Sustainable Business For Carbon Neutrality

For a Virtuous Cycle
of Environment and Growth

Vol. 4

SUSTAI

Preface

Japan External Trade Organization (JETRO) Bangkok Office has established a Sustainable Business Desk to promote initiatives toward achieving Carbon Neutrality (CN). In addition to publishing this catalog, the Desk facilitates business matching between Thailand and Japan aimed at achieving CN, disseminates related information, and undertakes PR activities through seminars and other events.

Currently, Thailand has adopted the "BCG Economic Model" as its national strategy, while Japan is promoting "GX (Green Transformation)", with both countries advancing efforts to achieve CN. At JETRO Bangkok, since the renewal and signing of a Memorandum of Cooperation with the Thailand Board of Investment (BOI) and the Eastern Economic Corridor (EEC) Office in 2022, we have been organizing seminars to showcase public-private CN initiatives as well as Japan–Thailand business matching events.

This publication introduces the products, technologies, and services of Japanese companies that have contributed to achieving CN through their participation in this initiative. Now in its fourth edition, it features 67 companies ranging from major corporations to startups. We hope that this catalog will help foster new sustainable business opportunities in Thailand and across ASEAN.

Finally, we extend our heartfelt gratitude to BOI, the EEC Office, and all the individuals who contributed to the creation of this publication.

March 2025

67 POTENTIAL PARTNERS

AC Biode Co., Ltd.

Plastalyst: With our catalysts, we decompose almost any kind of mixed plastic waste and organic waste at 200 degrees C into monomers, hydrogen, CO, etc.

AGC Flat Glass (Thailand) Plc.

AGC contribute to the creation of Zero-energy buildings

Algal Bio Co., Ltd.

Algae Biofoundry Platform Technology development platform for CO2 reduction and wastewater purification using microalgae

Archeda, Inc.

Support the creation of nature-based carbon credits using satellite data
Green Insight

ASUENE (Thailand) Ltd.

The Climate cloud platform for measuring, reporting and reducing carbon emissions for enterprises

Azbil (Thailand) Co., Ltd.

Saving Energy Solution
For Factory : ENEOPT™ /
For Building : ESCO
for Energy Conservation to Contribute Sustainable CO2 Reduction

Cellulosic Biomass Technology Co., Ltd.

Upcycling sugar-cane residue (bagasse)
Feed and chemical material: create cellulose sugar, oligosaccharides, and polyphenols

DPS Inc.

Efficient recovery of rare metals
DualPore Palladium recovery cartridge

ECOMMIT Co., Ltd.

Circular Value Chain Creation Project
New Manufacturing Infrastructure

Enel X Advisory Services Japan G.K.

Decarbonization Solution
Advisory Services
Support for procuring
Renewable Energy/ EACs etc.

ENEOS Oil & Energy Asia Pte. Ltd.

Electricity cost reduction and
low-carbon energy
with Zero Initial Cost
Onsite B2B
Solar Distributed Generation

Farmland Co., Ltd.

Renewable energy and
agriculture production
from the same plot of land
Solar Farm®

For Delight (Thailand) Co., Ltd.

Even 1 Yen Less,
Even 1 Watt More.
Solar powerplant construction

Gaina Pro Co., Ltd.

Insulation paint that
significantly reduces electricity
and maintenance cost
GAINA

Green Carbon Inc.

An Agriculture-Based Carbon
Credit Generation Business
Mitigating Climate Change
and Increasing Farmers'
Income

Hakaru Plus (Thailand) Co., Ltd.

Eradicate measurement
mistakes and eliminate raw
material scrap and waste Multi-
variety automatic measurement,
manual measurement &
trace management

Hamasho Corporation (Thailand) Ltd.

Energy saving/renewable
energy and FA automation
one-stop support
Comprehensive improvement
solution for manufacturing
and factory equipment

Helical Fusion Co., Ltd.

Clean and Sustainable
Baseload power source
"Helical-Stellarator"
Steady-State Fusion Reactor

67 POTENTIAL PARTNERS

Hitachi High-Tech (Thailand) Ltd.

Providing sustainable plastic material
Tapioca-based biomass plastic compound

Igaden Co., Ltd.

Chemical-free water treatment system using electrolysis technology
High-efficiency electrolysis wastewater treatment system
“MICRO WATER SYSTEM”

IHI ASIA PACIFIC (Thailand) Co., Ltd.

Supporting the CO2 reduction goals in factory
Energy-saving Solutions for factory

Industria (Thailand) Co., Ltd.

Liquid filter with zero industrial waste
Element-less filter
“FILSTAR”

IPA (Thailand) Co., Ltd.

Up Cycle project from clothing to clothing
RENU

Iwatani Corporation (Thailand) Ltd.

Upcycling the by-products of sugar manufacturing
Plant-based PET resin

JFE Engineering Corporation

High efficiency stoker-type Waste-to-Energy plant

Kanadevia(Thailand) Co., Ltd.

Fully automated production of green hydrogen using only renewable energy battery and water
Water electrolysis system
“HydroSpring”

Kaneka (Thailand) Co., Ltd.

Next generation innovative photovoltaic system integrated with building’s exterior walls and windows
T-Green® Multi Solar (Abbreviated material name: T-GMS)

KI-ECOTECH Co., Ltd.

Contributing to the realization of a sustainable circular economic society
High standard recycling factory

KURITA-GK CHEMICAL CO., LTD.

Improved Heat Transfer Efficiency for Energy Conservation
Kurita Dropwise Condensation Technology

Marubeni Green Power Asset (Thailand) Co., Ltd.

Solutions for Decarbonization
Installation of Solar Power System (Corporate PPA, Self-Investment)

Matsui (Asia) Co., Ltd.

Dehumidifying Dryer
MJ6-i

Mechanocross Co.,Ltd.

Unseen sustainable chemical processes created with us
Chemical Process Dev. w/ MECHANOCHEMISTRY

METAWATER Co., Ltd.

Achieving non-coagulation and small-footprint rainwater treatment
High Rate Filtration system

Mitsubishi Chemical Aqua Solutions Co., Ltd.

Large-scale cost reduction by reducing sludge volume
Sludge volume reduction technology that achieves near-zero excess sludge in oil-bearing water treatment

Mitsubishi Heavy Industries (Thailand) Ltd.

Technology supporting the energy transition
Energy saving solutions, CO2 capture, hydrogen and ammonia power generation systems

Miura Industries (Thailand) Co., Ltd.

CO_2 emission-free hydrogen boiler
High efficiency hydrogen-fueled flow-through boiler

67 POTENTIAL PARTNERS

MT AquaPolymer, Inc.

Polymeric flocculant that promotes a circular society
ARON FLOC C series, E series

Musashi Asia Co., Ltd.

Key device for a sustainable society
Lithium-ion Capacitor

Nagase (Thailand) Co., Ltd.

A low carbon soil-based pavement material to absorb and fixe CO2 aiming to achieve zero carbon
Zero Carbon Soil

NISSHINTOA IWAO Inc.

A low carbon soil-based pavement material to absorb and fixe CO2 aiming to achieve zero carbon
Zero Carbon Soil

NMB-Minebea Thai Ltd.

Smart city concept with IoT lighting equipment as its core
Next generation LED street lights with high extensibility

PEEL Lab K.K.

New leather-like material made from wasted pineapple leaves
Pineapple HYDE

RECOMM BUSINESS SOLUTIONS (Thailand) Co., Ltd.

Next-generation LED lighting
RENTIA
Demand control system specializing in air conditioning
Ai-Glies

Sagri Co., Ltd.

Soil analysis, fertilization optimization, and decarbonization of farmland using satellite data
Generation and sale of agriculture-derived carbon credits

Sharp Solar Solution Asia Co., Ltd.

Solution for reducing electricity expenses and CO2 emissions
Installation of solar power generation system

Shin Nippon Machinery Co., Ltd.

Generating clean energy
Steam turbine

Shizen International (Thailand) Co., Ltd.

Clean energy implementation that can be started right away
Solar energy corporate PPA

Siam Somar Co., Ltd.

Recycling waste organic solvents used in cleaning
Distillation and regeneration of used organic solvent

Siam Takuma Co., Ltd.

From biomass and waste to utilization of steam, electricity, and CO_2
Biomass / Waste to Energy plant

Sojitz (Thailand) Co.,Ltd.

Transform agricultural residue to sustainable biomass fuel for carbon neutrality

SPACECOOL INC.

Zero Energy
Radiative Cooling Material
SPACECOOL®

Sun-up Corporation (Thailand) Limited

Total solution provider for environment and recycling sphere
3Rs solutions for industrial waste, water treatment, energy saving

TAISEI (THAILAND) CO., LTD.

Buildings, factories, etc.
“Energy Conservation and Energy Creation”
Total Solution

Tanaka Kikinzoku International (Thailand) Co., Ltd.

Precious metal catalyst that will contribute to the decarbonized society
Reforming catalyst, PROX catalyst and Oxidation catalyst

67 POTENTIAL PARTNERS

Tanso-man GX Inc.

Starting decarbonization management from zero, the new standard TANSO-CHECK

TBM Co., Ltd.

New replacement material for plastic and paper made with limestone as its main material Environment-conscious material LIMEX

Tenchijin, Inc.

Evaluating the potential and risk of a land through satellite data and AI Land evaluation engine - Tenchijin compass

TEPCO Energy Partner International (Thailand) Co., Ltd.

Achieving Only One CN promotion with four methods Energy saving & CN solution service

Thai Mitsui Specialty Chemicals Co., Ltd.

Plant-based biomass plastic raw material Bio-polyol "ECONYKOL®"

Thai Nippon Steel Engineering & Construction Corporation Ltd.

CO_2 Capture and high purity Regeneration Energy-saving CO_2 capture equipment (ESCAP®)

Thai Takasago Co., Ltd.

The Utilization of the "Hydro Creator®" Water Electrolyzer Ishikari City Atsuta District Microgrid

Thermalytica Inc.

Revolutionary Superinsulation Material TIISA®

TOWING Co., Ltd.

Sustainable agriculture using microorganism cultivation technology high-performance biochar "Soratan"

Tromso Co., Ltd.

Challenging the world
with new technologies
Connecting the circle of ecology
with rice husks for warmth
Grind Mill•Rice husk solid fuel
production equipment

TSURUMI PUMP

TSURUMI PUMP (THAILAND) Co., Ltd.

Sludge dehydrator that
can significantly reduce
the amount of sludge
generated in water treatment
JD Series

Vioce Co., Ltd.

Small-sized biogas system
that can fit into a container
Small-sized methane
power plant

Zeroboard

Zeroboard Inc.

A Solution for Calculating and
Visualizing Greenhouse
Gas Emissions

AC Biode Co., Ltd.

Plastalyst: With our catalysts, we decompose almost any kind of mixed plastic waste and organic waste at 200 degrees C into monomers, hydrogen, CO, etc.

Message

AC Biode is a cleantech startup with expertise in chemistry, material science, and electronics. Our mission is to contribute to reducing GHG and improving recycling rates at a global scale. We develop catalysts for decomposing plastic and organic waste, AC battery systems, and adsorbents. Funded by EIT InnoEnergy, a body of the EU, Genesia Ventures. Based in Japan, Luxembourg, and the UK.

Service and Technologies

Only at 180-200 degrees C, we can decompose almost any kind of mixed plastic waste including PVC, SBR, and organic waste into monomers, hydrogen, CO, etc. No organic solvent is used, we use standard industrial water, no precious metals or rare metals are used. As far as we know, we are the first one in the world that can decompose from PET to methanol. We can also tackle cellulose, lignin, agriculture waste, sewer sludge, paper sludge, and more.

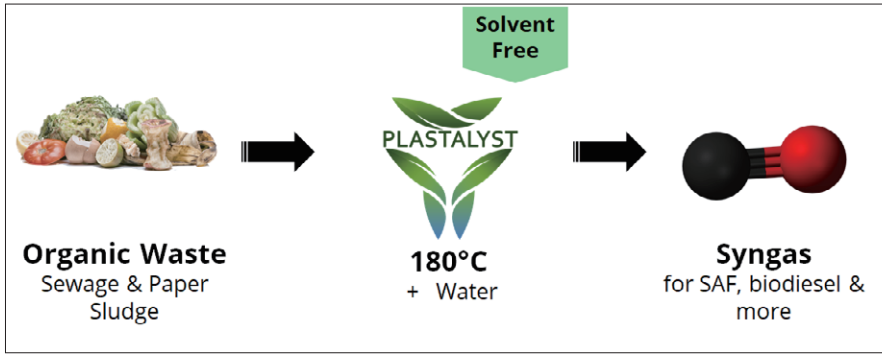
Sustainability

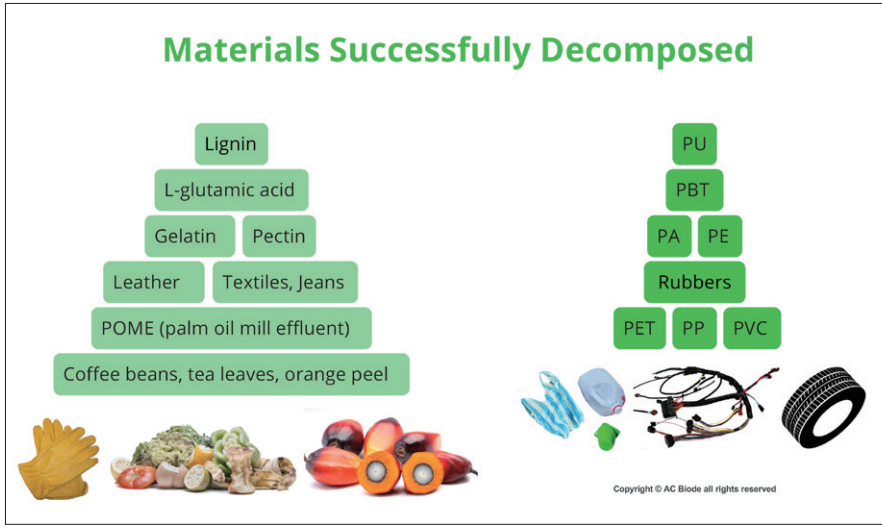
A lot of plastic waste is mixed, multi-layered, and is extremely difficult to mechanically recycled. Thermal recycling can tackle this, however, its CAPEX and OPEX are quite high, it emits CO2 and pollutes the environment.

Experience

Our technologies are:

- compared to pyrolysis: lower temp and pressure, lower energy usage. We can get monomers, hydrogen, CO, etc. instead of oil
- compared to other depolymerization: lower temp and pressure, lower energy usage, no organic solvent is used, no precious metals are used to our catalysts
- compared to methane digestion: our reaction time is a few hours while digestion can take a few days, we can get different outputs, we can skip some drying processes as we can use water as solvent.





Industry: Chemical, medicine, petrochemistry
Website: https://www.acbiode.com/circulite
Contact: tadashi.kubo@acbiode.com (Kubo)
Affiliated Company in Japan: Same as above
Address: 498-6 Hanazono-cho, Iwakura, Sakyo, Kyoto, Kyoto 606-0024

ACBIODE

AGC Flat Glass (Thailand) Plc.

AGC Glass serves the needs of Net-Zero Buildings

Message

AGC Flat Glass (Thailand) Plc, a leading glass manufacturer with over 60 years of experience, offers a wide range of high-quality products, including Clear Float Glass, Tinted Float Glass, Heat-Reflective Glass, Mirrors, Low-E Glass, Tempered Glass, Laminated Safety Glass, Insulating Glass, and specialty glasses for energy conservation. Serving diverse markets in construction, processing, fabricating, and automotive sectors, both domestically and internationally. AGC is dedicated to excellence and innovation, guided by its "Look Beyond" philosophy to enhance brightness through quality glass solutions.

Service and Technologies

A Net Zero Energy Building (ZEB) is defined as an energy-efficient building that generates enough on-site renewable energy to match or exceed its annual energy use. There are primarily two ways to achieve ZEB status: (1) Reducing energy consumption, and (2) Utilizing energy-generating products. These two steps can be accomplished for ZEB buildings with AGC's glass solutions, including Energy-saving Glass products such as STOPRAY (Smart, Vision, Ace), SolarTAG Plus, and LUXGREY. AGC's coated glass combines aesthetics, and innovative facade technology while effectively addressing today's environmental concerns. Specifically designed to counteract solar heat, making it an ideal architectural glass application for areas with strong sunlight that causes excessive solar heat gain. AGC also offers an Energy-generating Glass product: SunEwat Building Integrated Photovoltaics (BIPV). SunEwat BIPV features laminated glass with embedded solar cells and is now available with a Low-E coating. Additionally, SunEwat BIPV can be customized to meet the building owner's requirements and design goals. This customization can help to maximize energy generation, improve architectural aesthetics, and achieve certification points for sustainability standards and green building certifications.

Sustainability

AGC Glass Asia Pacific has been the forerunner in Asia to have our glass products manufactured in Asia to obtain

RENEWABLE ENERGY ENERGY EFFICIENCY

ZEB = Energy saving + Energy generating
AGC's products can contribute to both energy saving and generating.

EPD verification since 2022 and earned Cradle to Cradle Certified® in 2024. With AGC's Sustainable products, it contributes to various green building rating systems such as LEED, WELL or TREES.

Experience

AGC has a lot of experiences contributing energy efficient building.

Energy-saving Glass:
We supplied Low-E products, STOPRAY SMART51 to EGAT in Nonthaburi, Thailand.

Energy-generating Glass:
The product has been installed in over 400 sites since its launch in 2000.
In 2023, we successfully supplied BIPV's skylights and horizontal fins on the facade at "Dulwich College" in Singapore which is net-zero energy building.
In 2024, we successfully supplied 1st project of Laminated BIPV and Laminated – Insulated Low-E BIPV for "Gewertz Square Project" at Electrical Engineering Faculty, Chulalongkorn University, Bangkok, Thailand.



Industry: Glass manufacturer
Website: www.agc-flatglass.co.th
Contact: aft.glassinfo@agc.com
Affiliated Company in Japan: AGC Inc.
Address: 200 Moo 1, Suksawas Rd., Pak Khlong Bang Pla Kod, Phra Samut Chedi, Samut Prakarn 10290

Algal Bio Co., Ltd.

Algae Biofoundry Platform
Technology development platform for CO2 reduction and wastewater purification using microalgae

Message

As a University of Tokyo startup, Algal Bio has been aiming to realize a "circular and sustainable" society with our stakeholders by drawing out the potential hidden in algae under the slogan of "contributing to the future of people and the earth through the research and development of algae." In order to pass on a better society to the next generation, we will continue to boldly take on challenges as a startup company, together with our like-minded colleagues.

Service and Technologies

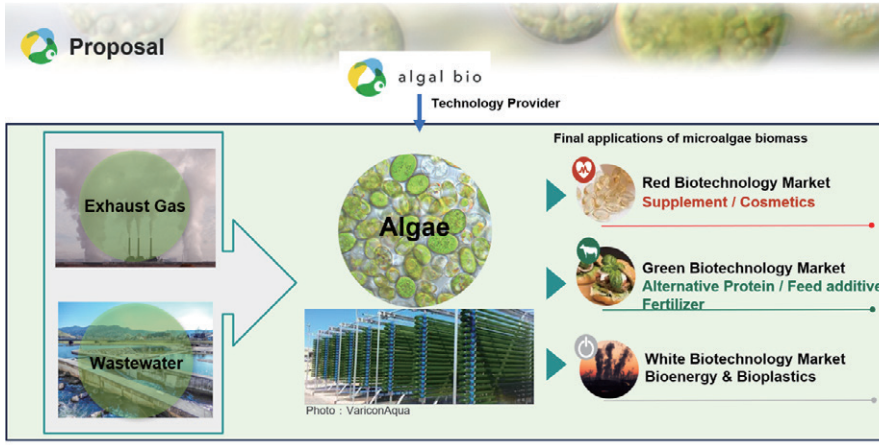
Algal Bio is a cleantech startup company from the University of Tokyo.
To solve various global-scale social issues such as human health, more sustainable food supply, and environmental problems, we are promoting the commercialization of new algae-derived products and solutions through the establishment of the "Algae Biofoundry Platform".

Sustainability

Microalgae absorb carbon dioxide through photosynthesis and contribute to the mitigation of global warming. Due to their ability to multiply quickly, they have potential as a source of biomass energy and can also be used as a food resource due to their high nutritional value.
In addition, they are effective in water purification. Microalgae are considered an indispensable biological resource for ensuring environmental sustainability because they can grow in any location, even on land unsuitable for general agriculture and cultivation, from snow-covered mountains to hot springs.

Experience

Kansai Electric Power Co.
We are working on "Research and Development of CO_2 Fixation by Microalgae and Production of Useful Chemicals". In this project, we are developing a compact and highly efficient microalgae cultivation system by combining the development of microalgae with high CO_2 fixation efficiency using breeding technology and a highly productive mass cultivation method, aiming at CO_2 fixation in medium and large-scale factories and power plants. Furthermore, we are aiming to establish a sustainable carbon recycling technology by utilizing CO_2-fixing microalgae



to produce high-value-added functional chemicals such as fucoxanthin and EPA, and by using the residue after extracting functional components as a raw material for bioplastics.

Other technologies

We also provide solutions for upcycling the use of valueless materials such as “factory wastewater,” “waste oil,” and “food waste” for cultivating microalgae and using the biomass to produce functional chemical products, alternative proteins, and raw materials for bioplastics.

Industry: Other Manufacturing
Website: https://algalbio.co.jp/en/
Contact: kida@algalbio.co.jp
Affiliated Company in Japan: Same as above.
Address: Tokatsu Techno Plaza 301,5-4-6 Kashiwanoha, Kashiwa, Chiba 277-0882, Japan

algal bio

Archeda, Inc.

Support the creation of reliable nature-based carbon credits using satellite data

Green Insight

Message

Archeda, Inc. is a Tokyo-based startup that develops analytical models using satellite data for nature-based carbon credit projects.

Service and Technologies

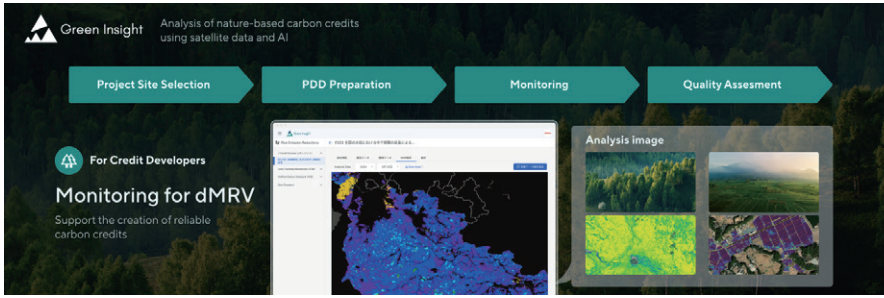
We provide with optimal analytical solutions using satellite data for each stage of the carbon project development process, including site selection, project registration, monitoring, and credibility checks. Our focus is on nature-based projects in forests (Afforestation, Reforestation, and Revegetation; ARR, Reducing emissions from deforestation and forest degradation in developing countries; REDD+, etc.), paddy fields (Alternative Wetting and Drying; AWD), and mangroves. We also support international methodologies such as Verified Carbon Standard (VCS), Gold Standard, and Joint Crediting Mechanism (JCM).

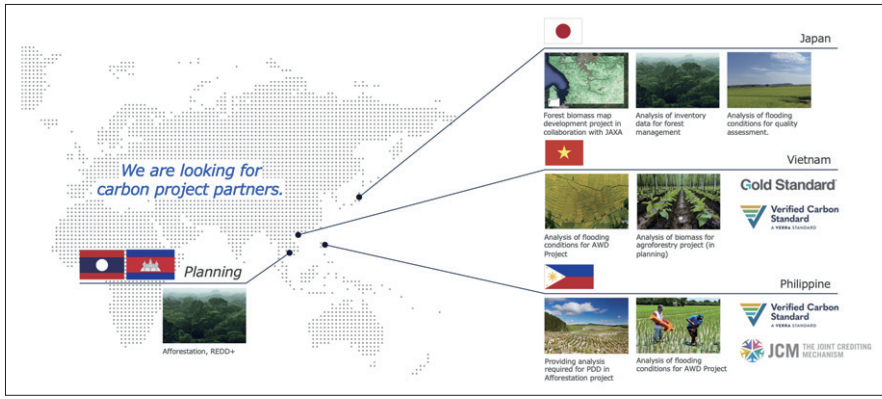
Sustainability

As part of climate change countermeasures, nature-based carbon credit creation projects are becoming increasingly important in achieving carbon neutrality over the world. We support digitalization (DX) in the project development process using satellite data, as well as reliable credit creation, aiming at building a highly transparent, global standard natural capital assessment system.

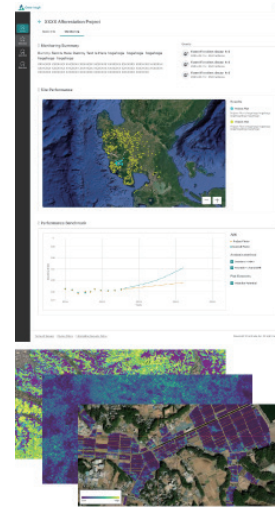
Experience

We have been providing public and private





sectors in Japan and ASEAN with satellite data analysis for various type of carbon projects, focusing on forest related credit such as research and development on forest biomass estimation with Japan Aerospace Exploration Agency (JAXA) and analysis of afforestation carbon credit project in a country of Southeast Asia, and furthermore on paddy related credit such as analysis of flooding status in paddy field in Philippines and Japan.



