MCP SERVER | NO CODE | CLOUD HOSTED

ENTSO-E MCP

Analyze European Power Market Flows Instantly

ENTSO-E gives you direct access to European electricity market data, letting your AI agent track generation forecasts, load patterns, pricing, and cross-border flows across major bidding zones. Stop manually querying complex APIs; just ask for the grid status.

A+ Quality Score 100/100

electricity-market | grid-monitoring | energy-generation | load-forecasting | market-prices | european-data

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vinkius.com/mcp/entso-e

SCAN TO VIEW

The infrastructure that powers AI agents in the real world.

Vinkius connects AI to the world's software through secure, enterprise-grade infrastructure — enabling real-world execution at scale, built on the Model Context Protocol (MCP).

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the cloud infrastructure where AI agents connect 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.

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.

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.

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	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	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.

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.

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.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken 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.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

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.

ENTSO-E MCP

12 tools available
Cloud-hosted on Vinkius

Managing energy markets means dealing with massive amounts of time-sensitive operational data. This MCP connects your preferred AI client directly to ENTSO-E's Transparency Platform API, giving you full control over European power market intelligence through natural conversation. You don't write complex XML queries or navigate dozens of tabs; you simply ask for what you need—whether it's comparing day-ahead forecasts against actual generation, or calculating the impact of a planned transmission outage. This ability to speak directly to deep energy data is why we built this on Vinkius; your AI agent becomes a dedicated European energy market analyst. You can analyze everything from current installed capacity and cross-border trade schedules to detailed wind and solar power predictions.

Core Capabilities

01 — Model Current Grid State

Get real-time or scheduled data on generation, load, and transmission outages across specific European zones.

02 — Analyze Market Pricing Dynamics

Retrieve day-ahead market clearing prices (EUR/MWh) and balancing regulation costs for any control area.

03 — Predict Future Energy Flows

Access forecasts for wind, solar, total generation, and electricity consumption to prepare for future grid conditions.

04 — Track Interconnection Trades

Monitor scheduled imports and exports between different bidding zones to gauge cross-border trade volume.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/entso-e** — connect your AI agent in three steps.

01 First, subscribe to this MCP and provide your ENTSO-E security token (you request this via email).

02 Next, prompt your AI client with a natural language query describing the energy market data you need.

03 Your agent processes the request using the available tools and returns structured XML data detailing generation, load, or prices for the specified zone.

The bottom line is that this MCP lets your AI agent bypass all the manual API work and analyze complex European energy market shifts conversationally.

Built For

Energy traders, grid operators, and renewable analysts use this when they can't afford to wait for reports. They need immediate insights into price spikes, capacity shortfalls, or cross-border flow limits—all before the next market open.

Energy Trader

Uses the MCP to compare day-ahead electricity market prices against generation forecasts and current cross-border flows to determine optimal trade volumes.

Grid Operator

Checks for planned or unplanned transmission outages and monitors balancing prices to ensure grid stability and manage system constraints.

Renewable Analyst

Compares wind and solar power generation forecasts against actual load data to accurately model the impact of clean energy sources on overall supply.

What Changes When You Connect

01 You stop spending hours manually compiling data. Instead, you ask your agent for the cross-border flows and day-ahead prices in one prompt, getting an instant analysis.

02 Need to assess grid stability? Use get_transmission_outages alongside get_generation_outages to model how planned maintenance impacts total available capacity.

03 Comparing supply vs. demand is simple. Run get_day_ahead_load and compare the results directly against get_forecasted_generation to spot potential imbalances.

04 Renewable energy analysis gets accurate fast. Compare the detailed forecasts from get_wind_solar_forecast with actual generation using get_actual_generation for better modeling.

05 Pricing intelligence is immediate. Get day-ahead electricity market prices using get_day_ahead_prices, and then check balancing costs via get_balancing_prices to understand total cost risk.

Real-World Applications

Modeling Peak Demand Deficits

A grid operator needs to know if the system can handle peak load. They use get_day_ahead_load and then run get_generation_outages to calculate exactly how much capacity is missing during critical hours.

Cross-Border Arbitrage Check

A trader wants to know if they can profit from moving power between zones. They check get_crossborder_flows and compare that against the day-ahead prices using get_day_ahead_prices.

Assessing Clean Energy Impact

A renewable analyst wants to quantify solar's contribution. They run get_wind_solar_forecast and then cross-reference it with the installed capacity data from get_installed_generation for a full picture.

Post-Event Market Review

After an outage, an analyst checks get_actual_generation against the initial day-ahead forecasts (get_day_ahead_generation) to quantify the market impact and losses.

Patterns to Avoid

Sequential API Calls

✗ AVOID

The user writes a prompt that requires gathering 10 separate pieces of data points (e.g., load, prices, cross-border flows) and then manually combines them in an external spreadsheet.

✓ INSTEAD

Just ask your agent to 'Analyze the energy market for Zone X, comparing day-ahead prices (get_day_ahead_prices), forecasted load (get_day_ahead_load), and scheduled cross-border imports (get_crossborder_flows).' Let your agent handle the orchestration.

Focusing on Data Retrieval Only

✗ AVOID

The user runs separate queries for every single tool, resulting in a massive dump of XML data that requires hours of manual parsing and synthesis.

✓ INSTEAD

Instead, prompt your agent: 'Compare the actual generation (get_actual_generation) to the forecast (get_forecasted_generation) for last week and highlight any discrepancies.' This turns raw data into actionable insights.

Ignoring Outage Context

✗ AVOID

A user only checks current load forecasts without considering planned maintenance.

✓ INSTEAD

Always check get_transmission_outages first. Then, ask your agent to calculate the potential peak load (get_day_ahead_load) given the reduced capacity.

