

Yes, you can use the `generate_emission_report` tool to aggregate all pollutant calculations into one report.

05 How do I use this with Claude or Cursor?

You connect to the Vinkius hosted MCP once, and then your AI client can call the tools directly through the Model Context Protocol.

06 What standards does this server use for emission factors?

The server uses the standardized EPA AP-42 emission factors to ensure accurate calculations for various gas compositions and flare types.

07 How is pilot gas accounted for in the calculations?

The ``calculate_total_gas_flow`` tool allows you to include the pilot gas flow rate in the total volume, ensuring all combustion products are captured.

08 Can I calculate the impact of incomplete combustion?

Yes, by using ``calculate_pollutant_mass`` and providing the combustion efficiency as a decimal, the tool adjusts the mass for unburned hydrocarbons like CH₄ and VOCs.

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>"emission-calculations-for-flaring": { "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

Emission Calculations for Flaring 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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