Industry: Information Technology
Website: https://archeda.inc
Contact: takamasa_ogasawara@archeda.inc (Ogasawara)
Affiliated Company in Japan: Same as above.
Address: WorkStyling Kasumigaseki Building, 3-2-5, Kasumigaseki, Chiyoda-Ku, Tokyo, 100-6036, Japan

Archeda

ASUENE (Thailand) Ltd.

The Climate cloud platform for measuring, reporting and reducing carbon emissions for enterprises

Message

With the mission of "Changing the world for the next generation", we are developing multiple products in the decarbonization and ESG domains, including "ASUENE", a climate cloud service, "ASUENE ESG" a ESG evaluation service, and the "Carbon EX" carbon credit and emissions trading exchange.

In November 2022, we established the overseas subsidiary Asuene APAC in Singapore, and are promoting decarbonization throughout the Asia-Pacific region (APAC). In addition, in November 2023, we established Asuene USA in Los Angeles, California, in November 2024, we established Asuene (THAILAND) and are supporting corporate sustainability management globally.

Service and Technologies

Asuene" easily calculates CO2 emissions of companies and municipalities, and reduces man-hours required for decarbonization management by up to 70%. It collects and calculates data on CO2 emissions not only for the company itself, but also for its entire supply chain (Scope 1-3), and visualizes the data automatically using AI-OCR technology. Calculation of carbon footprint (CFP), water security, waste, and energy management can also be completed with "as-energy" alone. Furthermore, our strength lies in the fact that we offer a diverse range of one-stop solutions for decarbonization, including ESG assessment of supply chains, carbon offsetting through the trading of carbon credits, and switching to renewable energy.

Sustainability

As a full member of JCLP, Asuene participated in the COP27 and COP28 inspection tours, and also participated in the COP29 inspection tour as a member of the Green x Digital Consortium. We provide the latest information on decarbonization around the world, make policy recommendations to the government, and in July 2024, CEO Nishiwada participated in the handover of JCLP's policy recommendations to Minister Saito of the Ministry of Economy, Trade and Industry. In addition, Asene is participating in a project with the Osaka Prefectural Government and the Boston Consulting Group to support the calculation and reduction of CFP at the Osaka/Kansai Expo. We are promoting ESG/GX management in companies by holding

ENERGY EFFICIENCY

ASUENE

The Climate cloud platform for measuring, reporting and reducing carbon emissions for enterprises

a summit every year that brings together speakers representing various ministries, the media, and various fields. In Singapore, we are working with government-affiliated companies to promote the creation of subsidies that contribute to decarbonization, and we will also contribute to improving Japan's presence.

Experience

Track record

Over 10,000 companies have adopted the system, making it the No.1 product in its industry in Japan and Asia. The system has been adopted by a wide range of industries, including manufacturing, construction, real estate, logistics, transport and finance.

Case studies

By scanning invoices and other documents using AI-OCR, the company was able to reduce the man-hours required for data entry by 70%, while at the same time ensuring the accuracy of the input data. (Retail industry) The supply chain management function enables the integrated management of GHG calculations, including data from global subsidiaries and business partners. (Food and manufacturing industry) The CFP calculation function enables the calculation of both the GHG emissions of the entire company and the GHG emissions per product and service on a single platform. (Semiconductor and manufacturing industry) Climate change consultants with a wealth of experience in supporting CDP responses, etc., can support reporting for various initiatives such as CDP, TCFD, and SBT, so you can respond while accumulating knowledge. (Real estate industry) We were able to achieve our corporate goals in accordance with SBTi by providing one-stop solutions for decarbonization, such as CO2 credit offsets and clean electricity procurement. (Financial institution)

Industry: Information and Communication Industry
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Affiliated Company in Japan: ASUENE VERITAS, Carbon EX
Address: Unit 2901-2904, Level 29 388, Exchange Tower, Sukhumvit Rd, Khwaeng Khlong Toei, Khlong Toei, Bangkok 10110, Thailand

ASUENE

Azbil (Thailand) Co., Ltd.

Saving Energy Solution
For Factory : ENEOPT™ / For Building : ESCO
for Energy Conservation to Contribute Sustainable CO2 Reduction

Message

The Azbil Group has pursued measurement and control technology and delivered unique solutions since its founding in 1906.

In order to resolve issues at various manufacturing sites, including buildings, factories, and plants, we provide products and solutions, instrumentation/engineering, and maintenance services that support the optimal operation of equipment and equipment throughout their life cycles.Through collaboration with people, we aim to develop advanced measurement and control technology, create work and production spaces that are safe, comfortable, and efficient for people, and realize production sites that are safe and allow people to demonstrate their abilities and contributing to reducing environmental load.

Service and Technologies

Saving Energy Solution for Factory: ENEOPT™

- ENEOPT is one of energy conservation solutions towards a decarbonized society by Optimization Control.
- The target applications: ENEOPT is energy-saving improvement support system that minimizes CO2 emissions and energy costs of Utility Plant such as Boiler, Turbine facilities.
- General step for ENEOPT solution service. Step1: Find Opportunity for Energy Saving from Operation Improvement. Step2: Feasibility study to estimate CO2 reduction by using actual operation data. Step3: ENEOPT Installation/Customized and set up to suit customer's plant's need. Step4: Operational support and maintenance services by Azbil to ensure the performance of ENEOPT

Saving Energy Solution for Building : ESCO

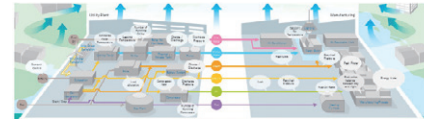
- Optimization of overall facility operation For larger energy savings, we not only install high-efficiency equipment that is common in Bldg. energy savings, but also optimize the overall operation of HVAC equipment with a control & monitoring system (BMS) and tuning service.
- No initial investment with Lease financing Initial investment will be unnecessary, if lease financing can apply in ESCO scheme (Depends on the potential of energy saving

through site surveying.)

- Energy saving performance guarantee by Azbil
  Azbil guarantees energy saving performance when utilize ESCO scheme.
  Azbil will compensate the unachieved amount, if not achieve the saving performance target.
- Long-term Support
  Report quarterly with advices until ESCO term completion. No worries regarding BMS system maintenance because that maintenance is packaged in ESCO service scope.

Sustainability

In 2020, Joined an infrastructure development survey project (International Contribution Quantification and JCM feasibility study) which conducted by the New Energy and Industrial Technology Development Organization (NEDO), a national research and development agency, for obtaining the



Joint Crediting Mechanism with the Thai government.

Experience

Energy saving results through compressor optimization control : Siam Kraft Industry Co., Ltd. (https://www.azbil.com/jp/case/aac/nou_477/index.html)

- 250+ ESCO projects in Japan
- 20+ Energy-saving projects by utilizing ESCO scheme in Thailand
- References in Thailand: Shopping mall 450,000 kWh down in annual, Hotel 570,000 kWh down in annual

Industry: Electrical / Electronic Equipment Manufacturing Industry
Website: https://th.azbil.com/index.html
Contact: t.fukuda.2z@th.azbil.com
Affiliated Company in Japan: Azbil Corporation
Address: No.9 G Tower Grand Pram 9, 14th Floor, Rama 9 Road, Huay Kwang, Bangkok

azbil

Cellulosic Biomass Technology Co., Ltd.

Upcycling sugar-cane residue (bagasse) Feed and chemical material : create cellulose sugar, oligosaccharides, and polyphenols

Message

We are looking for communication with corporations who can consider developing a business using our raw material or are interested in our manufacturing system. If any of the below interests you, please feel free to contact us.

Service and Technologies

Using sugar-cane residue (bagasse) produced by Thailand's core industry - the sugar industry, as its material, they produce cellulose sugar which has the potential of being biochemical/bioplastic raw material; oligosaccharide with growth promotion and intestinal regulation effect in livestock; and polyphenols which is a functional food with potential in beauty enhancement effects for cosmetics goods and anti-diarrheal effects for livestock.

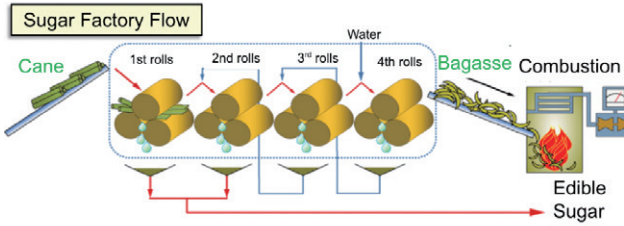
Sustainability

It can be manufactured by B (using biotechnology), C (producing valuable products from the agricultural residue that's currently being incinerated), and G (low energy consumption using the membrane technology from non-edible material bagasse). We can produce high added value products from bagasse which is discharged in the sugar industry and used for purposes such as power generation. With this we will contribute to solving various social issues such as "reduction of feed usage" in feed industry, "reduction of fossil resource by using carbon neutral material" in biochemicalmanufacturing, and "competition with food".

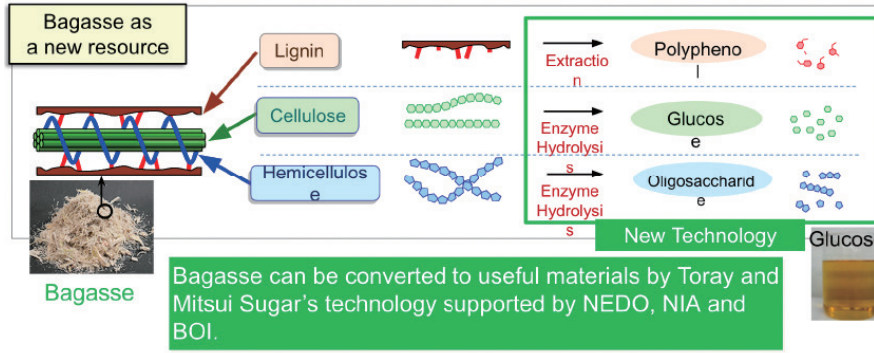
Experience

This project has received technology verification and market evaluation by Toray Industries, Inc. and Mitsui Sugar Co., Ltd. as "International demonstration projects for increasing the efficient use of energy / The Demonstration Project for an Energy-Saving Cellulosic Sugar Production System Using Bagasse in the Kingdom of Thailand" by Japan's national research and development agency New Energy and IndustrialTechnology Development Organization (NEDO) and Thailand's National Innovation Agency (NIA).

Value added products from Bagasse



Bagasse for Boiler Fuel



Industry: Manufacturing of raw materials for biochemicals, feed and food etc.
Website: https://www.toray.com/global/
Contact: metakarn.leartkiatratchata.t6@cbtthai.com (Bew)(Kubo)
Affiliated Company in Japan: Toray Industries, Inc. Mitsui Sugar Co., Ltd.
Address: Headquarters 6th Floor, Bubhajit Building, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500 Thailand

DPS Inc.

Efficient recovery of rare metals
DualPore Palladium recovery cartridge

Message

We strive to respond to global issues by enabling the efficient recycling of precious and rare metals through adsorption, separation, and recovery of residual metals using DualPore™.

Highly efficient technology that can also deliver high performance is indispensable to maintain high production value and reduce the burden on the environment in all future sectors. By applying our proprietary DualPore™ technology, we believe that it is possible to meet the many needs related to the adsorption, separation, and recovery of trace metals and substances in a more advanced and efficient manner.

Service and Technologies

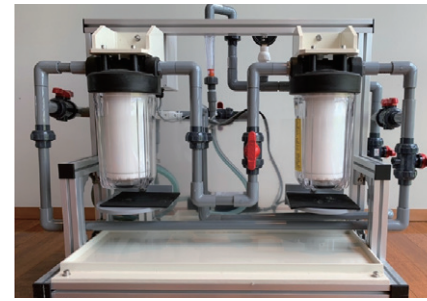
The metal scavenger for recycling is made from our "DualPore™" material.The product is pre-filled in cartridges for immediate use, and efficiently adsorbs and captures trace metals remaining in solutions and wastewater for recovery, reuse, and sale.
The product efficiently adsorbs and traps trace metals remaining in solutions and waste liquids, allowing them to be recovered, reused, and sold.We are currently developing the first practical example of DualPore™, Dua|PoreTM silica, with ion-exchange or chelating surface modification.

Sustainability

We are currently promoting the recycling of precious metals, which were previously difficult to recover, by applying ion exchange or chelating surface modification to Dua|PoreTM silica, the first practical application of DualPore™. We are also exploring new surface modification technologies to provide a wider range of rare metal recovery options.

Experience

In Japan, we have experience in recovering palladium from plating waste at a plating factory and in recovering three-way catalyst



metals generated from exhaust gas catalyst production at a major manufacturer's plant.
Palladium recovery at plants of Japanese companies overseas.
Based on our domestic track record, we are actively expanding our business to China and ASEAN countries, which are the world's manufacturing bases.

Industry: Nitrogen Industry, Glass and Stone Product Manufacturing Industry
Website: https://www.dps-inc.co.jp/en/
Contact: info@dps-inc.co.jp
Affiliated Company in Japan: Same as above.
Address: 201, Funai Center, Kyoto University Katsura, Nishikyo-ku, Kyoto, Japan

dps DualPore™ Solution

ECOMMIT Co., Ltd.

Circular Value Chain Creation Project
New Manufacturing Infrastructure

Message

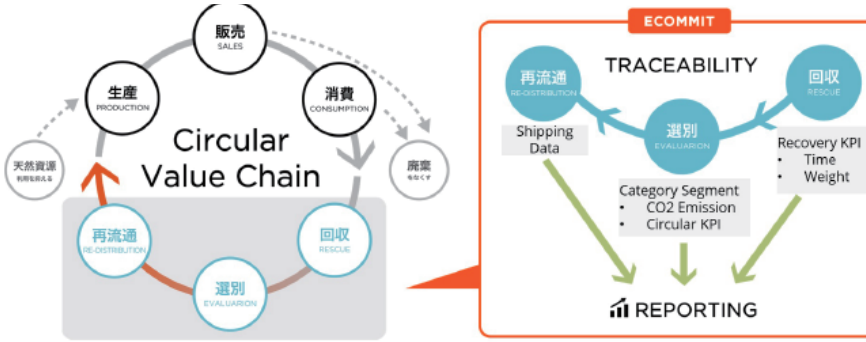
With the theme of "Realizing a Zero-Waste Society where nothing is thrown away," we are a company that aims to create a new manufacturing infrastructure by making a structure that recycles everything. A nationwide logistics network which makes use of 15 years of past results to provide one stop for all recycling needs: we have the sorting know-how that maximizes the economic value of collected items, as well as a sales network, and take responsibility for the time-consuming processes of collection, sorting, and redistribution all together. Additionally, the traceability system developed in-house automatically aggregates the data collected, calculates the reuse/recycle rate, and reports the reduction of CO2.

Service and Technologies

Circular Value Chain provided by ECOMMIT Co., Ltd. is a project that constructs the societal infrastructure necessary to accelerate the transition from the current linear economy to a circular economy. We take responsibility for everything from collecting to recirculating various unneeded items, with a focus on clothing. We maintain various collection points as nearby infrastructure through cooperative industry with municipalities (local governments), businesses, and public. The collected items are sorted into over 100 item lists by experienced staff. By making use of over 15 years of accumulated data, we minimize the environmental impact while supplying reusable items and recyclable materials to vendors who can maximize their economic value.

Sustainability

Circular Value Chain cooperates with various municipalities, businesses along with the general public to connect "Items that are still usable and/or recyclable" with circular process and aim to reducing resource consumption, decreasing greenhouse gas emissions, and contributing to the construction of a new circular society. We circulate 12,000 tons of reusable items annually from 3,000 sites all around Japan, of which clothing makes up 6,000 tons (1% of the total disposed in Japan), achieving resource recovery of over 98%. Additionally, using our in-house developed traceability system that converts the "flow of materials" into data, we can calculate reuse



and recycling rates and report the amount of CO2 reduced.

Experience

Cooperation with businesses: We signed a business partnership contract with ITOCHU Corporation and developed "Wear to Fashion", a collection service for textile products in the Japanese market. Applicable to operators/municipalities nationwide starting from the spring of 2022, we aim to collect/sort and reuse/recycle textile products disposed of at various sites, including (1)worn clothing collected at retail stores, (2)textile waste from businesses, and (3)clothing collected by municipalities.

Cooperation with municipalities: We collaborate with over 50 cities, towns, and disposal associations across Japan including Osaki Town in Kagoshima Prefecture, Kameoka City in Kyoto Prefecture, Saga City in Saga Prefecture, Saitama City in Saitama Prefecture, Nishinomiya City in Hyogo Prefecture, Yakushima Town in Kagoshima Prefecture.

We have begun testing the collection of reused items at clean centers, etc., and are implementing a waste reduction in each region.

Examples of the collection on daily life: Together with Japan Post Holdings, Co., Ltd., we have launched an original brand called "PASSTO" that handles the collection, sorting, and redistribution of unnecessary items all at once. Starting on April 20, 2023, we are the first in the country to set up "PASSTO" at post offices in Shibuya and Nagareyama and begin collecting unwanted items free of charge.

Industry: Infrastructure and System Development for a Circular Society, and Reuse and Recycling Business
Website: https://www.ecommit.jp/en/
Contact: sakano@ecommit.jp, okuno@ecommitt.onmicrosoft.com
Affiliated Company in Japan: Same as above.
Address: 2-30 Kandachō Satsumasendai, Kagoshima, Japan

ECOMMIT

Enel X Advisory Services Japan G.K.

Decarbonization Solution Advisory Services
Support for procuring Renewable Energy/ EACs etc.

Message

Enel X Advisory Services G.K. is a consulting firm specializing in decarbonization solutions in the Enel Group, the world's largest integrated energy company headquartered in Italy. Our Japan office is responsible for the Asia-Pacific region, including Thailand. We support our clients in developing energy procurement strategies, reducing costs, and improving energy procurement efficiency. We use our knowledge of countries and markets around the world to provide the best possible energy solutions. Please feel free to contact us if you have any questions.

Service and Technologies

We offer end-to-end support for companies aiming to transition to decarbonized operations. Conducting market research tailored to your specific needs. Global one-stoppable support across multiple countries. Advisory services aligned with international initiatives, and more.

Sustainability

Our company is committed to supporting our clients in the effective and efficient execution of their decarbonization strategies from a mid- to long-term perspective, spanning 2030 to 2050, and with a global outlook that extends beyond individual countries. Through these efforts, we aim to contribute to the advancement of global initiatives addressing climate change, as well as to bolster efforts within the specific countries.

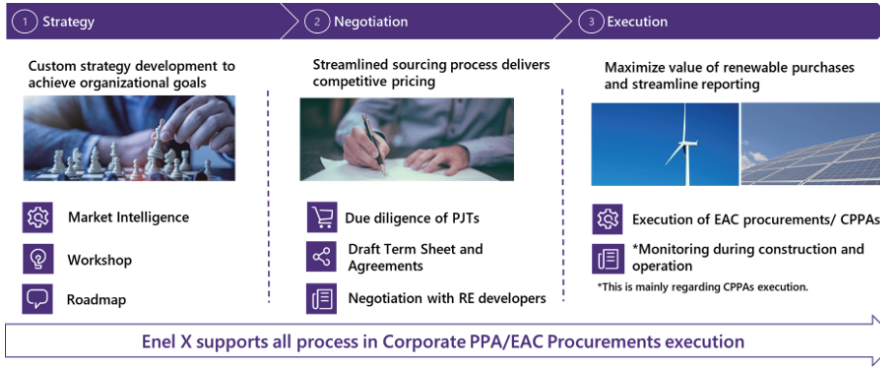
Experience

We have a proven track record of partnerships with more than half of the Fortune 100 companies.

Case 1: Optimization of Renewable Energy Procurement
Client: Global IT Company
Customer Needs: Procurement of renewable energy
Our Solution: Assisted in procuring approximately 2,000 MW of renewable energy PPAs through a reverse auction.

Case 2: Management of Global Corporations' Energy Costs and Emissions
Client: Globally operating automotive parts suppliers
Customer Needs: Building a platform for optimizing energy efficiency at each location
Our Solution: Supported the installation of

RENEWABLE ENERGY ENERGY EFFICIENCY



equipment to procure renewable energy on-site, as well as the introduction of various systems such as energy management, to improve energy efficiency.

Case 3: Reduction of GHG emissions corresponding to Scope 3
Client: Global Real Estate and Logistics Company
Customer Needs: Reduction of GHG emissions, procurement of renewable energy and environmental value
Our Solution: Introduction of renewable energy for the entire facility, including tenants, and procurement of EAC. Achieving supplier engagement.

Industry: Consulting
Website: https://www.enelx.com/jp/en/home
Contact: enelxad-jp.enelx@enel.com
Affiliated Company in Japan: Enel X Japan K.K.
Address: Grant Tokyo South Tower, 11th Floor
1-9-2 Marunouchi, Chiyoda-ku, Tokyo 100-6611, Japan

enel x

ENEOS Oil & Energy Asia Pte. Ltd.

Electricity cost reduction and low-carbon energy with Zero Initial Cost
Onsite B2B Solar Distributed Generation

Message

ENEOS, a Japanese leading energy company, has one of the largest renewable energy generation capacities in Japan. The Group's envisioned goals for 2040 are: becoming one of the most prominent and internationally competitive energy and materials company groups in Asia, creating value by transforming our current business structure, and contributing to the development of a low-carbon, recycling-oriented society with the pursuit of carbon-neutral status in its own CO2 emissions.

Service and Technologies

Our company is developing onsite B2B solar distributed generation business across Asia (*), through JV with TotalEnergies, a global energy company. To realize reduction of customer's electricity costs and supply of low-carbon energy by installing rooftop power generation equipment on the premises and facilities (factories, warehouses) at zero initial cost for corporate customers.

*Thailand, Japan, Vietnam, Indonesia, Philippines, Singapore, Malaysia, Cambodia, India.

Sustainability

Significant reductions in electricity costs can be expected during the term of the Power Purchase Agreement (PPA). Customers can appeal that they are an environmentally friendly company that contributes to the SDGs by significantly reducing carbon dioxide emissions.

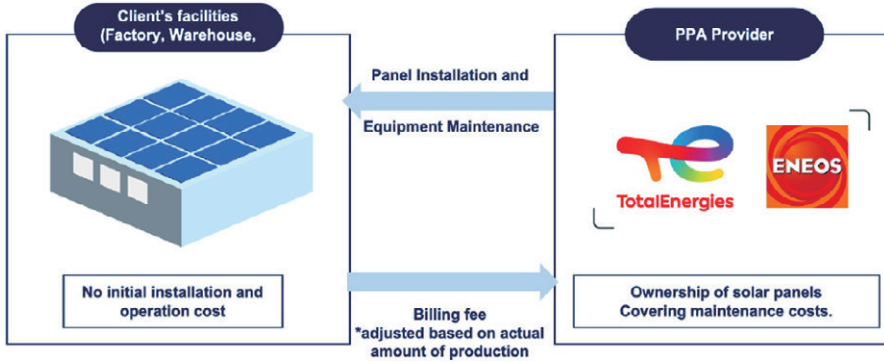
Experience

In a joint venture with ENEOS and TotalEnergies, we have more than 300 MW of solar power generation capacity in 9 countries in Asia. (Incl. in operation and under development)

<Solar Power Generation Business Project in Thailand>

Construction	Capacity 7,000 kWp
Utilities & Energy	Capacity 5,800 kWp
Food & Beverage	Capacity 2,500 kWp

and many others.



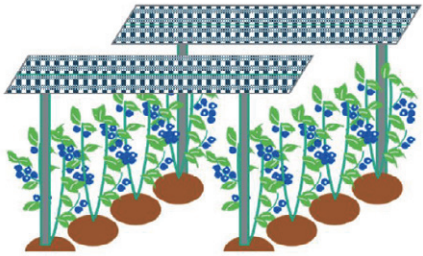
Industry: Mining (Metals, Non-Metals, Oil, Gas, Coal, etc.)
Website: https://eneos.asia/jx-nippon-oil-energy-asia/
Contact: masahiro.tomitsuka@eneos.sg
Affiliated Company in Japan: Same as above.
Address: 9 Temasek Boulevard, #23-01, Suntec Tower Two, Singapore 038989

Farmland Co., Ltd.

Renewable energy and agriculture production from the same plot of land
Solar Farm®

Message

We, Farmdo Group have obtained support from customers under our business policy “Support agriculture; Make efforts towards an increase in farmers’ incomes”. Since our society is being reformed dramatically day by day, we are pursuing new business models constantly. Farmland contributes to people and the global environment by creating and offering safer and enrich life environment. Solar Farm® creates a new ideal style of agriculture for young generations. With our group management system, we strengthen each function and go forward with “dream cycle”. That isthe way we contribute to society.

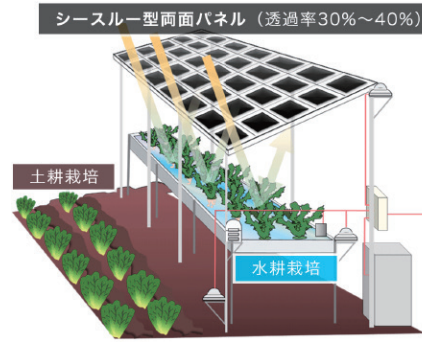


Service and Technologies

The combination of agriculture and solar energy by Solar Farm® allows for an increase of land use efficiency unlocking its potential to provide both renewable energy and food self-sufficiency at the same time. Solar Farm® has got its patent in Japan, USA, China & Taiwan. In 2017 has obtained Polaris Medal. Our activity was taken up in Whitepaper issued by MOE in 2019 and registered in “Good Practice for adaptation against climate change” by METI in 2020/2021. t

Sustainability

Through the adoption of bi-facial, transparent solar panels Solar Farm® is able to maximize renewable energy production while allowing for appropriate amounts of light to reach



crops below the solar array so that agriculture production can maintain near normal levels. Any loss in agriculture production can be made up through electricity sales or savings from solar.