The Right Fit

Use this MCP if your job requires modeling complex systems where multiple data streams interact—like a power grid or an international supply chain. You need to know how generation outages affect market prices, for example. If you only need simple historical data (e.g., just the average load last month), a basic database connector might suffice. However, if your question is 'What happens when X changes?', this MCP is what you need because it links physical grid constraints (like get_transmission_outages) directly to financial outcomes (like get_day_ahead_prices). Don't use this if you just want general industry news; stick to specialized research databases for that.

The Energy Market Data Nightmare

Right now, getting a full picture of European energy trading feels like doing forensic accounting. You have to jump between multiple vendor portals: one tab for generation forecasts, another for cross-border flow schedules, and yet another for market prices. Then you copy everything into Excel because no single system shows the impact of a planned transmission outage on next week's expected price.

With this MCP, that entire manual workflow vanishes. You tell your AI agent what you need—for example, 'What will the average price be if we lose 1 GW of capacity?' and it handles all the data calls automatically. The output is a synthesized, ready-to-read analysis.

Get Full Market Visibility with ENTSO-E

You no longer have to manually correlate generation forecasts (get_day_ahead_generation) against actual load data (get_actual_load). You simply ask for the comparison, and your agent delivers a clear report on supply/demand balance.

It’s not about getting data; it's about getting answers. This MCP lets you analyze complex interactions—like how a high wind forecast interacts with cross-border flow limits—in seconds.

ENTSO-E: 13 Tools for Energy Analysis

These tools provide granular access to critical European energy market metrics. Use them to predict outcomes, analyze historical performance, or model grid stability.

#	TOOL	DESCRIPTION
01	`get_actual_generation`	Retrieves historical electricity generation output, broken down by energy source for a specific European bidding zone.
02	`get_actual_load`	Gets the actual electricity consumption data (load) for a specified European bidding zone.
03	`get_balancing_prices`	Retrieves market prices related to balancing services and grid stability assessments for a control area.
04	`get_crossborder_flows`	Calculates the scheduled amount of electricity being imported or exported between two European bidding zones.
05	`get_day_ahead_generation`	Provides energy generation forecasts for a specific zone, essential for planning and trading decisions.
06	`get_day_ahead_load`	Retrieves electricity consumption forecasts for a specified zone to model expected demand.
07	`get_day_ahead_prices`	Provides the predicted day-ahead market clearing prices (in EUR/MWh) for a specific European bidding zone.
08	`get_forecasted_generation`	Gets total electricity generation and load forecasts, giving an overall picture of supply versus demand in a zone.
09	`get_generation_outages`	Lists planned or unplanned maintenance schedules for power plants within a bidding zone.
10	`get_installed_generation`	Determines the total installed generation capacity by energy source available in a specific bidding zone.
11	`get_transmission_outages`	Provides details on scheduled maintenance and outages for major transmission lines in a bidding zone.
12	`get_wind_solar_forecast`	Predicts the energy generation output specifically from wind and solar sources within a given bidding zone.

See It in Action

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

U Show me day-ahead electricity prices for Germany tomorrow.

Fetching day-ahead prices for Germany (10YDE-RWENET---I)... Average price: 85.42 EUR/MWh. Peak hours (08:00-20:00): 98.15 EUR/MWh average. Off-peak: 62.30 EUR/MWh average. Highest price: 125.50 EUR/MWh at 18:00-19:00. Lowest price: 45.20 EUR/MWh at 03:00-04:00. Price drivers: High wind generation expected midday, low solar in evening driving evening peak. Would you like the hourly price breakdown?

U What is the wind and solar forecast for France today?

Fetching wind and solar forecast for France (10YFR-RTE------C)... Wind forecast: 8,450 MW average, peak 12,200 MW at 14:00. Solar forecast: 15,300 MW average, peak 32,500 MW at 13:00. Total renewable forecast: 23,750 MW average. Combined wind and solar expected to cover 55% of daytime demand. Strong solar generation expected between 10:00-16:00. Would you like to compare this with actual generation data?

U Show me generation outages in Germany this week.

Checking generation outages for Germany... Found 3 active outages: 1) Nuclear plant Biblis B — 1,300 MW unavailable (planned maintenance, expected return: Friday). 2) Coal plant Neurath — 850 MW unavailable (unplanned outage, return TBD). 3) Gas plant Irsching — 400 MW unavailable (planned maintenance, expected return: Thursday). Total unavailable capacity: 2,550 MW. This represents approximately 3% of Germany's total installed capacity. Would you like impact analysis on expected prices?

Frequently Asked Questions

01 **How do I use the get_day_ahead_prices tool in ENTSO-E?**

You prompt your agent by specifying the bidding zone and date. The tool returns the predicted market clearing prices (EUR/MWh) for that specific time window, which is key for trading decisions.

02 **Can I use get_actual_generation to check my renewable performance?**

Yes. By requesting actual generation data and comparing it against the wind and solar forecasts (get_wind_solar_forecast), you can precisely calculate your renewable energy efficiency.

03 **What is the difference between get_generation_outages and get_transmission_outages?**

Generation outages detail planned maintenance on power plants, while transmission outages track scheduled maintenance on the physical lines that carry the electricity between zones. Both are vital for grid stability.

04 **Does ENTSO-E help with cross-border trading analysis?**

Absolutely. Using get_crossborder_flows lets you monitor scheduled imports and exports, which is the foundation of any cross-border energy arbitrage strategy.

05 **Is it possible to compare load forecasts vs. total generation forecasts using ENTSO-E?**

Yes, your agent can use get_day_ahead_load and combine that analysis with get_forecasted_generation to provide a holistic view of the expected market balance.

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 `"entso-e": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → 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

ENTSO-E 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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