



enervoxa

Disruptive Innovations in Green Energy

CLIMATE TECHNOLOGY

Transforming Energy.
Creating Value.

TEAM CANADA TRADE MISSION · JAPAN · JUNE 2026

Canada–Japan Strategic Partnership Opportunity

HYDROGEN

LOW-CARBON FUELS

CRITICAL MINERALS

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WHO WE ARE

Enervoxa is a **Canadian climate technology company** developing scalable, patented industrial solutions for the global energy transition. Our platforms address hydrogen production, low-carbon fuels, carbon utilization, and critical minerals recovery.

CORE TECHNOLOGY PLATFORMS

Hydrogen Production

Matrix Reactor (POX/ATR) · Cold Plasma (30 kWh/kg)

Low-Carbon Fuels (Blue Methanol)

Modular plants · Any hydrocarbon feedstock · Full CO₂ capture

Critical Minerals — REE from Red Mud

Patented process · No new mining · Scalable globally

Modular Wastewater & Pyrolysis

Waste-to-energy · Biomass & plastic conversion · WWTP

GLOBAL ENGAGEMENT

CA North America
Canada · United States · Mexico

EU Europe
Italy (Team Canada Trade Mission) - Germany

Indo-Pacific
Japan · South Korea · India - Indonesia

KEY CREDENTIALS

Patented technologies — no direct global competitors in REE from red mud

Government-backed Team Canada Trade Mission participant

Active international project pipeline across 5 countries

Research collaboration: Semenov Institute of Chemical Physics



Enervoxa's technology platforms directly address Japan's most critical national energy and industrial priorities as defined under the Strategic Energy Plan, METI Hydrogen Roadmap, and Green Transformation (GX) program.

JAPAN NATIONAL PRIORITY	TARGET	ENERVOXA TECHNOLOGY RESPONSE
Hydrogen Import & Domestic Production	3M t/yr by 2030	Matrix Reactor (Blue H ₂) + Cold Plasma (15 kWh/kg vs 50 kWh electrolysis) — 70% energy advantage
Low-Carbon Marine Fuel (Methanol)	IMO 2030 mandate	Blue Methanol production platform — modular, feedstock-flexible, full CO ₂ capture. Benchmark: MGC 2.15M t/yr offtake signed Nov 2025
Critical Minerals — REE Supply Security	76% China dependency	Patented REE extraction from bauxite red mud — no new mining, scalable, non-Chinese supply chain. Only company globally with this process
AI Data Centre Power Infrastructure	9.2 GW planned (SoftBank)	Matrix Reactor + SOFC integration — distributed, modular, multi-feedstock power for data centres. Lower cost vs Bloom Energy
GX Industrial Decarbonization (Steel, Chemicals)	Carbon neutral 2050	CCUS-integrated Matrix Reactor for hard-to-abate sectors — steel DRI, refinery decarbonization, industrial H ₂ supply

\$6.8B

Japan H₂ CfD awards, Jan 2026

37.1%

Japan SOFC market CAGR to 2034

¥2 Trillion

Mizuho H₂ financing pledge (2024)

20M t

Japan H₂ target by 2050



Enervoxa operates four integrated, patented technology platforms designed for industrial scale, feedstock flexibility, and maximum resource efficiency.

1. Matrix Reactor (POX/ATR)

Advanced non-catalytic partial oxidation and autothermal reforming technology for syngas, hydrogen, and blue methanol production.

Feedstock Flexible: Natural gas, flare gas, biogas, industrial emissions

High Efficiency: Near-zero emissions with integrated CO₂ capture

Modular: Scalable from small remote fields to giga-complexes

2. Cold Plasma Hydrogen

Disruptive hydrogen production technology utilizing cold plasma to dissociate water molecules with unprecedented energy efficiency.

Energy Breakthrough: Requires only 15 kWh per kg of H₂

Competitive Advantage: 70% less energy than conventional electrolysis (50 kWh/kg)

Application: Low-cost green/turquoise hydrogen for industrial use

3. REE Extraction from Red Mud

Patented hydrometallurgical process to extract Rare Earth Elements (REEs) and critical minerals from bauxite residue (red mud).

Supply Security: Creates domestic REE supply chains without new mining

Waste Valorization: Remediates toxic industrial stockpiles

Exclusive IP: Enervoxa holds the sole global patent for this specific pathway

4. Modular Pyrolysis & WWTP

Advanced waste-to-energy and water treatment systems for municipal and industrial applications.

Pyrolysis: Converts biomass and plastic waste to power/fuels

WWTP: Modular, scalable wastewater treatment plants

TECHNOLOGY & PRODUCTION MODEL

- **Matrix Reactor Technology:** Advanced POX/ATR process enabling highly efficient syngas generation for methanol synthesis.
- **Feedstock Flexibility:** Capable of processing natural gas, stranded/flare gas, and industrial emissions with full CO₂ capture.
- **Modular Deployment:** Containerized, scalable plant design allows for rapid deployment and phased capacity expansion.
- **Cost Competitiveness:** Achieves cost parity with conventional methanol while delivering a near-zero carbon footprint.