Experience

In 2020, an MoU was concluded with the Chilean Ministry of Agriculture to implementa 20kW Solar Farm® pilot project. Its construction will be completed in Q1 of 2022 whereby studies will commence to identify the ways to best adapt the system for farmers of Chile. In Mongolia, 2017, through the support of the Joint Credit Mechanism subsidy from the Japanese government a 10.4 MWac (12.7 MWdc) solar systemwhich incorporates Solar Farm® began its operations in Mongolia. In Japan, since2015 Farmdo Group has constructed, maintained and managed over 50 Solar Farm® locations.

Industry: Other manufacturing
Website: https://farmdo.com/en/farmland.html
Contact: w-remi@farmdo.com (Remi)
Affiliated Company in Japan: Same as above
Address: NF2 Building, 1-1-1 Tonyamachi, Maebashi, Gunma 371-0855

For Delight (Thailand) Co., Ltd.

Even 1 Yen Less, Even 1 Watt More.
Solar power plant construction

Service and Technologies

FD Co., Ltd. is a total solution provider for solar power generation. We provide total support from planning proposals for power plant installation to maintenance. Our main service are as follow Solar EPC services. We provide EPC services for our customers. We optimized based on each customer's unique circumstance to be able to give them the best solution.

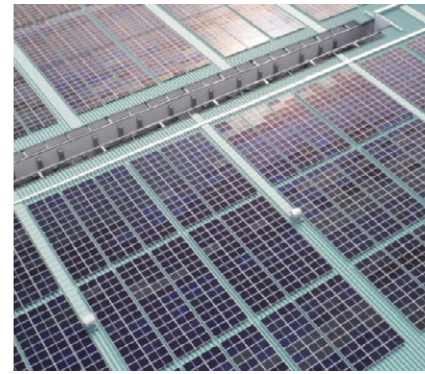
Educational Services Support. We provide knowledge in renewable energy and raise awareness of carbon neutrality for businesses in the market. We aim to improve the SDGs activity of the Thailand market.

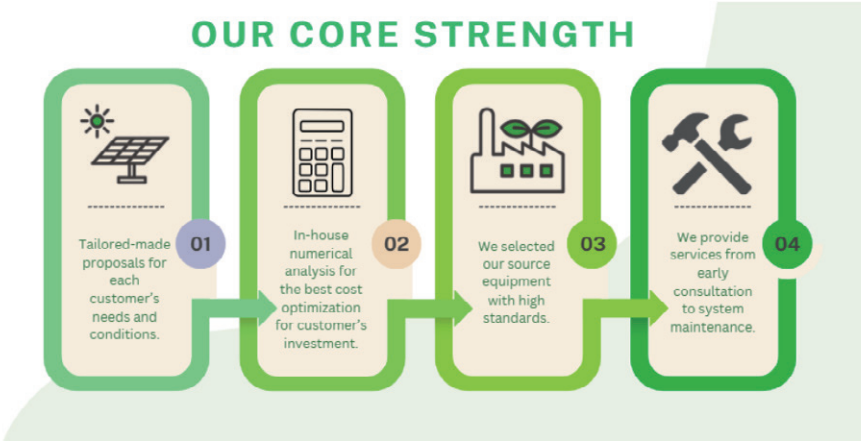
Sustainability

The expression "climate change," also referred to as global warming, is commonly used to describe a series of anthropogenic phenomena that impact the Earth's climate system. Our business promote the utilization of renewable energy through solar power source. We optimize and tailor our proposal to fit not only large-scale usage of electricity customer but also small-scale business owner to further promote the use of solar energy into the society. Moreover, we also provide trainer in educational business to spread the knowledge and know how of solar construction and utilization.

Experience

"In Japan, we have experienced in installing solar system in various environment and condition. We provide customer with proposal that optimize to each customer's needs and condition. We have past record of more than 400 locations around Japan in both on-ground and rooftop installation. We also experienced in many scheme, such as, self-consumption, self-consignment, PPA, FIT, etc. Currently, we have a wide range of equipment patents





related to solar construction in Japan and will continue to innovate to improve society's accessibility to clean power. We are ready for the future of Thailand solar market with public use in electrical transmission system. We also collaborated with various company to expand the business possibility for our customer. Our key success in Japan.

Installation of solar power in a factory receiving electricity at special high voltage (77,000 V).

Normally this would have required extensive equipment modifications, but as a result of trial and error, not only did it clear the regulations of the power grid, but it also significantly reduced the cost and time required for installation, making it possible to install an economical solar power system. With this breakthrough, We won "Gold award on 2023 New Energy Awards from Ministry of Economy, Trade and Industry of Japan."

Industry: Solar EPC
Website: https://www.for-delight.co.jp/
Contact: global@for-delight.co.jp
Affiliated Company in Japan: FD Corporation
Address: 622 EmporiumTower, 10/1,8 Floor, Sukhumvit Road., Klongton Sub-District, Klongtoey District, Bangkok. 10110

For Delight

Gaina Pro Co., Ltd.

Insulation paint that significantly reduces electricity and maintenance cost

GAINA

Message

GAINA, is a cutting-edge product created with Japan's space development technology (JAXA). It was recognized by the United Nations as part of UNIDO in 2019, and is compatible with SDGs, which are the reasons why it's attracting attentions worldwide. Its installation is extremely easy. Insulation effect can be achieved by simply painting it, and not only can it help reduce energy costand CO_2 emissions, but also reduces maintenance cost of buildings as its painted surface has over twice the durability of other paints. We are looking for partners who do not only sell our products, but also handle local implementation and sales activities.

Service and Technologies

GAINA is insulation paint derived from space rocket development technologies in Japan (special hollow insulation ceramic coating), and it enables reduction in various costs just by its application to the building. Unlike thermal barrier paint, it uses special ceramic for coating, making the effect long lasting even when the surface becomes dirty. It can be applied by anyone with ease, to all kinds of buildings, including warehouses, factories, schools, hospitals and hotels promising a magnificent result. Our company not only sell the material but also provide total service including the installation.

Sustainability

The special hollow insulation ceramic effect provides various cost reductionbenefits with its application to the building.

- Reduction of energy costs (electricity usage)
- Reduction of maintenance costs with the elongation of building lifespan
- Lower risk of fire spread in case of fire (certified as non-combustible)

- As a result of reducing energy and maintenance costs, it also reduces CO2 emissions in turn.

It is a highly safe water-based paint with no odor or any health impact on human body.

Experience

- The roof of Toyota and Nissan automotive factories, cold storage warehouse inOnagawa, Miyagi, and the national treasure exhibition room in Todai temple.
- Resort hotel in Palau, tanker deck of Mitsui O.S.K. Lines, Ltd., roof of trains in Spain, airport facilities in Saudi Arabia.
- Apparel warehouse. The inside temperature dropped 5 to 10°C just by applying the product as a normal paint. In Dubai, UAE, we placed two international shipping containers, then we painted one with a normal paint and the other with this product. When the outside temperature was 50°C, the temperature inside of the container with normal paint exceeded 75°C, and was immeasurable, while the container with this product was 46°C.

Industry: Other services
Website: https://www.gaina-pro.com/
Contact: info@gaina-pro.com
Affiliated Company in Japan: Nissin Sangyo Co., Ltd.
Address: 834 Shimo-Hiratsuka, Tsukuba, Ibaraki 305-0813

GAINA

Green Carbon Inc.

An Agriculture-Based Carbon Credit Generation Business Mitigating Climate Change and Increasing Farmers' Income

Message

Here at Green Carbon Inc., our vision is to "save the Earth with the power of nature". We aim to contribute to the reduction of greenhouse gas emissions and climate change mitigation by harnessing the power of nature to its maximum extent.

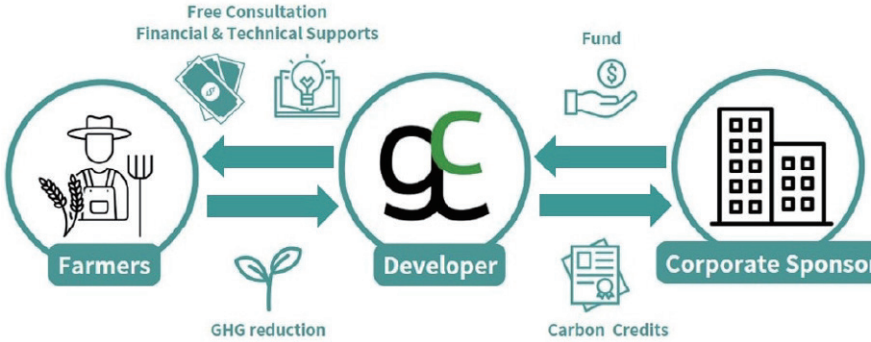
In particular, we focus on generating carbon credits from the agricultural sector, which will contribute to increasing the income of farmers, who are facing a shortage of workers and successors. We have developed an application called Agreen to further simplify our project operations and increase transparency.

Service and Technologies

We offer a full range of services, from the generation to the sale of carbon credits. Carbon credits are generated through various greenhouse gas emissions reduction activities. They are treated as negative CO2 emissions, and are purchased by companies, which are the main source of CO2 emissions, to offset their own emissions. In particular, we focus on greenhouse gas emissions reduction activities in the agricultural sector, and have established carbon credit projects in collaboration with various farmers in many countries. In Thailand, we are developing methane gas reduction projects in rice paddies and biochar projects.

Sustainability

Since carbon credits are generated from greenhouse gas emissions reduction activities, we believe that we can reduce greenhouse gas emissions and contribute to climate change mitigation as the scale of our projects and businesses expand. In addition, farmers participating in our projects will receive a return on the sale of carbon credits, which we believe will contribute to increasing the income of farmers as a whole. One of the features of our company is the stable supply and sale of credits under long-term contracts in units of 10 or 20 years.



We have developed an application called Agreen to aid in the digital transformation of project operations and simplify their management, thereby reducing the burden on farmers and making our projects more accessible to all farmers.

Experience

We are conducting joint research with local universities in Vietnam and the Philippines on water management technology to control methane gas emissions due to anaerobic decomposition that occurs when paddy fields are flooded (watered).

- University of the Philippines
- Vietnam National University of Agriculture

We have compared the quality, yield, and methane gas emissions of rice plants via research, conventional farming methods, and AWD*. We verified that there is no significant negative impact on quality and yield and that AWD is effective in reducing methane gas emissions.

Based on the results of this study, we started a project with farmers in the Philippines and Vietnam in early 2024, covering 1,000 ha and 12,000 ha, respectively. Similarly in Thailand, a pilot project covering 815 ha will be implemented from December 2024 with the cooperation of local universities and partner companies, and will be expanded in other provinces as needed.

*AWD (Alternative Wet and Dry): A cultivation method in which paddy fields are intermittently flooded with water. It is said to reduce water consumption and methane gas emissions.

Industry: Agriculture, Forestry and Fishery
Website: http://green-carbon.co.jp/en/
Contact: r.harada@green-carbon.inc
Affiliated Company in Japan: Same as above.
Address: Room 607 Isal AKASAKA, 5-2-33 Akasaka, Minato-ku, Tokyo 107-0052

green carbon

Hakaru Plus (Thailand) Co., Ltd.

Eradicate measurement mistakes and eliminate raw material scrap and waste

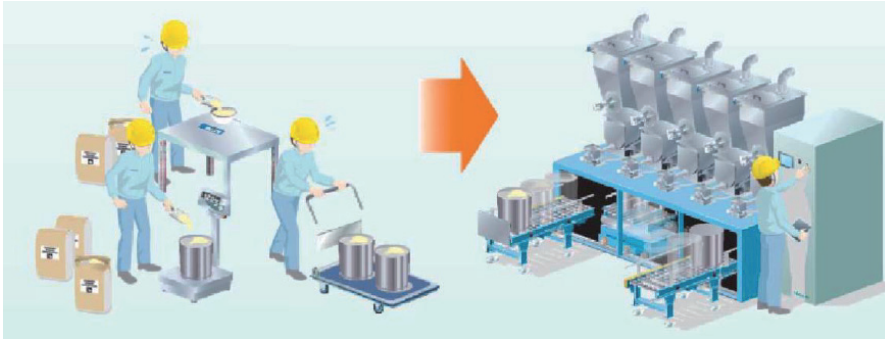
Multi-variety automatic measurement, manual measurement & trace management

Message

Using the abundant experience gained over 100 years, we develop/ provide numerous new systems and equipment ranging from software to hardware. We answer to customers' needs with the technology to "measure". we have introduced four businesses; measurement, ready mixed concrete, weight measurement, and medical. In Thailand, we operate Japanese-quality weight measurement business by Thai production, which covers design, manufacturing, sales to on-site maintenance.

Service and Technologies

Automatic measurement technology that automates measurements of multi-variety, high precision, and wide range. This technology is especially suitable for measurement of auxiliary material and additives. For materials that are difficult for automation due to the cost and their specific qualities, we provide a management system for manual measurement and eradicate measurement mistakes that occur from human intervention. It carries out data tracing from material incoming, storage, picking, measurement, to material input, and enables the simplificationof management tasks and centralization of data. With these technologies we will contribute to saving energy, increasing precision, reducing measurement mistakes, environmental improvements and so on.



Sustainability

By eradicating measurement mistake with automation and manual measurement management, they can reduce material waste that occur from scrapping and re-measurement, eventually contributing to carbon neutrality. The tracing management allows mistake-free material storage (shelf management, expiry date, FIFO, lot control) as well as mistake-free input of blending machine, which enables improvement and stabilization of product quality as well as simplifying the management tasks.

Experience

Delivery experience for industries that require multi-variety measurement such as ink, paint, rubber, resin, chemical, food, medicine, battery, glass, ceramic etc. Delivery regions include Japan, East and Southeast Asia, North America and EU. Subjects of measurement can be each industry's main raw material, auxiliary material and additives, regardless of whether it is in powder or liquid form. It can also be used for powder and high-viscosity liquid prone to bridging and jetting. They provide system design customized based on customer requirements.

Industry: Other manufacturing
Website: www.hakaru.co.th/
Contact: yamauchi_y@hakaru.co.th (Yamauchi)
Affiliated Company in Japan: Hakaru Plus Corporation
Address: 59/19 Moo 2, Tambon Rachathewa, Amupur Bangplee, Samutprakarn 10540 Thailand

Hakaru+

Hamasho Corporation (Thailand) Ltd.

Energy saving/renewable energy and FA automation one-stop support
Comprehensive improvement solution for manufacturing and factory equipment

Message

We are a Japanese trading company that entered its 26th year of expansion into Thailand. We have 3 core businesses; MRO consumable subsidiary material business; FA automation/manpower reduction/robotics business and;our department's energy-saving environmental business. Within the three years since the organization of business with focus on "renewable energy and environmental engineering business". We can also provide a one-stop service for FA business from SIER selection to machine selection, and evaluation to after implementation.

Service and Technologies

An engineering service specialized in energy-saving/renewableenergy proposals targeted at crucial utilities for factory operation, such as electricity, gas, water and oxygen; installation of an advanced fire extinguishing system; and so on. Providing solutions for automation of manufacturing equipment and manpower reduction, they offer a one-stop service that provides implementation support for comprehensive improvement solutions for a wide variety of customers. Also, aside from HDD, automotives, food and chemical industry where they have recognized experience and know-hows, they are also committed to providing various solutions for the EV and battery industry.

Sustainability

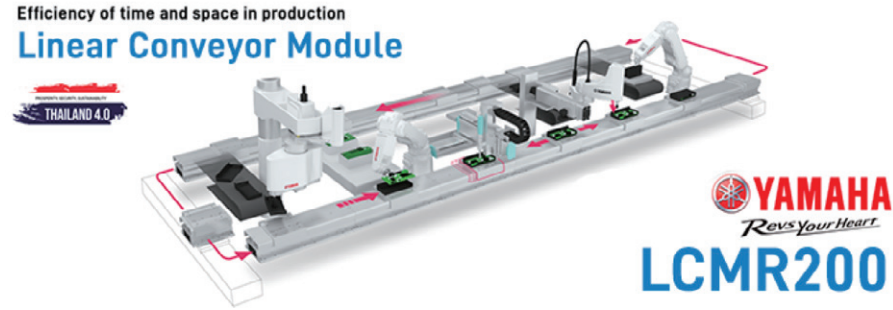
With the wide range of products, engineering function and one-stop service as the top3 strengths, they support the improvement and implementation of energy- saving/renewable energy and contribute to the expansion of SDGs activities and achievement of carbon neutrality. They also provide support for the implementation and progress of various robots and specialized machines in order to support the effort for automation of manufacturing processes and reduction of manpower in alignment with the policies of Thailand 4.0. They contribute to a wide array of fields and industries as a provider of comprehensive energy-saving environment and factory automation solutions.

Experience

[Past implementation examples for Thailand-based Japanese companies]
As part of ESG investments and SDG activities,

RENEWABLE ENERGY

ENERGY EFFICIENCY



they have been engaged in the implementation of a solar power system and also developing a project dedicated to transitioning boiler system into LPG and making it more energy-saving as the next energy-saving activity. They provide a gradual solution proposal to realize the near-future zero-carbon achievement scheme raised by the customer's headquarters. Additionally, they have an in-factory eco park operation scheme targeted at promoting employees' health and contributing to Thailand's local environment, and plan to consistently carry out comprehensive projects.

Industry: Trading
Website: https://hamasho.co.th/
Contact: kazuya.hashiba@hamasho.co.th (Hashiba)
Affiliated Company in Japan: Hamasho Corporation
Address: 825 Phairojkijja Building 11th Floor, Debaratana Road, Bangna-Nua, Bangna, Bangkok 10260

HAMASHO CORPORATION

Helical Fusion Co., Ltd.

Clean and Sustainable Baseload power source “Helical-Stellarator” Steady-State Fusion Reactor

Service and Technologies

Helical Fusion aims to realize the world’s first commercial fusion reactor capable of steady-state operation by 2034, realizing the mechanism of the Sun shining on Earth.

As a spin-out start-up of the National Institute for Fusion Science, we leverage over 70 years of research and advanced expertise in entire reactor design to drive development. Also, our patented “high-temperature superconducting magnet” combines manufacturability and performance, serving as a core technology for fusion reactors, and broad applications across various fields.

Sustainability

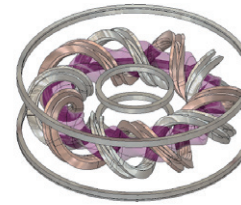
We use deuterium and lithium as fuel, procured inexhaustibly from seawater. In fusion reactors, no greenhouse gases are produced when the energy is extracted. Fusion power is inherently safe and has no risk of melting down, and the fusion reaction produces no high-level radioactive waste.

Among various types of reactors developed worldwide, the ”Helical-Stellarator“ type we are working on is distinguished by steady-state operation throughout a year, and ease of maintenance. When commercialized, it will become a truly sustainable, carbon-free baseload power source.

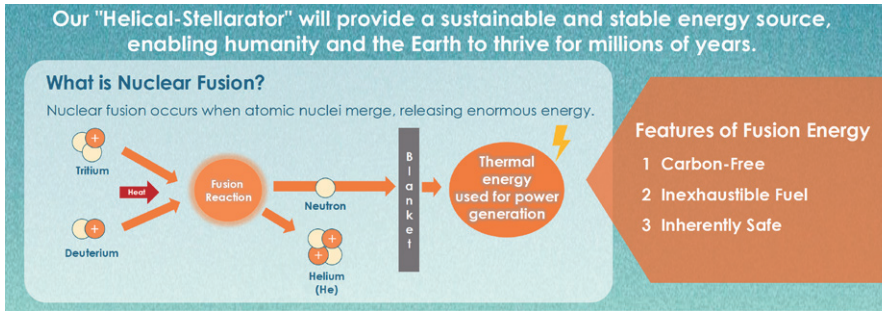
Experience

■Stable power supply to meet various needs

Our fusion reactor is designed to fit all of its equipment into a site measuring just a few dozen meters across and 200 meters long, and it is expected to be able to provide a stable supply of electricity at a scale of 50 to 100 MW continuously for a year.Furthermore, if the size of the device is increased, it is also possible to build a power plant with an even greater output, and we can provide clean energy while flexibly responding to power needs. In addition to grid connection, we can provide a main power



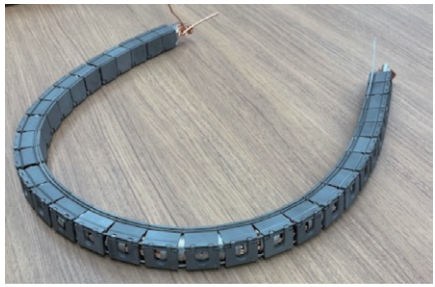
Helical coils known for stable operation and easy maintenance



source tailored to individual businesses, such as data centers, factories that require large amounts of power, and large ships.

■High-temperature superconducting magnets

The unique design of this material, which can achieve both bendability and high current density, has received a Japanese government subsidy, and development is progressing smoothly. If commercialized, the material is expected to have a wide range of applications, including other types of fusion reactors, superconducting motors, and superconducting medical devices.



High-temperature superconducting magnets featured with bendability

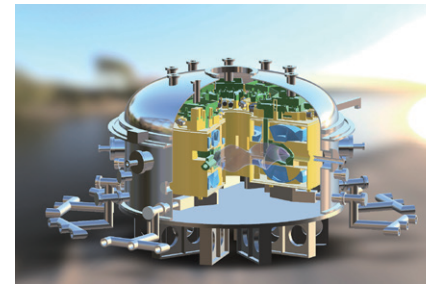


Image of Helical reactor

Industry: Manufacture of generators, electric motors, and other rotating electrical machinery
Website: https://www.helicalfusion.com/en
Contact: contact@helicalfusion.com
Affiliated Company in Japan: Same as above.
Address: N&E BLD. 6F, 1-12-4 Ginza, Chuo-ku, Tokyo

Helical Fusion

Hitachi High-Tech (Thailand) Ltd.

Providing sustainable plastic material Tapioca-based biomass plastic compound

Message

Hitachi High-Tech integrates manufacturing in high-tech fields—such as semiconductor manufacturing equipment, medical testing systems, and electron microscopes—with advanced trading functions for cutting-edge materials. Leveraging expertise in Observation, Measurement, and Analysis Technologies, we deliver world-class solutions.

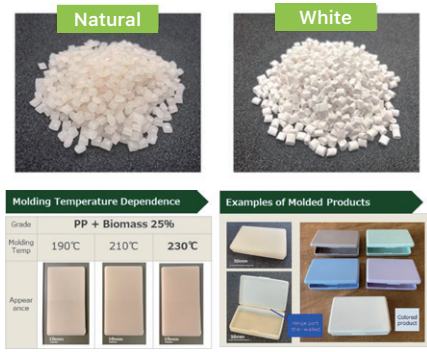
In Thailand, our focus is on trading functions, supplying advanced materials to meet diverse customer needs. Looking ahead, we aim to support a decarbonized and circular society by offering environmentally friendly materials and innovative solutions in collaboration with our clients.

Service and Technologies

We produce biomass plastic compounds by blending thermoplastic polymers derived from cassava-based tapioca starch with petroleum-based polymers (e.g., PP) and biodegradable polymers (e.g., polylactic acid). This approach balances fossil fuel reduction with biomass utilization, addressing the high-cost challenges of biopolymers. Our products offer a diverse lineup, including high-elasticity, high-flow, antibacterial, and anti-mold grades, as well as recycled PP and inorganic blend grades that reduce petroleum-based plastic usage. These cassava-starch-based bioplastics, with a biomass content of 25% to 50%, demonstrate excellent moldability at 230°C. Additionally, we are developing ABS-grade materials to introduce a new generation of sustainable plastics to the market.

Sustainability

This product focuses on cassava (tapioca starch), a biomass resource abundantly available in Thailand. As the world's third-largest producer, Thailand produces around 30 million tons annually (2020), over 70% of which is exported. This ensures little competition with the domestic food supply. The Thai government is promoting high-value applications for bioresources, aligning with rising global awareness of environmental issues. The growing demand for biomass plastics is expected to secure stable



demand for cassava, supporting steady income for farmers. Cassava-based bioplastics are biodegradable and reduce environmental impact and CO2 emissions compared to petroleum-based plastics, contributing to a sustainable and circular economy.

Experience

Currently under proposal. Since 2023, we have been exhibiting annually at the "Sustainable Material Expo (SUSMA)" as part of the Highly-Functional Material Week in Tokyo and Osaka.

Other technology

We provide "Materials Informatics (MI)" solutions, leveraging AI and informatics technologies for advanced materials data analysis. Informatics involves techniques from computational science and statistics to analyze experimental and simulation data, enabling data-driven insights rather than relying on intuition or experience. This approach identifies optimal compound formulations and experimental conditions, enhancing efficiency and innovation in development. Our solutions are particularly well-suited for biodegradable compounds, contributing to reduced development time, costs, CO2 emissions, and waste. Additionally, we offer database solutions for storing and managing experimental and simulation data, supporting DX initiatives from data accumulation to utilization.

Industry: Trading
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Affiliated Company in Japan: Hitachi High-Tech Corporation
Address: 62 Thaniya Bldg. 7th Floor, Room 702,
Silom Rd, Suriyawong, Bangkok 10500 Thailand

Hitachi High-Tech

Igaden Co., Ltd.

