

GLENCAL TECHNOLOGY

*Revolutionizing the world through
the power of highly advanced
ion technology*

Contact Info:



#20 Marunouchi Trust Tower-Main
1-8-3 Marunouchi, Chiyoda-ku, Tokyo,
Japan 100-0005



info@glencaltech.com
www.glencaltech.com/indexEN.html



TEL: +81(0)3-5288-7059
FAX: +81(0)50-3730-3755

BUSINESS Brochure 2026



An associated partner of Dii Desert Energy





Company Business

Innovative solutions for energy, water, environment, food and healthcare.

Customization, sustainability, partnership for global impact.



ION-BASED SOLUTIONS

Glencal Technology develops proprietary solutions utilizing ions, pioneering innovative approaches in the fields of energy, water, environment, food and healthcare.



COMMITMENT TO SUSTAINABILITY

Glencal Technology is dedicated to creating a sustainable future, prioritizing environmental conservation and economic rationality.

About Company

Glencal Technology Co., Ltd. was established in 2013

Glencal Technology Co., Ltd., was established in 2013. With a rich history dating back to 2002, Glencal Co., Ltd. has been at the forefront of investments and M&A advisory work, particularly in the medical and environmental sectors. Recognizing the global potential of a highly advanced ionization technology, Glencal Technology was founded to spearhead its development and commercialization under the guidance of Glencal Co., Ltd.

Glencal Technology has since developed MIRA-ion engine and RedoxMaster®, which utilizes patented ionization technology enabling unprecedented drying of organic materials and heavy industrial wet waste. This technology has been successfully applied in various industries, such as agriculture, food processing, and waste management, demonstrating its potential to contribute to a global sustainable society where environmental protection and economic growth are compatible.

In 2025, we found Data centers can create water, food, and critical minerals. At Glencal Technology, we turn waste heat into freshwater, agriculture, salt, and magnesium – powering a new Coastal Circular City. AI → Waste Heat → Water → Food → Minerals → Export. Japan needs supply: 70%+ of industrial salt and nearly all (99%+) magnesium are imported. This is not just desalination – it's a new circular industry.