MODULAR PLANT INFRASTRUCTURE

MARKET PRECEDENT

Japan's demand for low-carbon marine bridging fuels is accelerating rapidly, validated by recent mega-deals.

November 2025 Benchmark

Mitsubishi Gas Chemical (MGC)

Signed long-term sales and purchase agreement for **2.15 million tonnes/year** of ultra-low carbon methanol from the Pacifico Mexinol project (Mexico).

THE OPPORTUNITY: NORTH AMERICA TO JAPAN

Enervoxa seeks strategic Japanese partners for long-term offtake agreements (MoU) to supply ultra-low carbon blue methanol from our North American production hubs to Japan's maritime and industrial sectors.

TARGET VOLUME

500k - 2M t/yr

TARGET PARTNERS

Trading Houses, Shippers



Enervoxa offers two complementary, patented hydrogen production pathways designed to overcome the cost and energy barriers of conventional electrolysis and SMR, directly supporting Japan's 3M t/yr 2030 hydrogen target.

Matrix Reactor (Blue H₂)

FEEDSTOCK-FLEXIBLE POX/ATR

Any Hydrocarbon Feedstock

Processes natural gas, flare gas, biogas, or industrial off-gases without complex pre-treatment.

Integrated CO₂ Capture

Full carbon capture and utilization (CCU) capability, producing ultra-low carbon Blue Hydrogen.

Non-Catalytic Efficiency

Eliminates catalyst degradation issues, ensuring high uptime and lower OPEX for industrial deployment.

Cold Plasma Technology

ULTRA-LOW ENERGY H₂ PRODUCTION

15 kWh per kg of Hydrogen

Requires only 15 kWh/kg compared to ~50 kWh/kg for conventional electrolysis.

70% Energy Reduction

Fundamentally changes the economics of green/turquoise hydrogen production.

Modular & Scalable

Compact footprint allows for distributed generation at the point of demand (e.g., data centres, ports).

Target Applications in Japan

Steel DRI

Direct Reduced Iron (DRI) processes requiring massive, stable hydrogen volumes. Aligns with Nippon Steel & JFE decarbonization roadmaps.

Power Generation

Co-firing in gas turbines and dedicated hydrogen power plants. Supports JERA and SoftBank's clean energy infrastructure goals.

Marine Fuel

Feedstock for green/blue ammonia and methanol synthesis, supporting Japan's maritime decarbonization and Kawasaki's supply chains.

Industrial Decarbonization

Replacing grey hydrogen in chemical refining and manufacturing (GX program targets). Applicable to ENEOS and Mitsubishi Chemical.



01 Japan's Critical Vulnerability

76%

of Japan's Rare Earth Elements are imported from China

This represents an existential supply chain risk for Japan's advanced manufacturing, EV, and renewable energy sectors. Diversification is a national security imperative.

02 The Enervoxa Solution

Patented Red Mud Extraction Process

INVENTOR: IGOR KUNTZEVITSKY (ENERVOXA CTO)

No New Mining: Extracts high-value REEs directly from bauxite residue (red mud) generated by aluminum production.

Global Scalability: Utilizes massive existing industrial waste stockpiles worldwide, bypassing traditional mining bottlenecks.

Exclusive Capability: Enervoxa is the only company globally with this patented, commercially viable extraction process.



TARGET PARTNERS

JOGMEC

State-backed funding and strategic support for critical mineral supply chain security.

Shin-Etsu & TDK

Top-tier rare earth magnet manufacturers seeking non-Chinese REE supply sources.

Proterial

Major REE magnet maker actively diversifying its raw material procurement.

THE OPPORTUNITY

Establish a strategic partnership or joint venture to deploy Enervoxa's technology globally, securing a dedicated, independent REE supply chain for Japanese industry.

Matrix Reactor + SOFC Integration

Enervoxa provides a next-generation distributed power solution combining our patented Matrix Reactor with Solid Oxide Fuel Cell (SOFC) technology. This platform delivers highly efficient, low-emission baseload power for energy-intensive facilities.

Multi-Feedstock Flexibility

Unlike standard SOFCs requiring pure hydrogen or highly processed gas, the Matrix Reactor seamlessly processes natural gas, flare gas, and biogas directly into syngas for the fuel cell.

Dual Output Capability

The system can be configured to co-produce both electricity and hydrogen/syngas, maximizing asset utilization and revenue streams.

STRATEGIC MARKET ALIGNMENT

SoftBank AI Data Centre Initiative

SoftBank is leading a consortium to develop 9.2 GW of natural gas-fired power specifically for AI data centres. Enervoxa's platform offers a direct, higher-efficiency, lower-emission alternative to conventional gas turbines for this massive infrastructure build-out.