Chemical-free water treatment system using electrolysis technology

High-efficiency electrolysis wastewater treatment system “MICRO WATER SYSTEM”

Message

Our main products are wastewater treatment equipment for factory, water quality purification equipment for cooling tower, and electrolytic alkaline cleaning water generation equipment, with an abundant history of delivering the products overseas. In Thailand, our distributor Konishiyasu Co., Ltd. has staff with expertise to ensure a wide coverage of support including the neighbouring countries.

Service and Technologies

With its original electrolysis technology, the product achieved separation anddecomposition of oil emulsified in water and recalcitrant wastewater without using chemical, which have been difficult to treat until now. Electrolysis apparatus has been implemented for use in silica removal from factory wastewater and cooling tower circulating water, purification of lakes and marshes, wastewater treatment in stock raising, and final wastewater treatment system of biomass facility. The apparatuswill be useful in saving water, energy, and also space by integrating the equipment, contributing to the achievement of SDGs and carbon neutrality.

Sustainability

The purification of factory wastewater is directly linked to environmental conservation of rivers, lakes, marshes, and the ocean. We believe such heightened awareness willlead to global environment conservation. In addition, with the previous treatment method involving the use of chemical, there was an issue of increasing amount of sludge resulting from the large chemical input for separation process. However, as this electrolysis treatment technology is also capable of suppressing the

amount of sludge produced in the process, reduction of manufacturing waste and waste treatment cost can be achieved.

Experience

In Kasumigaura, Ibaraki, where Igaden is located, eutrophication of water in the recent years resulting in deteriorating water quality has been an issue, and the company has been providing wastewater treatment equipment that caters to such specific needs. With the implementation of water quality improvement equipment for cooling towers, energy consumption of circulation pump can be reduced by 20%, and by replacingwith the heat treatment equipment used for incinerating and vaporizing recalcitrant wastewater, it can also help steer away from fossil fuels. This technology is also applied in places other than factories, such as advanced removal of phosphorus in a university- affiliated ranch, decomposition of high-density nitrogen in a lab and so on.

Industry: Other manufacturing
Website: http://www.igaden.com/indexEnglish.htm
Contact: moro@konishiyasu.com (Moroguchi)
Konishiyasu Trading (Thailand) Co., Ltd. (Distributors in Thailand)
Affiliated Company in Japan: Same as above.
Address: 78-4 Shinoyama, Joso, Ibaraki 300-2721

株式会社イガデン
IGADEN CO.,LTD.

IHI ASIA PACIFIC (Thailand) Co., Ltd.

Supporting the CO2 reduction goals in factory
Energy-saving Solutions for factory

Message

As a comprehensive heavy industries group having 170 years history, IHI works to provide value in four main fields: Resources/Energy/Environment, Public Infrastructure, Industrial Systems/General Purpose Machinery, and Aviation/Space/Defense.

Sustainability

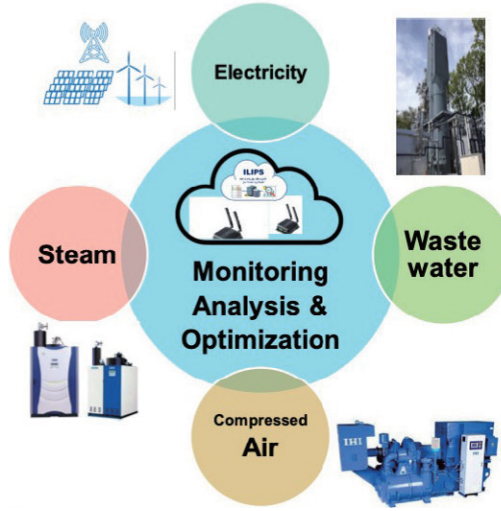
In the industrial sector, achieving CO2 emission targets is typically realized through two methods: the adoption of renewable energy sources such as solar power, and energy-saving measures. However, the former is usually constrained by site area and cost. Therefore, a combination of these two methods needs to be promoted.
In fact, it is said that the energy efficiency in industry is only about 50%, making the adoption of excellent energy-saving technologies highly promising for significant CO2 reduction effects.

Service and Technologies

This technology provides various energy-saving solutions for factories, including the aggregation of multiple low-output compressors into a high-efficiency turbo compressor, multi-unit control system for compressors or boilers, steam turbine assisted compressors, compressor waste heat recovery technology, utilization technologies of various waste heat and biogas, vacuum heat treatment or carburizing furnaces that reduce heat loss through vacuum insulation, monitoring technolgies of electricity and equipment, monitoring data analysis, and energy audit for the entire factory etc.

Other technology

Boiler... IHI's general-purpose boilers feature compact design and high efficiency to meet customer requirements. Our once-through boilers, available for oil and gas, serve a wide range of customers (evaporation capacity: 0.75 to 6.0 ton/h).
Compressor... With a diverse product lineup ranging from 125 KW to several tens of MW, we propose optimal solutions and continue to meet our customers' various needs.
Vacuum Heat Treatment Furnace... With a top-class delivery record, we can meet all of your vacuum heat treatment needs (hardening, tempering, solution treatment, magnetic treatment, annealing, brazing, etc.).



Experience

The delivery record of energy-saving technologies for factories are as follows:

Multi-unit Control for Boilers	About 12 cases
Biogas-fired Boilers	Above 20 units
Tubo compressor	Above 15,000 units
Multi-unit Control for Compressors	Above 100 cases (outside Japan)
Steam Turbine Assisted Compressors	Above 30 units
Compressor waste heat recovery	15 units
Vaccum Heat Treatment Furnace	Above1,700 units
Energy Audit for Factory	Above 20 cases
Monitoring & Data Analysis(Southeast Asia)	Boiler 11 units, Compressor 2 units, factory electricity 1 case

Industry: Other Manufacturing Industry
Website: https://ihiapt.co.th
Contact: zhang0576@ihi-g.com
Affiliated Company in Japan: IHI Corporation
Address: No. 6 O-NES Tower 10th Floor, Soi Sukhumvit 6, Klongtoey, Bangkok 10110, Thailand

IHI

Industria (Thailand) Co., Ltd.

Liquid filter with zero industrial waste
Element-less filter “FILSTAR”

Message

We are a maker of Industria brand products such founded in Saitama, Japan, in 1991. Our Thai local subsidiary was established in 2014, and the main customer base of our own product, FILSTAR, is the processing factories of Japanese automotive factories. Also, we compile a test report internally to verify the effect before implementation. We work hard every day to do good for the mankind, the earth, and companies.

Service and Technologies

Liquid filter designed to generate centrifugal force with the water flow when passing through the filter, allowing it to forgo the need for filter element for removing impurities. It has achieved a high filtration spec with its unique technology and also capable of eliminating running cost, maintenance, and industrial waste, as well as having a long lifespan. Separating solid from liquid usually requires filter element, but this emits carbon dioxide during production, purchase & transportation, and disposal after use. This product does not use filters, so it does not only help reduce the related cost but also contribute to achieving carbon neutrality.

Sustainability

Normal filter elements are made of synthetic resin such as polypropylene, polyester and nylon, so using a normal filter would mean a constant disposal of these plastic- based consumables. On the other hand, our product which doesn’t use filter element can provide zero plastic usage solution in its liquid filtration processes. Also, as this filter does not require consumables like the filter element, it can help eliminate the disposal cost for consumables too.

Experience

This product has a history in successfully reducing the use of consumables (filter elements) from 5,000 pcs/year to zero by replacing normal filters in one production line of an aluminum part manufacturing factory. The content weight of synthetic resin per filter element is approximately 500 grams, which means the amount we reduced is equivalent to 2,500 kilograms worth of plastic and synthetic resin per year. Other than this, costs such as the industrial waste disposal and maintenance were reduced to almost zero, contributing to a total cost reduction of approximately 20 million JPY. It is a filter that is friendly to both the earth and companies, and could become a standard in the field.

Industry: Normal machine equipment manufacturer
Website: https://industria.co.jp/en/
Contact: goto@industria.co.th (Goto)
Affiliated Company in Japan: Industria Co., Ltd.
Address: No.36/56 RK Biz Center Project, Motorway Road, Kwaeng Klongsongtonnun, Khet Ladkrabang, Bangkok 10520 Thailand

industria
industria(Thailand)Co.,Ltd.

IPA (Thailand) Co., Ltd.

Up Cycle project from clothing to clothing RENU

Message

An operating company under Itochu group. With the centrally located Thailand as the starting point, we operate a wide range of fashion businesses. In Thailand, we have signed a strategic partnership with CP group.

Service and Technologies

RENU materializes clothes-to-clothes circular economy and enables upcycling of all types of textile products by collecting unwanted clothes, cutting scraps and the likes. Textile industry is the second most polluting industry in the world, emitting an enormous amount of CO2 in its value chain. Clothing disposal, in particular, has a severe problem as it creates 92 million tons of waste per year. 99.9% of textile products are disposed, so very little end up in recycling. Compared to the conventional PET bottle-derived recycled polyester, our product has a stable quality and rich in colors. (Currently we only operate collection of unwanted clothes in Japan and China, with an expansion plan to other countries soon.)

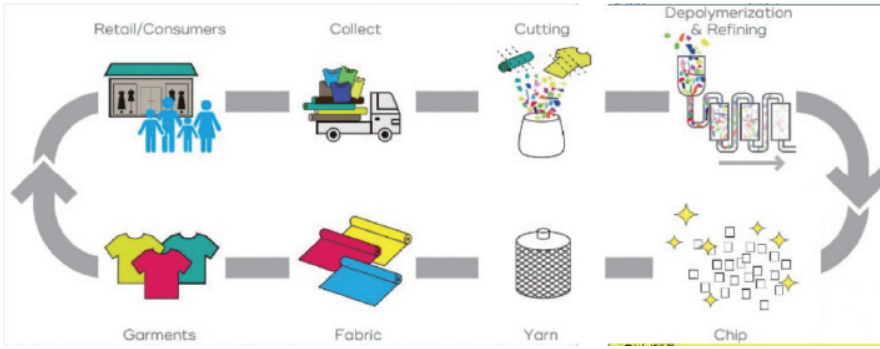
Sustainability

Compared to the conventional polyester, the emission of CO2 and usage of water during the manufacturing process of yarns and fabrics can be reduced. 59% reduction of CO2and 11% reduction of water usage.

For example, if we use 40 tons of RENU raw material, the reduction results will be as follow:

- 200,000 pieces of clothing saved from disposal.
- CO2 reduction amount equivalent to 2.7

UPCYCLING WASTE REDUCTION



round trips around the globe by car.
- Water usage reduction equivalent to 100,000 of 500ml bottle.

Also, the concept of RENU = fashion is gaining recognition, which has led to the increased adoption in the fashion industry.

Experience

- Corporate uniforms: Family Mart, Century21, Meitetsu Transportation, MurataMachinery, Nissan dealers, YKK VN and others.
- Apparel: United Arrows, SHIPS, BAYCREW'S, Dickies, H&M, ADASTRIA, World, GU, Descente and others.

IPA is an operating company under Itochu group. With the centrally located Thailand as the starting point, we operate a wide range of fashion businesses. In Thailand, we have signed a strategic partnership with CP group. The following are our main business areas:

- Manufacturing: material development in Thailand with focus on sustainable raw material. Production of fabric and clothing in various Asian countries. Possible to have a collaborative partnership with top designers in Japan too.
- Brand: licensing, distribution and collaboration of more than 100 brands handled by Itochu.

RENU®

Industry: Trading
Website: https://www.ipahkg.com.hk/
Contact: morita-j@ipathailand.co.th
Affiliated Company in Japan: ITOCHU Corporation
Address: 287 Liberty Square Building,
10th Floor, Silom Road, Silom,Bangrak, Bangkok 10500

ITOCHU

Iwatani Corporation (Thailand) Ltd.

Upcycling the by-products of sugar manufacturing Plant-based PET resin

Message

We are a leading company in the carbon neutral businesses symbolized by companies providing hydrogen, energy conversion (LPG & LNG), biomass fuel, Bio-PET and EV battery material.

Service and Technologies

The product uses biomass PET whose main material is biomass mono-ethylene glycol derived from molasses produced as a by-product when white sugar is extracted from sugar cane. With this method, 30% of the PET resin composition can be made with plant-derived material, which makes it compatible with existing equipment without changing the outline equipment or conditions. It can also be provided in the form of films and sheets.

Sustainability

Iwatani has been conducting surveys based on LCA (Life Cycle Assessment) which quantitatively evaluates impact on the ecological system and environment from development stage. In 2011, they conducted a joint research and survey with Dai Nippon Printing Co., Ltd. and Tokyo City University. In the research, they compared the process from production to product disposal of biomass MEG and biomass PET to that of petrochemical PET and confirmed that the former can reduce around 28% of the entire greenhouse gas emissions (equivalent to 0.67 kg per 1 kg of product).

Experience

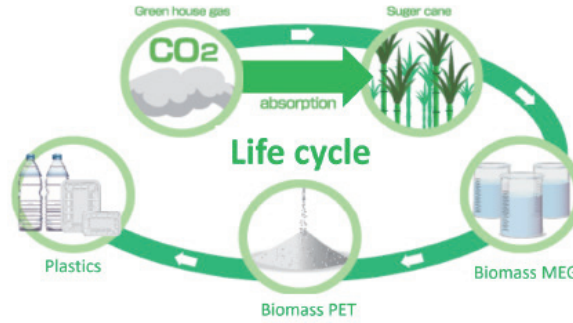
The company started handling biomass PET resin since 2010, and the sales amount in 2021 was 23,000 tons. For beverage PET bottles, they have sales history to multiple major Japanese beverage makers, while also being adopted for containers of cosmetics and hair care products. Moving forward, they will not only sell domestically in Japan, but also introduce a wide range of product lineups to the Southeast Asian market as part of their business expansion plan.

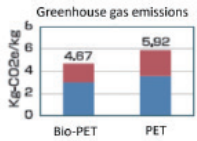
Other technology

Support the achievement of carbon neutrality with energy conversion technology. Iwatani is a clean energy promotion corporation. They have been contributing to the Reductionof CO2 emissions by supplying LPG, LNG and refrigerant gas which are low in greenhouse gas. They also provide energy such as environment-conscious refrigerant gas, biomass fuel, ammonia and hydrogen and have abundance of experience as a company handling various kinds of energy. They provide clean energy suggestions based on client's request and circumstances.

UPCYCLING WASTE REDUCTION

PET resin made from sugar cane

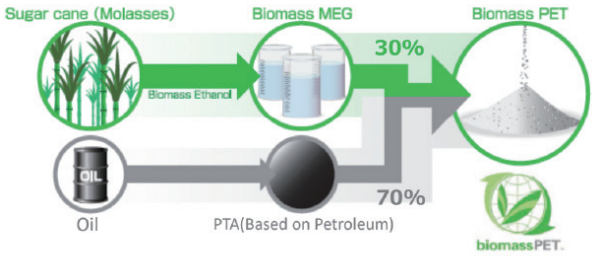




1.Use drain water and gas emitted from the manufacturing process as energy.
2. Plants absorb CO2 emitted from disposal process by photosynthesis (Carbon neutral).

Reduce greenhouse gas emissions by 21%

■Production process



■Application

Industry: Trading
Website: http://www.iwatani.co.jp/eng/index.html
Contact: Biomass PET resin tsukamoto@iwatani.co.jp (Tsukamoto)
Gas yuki-oiwa@iwatani.co.th (Oiwa)
Biofuel otsuka@iwatani.co.jp (Otsuka)
Affiliated Company in Japan: Iwatani Corporation
Address: 323 United Center Building, 29th Floor, Room No.2903,
Silom Road, Silom, Bangrak, Bangkok 10500 Thailand

Iwatani

JFE Engineering Corporation

High efficiency stoker-type Waste-to-Energy plant

Message

JFE Engineering, with its corporate purpose of 'Creating, Supporting, and Connecting the Foundation of Life - Just For the Earth,' is extensively involved in businesses related to infrastructure such as waste treatment facilities, chemical and power plants, bridges, and roads. Our field of operations extends infinitely, from the construction of various infrastructure to their operation, maintenance, and business development.

Service and Technologies

While waste in Thailand is characterized by a high proportion of food waste and low calorific value, our waste-to-energy plants can incinerate such waste. Moreover, with an operational rate exceeding 8,000 hours per year and a high-power generation efficiency of over 28%, these plants can produce more electricity from waste, demonstrating their excellence as power generation facilities. In terms of environmental performance, NOx and CO emissions are suppressed, enabling a reduction in environmental impact.

Sustainability

Waste in landfills produces methane, a highly potent greenhouse gas that contributes to global warming. However, switching to incineration can prevent methane generation. This transition is also expected to curb the expansion of landfill sites. Furthermore, since electricity derived from waste is partially considered CO2-free, the installation of waste-to-energy plants is anticipated to contribute to the realization of a carbon-neutral society.

Experience

We have a track record of over 260 installations worldwide, including in Japan, Thailand, Taiwan, and Germany. In Thailand, we have supplied a waste-to-energy plant with

a capacity of 360 tons per day and a power output of 8.6 MW in Chonburi Province. Our plants can incinerate not only low-calorie waste but also high-calorie industrial waste, enabling power generation from a wide variety of waste types. In recent years, we have established a joint venture company together with a customer in Vietnam and have begun operating waste-to-energy plants there. We can address a wide range of inquiries, including methods for financing the construction of waste-to-energy plants.

Other technology

In addition to waste-to-energy plants, we also sell power plants that use biomass as fuel. Regarding biomass power plants, we have a track record of 77 installations worldwide. We offer proposals tailored to the type of biomass fuel that our customers are considering.

Industry: Plant Engineering
Website: https://www.jfe-eng.co.jp/
Address: Yokohama Headquarter: 2-1, Suehiro-cho, Tsurumi-ku, Yokohama
Tokyo Headquarter: 2-2-3, Uchisaiwai-cho, Chiyoda-ku, Tokyo

JFE エンジニアリング 株式会社

Kanadevia(Thailand) Co., Ltd.

Fully automated production of green hydrogen using only renewable energy battery and water
Water electrolysis system “HydroSpring”

Message

In 1881, the Osaka Iron Works was founded by E. H. Hunter, and by now passing 140 years. We, with our philosophy “we create value useful to society with technology and sincerity to contribute to a prosperous future”, in the “Clean energy”, “Clean water”, and “Environmental conservation, and building resilient and prosperous community” business fields, will bring transformation as a solution partnerof our customers.

Service and Technologies

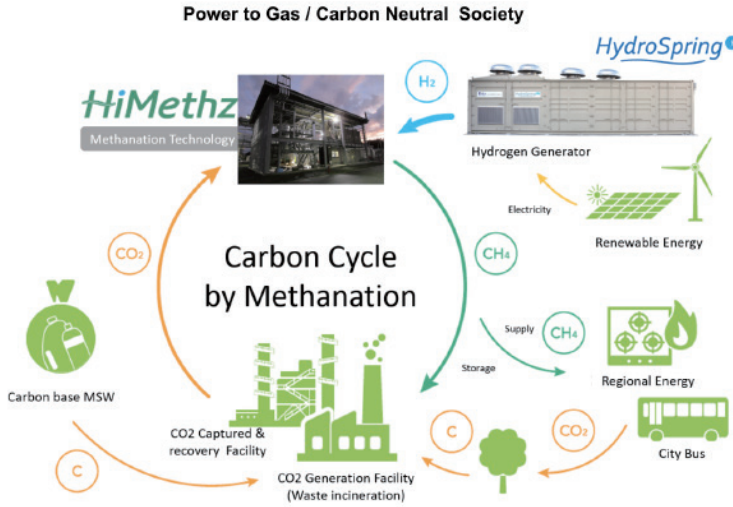
System capable of fully automated production of high purity hydrogen from renewable energy. Material used are only battery and water without any chemical, so the operation can be safely managed. The operation status can be checked with the remote monitoring system built in by default.

Sustainability

The green hydrogen produced by this product can be used to produce the heat source of boilers, to produce green ammonia by ammoniation, and to be re-converted into energy by utilizing fuel cell. Also, by combining with the company’s methanation system “HiMethz”, it can convert carbon dioxide emitted from factories into methane gas, to be reused as the heat source of factories. By re-capturing the carbon dioxide generated by these factories and appropriating for HiMethz, this can help to achieve the in-factory carbon recycling and contribute to the decarbonization effort.

Experience

Hydrospring is adopted in the “P2G system technology development and verification targeted for the construction of a CO2-free hydrogen society” by the enterprise bureau of Yamanashi since 2016. The final target is to (1) develop and verify a system technology of 74.0% water electrolysis system efficiency in order to manufacture a 1.5 MW water electrolysis apparatus and achieve 80% in the said efficiency level in the future, and (2) construct a system adaptable to the changes in boundary conditions and establish a business model of Powerto Gas system targeted at a CO2-free hydrogen society through verification



of its technology feasibility and economy feasibility in the real world field by operating a sustained system from the production to utilization of hydrogen. The enterprise bureau of Yamanashi has created a business model using solar power from Komekurayama power plant to produce, compress/storage and supply hydrogen to the neighboring households with power demand.

Other technology

Transforming waste into energy. Hitachi Zosen Waste to Energy system. The system for this Waste to Energy plant was chosen without stoker-typed technology, granted from the former Von Roll company in Switzerland. We have achieved 1,063 references worldwide, particularly in Thailand we handed over Waste to Energy plant in Rayong in 2021, incinerating 300 tons of refuse derived fuel, the “RDF”, daily to generate 9.9 MW, of which 8.0MW of electricity is to be sold. The amount of this supplying electricity is worth contributing to 5,000 households in Thailand.

Industry: Other manufacturing
Website: https://www.kanadevia.com/english/
Contact: morita_ma@kanadevia.com (Morita)
Affiliated Company in Japan: Kanadevia Corporation
Address: 19th Floor, Room 1911, BB Building 54 Sukhumvit 21 (Asoke) Road, Klong Toey Nua, Wattana, Bangkok 10110

Kanadevia

Kaneka (Thailand) Co., Ltd.

Next generation innovative photovoltaic system integrated with building's exterior walls and windows

T-Green® Multi Solar (Abbreviated material name: T-GMS)

Message

Since its foundation in 1949, Kanekahas overcome and grown through the transitions in time and environment with the creative harmony between people and technology. Kaneka is a company dedicated to making the world "healthy" by standing by all lives on the earth, making food wholesome, cheering people and animals, energizing businesses and brightening societies. We, Kaneka, will continue to expand the possibilities of "science" and make the societies' and people's wishes come true by providing various solutions.

Service and Technologies

"T-Green® Multi Solar" generates electricity through photovoltaic laminates integrated intothe wall and window surfaces of buildings. This has been developed by bringing together Taisei Corporation's expertise in planning and constructing photovoltaic system that integrate into buildingmaterials with the photovoltaic laminates of Kaneka Corporation. This exterior system provides for the same level of durability as general exterior materials, outstanding workability due to the photovoltaic laminates being integrated intothe exterior materials, and continuous power generation for over 30 years.

Sustainability

Society is calling for more widespread use of renewable energy in order to achieve carbon neutrality. There is an increase in companies taking measures against the long-term power outages that have been caused due to natural disasters, demand for securing independent sources of power is growing, including from the point of BCPs (Business Continuity Plans) and LCP (Life Continuity Performance). This is a photovoltaic system that can be installedto office buildings, mid-sized and high-rise buildings, to which installation of photovoltaic system has been difficult. Thus "T-Green® Multi Solar" will contribute to adoption of renewable energy and independent power source of buildings.

Experience

Since 2021, the product has been adopted to skylight and aperture area of public and commercial buildings as building material. The product is highly regarded for its designability and it has been awarded of the Good Design Awards 2021 (sponsored by the Japan Institute of Design Promotion) . Kaneka Corporation and Taisei Corporation aim to make further major contributions to the realization of

*This is a co-developed product ofTaisei Corporation and Kaneka Corporation.

*T-Green Multi Solar (See-through type)
Example: Complex facility “CAN@YELL” in Furubira(Completion scheduled for February 2022)

ZEBs (Zero Energy Buildings) to mid-sized and high-rise buildings which limited space is available for installation of Photovoltaic systems in areas such as its roofs.

* “T-Green®” is a registered trademark of Taisei Corporation.

Industry: Other manufacturing
Website: https://www.kaneka.co.jp/en/ Affiliated Company in Japan:
Contact: yoshihiro.saito@kaneka.co.jp(Saito)
takeshi.Morimatsu@kaneka.co.jp (Morimatsu)
Affiliated Company in Japan: Kaneka Corporation
Address: 388 Exchange Tower, 21st Floor Unit 2101-1 Sukhumvit Rd, Klongtoey sub-district Klongtoey district, Bangkok 10110 Thailand

kaneka
The Dreamology Company
– Make your dreams come true –

KI-ECOTECH Co., Ltd.

Contributing to the realization of a sustainable circular economic society
High standard recycling factory

Message

We, as a good business partner trusted by customers, recognize the importance of highly specialized waste management. We collect waste generated by factories and consumers, and process them based on the standard required by the customers. In the current industry where each manufacturing factories expand their production volume, generation of such waste cannot be avoided, and could contribute to environmental issues. We are deeply aware of such issues, and conduct an appropriate collection of waste in order to prevent the waste from causing environmental issues.

Service and Technologies

We have guillotine machine for cutting metal, mini steel cutting machine, motor dismantling machine, briquette machine, resin pulverizing machine. We are able to conduct processing and separation of any material including metal, non-metal, resin.