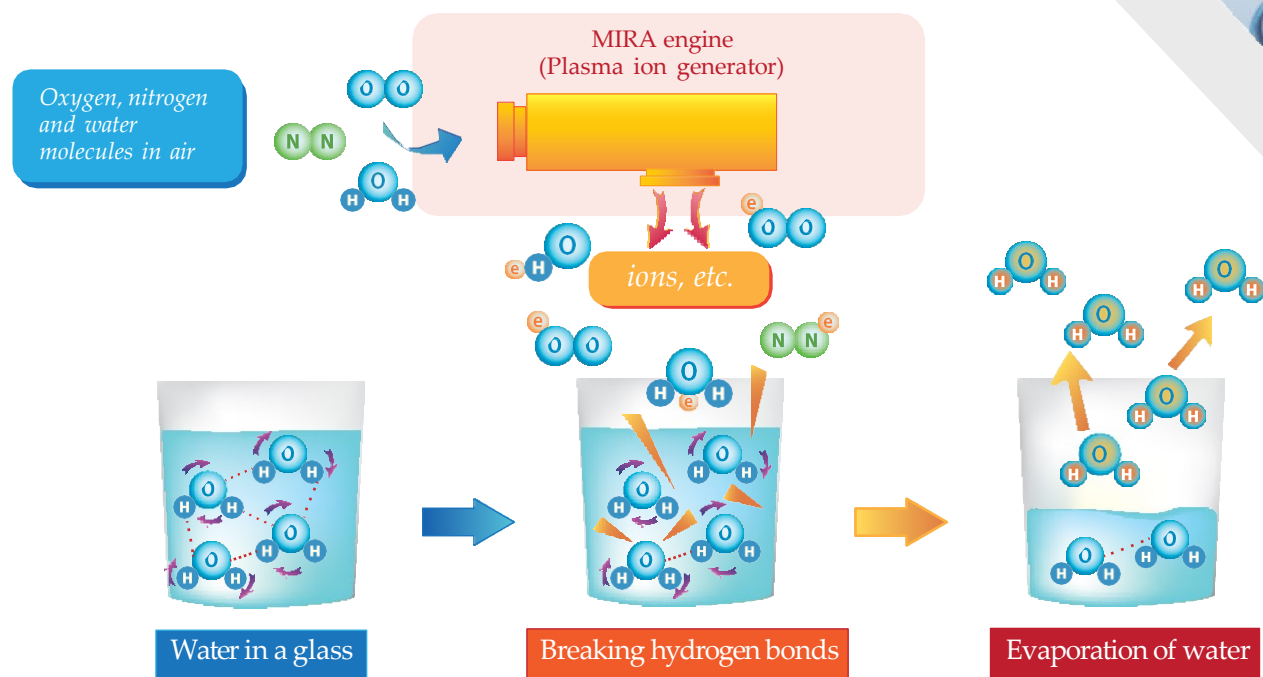
Strength and Innovation

Glencal Technology's core strength lies in the revolutionary ionization technology, such as MIRA-ion engine, SILK-ion engine and RedoxMaster®, i-EVA, i-FOOD technologies. With the commercialisation know-how and extensive high-end network of Glencal Co., Ltd., we are uniquely positioned to deploy RedoxMaster® drying technology in various fields. Our commitment to this cause is unwavering. We are dedicated to addressing global climate change issues, conflict-induced price spikes in commodities including food, fertiliser, fuel and animal feed, and water shortages. We firmly believe that solving water, environmental, food and energy problems will indirectly lead to resolving global conflicts, and we will continue to develop and apply MIRA, SILK, RedoxMaster®, i-EVA, i-FOOD technologies to achieve our goals.



Our Unique Technology

Glencal Technology develops, manufactures, and owns the IP for both Ion-engines such as MIRA, SILK and application equipment such as a RedoxMaster®. The MIRA ion-engine & the SILK ion-engine incorporates highly advanced ionization technology to generate reactive oxygen species and ultra-low energy plasma ions. This facilitates rapid drying of wet materials by disrupting the hydrogen bonds in water to form smaller clusters, enabling swift drying at remarkably low temperatures, thereby delivering substantial energy cost savings and reduced CO2 emissions.