Competitive Positioning vs. Incumbent SOFC

Metric	Enervoxa Platform	Incumbent (e.g., Bloom)
Capital Cost	Significantly Lower	High Premium
Feedstock	Any Gas (NG, Flare, Bio)	Strict Purity Req.
Output	Power + Fuel (Dual)	Power Only
ROI Timeline	Accelerated	Extended

Enervoxa has identified and prioritized key Japanese stakeholders across five strategic sectors for MoU-level discussions, offtake agreements, and joint venture formation.



TRADING HOUSES & ENERGY

Mitsubishi Corporation
Mitsui & Co.
Marubeni Corporation
Sumitomo Corporation
JERA
ENEOS

INDUSTRIAL & ENGINEERING

IHI Corporation
Kawasaki Heavy Industries
Mitsubishi Heavy Industries (MHI)
Toyo Engineering
JGC Corporation
Chiyoda Corporation

REE / CRITICAL MINERALS

JOGMEC
Shin-Etsu Chemical
TDK Corporation
Proterial
UACJ Corporation

FINANCIAL & CAPITAL

SoftBank Group
Mizuho Financial Group
SMBC Group
MUFG
JBIC & DBJ
Advantage Partners

STEEL & HEAVY INDUSTRY

Nippon Steel
JFE Steel

Enervoxa is seeking to establish formal, MoU-level partnerships during the Team Canada Trade Mission. We offer three distinct, highly structured collaboration models tailored for Japanese industrial and financial counterparties.

STRUCTURE 01

Methanol Offtake Agreement

Long-term supply of ultra-low carbon blue methanol from Enervoxa's North American production hubs to Japan.

TARGET PARTNERS

Trading Houses, Marine Shippers

KEY MECHANISMS

Long-term purchase agreement (10-15 yrs)

Volume: 500k - 2M tonnes/year

Pre-agreed pricing index & carbon premium

STRUCTURE 02

REE Strategic Partnership

Joint venture and technology licensing to deploy Enervoxa's patented red mud extraction process globally.

TARGET PARTNERS

JOGMEC, Magnet Mfrs (Shin-Etsu, TDK)

KEY MECHANISMS

Joint Venture formation for specific sites

Exclusive regional technology licensing

Co-investment in commercial pilot plant

STRUCTURE 03

Technology & Project Co-development

Integration of Matrix Reactor + SOFC for data centres, and CCUS deployment for industrial decarbonization.

TARGET PARTNERS

SoftBank, EPCs (IHI, MHI), Steelmakers

KEY MECHANISMS

Co-development & engineering agreement

EPC partnership for Japan deployment

Pilot deployment at target industrial site

Enervoxa provides Japanese industrial partners with exclusive access to disruptive, patented climate technologies that fundamentally alter the economics of decarbonization and critical mineral supply.

01 Unrivaled IP Portfolio

Patented technologies with no direct global competitors, including the world's only commercially viable process for extracting Rare Earth Elements directly from red mud.

02 Transformative Economics

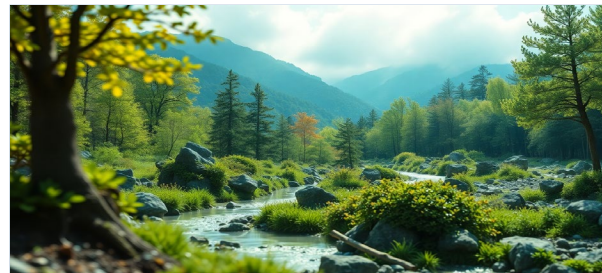
A 70% energy advantage in hydrogen production (15 kWh/kg via Cold Plasma) compared to conventional electrolysis, enabling cost-competitive green/turquoise hydrogen.

03 Feedstock Flexibility

The Matrix Reactor processes any hydrocarbon gas (natural gas, flare gas, biogas) without complex pre-treatment, maximizing resource utilization.

04 Rapid, Scalable Deployment

Modular, containerized systems allow for phased capacity expansion, reducing upfront CAPEX and significantly de-risking project execution timelines.



GLOBAL GOVERNMENT-BACKED TRACTION

Enervoxa is a trusted Canadian climate tech leader, actively participating in official, government-backed trade missions globally to establish strategic industrial partnerships.

Italy (Oct 2025)

Mexico (2026)

South Korea (2026)

India PDA (Apr 2026)

Japan (Jun 2026)

Enervoxa is participating in the **Team Canada Trade Mission to Japan** with a clear mandate: to transition from exploration to execution.

01

Establish Strategic Partnerships

Identify and align with 1-2 key Japanese industrial conglomerates or trading houses for long-term collaboration across our technology platforms.

02

Advance to Signed MoUs / LOIs

Formalize agreements in specific tracks: Blue Methanol Offtake, REE Extraction Joint Ventures, or Data Centre Power Integration.

03

Engage Capital Partners

Initiate discussions with Japanese financial institutions and infrastructure funds for large-scale project deployment and equity participation.

EXECUTION READINESS

Pre-drafted MoU frameworks and detailed technical data rooms are available immediately upon strategic alignment to accelerate the partnership process.



NEXT STEPS

B2B MEETINGS

June 2026 — Tokyo, Japan

CONTACT

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