We are engaged in not only collection and recycling of metal and resin scraps, but also in the reuse of surface polishing powder of steel products called sludge, which is processed into landfill at additional cost. We try to reuse it through weight utilization and repurposing as replacement of cement and steel material. We can supply resin molding material that is pulverized and re-pelletized as a recycled material.

Sustainability

Along with metal and resin, the effective use of recycled material reduces CO2 emissionRecycled materials are materials that have been productized with a certain amount of CO2 emission. Therefore, the use of such recycled materials as renewed resource can bring bigger advantages in terms of environment and cost. Nowadays, many companies are paying attention to an effective


Guillotine


Arm Roll Truck


Alligator Shears


Magnet Backhoe


Long Arm Backhoe

utilization of recycled materials. Recycled material can be reborn as renewed resources through the processing and separation processes using our in-house equipment.

Experience

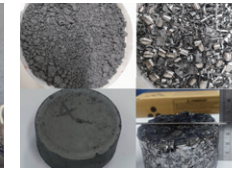
We are currently working on taking steel sludge generated at a major bearing manufacturing factory in Thailand and using it as a replacement to magnetite to mix with water and cementto reutilize as the weight used in forklifts. Relative density and mixing conditions have been tested. Further tests for mass production are being conducted.

Other technology

We also process briquettes of stainless-steel chips and steel sludge generated at a major bearing manufacturing plant in Thailand and sell it to manufactures.


Briquette machine


Briquette machine


Briquette size: 70x40mm

Industry: Recycling industry
Website: https://www.keiaisha.co.jp/
Contact: na-yoshioka@keiaisha.co.jp
Affiliated Company in Japan: Keiaisha Co., Ltd.
Address: 700/231 Moo 1, Amata City Chonburi Industrial Estate, T.Bankao, A.Panthong Chonburi 20160

Helping create a recycling-oriented society
KI-ECOTECH CO., LTD.

KURITA-GK CHEMICAL CO., LTD.

Improved Heat Transfer Efficiency for Energy Conservation

Kurita Dropwise Condensation Technology

Message

Since establishment in 1989, We produce water treatment chemicals that is highly effective for users. In addition, we propose the water management in a factory operation such as reuse, reduce and recycle. The Kurita Group provides optimum water treatment systems to produce the specific water quality required for a broad spectrum of different users.

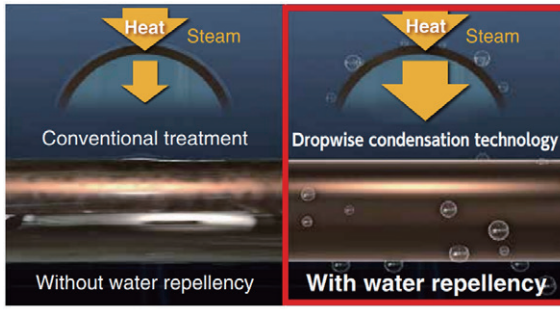
The Kurita Group utilizes its technologies to keep water, an indispensable resource for society and industry, in the optimum condition for use by its customers.

Service and Technologies

KURITA DW-series are volatile chemical product to form a water repellent film on the heat exchanger surface. The business model was designed for this new energy conservation technology, which improves heat transfer efficiency using dropwise condensation to condense steam. In heat exchangers, a water film on the metal acts as thermal barrier, which restricts heat transfer. With this new technology, instead of water film, the steam condenses into droplet that are repelled increasing overall heat transfer by up to 30%.

Sustainability

The production process at many manufacturing plants uses heat exchangers to heat substances with steam. KURITA DW-series induces water-repellent properties in the heat transfer



During steam condensation, this technology transforms the water film acting as thermal barrier into droplets to increase heat transfer efficiency.

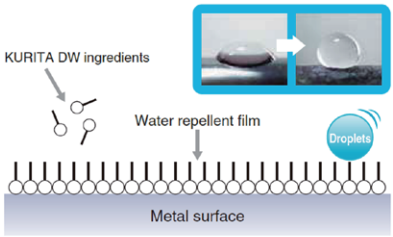
Higher heat transfer efficiency

Higher productivity

Lower steam consumption

YouTube video

surface of the heat exchanger, thus preventing the formation of a water film and boosting heat transfer efficiency. This in turn improves productivity and reduces the volume of steam required, which contributes to energy-saving. As the technology works by simply adding water treatment chemicals to the steam, it allows manufacturers to reduce GHG emissions without needing to stop production equipment or make a large-scale investment.



Easily applicable through the successive addition of chemicals to the steam line just before a heat exchanger*

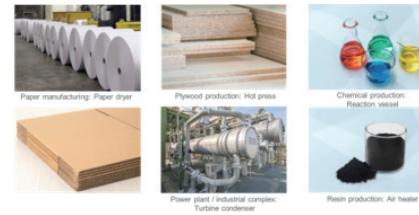
Experience

To achieve productivity improvement & energy conservation

Providing this technology that consists of KURITA DW-series as unique product, technical consultant and analysis to a larger number of users through Pay-per-Performance package agreements.

Application Example

KURITA DW-series is now being adopted in many manufacturing processes (Over 300 systems all over the world). In addition, the technology does not interfere with existing water treatment systems, so it can be used for many applications, such as the dryer processes of paper mills, where it reduces per-unit steam consumption by 5-10%.



Industry: Water Treatment Chemicals
Website: https://www.kurita.co.th/
Contact: k.imai11@kurita-water.com (Imai)
t.chavalee78@kurita-water.com (Noon)
Affiliated Company in Japan: KURITA WATER INDUSTRIES CO., LTD.
Address: 460 Moo 17 Bangphli Industrial estate, Bangsaothong, Bangsaothong district, Samutprakarn

Marubeni Green Power Asset (Thailand) Co., Ltd.

Solutions for Decarbonization Installation of Solar Power System (Corporate PPA, Self-Investment)

Message

Marubeni Green Power is a subsidiary of Marubeni Corporation. Within Marubeni Group's power division, we own, operate, and manage approximately 37 GW of power plants worldwide. In Thailand, we have constructed and delivered around 10 GW of power plants to the Electricity Generating Authority of Thailand (EGAT).

Leveraging our expertise and experience, we provide construction management and maintenance services to ensure our customers feel confident and at ease. Additionally, we offer similar services to private companies in multiple countries, including Vietnam, Taiwan, Saudi Arabia, The Philippines, Singapore and Mexico, extending our support beyond Thailand.

As part of the Marubeni Group, we are dedicated to helping our customers address their concerns effectively. Our Solar PV Installation Group has achieved an impressive record, with an installation capacity of approximately 280 MWp.

Service and Technologies

Marubeni Green Power installs solar power systems across customer premises, including rooftops, parking structures, vacant land, and water sources, through both Power Purchase Agreement (PPA) and Self-Investment schemes. With the PPA scheme, customers enjoy clean energy and sustainable cost savings without any upfront costs, as Marubeni Green Power retains ownership and manages all maintenance during installation and the contract period. This approach allows customers to focus on their operations while benefiting from renewable energy. Our solutions also include options like energy storage systems and environmental certifications, supporting various sustainability goals. With a track record of 35 projects and a total capacity of 24 MWp, Marubeni Green Power delivers quality, reliability, and competitive value tailored to each customer's needs.

Sustainability

As global decarbonization efforts accelerate, Marubeni Green Power support businesses in

achieving renewable energy targets through tailored solar installations. With the merit of our rich experiences in power generation business, proficient in-house engineers design optimal system capacities and provide comprehensive post-installation maintenance ensuring high performance and long-term reliability. Committed to empowering our customers' sustainability initiatives, we leverage the precision of Japanese quality standards to align with specific operational needs.

Experience

[PPA Achievement 1]
For a major Japanese watch manufacturer located in Nakhon Ratchasima, a 0.999 MWp solar power system has been successfully installed in October 2024. Solar panels were installed on the rooftop.

[PPA Achievement 2]
For a leading non-Japanese group, a global manufacturing leader in plastic injection molds and products, based in Rayong, solar power systems with total capacity of 0.825 MWp has been successfully installed, completing the installation since March 2023.

[Self-Investment Achievement]
For a prominent technology manufacturer specializing in advanced electronic components and devices located in Amata City, Chonburi, our largest project to date has been successfully completed with a solar power system capacity of 2.07 MWp. This solar rooftop installation serves as self-consumption and has been designed to meet the connectivity requirements specified by SPP grid code regulations.

Industry: Renewable Energy
Website: https://www.marubeni-mgp.com/
Contact: sales@jpn.marubeni-mgp.com
Affiliated Company in Japan: Marubeni Corporation
Address: 548 One City Centre Building, 33rd Floor, Unit No.3304-3306
Ploenchit Road, Lumpini, Pathumwan, Bangkok 10330, Thailand

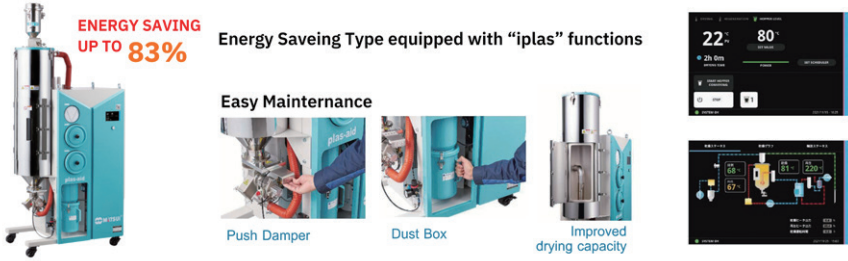
Marubeni Green Power

Matsui (Asia) Co., Ltd.

Dehumidifying Dryer
MJ6-i

Message

Matsui Asia is engaged in manufacturing various machines and equipment that accompany plastic molding machines. MATSUI MFG. CO., LTD. in Japan has a history of 113 years, and was one of the first to enter Thai market, with 39 years of experience. We have our manufacturing base in Bangpoo industrial estate, from where our products are delivered across Thailand and the neighbouring ASEAN countries. Apart from sales of machinery equipment, we have also supported customers' problem solving and energy-saving initiatives by providing solutions. We would like to use this opportunity to have more customers know about us, and allow us to support their improvement activities. Matsui aims for the realization of "factor4" - doubling the richness of molding process, and halving the use of resources.



Service and Technologies

This dehumidifying dryer uses a honeycomb rotor with no need to replace an adsorbent. Stable drying without the effects of powdering and unaffected by outside air temperature and humidity.

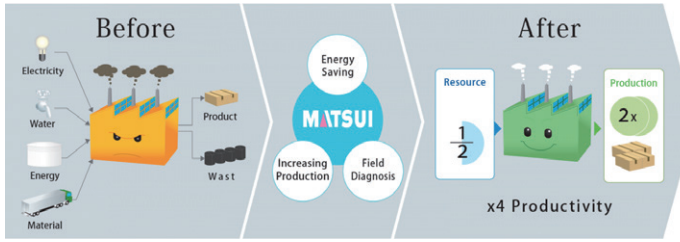
1. Advanced Automatic Control Function – Enhances operational efficiency and provides precise control.
2. Compact Space-Saving Design – Designed to minimize space usage, allowing for more workspace.
3. 7-Inch Touchscreen with Intuitive UX Design

– Easy to use and highly responsive.

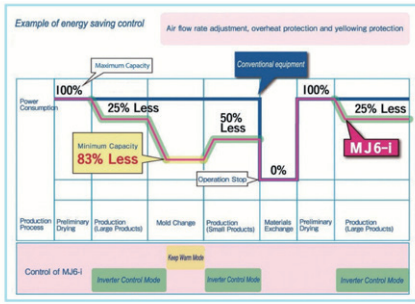
4. Honeycomb Rotor System with No Adsorbent Replacement Needed – Reduces maintenance and ensures stable drying.
5. Resistant to External Temperature and Humidity – Operates efficiently despite changes in external weather conditions.

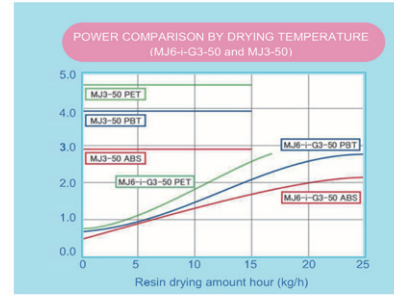
Sustainability

Does your dryer save energy use when resin demand drops? Equipped with iplas functions, energy saving of up to 83% is now possible!
Further advances in the continuous operation method and air volume control have realized energy-saving operation with less temperature drop of the resin after drying.



Experience





Industry: Precision machinery and equipment manufacturing
Website: www.matsui-asia.co.th
Contact: ykano@matsui.net , salesbangkok@matsui.net
Affiliated Company in Japan: MATSUI MFG. CO., LTD.
Address: 300 Moo 4 Soi 5 C Bangpoo Industrial Estate, Sukhumvit Road, Tambol Praksa, Amphur Muang, Samutprakarn

MATSUI

Mechanocross Co.,Ltd.

Unseen sustainable chemical processes created with us

Chemical Process Dev. w/ MECHANOCHEMISTRY

Message

Mechanocross is the startup driven with Hokkaido University as for the chemical process developer.

Mechanocross reshapes chemistry by eliminating organic solvents, driving a greener future while unlocking innovation in advanced material development.

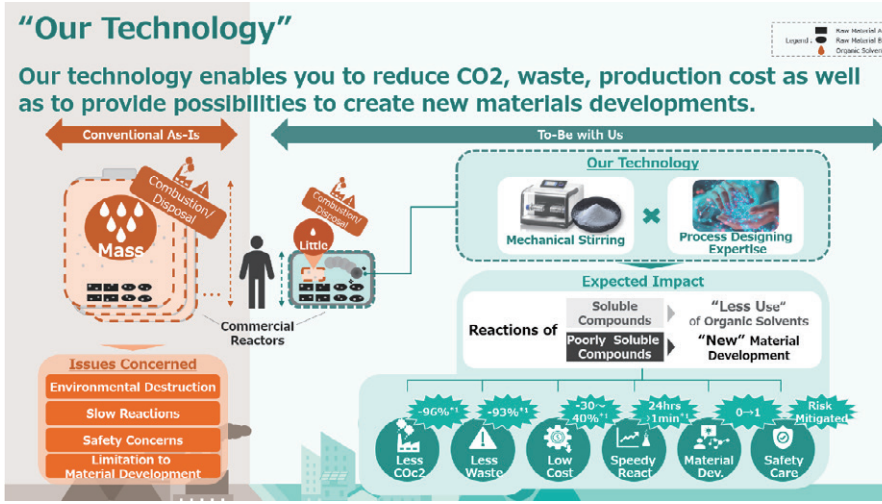
Service and Technologies

Our primary focus is to innovate the conventional reaction method to the new way which does not require organic solvents. Organic solvents are almost unnecessary in the new process developed with us! Major expected impacts arising compared with the conventional method are that;

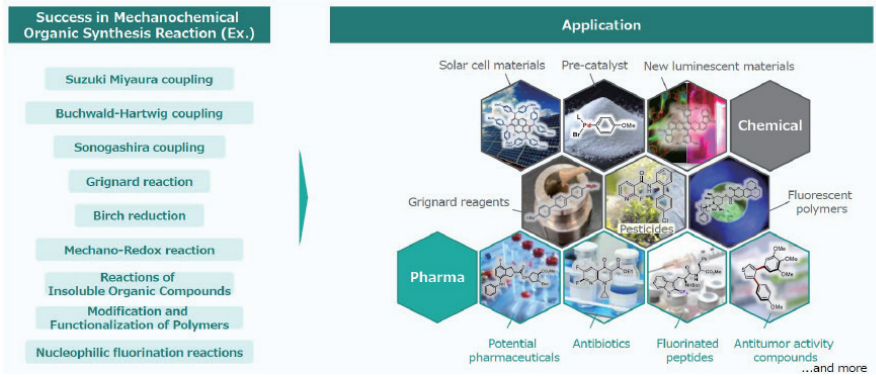
To reduce the CO2 emissions/ waste disposal more than 90%* for instance

To groundbreaking reaction speed (1day to 1 min* as example)

To open new opportunities for new materials by enabling



UPCYCLING WASTE REDUCTION



reactions with insoluble compounds previously deemed impossible.
*Cross Coupling case

Sustainability

Conventional method forces you to use exessive amont of organic solvent in the reacting processes and it is eventually burns out of disposed with consuming tons of energy and time. You will be freed from this high environmental brothering situation!

Experience

Several Japanese major chemical companies as well as a leading pharma company have already engaged in PoC* of their process innovation with us.
*Details are confidential
We have successfully innovated the major chemical processes and compounds with MECHANOCHEMISTRY. (See the example below)

Industry: Chemical, Pharma
Website: https://mechanocross.com/en/
Contact: koki.nishioka@mechanocross.com (Nishioka)
Affiliated Company in Japan: Same as above.
Address: Institute for Chemical Reaction Design and Development (WPI-ICReDD)
Kita 21 Nishi 10, Kita-Ku, Sapporo, Hokkaido, Japan

MECHANO CROSS

METAWATER Co., Ltd.

Achieving non-coagulation and small-footprint rainwater treatment High Rate Filtration system

Message

We are one of the largest engineering company in Japan in the water and environment sector. Currently, wehave our own unique technologies in ceramic membrane filtration system, ozonizer, sludge incineration system, and Pre-Treated Trickling Filter method and so on. We are based in Vietnam, Cambodia, Singapore, the Netherlands, Switzerland, Germany, and the US.We promote CSR activities such as water and environmental resource conservation and disaster recovery assistance, pursuing contribution to the sustainable society.

Service and Technologies

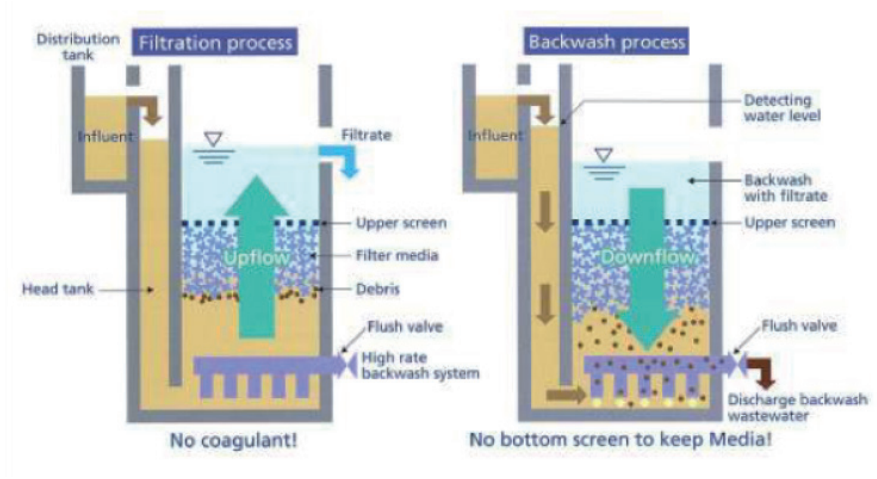
The High Rate Filtration system is a system capable of filtering (removing) suspended solids such as grease balls and PVC fibers at the filtration speed of approximately 1,000 m/day by installing it in primary sedimentation tanks or relay pump stations.

Sustainability

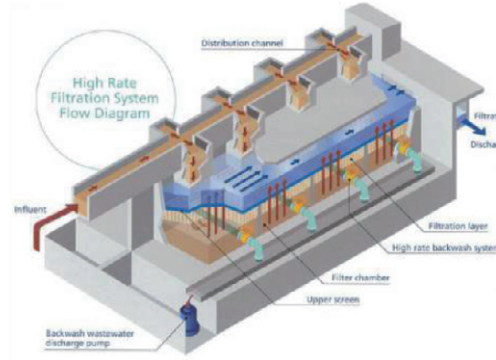
In many countries and regions, it has been concerned that the climate change is causing increased rainfall and localized heavy rainfall (stormwater) resulting in critical disasters such as flooding. It is also predicted that the frequency of such stormwater downpour will increase even more due to the continuation of greenhouse gas emission. Under such dire situation, there is a need for promotion of pre-emptive measures against overflow of combined sewer system (CSS), and this system can contribute to address such vital issue. The main features of this system are; (1) reduction of construction cost by utilizing the existing tank; (2) no need for coagulant; (3) no need for pre-treatment equipment, which brings about the result of no need for works such as transporting residues during and after operation. Point 1 helps reduce the concrete volume and point 2 helps minimize the volume of waste generated, hence, contributing to the reduction of CO2 emission.

Experience

This system has the installation reference of over 40 locations, mainly in the cities of Japan. Also, under the Japanese government's ODA loan assistance projects, it was adopted for "Yen Xa Sewerage System Project" in Vietnam, and the project is currently in progress. In the coming future, METAWATER



will further focus on expanding its sale to Southeast Asian countries and across the globe.
•Certified under MLIT's SPIRIT 21 Technology Assessment as a technology for CSS improvement.
•Received METI Minister's Award (The 34th Outstanding Environmental Equipment Award Project organized by the Japan Society of Industrial Machinery Manufacturers)



Industry: Water Industry (Engineering, M&E works, PPP investment, etc.)
Website: https://www.metawater.co.jp/eng/
Contact: info-meta@metawater.co.jp
Affiliated Company in Japan: Same as above
Address: JR Kanda Manseibashi Building, 1-25 Kanda Sudacho, Chiyoda-ku, Tokyo 101-004

METAWATER

Mitsubishi Chemical Aqua Solutions Co., Ltd.

Large-scale cost reduction by reducing sludge volume
Sludge volume reduction technology that achieves near-zero excess sludge in oil-bearing water treatment

Message

We use membrane filtration technology and other treatment components developed by Mitsubishi Chemical to deliver high value-added solutions to the needs of customers across different fields, ranging from the supply of drinking water to waste water treatment. Utilizing the technologies and experience gained domestically in Japan, we are also working on business expansion outsideof Japan, including developing countries.

Service and Technologies

A system that combines Oil-Decomposing and High-Load Contact Aeration method to treat wastewater with high oil and grease content from such as food processing factories. With the existing methods such as dissolved air floatation method and conventional activated sludge processing method, there are numbers of issues including the consumption of large amount of chemical additives, complex operation management, unstable treatment, and a large-scale sludge generation. However, this AABFR system uses fat splitting bacteria to achieve a stable treatment with little to no excess sludge generated. In this way, a major reduction in operation cost (manpower cost) and sludge treatment cost is possible.

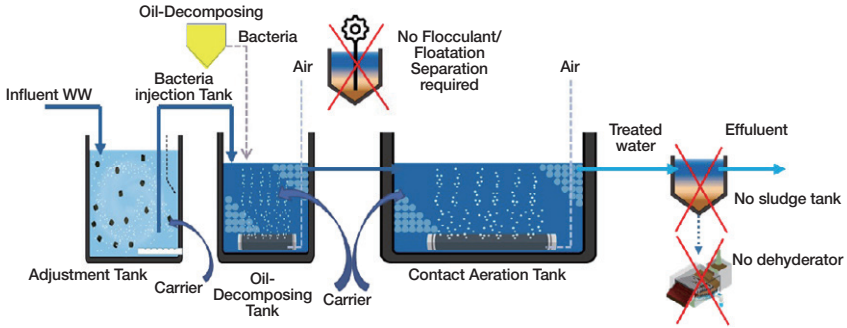
Sustainability

Oil-Decomposing and High-Load Contact Aeration method, especially when introduced in places such as food processing factories, can achieve near-zero excess sludge generationin treating wastewater with high oil and grease content. Therefore, it can contribute to the reduction of greenhouse gas previously emitted from sludge incinerations and the like (contribution to achieving carbon neutrality). We also have a track record of successfully reducing the sludge generation by 1/15 with this method as compared to the existing methods, enabling a major cost reduction. Furthermore, this technology does not require constant presence of operators and will resolve manpower shortage problems of factories.

Experience

This technology has been successfully applied to over 100 cases. Most of them are for confectionery factories, frozen food factories, dairy product factories, seafood factories. The system can cover wide range of wastewater treatment volumes, from approximately 50 to

Advanced Aerobic Bio-Film Reactor (AABFR) System for Oil-Containing Wastewater



< Merits >
• Reduction of Waste Volume and OPEX • High Treated Water Quality • Easy Operation • Smell Control

1,600m3 /day. In Thailand, a high oil and grease content wastewater treatment system witha 500 m3 /day capacity has already been implemented for a frozen food factory (Raw water quality: BOD 700mg/L, SS 400mg/L, n-Hex 400mg/L Treated water quality: below criteriafor all parameters and released to the sewage system). In another case of 300 m3 /dayplant, sludge generation (processing cost) was reduced by 1/15, and manpower cost for operation by 1/10 (the cost reduction of more than 17 million JPY per year) compared tothe conventional activated sludge processing method.

Other technology

Solid technical capability ensures stable provision of safe drinking water. The system uses waterfrom sources such as underground water, surface water and treats the water mainly with membrane filtration technology to supply drinking water to hospitals, factories, condominiums and shopping complexes etc. The system is custom- designed according to customer's requirements such as rawwater quality and amount of water to be treated (water demand).A remote monitoring system installed in the system enables stable operation and optimum maintenance by monitoring the system operational status and water quality in real-time from both Thailand and Japan.

Industry: Construction industry (construction, civil engineering, equipment etc.)
Website: https://www.mcas.co.jp/
Contact: MCJP-MBX-MCAS_OBD_INFO@mchcgr.com
Affiliated Company in Japan: Same as above
Address: 1-2-2 Nihonbashi Honishicho Chuo-ku Tokyo, 103-0021

MITSUBISHI CHEMICAL GROUP

Mitsubishi Heavy Industries (Thailand) Ltd.