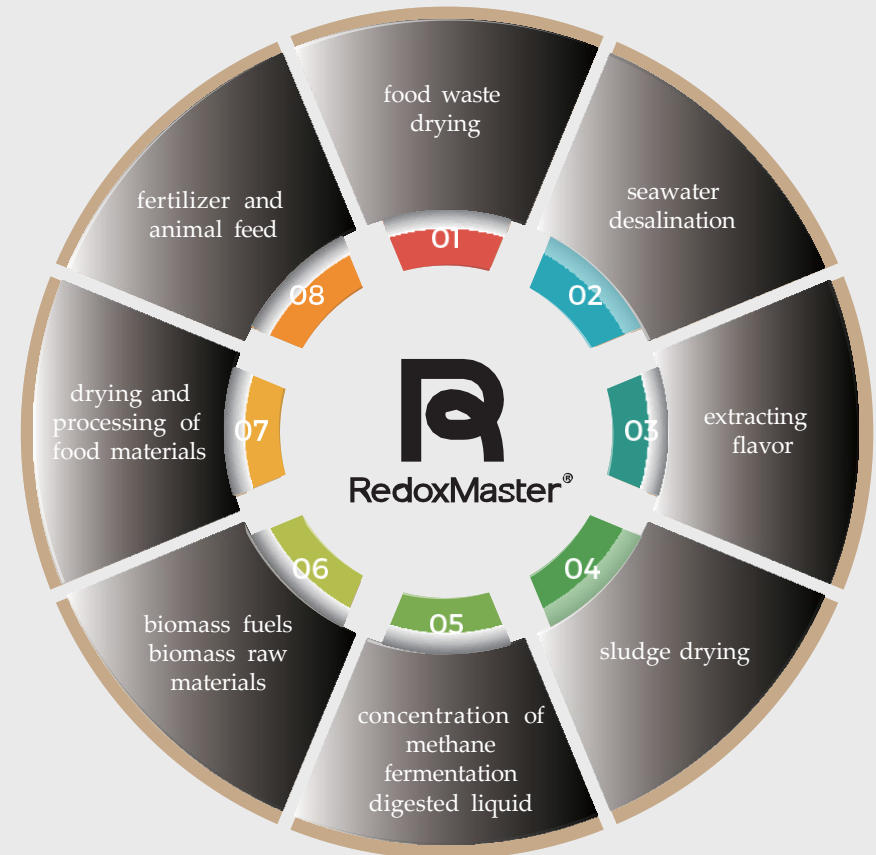
Our Solution

Glencal Technology is known for its innovative solutions and offers RedoxMaster®, which incorporates our patented Mixed Ion Reactive Approach (MIRA) since its commercial launch in 2019 for Japan Agricultural Cooperative(JA). RedoxMaster® can dry organic material and heavy industrial wet waste at unprecedented low temperatures without oxidization or carbonization. This diverts existing organic waste material from landfills, allowing it to be reused and commercialized as part of the circular economy.

Since 2024, Glencal Technology has entered a full development phase for two next-generation systems: i-EVA, a low-energy desalination technology, and i-FOOD, a food-drying system that replaces freeze-drying. Both solutions can reduce energy consumption and CO₂ emissions by 50% to over 90% compared with conventional methods, while maintaining — or even improving — output quality. These performance advantages have already been demonstrated. In particular, the combination of i-EVA with data-center waste heat represents a near-perfect circular-economy model. We are preparing to begin full-scale commercial deployment from 2026 onward.



Domain of MIRA & RedoxMaster®





Why partner with Glencal Technology Co., Ltd.?

RedoxMaster® diverts 100% organic waste from landfills, saving over 2.5kg of CO2 emissions for every 1 kg.

Glencal Technology is a cutting-edge Japanese company that passionately develops and manufactures the groundbreaking RedoxMaster®.

RedoxMaster® incorporates the patented mixed ion reactive approach (MIRA), an advanced industrial drying technology renowned for its exceptional efficiency. This scientific method effectively disrupts the hydrogen bond between water molecules, facilitating the low-temperature and cost-effective drying of raw organic material without inducing carbonization or oxidation. Significantly, this process safeguards the integrity of the fibres, nutritional properties, and characteristics of the original material.

RedoxMaster® has been proven to generate significant value by promoting the circular economy in both the private and public sectors. It is fully supported and endorsed by Japan Agricultural Cooperatives (known as JA group), and one of Japan's largest feed companies, JA Zen-noh kumiai shiryo Co., Ltd. It has also been approved by the Japanese government's Ministry of Agriculture, Forestry and Fisheries (MAFF) for the "Feed Self-Sufficiency Emergency Measures Project" Subsidy.

The purpose of the "Feed Self-Sufficiency Emergency Measures Project" is to improve Japan's self-sufficiency and strengthen the feed production base through measures such as enhancing feed production organizations to increase domestic feed production and sales.

Japan's highly-regarded technical development and manufacturing policy focuses on continuous innovation through collaboration between the government, industry, and academia. Now, through the government's vision, initiatives, and leadership, Japan is demonstrating that it is at the forefront of implementing policies to reduce the country's reliance on imported feedstock and associated risks.

Per the United Nations, it is projected that food production will need to increase by 70% by 2050 to adequately address global needs. Glencal Technology Co., Ltd. collaborates with industry stakeholders, agricultural authorities, and government regulators to formulate enhanced policies and strategies that enable the agricultural sector to transcend national constraints. This proactive approach serves to accommodate escalating food demands, counteract the depletion of natural resources, and mitigate the strain on global supply chains.