Technology supporting the energy transition Energy saving solutions, CO2 capture, hydrogen and ammonia power generation systems

Message

We, Mitsubishi Heavy Industries, are currently working towards "development of growth areas" as one of the targets set in the 3-year mid-term business plan for 2021 to 2023. One exampleof the "growth areas" is energy transition, which involves promotionof utilization of hydrogen and ammonia, and decarbonization technologiessuch as CCUS.

Service and Technologies

In order to provide concrete solutions for achieving carbon neutrality in Thailand, we offer the following three groups of solutions.

1) **Energy saving solutions**

We propose a combination of cost reduction and decarbonization by improving the efficiency of existing facilities through EMS (Energy Management System), which visualizes energy use in factories and controls energy efficiency. We propose energy-saving equipment such as Air conditioning/chiller, gas engine, waste heat recovery ORC, etc. based on the obtained data. We also propose energy saving solutions for data centers, which are increasing in Thailand.

2) Utilization of clean energy (hydrogen and ammonia)

We provide solutions for thermal power plants to utilize non-fossil fuels that do not emit CO2 when used.

3) Carbon neutral solutions through CO2 capture

Achieving a carbon-neutral world by capturing, using and storing CO2 emissions (CCUS)

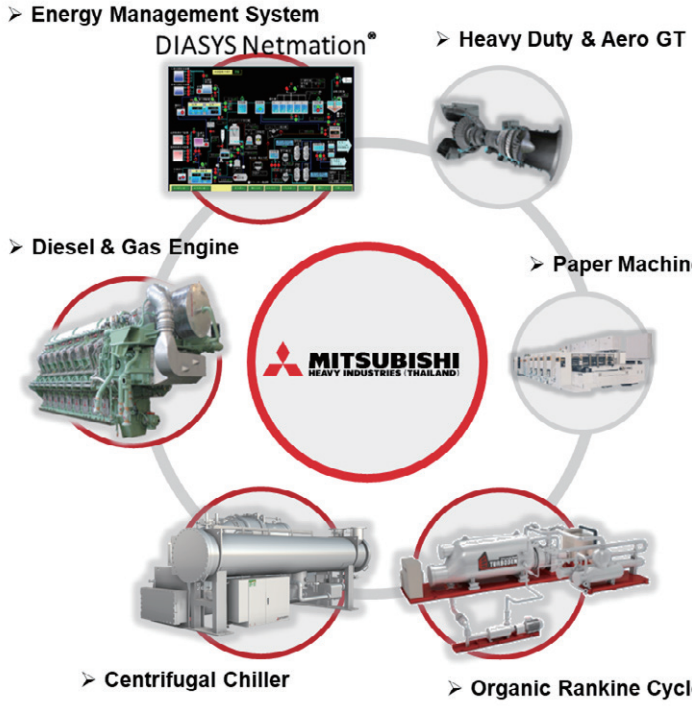
Sustainability

At first, we will develop highly feasible "(1) energy saving solutions" and build a value chain for "(2) clean energy utilization" and "(3) CO2 recovery" for the future. We will contribute to the achievement of Thailand's decarbonization goal and the improvement of its competitiveness by applying know-how from projects in Japan and other countries around the world to Thailand.

Experience

In Thailand, we have introduced EMS (Energy Management Systems) to many factories and achieved energy savings. Regarding the utilization of hydrogen and ammonia, numerous projects for hydrogen- and ammonia-ready systems (capable of transitioning to clean energy

CCUS/ CARBON RECYCLING HYDROGEN RENEWABLE ENERGY



once the supply chain is established) have been secured in response to the global expansion of clean energy demand. Additionally, MOUs with multiple companies in Thailand have been signed, and discussions are underway. As for CO2 recovery equipment, we delivered the world's largest CO2 recovery plant in the United States and secures the top global market share in CO2 recovery from exhaust gases, leading the industry. For more details, please refer to our website.

Industry: Other manufacturing
Website: https://solutions.mhi.com/branch/our-solutions-to-reduce-greenhouse-gas-emission/
Contact: yoshifumi.maruyama.c4@mhi.com (Maruyama)
Affiliated Company in Japan: Mitsubishi Heavy Industries, Ltd.
Address: 548 One City Centre, 20th Floor, Ploenchit Road, Lumpini, athumwan, Bangkok 10330

MITSUBISHI HEAVY INDUSTRIES (THAILAND)

Miura Industries (Thailand) Co., Ltd.

CO_2 emission-free hydrogen boiler High efficiency hydrogen-fueled flow-through boiler

Message

In Japan, once-through boilers account for 77% of all boilers in terms of the evaporation volume. Miura Industries is a leading company in the Once-through boiler market with approximately 60% market share. MIURA INDUSTRIES (THAILAND) is the Thai local subsidiary company. In Thailand, we are similarly offering online maintenance, engaged in chemical manufacturing and water analysis, with maintenance sites in Chachoengsao, Bangkok, Rayong, Ayutthaya, Surat Thani, Prachinburi, and Chiang Mai. Currently there are over 1,300 of our boilers running in Thailand.

Service and Technologies

With its high boiler efficiency, Once-through boilers are widely used for heat source - the company developed a hydrogen-fired version of the boiler, and in January 2017, they became the first in Japan to commercialize the product capable of using 100%* hydrogen fuel (*Based on the company's own research).

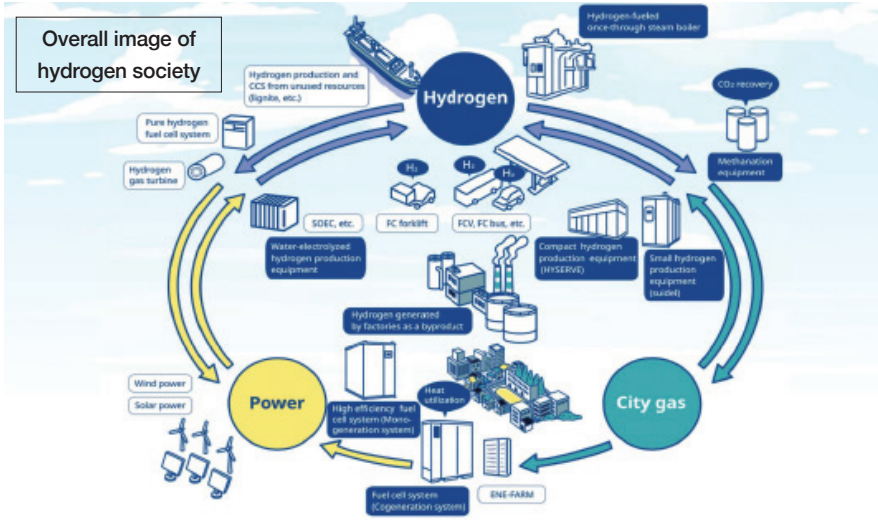
For the equipment used in hydrogen line, explosion-proof structures are used to prevent explosion from leaked gas.For the solenoid valves, hydrogen explosion-proof structures (d3aG4 or equivalent or higher) are selected for use. Also, as hydrogen burns at a high rate, a corrugated plate backfire arrester with high flame-extinguishing performance is adopted as standard.

Sustainability

The CO2 emission volume of steam boilers widely used for industrial heat source is said to account for around 6% of the total emission in Japan (direct emissions around 1,138 million in 2018). CO2 emission per 1 ton of steam (0.7MPa, 20 °C water supply) is approximately 355kg-CO2 for coal fuel, 243kg-CO2 for heavy fuel oil, and 161kg-CO2 for natural gas. On the other hand, for this product (hydrogen boiler), since the combustion only generate water, the CO2 emission volume during combustion is practically zero, making it an option towards achieving carbon neutrality.

Experience

At the moment, due to issues such as hydrogen price and supply chain, implementations have only been done in factories that generate byproduct hydrogen during production. However, since the first model was installed



in Okayama Chemical Co., Ltd., the boiler has been installed in more than 10 factories with byproduct hydrogen throughout Japan. The boiler was awarded "New Energy Fund Chairman's Award" by the New Energy Award in 2020, "Japan Machinery Federation Chairman's Award" for excellent energy saving machine system and certified as Ministry of the Environment's L2-Tech product. Also received the first ever certification for steam boiler (SI-2000AS-H2A, NOx = below 50pp(Conversion at O2=0%) by the low NOx equipment certification scheme). In 2023, AN-2000BS was launched which has a boiler efficiency of 105% and achieves suppression of NOx emission under 40ppm throughout the operating range. Tokyo Metropolitan Government low NOx/low CO2 small-scale combustion equipment certified it as "Grade HH" for the first time for a boiler with an evaporation capacity of 2,000kg/h.

Industry: Normal machine equipment manufacturer
Website: https://www.miuraz.co.jp/en/
Contact: miura-thai@miuraz.com
Affiliated Company in Japan: Miura Co., Ltd.
Address: 84/2 moo 9, Bangwua, Bangpakong, Chachoengsao 24130 Thailand

The Best Partner of Energy, Water and Environment
MIURA

MT AquaPolymer, Inc.

Polymeric flocculant that promotes a circular society
ARON FLOC C series, E series

Message

MT AquaPolymer, Inc. is a joint venture by Toagosei Co., Ltd. and Mitsui Chemical Inc. By integrating the polymer manufacturing technologies -mainly polymer flocculants as wastewater treatment chemicals, and technical services for wastewater treatment that have been developed by each company, we provide high-quality products and optimal solutions, aiming to improve the water environment in a sustainable manner.

Service and Technologies

Agents used as flocculants and dewatering agents for wastewater from a wide range of industries, including sewage, paper mills, chemical plants, and wastewater from the livestock industry. Polymer flocculant is an agent that flocculates, concentrates, and dehydrates wastewater for solid-liquid separation. By selecting a grade that matches the properties of the wastewater and adding the optimum amount, the volume of sludge can be efficiently reduced. The dewatered cake can also be adjusted to a low moisture content. We select and provide not only single grades but also blended grades of polymer flocculants suitable for the properties of organic sludge.

Sustainability

In Japan, livestock wastewater is dewatered by adding MT AquaPolymer's appropriate polymer flocculant. The dewatered cake can be aerobically fermented into compost, contributing to the promotion of a circular society. In the treatment of wastewater from livestock production and when discharged wastewater is allowed to settle naturally by staying in ponds as it is, evaporation of water and GHGs contained in the wastewater, such as carbon dioxide and methane gas from anaerobic conditions are released. On the other hand, the use of a polymer flocculant in livestock wastewater treatment, the use of an optimal polymer flocculant reduces the time spent in wastewater storage by solid-liquid separation, and the GHG released during the treatment is reduced.

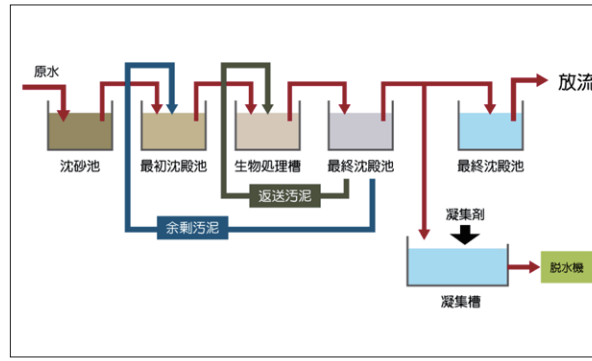
Experience

Sales record in Southeast Asia and China (via local distributors). By removing suspended solids as a solid during wastewater treatment, the load on the water environment can be reduced. In addition, the moisture content of dewatered cake can be lowered, it can be dried efficiently and used as auxiliary fuel for boilers as a raw material for cement or as a fertilizer. In the case of the use of polymer flocculant in livestock wastewater treatment,

The dewatering machine condition used Polymer flocculant of MTAP ~wastewater of food plant in ASEAN country~

This dewatering machine was used polymer flocculant of MTAquaPolymer. The load of dewatering process increased three times as the case of using domestic polymer flocculant.

the dehydration cake after solid-liquid separation can be converted into compost by fermentation as fertilizer for agricultural land. Crops grown on farmland can be used as livestock feed, thereby realizing a circular livestock production model. Similar utilization potential exists for the products that organic wastewater can produce.



Industry: Chemical, medicine, petrochemistry and coal product manufacturing
Website: http://mtaqua.co.jp/eng/
Contact: overseas_dept@mtaqua.co.jp
Affiliated Company in Japan: Same as above
Address: Ueno Building 3F, 2-6-2 Kajicho, Chiyoda, Tokyo 101-0044

MT AquaPolymer, Inc.

Musashi Asia Co., Ltd. (Musashi Energy Solutions Co., Ltd.)

Key device for a sustainable society
Lithium-ion Capacitor

Message

Lithium-ion Capacitor has a long service life, maintenance-free and highly safe. With these characteristics, they have been adopted in places such as power failure guarantee device and energy regeneration system for track transportation. As the technology development advances for further increased capacity, aside from creating a new market, it is also expected to be one of the key devices in creating the electric society. Musashi Energy Solutions will accelerate the expansion of energy solution business that contributes to the creation of a sustainable society.

Service and Technologies

Lithium-ion Capacitor (LIC) has a hybrid structure - it uses an activated carbonelectrode like an electric double layer capacitor as a positive electrode, and a carbon electrode like lithium-ion batteries as a negative electrode. By introducing pre-doping technology to this structure, it achieves a high level of performance that combines the advantages of both. It has a higher energy density (enabling high current discharge) compared to EDLCs, and higher output characteristics than lithium-ion batteries. It also features characteristics such as high safety, charge/discharge tolerance, excellent self-discharge characteristics, and wide operating temperature range.

Sustainability

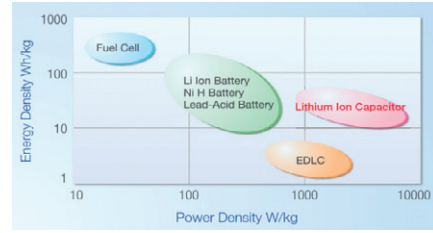
Our LIC can improve energy usage efficiency by means such as utilizing regenerativepower and saving energy on overall system by peak assist. Through our provisionof energy solutions for the various needs of customers, we will contribute to the realization of a sustainable society.

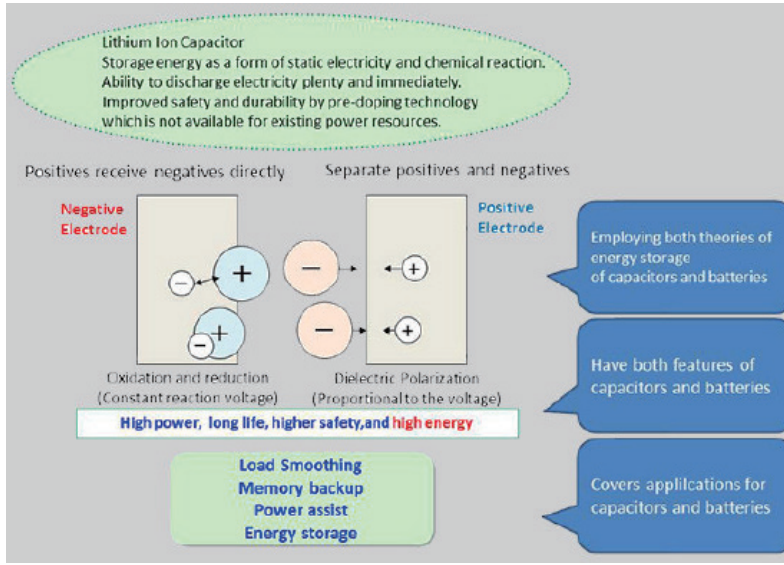
Experience

LIC is capable of high current charge/discharge. While maintaining a high safety, it hasa high tolerance for repeated charge/discharge with little self-discharge and wide operating temperature range.

[Application examples]

- Voltage Sag Compensator (downsized from conventional EDLCs).





- Auxiliary power supply for fuel cells (longer service life of fuel cell stacks by suppression of load fluctuation, and improved product value through output assist).
- Power source for transport machines like AGV (reduction of charging time loss and improved operation rate through rapid charging).
- Auxiliary power supply for automobiles, etc. (power supply even at low temperature, compatible with dual power sources for automated driving).
- Catenary-free Tram (rapid charging allows charging while stopping at stations, and improves maintenance ability by eliminating overhead wires.

Industry: Manufacturing
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Address: 8565 Oizumicho Nishiide, Hokuto, Yamanashi 409-1501, Japan

MUSASHI
Musashi Energy Solutions Co., Ltd.

Nagase (Thailand) Co., Ltd.

A low carbon soil-based pavement material to absorb and fixe CO_2 aiming to achieve zero carbon

Zero Carbon Soil

Message

Nagase is a specialized trading company in trading chemical products, with a history of more than 180 years. With over 100 subsidiary companies in and outside of Japan, we also actively engage in R&D, manufacturing and processing, etc. Nagase (Thailand) is currently promoting activities to search for items, technologies, and services that contribute to solving social and environmental problems from all over the world and introduce them to you, calling them Green Materials, in order to "realize a sustainable world where people can live with peace of mind". If you can provide solutions or are seeking solutions, please contact us.

Service and Technologies

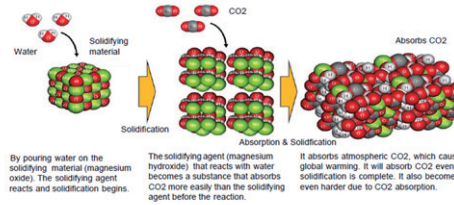
Zero Carbon Soil is a low-carbon paving material that is pre-mixed at the factory and consists of decomposed sand, natural sand or high-quality recycled sand, and natural inorganic precipitate (Kiyomaru-kun) from porous volcanic ash sediments, and easily absorbs CO_2 with magnesium oxide extracted from seawater, which has high strength and can fix CO_2. This paving material hardens and sets easily by simply spreading it evenly and watering it thoroughly. After construction, there is no need to remove weeds, and it can be used as a sidewalk immediately.
Research on CO_2 absorption and fixation is being carried out through demonstration experiments with Tokuyama College of Technology, Yamaguchi Prefecture.

Sustainability

The mechanism of CO_2 absorption and fixation starts when magnesium oxide combines with water to become magnesium hydroxide, which initiates the coagulation process, like gel. Then magnesium hydroxide absorbs CO_2 from the atmosphere through a chemical reaction, reducing the amount of CO_2 in the atmosphere. In addition to contributing to global warming, Zero Carbon Soil has also gained attention as a new solution to reduce industrial waste that directly impacts the environment. Because the starting materials are all natural materials, when the product reaches its end of life, it can be disposed of and returned to nature in an environmentally friendly manner.

Experience

So far, Zero Carbon Soil has been applied in a variety of projects, including: 1) Kudamatsu City Sports Park Walkway Improvement Project, in collaboration with Kudamatsu City Hall, Yamaguchi Prefecture, and the Town Planning Division; 2) Iwasa Area Existing Road Paving Project, in collaboration with the Construction Division of Hirono City, Fukushima Prefecture; -3) Wakabayashi District Weed Control Project, in collaboration with the Road Management Division, Construction Division, Wakabayashi Ward Office, Sendai City; 4) Nagahama Industrial Estate Public Land Weed Control Project, in Izumo City; 5) Tomioka City Tree Planting Corridor Construction Project, in collaboration with the Urban Development Division of Tomioka City, Fukushima Prefecture; 6) Yura River Namimatsu District Weed Control Improvement Project, in collaboration with the Ministry of Land, Infrastructure, Transport and Tourism, Kinki Regional Development Bureau, Fukuchiyama River Office, and National Highways, etc.



Industry: Trading
Website: https://group.nagase.com/th/labobio/green-materials
Contact: akira.sato@nagase.co.jp (Sato)
Affiliated Company in Japan: Nagase & Co., Ltd.
Address: No. 952, Ramaland Bldg., 14th Floor, Rama IV Rd., Kwaeng Suriyawongse, Khet Bangrak, Bankok, 10500 Thailand

NAGASE
Delivering next.

NISSHINTOA IWAO Inc.

A low carbon soil-based pavement material to absorb and fixe CO2 aiming to achieve zero carbon

Zero Carbon Soil

Message

NISSHINTOA IWAO is a mid-sized at the merger trading company was establishedin October 2016, at the merger between Iwao Co., Ltd., founded in 1901, andNisshin Toa Co., Ltd., which has a root inToa Jitsugyo Co., Ltd. founded in 1940.It is a wholly owned subsidiary of Nisshinbo Holdings, Inc. The products we handle are wide range, including foods (wheat flour,oils and fats, processed marine products, processed meat products, etc.), textiles (general textiles, sports apparel, kids wear, etc.), industrial materials (housing- related products, various machinery equipment and parts, long fans, etc.), and so on. Outside of Japan, we have a locally registered subsidiary in Shanghai, and have been working on business expansion to SEA region as our new business. We are committed to overseas expansion - we have opened an office in Thailand, and also have experience setting up a business in Laos.

Service and Technologies

All our air transport fan products are made in Japan, capable of removing stagnant air indoor and making the air-conditioning of the space more comfortable. They also minimize condensation and forming of mold.
The product characteristics are;

(1) By utilizing cross-flow fan to generate 8m wide pharyngeal flow, it is effective in ventilating a wide space.
(2) As the internal friction of airflow is little, there is little energy loss, enabling alonger reach.
(3) It generates less noise compared to other fans like propeller fans.

Sustainability

Compared to ventilation with the conventional air-conditioning, long fans can ventilate more effectively, leading to reduction of energy usage. As long fans can ventilate without the need for an air duct, it can replace the conventional big-sized fans, leading also to a considerable reduction of energy consumption.

Experience

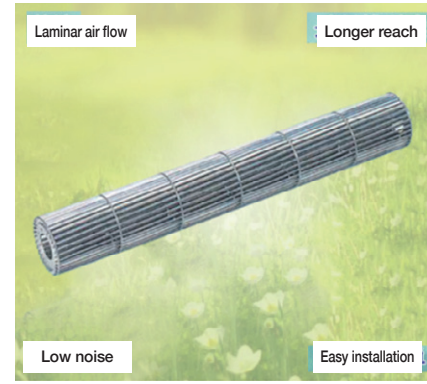
[Japan]
over 3,000 implementations domestically
Most companies implement this product

not only as a solution against condensation resulting in the forming of molds, but also to optimize energy usage by ventilating the indoor air and maintaining temperature. Increasing numbers of companies are utilizing the product in agricultural industry, in places like greenhouses and plant factories too.

Major places of installation: basement parking lots, logistic warehouses, logistic centers, multi-level storage warehouse, markets, factories, basement pathways, cleaning factories, stores.

[Overseas]

- Vietnam: 200 fans installed in a Japanese electric component factory.
- Hong Kong: 700 fans installed in places such as basement parking lots.t



Industry: Trading
Website: http://www.nisshintoaiwao.co.jp/
Contact: nti-shinjo@nisshinbo.co.jp
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Address: 2-30-8 Nihonbashi Ningyocho, Chuo-ku, Tokyo 103-0013 (Nisshinbo Annex)

NISSHINBO

NMB-Minebea Thai Ltd.

Smart city concept with IoT lighting equipment as its core

Next generation LED street lights with high extensibility

Message

MinebeaMitsumi group produce a wide range of electronic components from ball bearings to precision machining parts. Currently, we have 93 bases in 22 countries across the world, and Thailand has the highest production volume of all. With our high technical capabilities and high quality, we also develop environmentally conscious products.

Service and Technologies

Energy-saving road lamps with high energy efficiency as compared to normal road lamps andstandard LED road lamps. The high uniformityof light ensures the road is evenly lit. It can alsobe centrally managed and is highly scalable. By combining various sensors with the unique network structured by the road lamps, functions related to the city life can be centrally monitored. The energy consumption of road lamps is high due to the fact that they often stay on throughout the night for safety reasons. By implementing this product, reduction of energy use can be expected.

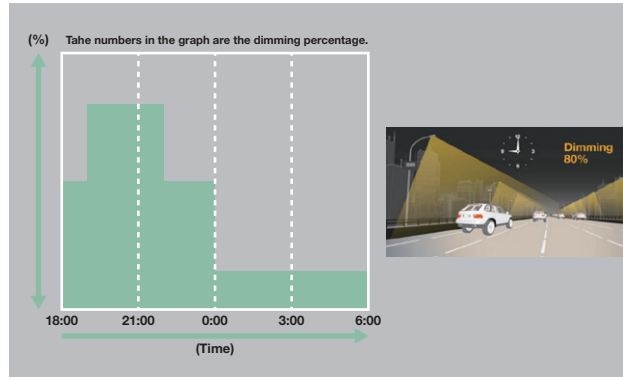
Sustainability

Smart road lamps is capable of a wide range of light adjustment depending on factors.
At times like midnight when the traffic is low, brightness can be reduced while still ensuring safety with these adjustments it can reduce maximum 80% of energy waste and contribute to the reduction of CO2 emissions. It can also help with disaster prevention and reduction by connecting with an environmental sensor which can simultaneously measure eight items including the temperature and humidity, or a water gauge, Lighting equipment will not only help light the streets but also play a role in saving energy, improvement of city life convenience and safety.

Experience

In Thailand, 167 lamps have been installed as part of the joint research on AI City with Thammasat University. In Cambodia, with the support of Japan's Ministry of the Environment, they installed 5,672 lamps as part of JCM project, and demonstrated its energy saving effect by 60-70%. They are expected to reduce 559 tons of CO2 per year.
In the case of environmental sensor, they conducted an experimental study of "operation related to improving the accuracy of solar radiation forecasts by utilizing smart lighting data" in collaboration with Japan Weather

Association, and are verifying the accuracy improvement effect on solar power generation forecasting.



Industry: Electrical and electronic
Website: https://www.minebeamitsumi.com/english/
Contact: tksaoki@minebea.co.th
Affiliated Company in Japan: MinebeaMitsumi, Inc.
Address: 19th Floor, Wave Place Building 55 Wireless Road, Lumpinee, Pathumwan, Bangkok 10330 Thailand

MinebeaMitsumi
Passion to Create Value through Difference

PEEL Lab K.K.

New leather-like material made from wasted pineapple leaves
Pineapple HYDE

Message

PEEL Lab is the first business platform for plant-based leather in Asia. Founded in February 2022, we are base in Osaka. Our main business is upcycling fruit peel to manufacture plant-based leather that is inexpensive, light-weighted, and has high waterproof and durability. This vegan leather can be used in the interior of automobiles, furniture, and fashion items. Our business model is mainly B2B, having manufacturing companies of various products as our customers.

Also our products are eco-friendly, as they contribute to restraining global warming, food loss, and prevention of animal abuse.

Service and Technologies

Leathers at PEEL Lab are made by upcycling plants (pineapple leaves, coconuts and bamboos). Pineapple leather consists of 40% pineapple leaves, 30% resin, and 30%. r-PET. This leather is affordable, light-weighted, and has high water resistance and durability. It is an eco-friendly material/technology that can be used for the interior of automobiles, furniture, fashion items, etc.

Sustainability

There are numerous issues in the leather industry - more than 50million animals per year are sacrificed for manufacturing leather products, and 80% of the manufactured leather are being disposed of. Also, 83billion gallons of water is used to process leather products each year, and most of it are used without being processed. On the contrary, PEEL Lab products and technologies are highly eco-friendly and contribute to minimizing food loss and prevention of animal abuse. Additionally, in the manufacturing of the conventional leather, 107kg of CO2 is emitted per 1m2 of leather. However, PEEL Lab's vegan leather can reduce the emission to 4kg. This amount is lower than the CO2 emitted by the simple act of eating a hamburger.

Experience

120m pineapple leather previously sold in Japan and Thailand. Apart from this, we are also developing other products such as "PinaSeru", table mats (Folio Brand), tissue box (Folio Brand), shoes (Locusshoe), chairs (Modernform) and so on. The plant-based




leather of PEEL Lab has over numerous members and supporters, and has been certified by the most prominent animal welfare organization (PeTA). It was awarded. the second place at Japan's Creative Business Cup, and at the French Business Award 2022 held by the French Chamber of Commerce in Japan, it received the "Sustainable Development Award", garnering attention from organizations not only in Japan but also overseas. Additionally, we have joined SDGs Challenge, a support program for SDGs-related startups jointly organized by United Nations Office for Project Services (UNOPS) and the city of Kobe, and have been working on the development of a new material.

Industry: Textile, apparel, leather/fur, decorative item manufacturing
Website: https://www.peel-lab.com/
Contact: info@peel-lab.com
Affiliated Company in Japan: Same as above
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2-3-6, Minami-semba, Chuo-ku, Osaka, 542-0081

PEEL LAB

RECOMM BUSINESS SOLUTIONS (Thailand) Co., Ltd.

Next-generation LED lighting RENTIA Demand control system specializing in air conditioning Ai-Glies

Message

Wherever the lights are turned on, such as in offices and factories, there is a possibility that the cost of electricity can be lowered by using our products. This also leads to CO2 reduction at the same time, making it an effective step for companies that aim to reduce CO2 as an environmental measure. Please let us know if you are considering installing or switching to our products.

Service and Technologies

RENTIA is a new generation of LED lighting that is brighter, more energy-efficient, and more eco-friendly than conventional lighting, which has been popular until now. The straight tube type has a light distribution angle of 300°, and the high-bay type has a light distribution angle of 90° to 120°, illuminating a wider area. It also has high luminous efficiency, achieving an illuminance of 200 lumen/W. Ai-Glies Demand control system specializing in air conditioning and centralized management by "CLOUD".

- Main Features : Automatic control by outdoor air conditioner and save electric charge.
- Able to save electric charge use thinning operation (24 hours / 365 days) By blowing air for 10 to 30% of the air conditioning operating time depending on climate.
- Peak cut of demand value.
- Reduce construction cost by solar panel and wireless.
- Centralized management by "CLOUD" : Able to change control setting by remote.

Sustainability

[RENTIA]
Reduce power consumption by simply replacing existing lighting with high-efficiency lighting. Since the same equipment (frame) can be used continuously, there is no need to waste existing equipment. In addition, the high-bay type has a switch that adjusts the output in three stages, allowing you to increase the illuminance by increasing the output when the illuminance decreases over time. This also reduces the time and cost of replacing the lighting itself. They reduce fossil fuels used for thermal power generation and at the same time reduces CO2 emissions, contributing to the preservation of the earth's environment.

[Ai-Glies]
Demand control system specializing in air conditioning make "Estimated Reduction

Effect" (Confirm reduction of electric charge and CO2 amount)

Experience

About 1,100 companies in Thailand, mainly manufacturing companies operating factories in Thailand, have installed our LED lighting and other energy-saving products.
Additionally, about 3,200 companies in areas including China, India, and the ASEAN region have installed our similar lighting products.

Industry: Retail / Wholesale
Website: https://www.recomm.co.jp/
Contact: na.shimizu@recomm.co.jp
Affiliated Company in Japan: RECOMM Co., Ltd.
Address: 12F MS&AD Insurance Group Shinjuku Bldg.,
3-5-3, Yoyogi, Shibuya-ku, Tokyo, 151-0053 Japan

Sagri Co., Ltd.

Soil analysis, fertilization optimization, and decarbonization of farmland using satellite data

Generation and sale of agriculture-derived carbon credits

Message

We are an impact startup founded in 2018 at Gifu University. In 2023, we were certified as J-startup Impact by the Ministry of Economy, Trade and Industry. With subsidiaries in Singapore and India, we are expanding our business not only in Asia but also in Africa and Central/South America, and we have strengths in overseas expansion. We will participate as a speaker at COP28 in Dubai in December with a nomination by the Japanese government.

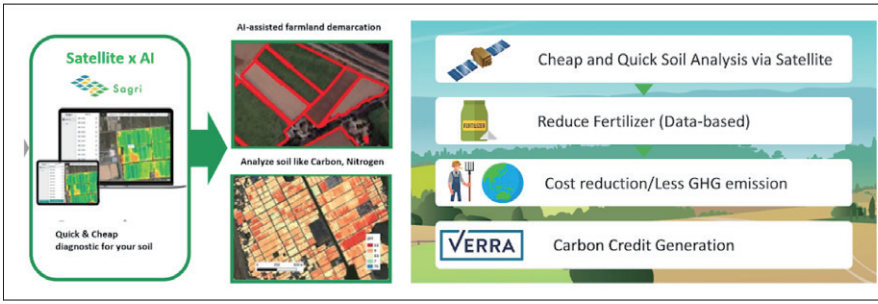
Service and Technologies

- Using satellite data analysis and the power of AI, we will perform soil analysis on farmland and optimize fertilization. By reducing the excessive use of chemical fertilizers, we will reduce greenhouse gas emissions and generate and sell carbon credits that provide additional income to farmers.
- Our business model is to partner with agricultural companies, food companies, and agri-tech companies that have a network of farmers to implement the carbon credit generation business and distribute the profits from the carbon credit generation (no initial cost).

*Companies interested in purchasing carbon credits are also welcome to contact us.

Sustainability

- The reduction of chemical fertilizers reduces nitrogen monoxide, a major contributor to greenhouse gases, and the use of organic fertilizers and biochar increases carbon storage, thereby reducing our impact on climate change.
- The profits from the sale of the carbon credits generated are returned to the farmers,so there is sustainability in terms of creating additional income and improving the livelihood of the farmers.



Experience

- In Japan, there are public works projects with central government ministries and local governments as clients, as well as farming and carbon credit projects. For overseas, we engaged mainly in farming and carbon credit projects.
- In Thailand, we are conducting a rice methane reduction pilot project with Kasetsart University. In Vietnam, we are conducting a sugarcane soil carbon credit project, which we hope to expand to Thailand as well.
- In the past, we have participated in many overseas projects related to the Japanese government, such as JICA/JETRO/Ministry of Agriculture, Forestry and Fisheries/Ministry of Economy, Trade and Industry projects.

Industry: Agriculture, Forestry and Fishery
Website: https://sagri.tokyo/en/
Contact: contact@sagri.co.jp
Affiliated Company in Japan: Same as above.
Address: 725-1 Joraku, Hikami-cho, Tamba City, Hyogo, Japan

Sagri

Sharp Solar Solution Asia Co., Ltd.

Solution for reducing electricity expenses and CO2 emissions

Installation of solar power generation system

Message

We aim to actively contribute to the implementation of a decarbonized society by promoting the adoption of solar power generation system, with a focus on the following three strengths:

1. A comprehensive service system that includes the manufacture of PV modules, procurement, design, construction, and maintenance of solar power systems, with support available in Japanese, English, and Thai.
2. A proven track record of utilizing Japanese government subsidies (JCM) and supporting applications to Thai government agencies for related projects.
3. Customized monitoring systems tailored to meet specific needs.

Service and Technologies

We are strengthening solar power generation system for proposing solutions to meet the increasing demand in environmental contributions by generating the electricity needed for corporate activities through self-consumption of renewable energy, as the efforts towards SDGs promotion and achieving carbon neutrality are gaining attention among corporate customers. Currently, we are responding to strong demand from Japanese companies and local leading companies in the ASEAN region. Furthermore, we continue to promote the construction of Large-scale solar power plants across the world. In Thailand, there are some cases where investment payback within 3 years is achieved by applying BOI tax incentives (EPC).

Sustainability

We aim to provide clean energy generated by solar power generation system installed on factory rooftop and available spaces, reducing CO2 emissions by suppressing the use of fossil fuel-derived electricity and contributing to environmental management. Ultimately, our goal is to encourage the environmental burden reduction. Additionally, we are working towards improving the technology of energy management that generates, stores and

intelligently utilizes clean energy with Battery energy storage system to achieve a sustainable society and environment for the future.

Experience

Sharp Solar Solution Asia has been carrying out the solar business in Thailand since 2011 and has achieved more than 100 projects (Total capacity is more than 300MWdc). In addition, we have numerous tracks of installation in the ASEAN region other than Thailand (Total capacity is more than 700MWdc), which has elevated our vigorous presence in the global market. As part of our efforts, we not only offer the EPC scheme mentioned above but also provide "Zero Initial Investment (PPA)" solar power services. We are actively meeting the demand and promoting the adoption of solar power generation system for many companies. In our affiliated companies in Japan, we have more than 60 years of experience in development of solar PV module and sales record (Total capacity is more than 1,400 MWdc). With the entire group working together, we have established the organization structure to promote broadly the usage of renewable energy.

Other technology

[Solar power generation system with Battery energy storage system]

You can store the excess electricity generated during the day in a battery and use it during nighttime production activities or during demand-peak on daytime. This allows for the efficient and maximum utilization of renewable energy.

Industry: Construction, Construction Industry (Construction, Civil Engineering, Equipment, etc.)/ Other Manufacturing Industry/ Electricity/ Gas/ Water Industry
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info@sssa.sharp-world.com (TH, EN, JP)
Affiliated Company in Japan: Sharp Corporation
Address: 952 Ramaland Building, 15th FL, Rama 4 Road, Suriyawong, Bangkok 10500

SHARP
Be Original.

Shin Nippon Machinery Co., Ltd.

Generating clean energy Steam turbine

Message

Waste incineration power generation will not only help to solve social issues of environmental hygiene with its contribution to achieving carbon neutrality by biomass power generation, but will also help in reducing methane gas emission, which has higher greenhouse effect than CO_2. By installing our steam turbine as the drive of such power generation system, we will ensure a highly efficient, trouble-free operation and contribute to the energy supply that is appropriate for a decarbonized society.

Service and Technologies

Steam turbine that can be installed as power equipment for driving generators in distributed power generation plants(small to medium scale) fueled by biomass fuels or waste which maintains the extraction pressure even when the extraction flow rate fluctuates and can control up to 90% of the extraction flow ratio. For more than 70 years since its establishment, the company has been working on cost saving, high quality, high precision, high added value, and immediate response. In Thailand, the company provides highly efficient, trouble-free, and safe operation with sufficient after-sales service by its local office.

Sustainability

By using this high efficiency turbine for biomass power generation and waste incineration power generation that uses urban waste as its fuels, the company will contribute tothe decarbonized society in terms of promoting use of renewable energy. Also, waste incineration power generation can contribute to solving environmental hygiene issues arising from urban waste landfills that are hard to manage, as well as the issue of methane gas emissions from waste, which has an even stronger greenhouse effect than carbon dioxide.

Experience

The company had been carrying out installation of steam turbine in Thailand's sugar manufacturing companies since before biomass power generation became popular 50 years ago, and their products have been contributing as the main machine for power generation equipment that uses bagasse as its fuels. Until now, their supply of steam turbines has expanded to 80 countries with total of 2,100 machines across the world. This steam turbine is used in places such as the steam supply machine for airconditioningin Suvarnabhumi Airport, and as a power supply for the major industrial areas in Thailand.

Industry: Normal machine equipment manufacturing
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Contact: (+81) 03-6737-2634
Affiliated Company in Japan: Same as above
Address: ThinkPark Tower, 1-1, Osaki 2-Chome,
Shinagawa-Ku, Tokyo, Japan 141-6025

新日本造機株式会社
SHIN NIPPON MACHINERY CO., LTD.

Shizen International (Thailand) Co., Ltd.

Clean energy implementation that can be started right away Solar energy corporate PPA

Message

We are a company that is working towards promoting the lifestyle with safe and sustainable energy by building natural power plants across the world. In Japan, we have developed approximately 1GW worth of renewable energy power plants. Our overseas businesses began in 2016, and currently we have solar power and wind power businesses in Malaysia, Thailand, Vietnam, Indonesia, the Philippines, and Brazil. Shizen Energy Group aims to engage in 10GW worth of power generation businesses across the world by 2030.

Service and Technologies

Solar energy PPA (Power Purchase Agreement) for the manufacturing industry. As customers do not need to bear the installation cost of solar energy system themselves, they can purchase clean energy for a long term (15 to 20years) without initialcost or operating cost. The service also provides comprehensive solutions to renewable energy including the implementation of storage batteries.
To further promote CO2 reduction efforts, we engage in the sale of environmental certificates. This allows the acquisition of 100% renewable energy-derived environmental value without altering electricity contracts or installing additional equipment. Customers can purchase only the necessary amount for their needs, enabling them to gain recognition under international initiatives such as CDP and RE100.

Sustainability

In the emerging trend where it is unavoidable for many companies to implement renewable energy, the means of procurement is highly limited. Solar energy corporate PPA is an effective method to implement clean energy in such situation as it doesn't require an initial investment.

Experience

[Example 1]
In February 2022, Panasonic Energy Thailand (PECTH), a leading battery manufacturer in Thailand, signed a long-term power purchase agreement (Corporate PPA) utilizing a 1,169 kWp rooftop solar power system. By adopting clean and cost-competitive renewable energy at its factory in Samut Prakan Province, PECTH aims to reduce electricity costs while cutting

approximately 13,745 tons of CO2 emissions over the 20-year contract period.

[Example 2]
On 29th October, 2020, they signed a corporate PPA with Aisin Thai Automobile Casting (ATAC), Thai local subsidiary of Aisin group (Toyota group). A 1MW solar power system was installed on the roof of ATAC's factory in Kabinburi Industrial Zone, Prachinburi on 26th April, 2021. PPA for an additional 2.7MW for expansion was signed in November 2021.

Industry: Electricity, gas and water service
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SHIZEN ENERGY

Siam Somar Co., Ltd.

Recycling waste organic solvents used in cleaning Distillation and regeneration of used organic solvent

Message

Siam Somar Co., Ltd. manufactures and sells epoxy adhesives, surface protection agents and encapsulants, and sells shading films, highperformance films, protective films,solvent regeneration equipment, and food additives. We have an abundance of experience in the automotive, electronic, and food industry, and have been growing as a company with both trading and manufacturing functions.

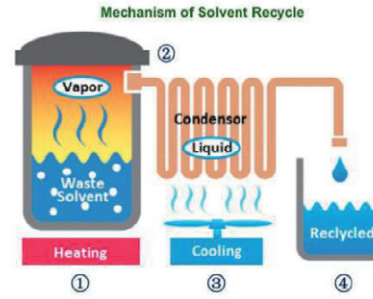
<Reduction of environmental burden with 3R promotion> Our factory has acquired ISO14001, and we are manufacturing environmentallyfriendly products to play our part in the preservation of the environment.

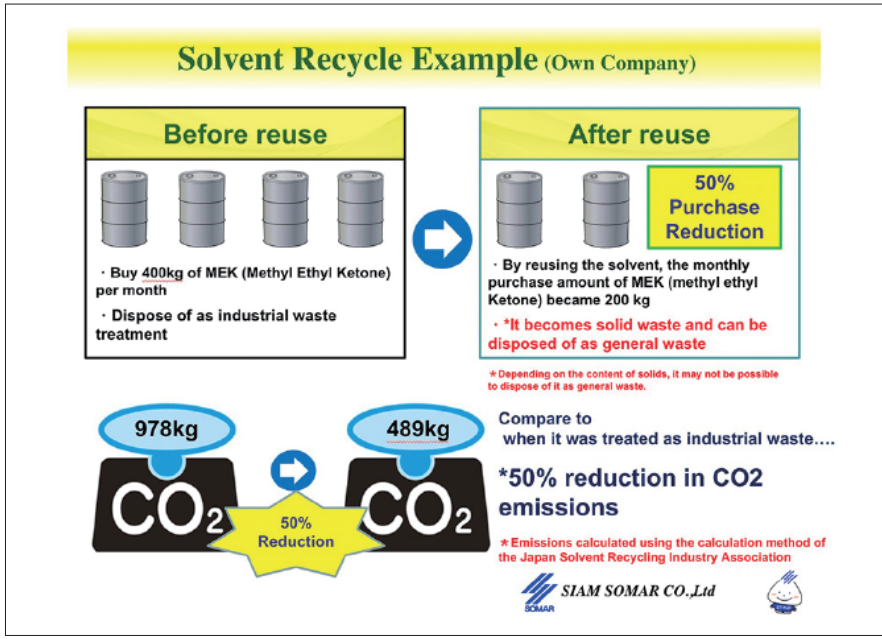
Service and Technologies

A solvent recycling business that collects used organic solvents, remove impuritiesfrom them and regenerate them. Waste solvents such as hydrocarbon solvents, alcohol solvents, ketone solvents, ester solvents, and brominated solvents are vaporized and liquefied by cooling fans to regenerate the solvents. This service will collect waste solvents from customers and return the regenerated solvents.

Sustainability

While used organic solvents will emit carbon dioxide when going through heat treatment for disposal, by recycling them with this service, not only can we reduce waste but also contribute to the reduction of CO2 emissions. Also, distilling and regenerating used solvents and cleaning agents in factories and offices will allow recycled use of the solvents and cleaning agents. This way, cost of purchasing new liquids and industrial waste disposal costs can be significantly reduced, thereby saving resources and reducing the environmental burden.





Experience

In the case of a company that used to purchase 400 kg of MEK (methyl ethyl ketone) per month and disposed waste solvents as industrial waste before switching to the regenerated solvents, their new purchase volume of MEK reduced to 200 kg per month after adopting this service. Also, by using the regenerated solvents, CO2 emissions were reduced by 50% as compared to what it would have been if the solvents were treated as industrial waste (calculated with the calculation method by Japan Solvent Recycling Industry Association). In the case of Siam Somar themselves, the waste generated from solvent recycling was able to be disposed as normal waste, so they managed to reduce disposal cost. *Depending on the solid contents, there are cases where it cannot be disposed as normal waste.

Industry: Trading
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SIAM SOMAR CO., Ltd

Siam Takuma Co., Ltd.

From biomass and waste to utilization of steam, electricity, and CO_2 Biomass / Waste to Energy plant

Message

Takuma is a company providing waste treatment, water treatment, and energy plant businesses - which is exactly why we take "environment" and "energy" very seriously. Since 2021, we have been incorporating ESG into our activities and aiming to maintain our role of being an indispensable presence in society over the long term sustainably. We have a long-time accumulated experience in the waste treatment and biomass power generation industry with our own combustion and boiler technology. In Thailand, we can provide services such as plant delivery, commissioning, and aftersales support.

Service and Technologies

Various scales (around 2MW to over 50MW) of Biomass Power plant / Waste to Energy plant supplied with our own technologies of combustion and boiler is our major business. Based on our extensive experience and knowhows, we select and design the optimum combustion method and boiler. Also, by reducing power consumption of auxiliary equipment and unburned portion, we supply plants that can operate stably with high efficiency (excellent energy saving performance).

Sustainability

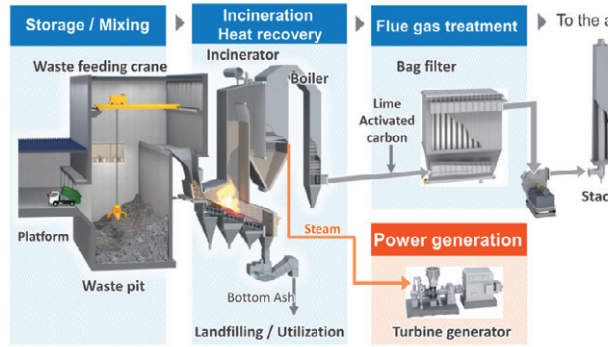
By efficiently utilizing biomass fuels, agricultural residues, and wastes, we contribute to prevent air pollution and greenhouse gas emission from activities such as open field burning, and at the same time create energy sources such as steam and electricity. By promoting resource utilization and renewable energy, we will contribute to reduce CO2 emissions and realize a decarbonized society.

Experience

The biomass power plant and combustion gas purification system installed in Okayama, Japan which were completed and started operation in March 2019, are located next to a greenhouse for vegetable cultivation. This plant uses lumber from nearby regions and imported woods such as palm kernel shells (PKS), and is successfully operating a sustainable operation as a biomass tri-generation plant that supplies three types of energy necessary for operation of the facility - electricity, heat for heating and cooling use, and carbon dioxide for promoting vegetable

RENEWABLE ENERGY ENERGY EFFICIENCY WASTE REDUCTION

growth. In this project, we helped achievement of the customer's innovative concept of biomass tri-generation through joint efforts such as experimental study.



Industry: Other manufacturing
Website: https://www.takuma.co.jp/english/
Contact: info@siamtakuma.com
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TAKUMA

Sojitz (Thailand) Co.,Ltd.

Transform agricultural residue to sustainable biomass fuel for carbon neutrality

Message

Sojitz (Thailand) Co., Ltd is a subsidiary of Sojitz Corporation which is a leading trading company in Japan.

In 2004 Sojitz (Thailand) Co., Ltd was formed out of the union of Nissho Iwai (Thailand) Limited Partnership and Nichimen (Thailand) Co., Ltd. Our three core businesses are plastic, chemical, and consumer lifestyle and agriculture. Sojitz is engaged in a wide range of businesses globally, including manufacturing, selling, importing, and exporting a variety of products, in addition to providing services and investing in diversified businesses, not limited only in Thailand, including Japan and worldwide.

Service and Technologies

Sojitz would like to introduce our sustainable products from agricultural residues. Our products; biomass pellet, wood pellet and sugarcane leave briquette could be used as alternative fuel to produce renewable electricity, thermal energy, or transportation fuels with high calorific value and low carbon footprint. By advanced technology and high quality standard, our products are international certified by FSC, PEFC, and ISCC. The product itself is tested for the chemical substance to pass the export standard to many factories and power plants in Japan and overseas. We also offer a wide range of decarbonization solutions, including biomass boiler technology, carbon credit report, and green finance.

Sustainability

Sojitz is concerned about the environment issue especially PM2.5. We strongly realize the big impact from outdoor burning agricultural residues in Thailand every year. Therefore, we agreed with our partners to handle this issue by collecting and utilizing the agricultural residues as alternative fuel which is sustainable solution. Our biomass fuel products have been tested by the leading institutions that certify the product properties to help reduction of greenhouse gas emissions and effectively reduce the usage of fossil fuel energy which is response to our customers' sustainability policy. It is not only about the environment issue, but also increase the farmer's income at the same time.

Biomass Pellet

RENEWABLE ENERGY BIOMASS/ INNOVATIVE MATERIAL WASTE REDUCTION

Wood Pellet

Sugarcane Leaves Briquette

Experience

Sojitz is committed to co-developing products with our partner companies to offer products and services that are environmentally conscious and geared toward sustainability in the future. Our products have received the certifications from the leading institutions which are not only accepted by power plants and factories in Thailand. Sojitz has also been trusted to export our biomass fuel products to power plants in Japan.

Other technologies

[Bio-based PE] Sojitz is the authorized distributor of Braskem Bio-based PE, offering our customers the sustainable solution to reduce GHG emission. Bio-based PE represents a significant step towards sustainable future. The raw material is derived from sugarcane into Bio-ethanol, this bio-based polyethylene offers a renewable alternative to traditional petroleum-based plastics. Bio-based PE maintains the same quality and performance standards as conventional PE, making the drop-in solution for businesses looking to adopt more sustainable practices. Its versatility allows for a wide range of applications across various industries.

Braskem Bio-based PE

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sojitz
New way, New value

SPACECOOL INC.