Data centers can create water, food, and minerals — and even supply Japan's chemical industry. At Glencal Technology, we are building something very simple in concept but extremely powerful in impact: Using data-center waste heat to produce freshwater, agriculture, salt, and magnesium — all in one integrated coastal ecosystem. Today, hyperscale AI data centers in the Middle East are scaling into the 100-500MW class, generating massive amounts of 40-50°C waste heat and relying increasingly on water cooling. Most of this warm water is unused. We see it differently: it is a new primary resource.

- Turning waste heat into desalination With our i-EVA (Ion-Enhanced Vapor Acceleration) system, even low-grade heat becomes a driver for large-scale desalination: • Plasma-ion excitation reduces water cluster size • Evaporation rate increases to roughly 3× that of natural evaporation • No high-pressure pumps like RO • No fossil-fuel boilers • Very low OPEX when heat is “free” This makes desalination feasible even in winter, when solar thermal is weak.
- What a 300MW data center can generate each year Using ~70% of the heat ($\approx 210\text{MW}_{th}$), one campus can produce: • ≈ 1.9 million m^3 of freshwater • $\approx 41,000$ tons of industrial-grade salt (NaCl) • $\approx 1,700+$ tons of magnesium • 50-60 hectares of controlled-environment agriculture This transforms the data center from a cost center into the anchor of a Coastal Circular City — a system where: AI → Waste Heat → Water → Agriculture → Minerals → Export all connect in a continuous thermal-material cycle.
- Why Japan's chemical industry would want salt and magnesium Many people believe Japan is self-sufficient in salt. The reality is different: JP Japan imports over 3 million tons of salt annually — over 70% of industrial demand. Used for: • caustic soda • chlorine • PVC • glass • semiconductors • food processing Japan relies heavily on imports from Australia, Mexico, China, and India. Japanese manufacturers — including Tokuyama, Tosoh, AGC, Mitsubishi Chemical, and Ube — are continuously seeking: • stable supply • high purity (96-99%) • diversified import origins (to reduce geopolitical risk) • long-term fixed contracts Data Centers can provide all of these.
- And magnesium? Even more strategic. Japan's magnesium market is almost entirely import-dependent — especially for: • lightweight automotive alloys • EV battery materials • chemical catalysts • specialty manufacturing.

Financial impact : When combining desalination, CEA agriculture, salt production and Mg recovery: • Project CAPEX: ~300M USD • Annual EBITDA: 85-90M USD • IRR: 20-30% (at 300MW scale) • IRR: 35-40% (at 1GW scale) This is not a “desalination project”. It is a national-scale circular industry, powered by the growth of AI.

The vision : Coastal Circular City We imagine coastal regions in the Middle East, Africa, India, and Asia turning: • waste heat into freshwater • brine into minerals • seawater into vegetables • AI infrastructure into sustainable economic engines • and even exporting salt and magnesium to Japan's industrial sector This is a new type of national infrastructure — one that integrates AI, water, food, minerals, and circular energy systems into a single, self-reinforcing ecosystem. If you are exploring pathways in data centers, desalination, chemical supply chains, food security, or sovereign industrial strategy, we would be very happy to collaborate with you.



President Mr. Masahito NAKAISHI

Mr. Nakaishi worked as an interest rate derivative trader and a private banker at HSBC Tokyo after he graduated from Sophia University with a BA in international law. Since leaving HSBC, he established Glencal Co., Ltd. in 2002, where he has been involved in investment, M&A advisory, IPO consulting, and other management consultancy. He has primarily worked in the environmental business, medical business, and automobile industry. Recently, he has focused on the environmental business. In 2003, he set up an environmental company specializing in electricity optimization technology with his business partners in Australia. The company was recognized as the second fastest-growing company in Australia by the prestigious economic magazine, BRW. Leveraging his vast experience and passion for the environment, in 2013 he established Glencal Technology co ltd to development and manufacture highly advanced technologies aimed at achieving unprecedented results in areas of sustainability to promote the circular economy.