Zero Energy Radiative Cooling Material SPACECOOL®

Message

Materials-based startup from Japan. Since its establishment in 2021, the company has launched a diverse product lineup for various construction needs, such as film, canvas, membrane materials, and magnetic sheets in Japan, Thailand, Saudi Arabia, etc. The use of our product is expanding both in Japan and overseas, including in the Gas Pavilion at Expo 2025 in Osaka, Kansai. In addition to being selected as an exhibitor two years in a row at the Japan Pavilion of COP27 and COP28, our product has also won the Environmental Startup Award, the Minister of Land, Infrastructure, Transport and Tourism EcoPro Award, and was selected for the PwC Middle East Net Zero Future50.

Service and Technologies

In addition to blocking heat from sunlight to reduce heat absorption, SPACECOOL® is a radiative cooling material that also discards heat by radiating it out into space, achieving a cooler temperature than the outside air with zero energy consumption. Various products are being developed to enhance comfort and safety, and to alleviate the effects of global warming by achieving a cooling effect with no energy consumption.

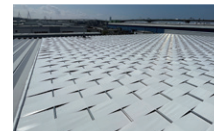
Sustainability

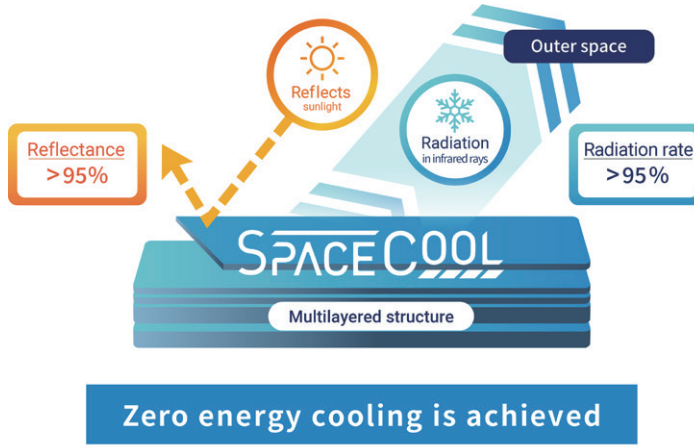
In today's world, there is a vicious cycle in which a great deal of energy is used for cooling due to global warming and industrial development, leading to an increase in greenhouse gas emissions, and further contributing to global warming. By using SPACECOOL® at the buildings, we can cool the spaces in which people work and live without consuming energy, thus dealing with thermal challenges in a very simple and efficient way.

Experience

Since the official product launch in 2022, it has been tested and fully adopted by many customers in Japan and around the world and





has contributed to solving thermal issues in various outdoor applications.

Solving Thermal Issues for Outdoor Electrical Equipment

After we installed SPACECOOL® on an outdoor distribution board at a large-scale shopping center (Mitsui Shopping Park LaLaport Kadoma), it significantly reduced the heat from sunlight that affects electrical equipment which helped prevent equipment failure and degradation. SPACECOOL® is increasingly being introduced for outdoor equipment all around the world.

Buildings

By installing SPACECOOL® on the roofs of factories and warehouses (concrete roofs, metal roofs), We have a track record of decreasing heat entering into the room by more than 35°C, and it reduces the transfer of heat into buildings. It has also been demonstrated to reduce the use of electrical power for air conditioning.

Heatstroke Countermeasures

Heatstroke mitigation products such as sunshades, parasols, and tents are being developed in response to the increasingly intense heat waves each year. Demand is increasing for products used for leisure and outdoor activities.t

Industry: Other manufacturing industry
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Sun-up Corporation (Thailand) Limited

Total solution provider for environment and recycling sphere

3Rs solutions for industrial waste, water treatment, energy saving

Message

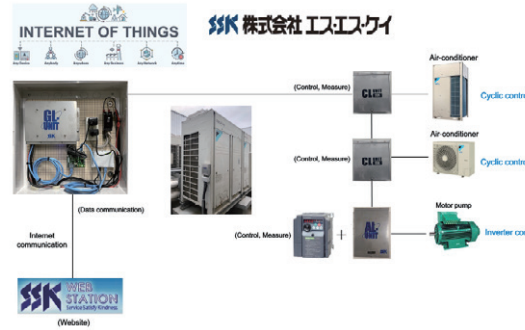
We've engaged in environmental and recycling business since 1997, so that SDGs, ESG, carbon neutral are not new words for us. We're surely able to provide 3Rs solutions for industrial waste, water treatment and energy saving. We can provide various solutions except for 3 solutions which are mentioned in this brochure. It's highly appreciated if you could ask us when you have any issues regarding our solutions. Moreover, we're interested in various environmental and recycling equipment, which have cutting-edge technologies.

Service and Technologies

We provide comprehensive solutions to reduce waste, cost and CO2 at manufacturing process through proposing 3Rs solutions for industrial waste, water treatment and energy saving. Our subsidiary, Rock Engineering Co., Ltd. is the maker of distillation plant, which can treat highly-contaminated wasted water such as wasted coolant water, wasted heavy metal water, wasted paint water, etc. Our other subsidiary, Sun-up Recycling Co., Ltd. provides recycling wasted organic solvent service. We supply high-purity recycled organic solvent through conducting quality-assurance analysis for every single shipment.

Sustainability

1.Highly-contaminated wasted water: Reduce waste and waste treatment cost through recycling wasted water. Recovery rate would be 80-90%, and recycled water can be used at manufacturing process.
2.Recycling wasted organic solvent: Reduce waste, waste treatment cost and purchasing virgin organic solvent cost through recycling wasted organic solvent. Recovery rate would be 80-90%, and recycled organic solvent can be used at manufacturing process.



3.Energy saving for air-conditioner and chiller: Reduce electric consumption and CO2 around 20% through adopting IoT cyclic control and inverter.

Experience

1.Highly-contaminated wasted water: We've provided our products for more than 30 customers in Thailand and more than 10 customers oversea market. These customers have difficulties on disposing highly contaminated wasted water such as high BOD, high COD, high TDS, high grease & oil wasted water.

2.Recycling wasted organic solvent: We've conducted recycling wasted organic solvent service for more than 60 customers in Thailand. There customers have washing process, cutting process, degreasing process, plating process, painting process, etc.

3.Energy saving for air-conditioner and chiller: We've installed our systems for more than 40 customers and 600 units of air-conditioners and chillers in Thailand. These customers have assembly room, QA/QC room, server room, where are required for air-conditioning. We also provide ESCO service, which enable customers enjoy cost merit without any investments.

Industry: Environmental/recycling busines
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TAISEI (THAILAND) CO., LTD.

Buildings, factories, etc. “Energy Conservation and Energy Creation” Total Solution

Service and Technologies

Taisei Corporation focuses on developing and implementing energy-saving technologies like ZEB (Zero Energy Building) and promotes renewable energy projects and hydrogen use. We also develop a diversified carbon neutrality business, including efficient EMS operations and innovative building materials for decarbonization. TAISEI (THAILAND) CO., LTD. will actively propose and implement these technologies in Thailand in cooperation with the Japan head office.

Sustainability

TAISEI (THAILAND) CO., LTD. will significantly contribute to decarbonizing not only urban office buildings but particularly factories through carbon neutral technologies in Thailand. We aim to enhance factory energy efficiency and reduce CO2 emissions by introducing energy-saving and renewable energy technologies. Thus, we support global sustainable industrial activities and reduce local environmental impact, promoting sustainability. Our strength is in total management combining multiple technologies.

Experience

Example of Energy-Saving in a New Factory: ZEF
Zero Energy Factory No. 1
At the OKI Honjo Plant H1 building (completed in 2022), we have realized ZEF, which is the factory version of the ZEB index. ”ZEF” is a new evaluation axis devised by Taisei Corporation. We have reduced energy consumption by 75% from the standard value (existing actual value), and the planned value is “Nearly ZEF”.

HYDROGEN RENEWABLE ENERGY ENERGY EFFICIENCY

ZEF: What is the Zero Energy Factory metric?

In particular, when calculating ZEB performance for factories, the absolute amount of energy consumed in factories is different from that of offices, so the evaluation target is limited to the lighting of general living rooms and warehouse areas, and there is a problem that areas related to production are not taken into account.

The ZEF devised by Taisei Corporation evaluates the air conditioning, ventilation, lighting, and elevators required for production, making it possible to evaluate and examine the reduction of energy consumption in factories more appropriately.

Industry: Construction
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TAISEI
For a Lively World

Tanaka Kikinzoku International (Thailand) Co., Ltd.

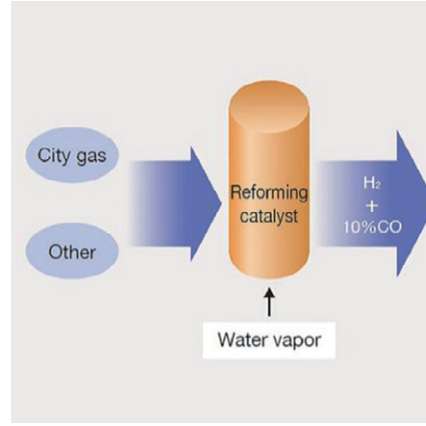
Precious metal catalyst that will contribute to the decarbonized society

Message

Tanaka Kikinzoku Group is workingas precious metal professionals. We provide services in the three fields of "Industrial use", "Asset use", and "Jewelry use". There are a wide variety of industrial-use application, with industrial precious metal products we are developing ranging from everyday automotive, mobile and other devices, to cutting-edge energy, medical and aerospace. We take charge of every operation involved in precious metals, from bullion procurement, to processing and manufacturing, sales, and recycling. Through this extensive service we will help solve our customers' issues with the optimal combination.

Service and Technologies

Tanaka provides reforming catalyst, a catalyst that generates hydrogen from hydrocarbon such as natural gas, and PROX catalyst, which has the ability to selectively oxidize and remove carbon monoxide that occurs during hydrogen generation. PROX catalyst is a catalyst that selectively oxidizes and removes

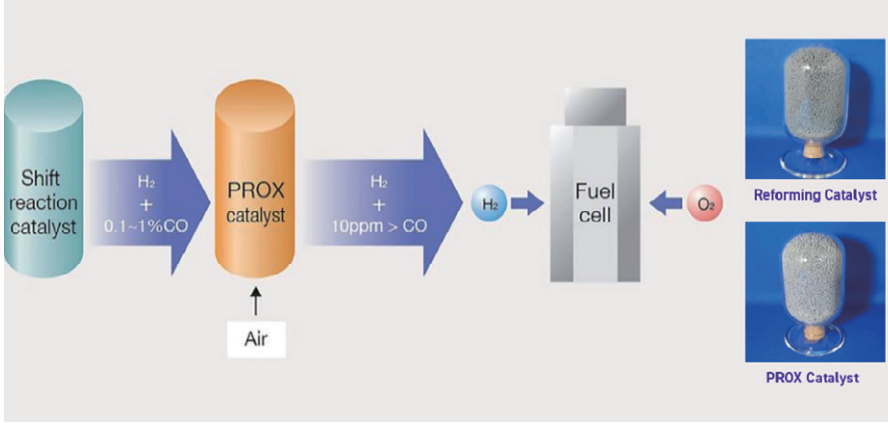


carbon monoxide down to below 10ppm from the hydrogen and carbon monoxide that occur from the reforming action. Tanaka Kikinzoku is capable of providing low-cost catalyst that shows high activity for a wide range of temperatures from low to high heat, with low precious metal loadings.

Sustainability

This product is a catalyst that generates hydrogen from city gas and biomass-derived methane gas and utilize it for purposes such as fuel cell. It is expected that, besides automotive, electrification of consumable energies will also advance as one of the technologies to achieve carbon neutrality. In this trend, it is also predicted that the fuel cell as part of the electrification technology will be utilized in

Reforming catalyst, PROX catalyst and Oxidation catalyst



renewable energy-derived pure hydrogen, biogas, or natural gas reformed hydrogen. Also, methanation catalyst and carbon dioxide reforming catalyst, which apply this technology, will contribute to reduction of carbon dioxide.

Experience

- Adopted by "ENE-FARM", fuel cell system for practical home use in Japan
- Introduction of demonstration equipment for catalysts (reforming and oxidation catalysts, etc.) developed for carbon dioxide reduction and utilization.

Industry: Trading
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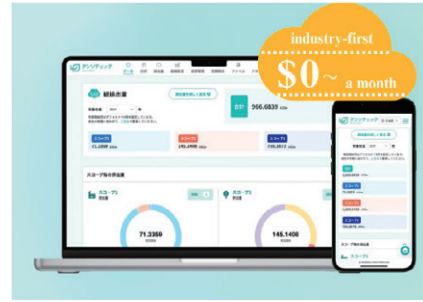
Address: Address:952 Ramaland Building, Zone F, 14th Floor, Rama4 Road., Suriyawongse, Bangrak, Bangkok 10500 Thailand

Tanso-man GX Inc.

Starting decarbonization management from zero, the new standard TANSO-CHECK

Service and Technologies

TANSO-CHECK is a SaaS-type tool for companies to visualize their CO2 emissions and achieve efficient decarbonization management, compatible with SCOPE 1, SCOPE 2, and SCOPE 3, enabling comprehensive management of overall greenhouse gas emissions. Intuitive operability and data management in the cloud make it easy to track CO2 emissions and generate reports for stakeholders in a short time. The solution offers a free plan and is ideal for companies that are tackling decarbonization management for the first time.

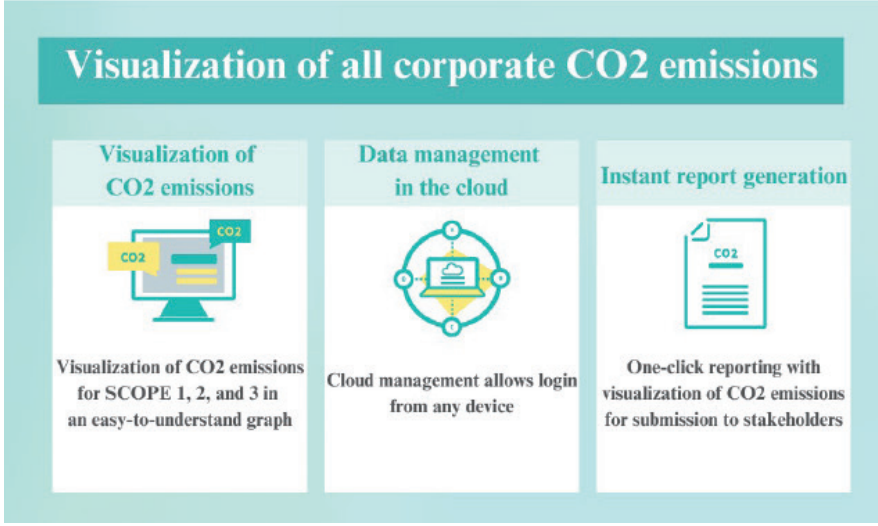


Sustainability

In response to mandatory disclosure of sustainability information and international efforts to become carbon neutral, TANSO-CHECK supports corporate decarbonization management. The automatic calculation function for electricity rates and fuel consumption data enables companies to set and manage CO2 reduction targets while reducing the amount of time and effort required. Furthermore, functions reflecting the latest calculation formulas from the Ministry of the Environment support sustainable decision-making based on accurate data.

Experience

As of December 2024, our product has been adopted by over 300 companies. While we have primarily supported a wide range of businesses, including publicly listed companies and small to medium-sized enterprises, our recent efforts have focused increasingly on collaboration with local governments. Through joint webinars with municipalities on decarbonization strategies, we've been raising awareness of the importance of sustainable



practices among local businesses, contributing to greater environmental consciousness within communities.

Currently, we are conducting pilot projects in partnership with two municipalities, working to calculate CO2 emissions at over 50 sites. Additionally, we are in the planning stages for similar projects with five other municipalities, steadily expanding our reach and impact.

One standout example is our collaboration with businesses in Kagoshima City. Not only did the pilot project there lead to the successful calculation of emissions, but it also resulted in a company completing its SBT (Science Based Targets) certification—a notable achievement, as such certifications remain uncommon among small and medium-sized enterprises. This milestone serves as an inspiring case for other SMEs considering similar goals and highlights the potential for broader adoption of SBT certification within this sector.

By sharing these success stories, we aim to further support local governments and small businesses in their journey toward decarbonization, working together to create a more sustainable future for all.

Industry: Decarbonization Support/Financing Support/Overseas Expansion Support
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タンソチェック tanso check

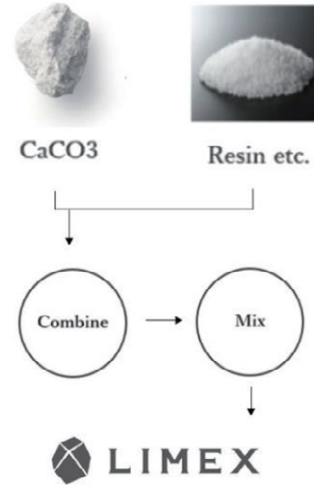
TBM Co., Ltd.

New replacement material for plastic and paper made with limestone as its main material

Environment-conscious material LIMEX

Message

TBM's mission is to "build a bridge for the future we want" and "realize of "sustainability revolution". Our businesses in Japan and abroad include development, manufacturing and sales of environmentally-conscious materials, such as "LIMEX", a new material with limestone and "CirculeX", that contains more than 50% recycled materials. In collaboration with municipalities and private enterprises, we are also promoting recycling that collects and regenerates used LIMEX and scrap plastics. In 2021, we ranked 4th with business value at 133.6 billion JPY in the "NEXT Unicorn Survey" by The Nihon Keizai Shimbun, and were introduced as a unicorn company.

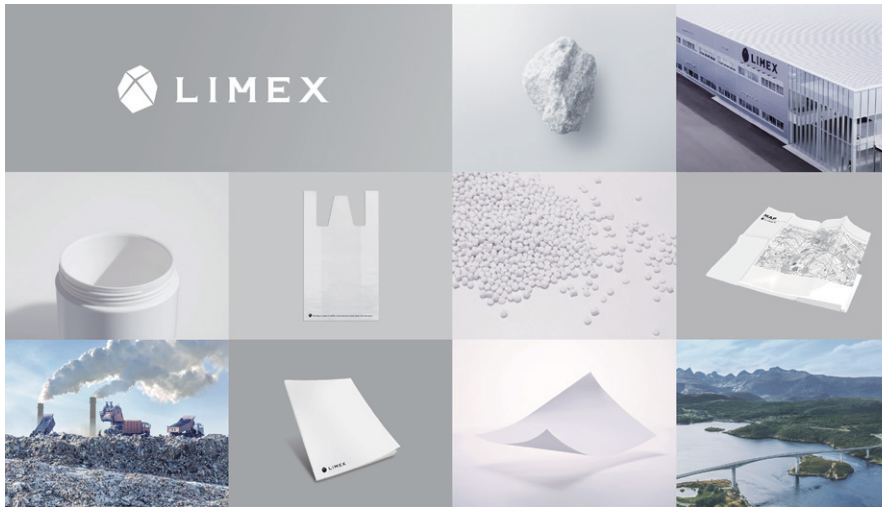


Service and Technologies

LIMEX is an inorganic filler-dispersion composite material containing more than 50% inorganic materials such as calcium carbonate. LIMEX Pellet can be processed into items such as packing material, containers, and daily products with existing molding machines, and LIMEX Sheet can be printed and bound with existing printers and binding machines. Since the main material is limestone, it can contribute to the preservation of resources with high risk of depletion such as petroleum, water, and forest resources. They can also be recycled as they can regenerate without separating inorganic materials with thermoplastic resin.

Sustainability

Limestone, the main material of LIMEX, is a



material that exists in abundance on the earth. As compared to petroleum-based plastic, for limestone, the CO2 emissions at the raw material procurement stage can be reduced to approximately 1/50, and at the time of incineration by 58%. Also, LIMEX Sheet can reduce the amount of water needed for manufacturing by around 97% as compared to normal papers. Since it does not use any wood pulp, it can also help preserve natural resources with risk of depletion. *All given figures are calculations for reference, and not guaranteed figures.

Experience

LIMEX has been adopted by over 10,000 companies and municipalities and is patented in more than 40 countries across the globe. Apart from being introduced at international conferences such as COP and G20, it is also registered on UNIDO's Sustainable Technology Promotion Platform "STePP". The technology is being used for various purposes including shopping bags in retail stores, clear files and calendars in offices, menus and take-away containers in restaurants, plastic models, stationeries, hotel amenities and so on.

Industry: Chemical, medicine, petrochemistry and coal product manufacturing
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TBM

Tenchijin, Inc.

Evaluating the potential and risk of a land through satellite data and AI
Land evaluation engine - Tenchijin compass

Message

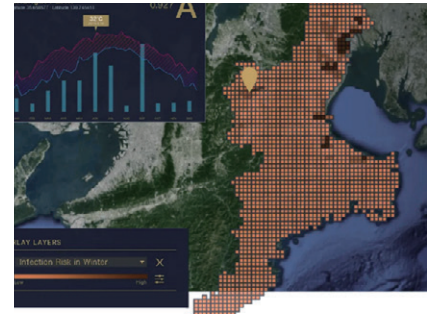
Tenchijin, Inc. is a startup company that utilizes space big data to shine a light on the value of land that is yet to be discovered.We conduct business solution development with high-precision/high-resolution earth observation satellite data and our independently developed land evaluation engine. Certified as JAXA STARTUP, startup company conducting business by utilizing intellectual property and knowledge of JAXA, it was founded by JAXA employee(s)and developer(s) with knowledge in the agricultural IoT field.

Service and Technologies

The independently developed “Tenchijin compass” is an information platform that utilizes space big data. It analyzes an enormous amount of data accumulated based on each business purpose, and is capable of guiding to valuable information by combining with different sets of data. Tenchijin compass helps customer’s decision making process by analyzing various data of a specific land, visualizing whether the land is suitable for customer’s business and whether there is any risk. Specifically, the service is used to understand carbon emissions, to search for a suitable area for renewable energy, to manage real estate and infrastructures, as well as to search for a suitable area for cultivation in the agricultural sector.

Sustainability

Tenchijin Compass supports efforts on carbon neutrality in agriculture and forestry. It helps with the acquisition of carbon credits by understanding the situation on carbon emissions and storage through satellite data, and monitors whether or not a sustainable agriculture/forestry is being practiced. We can also promote carbon storage and maintenance of soil environment by utilizing satellite data to recommend crops and subsidiary crops appropriate to the land.



Experience

• Zespri International
Assisted Zespri, world's biggest kiwi brand, in searching for a suitable location for kiwi cultivation upon the brand's expansion to Japan.

• Space big data rice project
A project that stimulates creation of new rice brands across regions and realizes a higher return agriculture through the use of space big data and cultivation of high quality rice.
Jointly carried out by a major agricultural wholesaler Shinmei Holdings and an agricultural IoT solution Enowa. We search for a location suitable for a specific rice variety using space big data, and produce high quality rice by managing water with satellite data and IoT. For this year, it is being conducted with an expanded cultivation area.

• Bx - sustainable fruit farming
Jointly conducted with a British company, Bx, which runs a carbon credit transaction platform for fruit farming. We developed a solution that helps farmers acquire more carbon credits and maintain the environment of land by using satellite data to propose subsidiary crops (crops to be cultivated between each fruit tree) that are appropriate for each orchard and have high carbon storage.

Industry: Information processing services and computer software business
Website: https://tenchijin.co.jp/?hl=en
Contact: urabe@tenchijin.co.jp
Affiliated Company in Japan: Same as above
Address: Sumitomo Realty & Development Onarimon Tower 9F, 1-1-1 Shibakoen, Minato-ku, Tokyo 105-0011

Tenchijin

TEPCO Energy Partner International (Thailand) Co., Ltd.

Achieving Only One CN promotion with four methods Energy saving & CN solution service

Message

As an energy business, we work closely with our customers based on the expertise we have cultivated through our experience in promoting energy conservation and support their CN and energy conservation activities.

Also, through our energy business in Japan, we have a wide variety of contact points with our customers, and our strength is our ability to understand customer needs and develop services tailored to each customer's business.

Service and Technologies

(1) Energy saving solution services
- Operation improvement proposals based on energy conservation diagnosis and equipment operation data analysis
- Survey on energy loss (compressed air and steam)

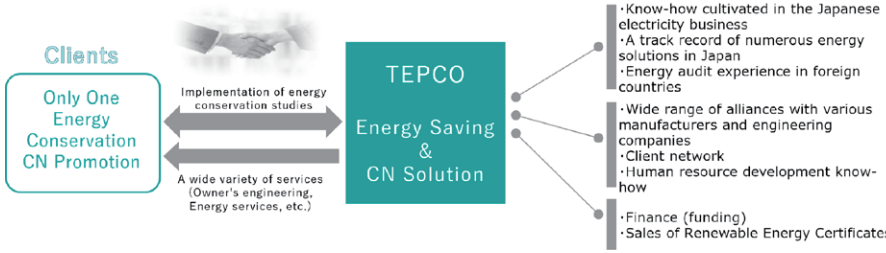
(2) Support for introducing energy-saving equipment
- Providing one-stop services from installation to operation and maintenance of highly efficient systems
- Outline design of energy saving systems (air conditioning, heat sources, etc.)

(3) Renewable energy electricity certificate (I-REC) sales
- Providing renewable energy electricity certificates (I-REC certificates) in Thailand and abroad

(4) Solar PPA proposals

Sustainability

Based on the Paris Agreement adopted at COP21 in 2015, decarbonization movements are gaining momentum internationally. We have entered an era in which various stakeholders, including investors, customers, employees, and business partners, are focusing on and evaluating a company's stance on ESG. Also, signs of rising energy prices on a global scale are becoming apparent, and the value of energy conservation initiatives is being rapidly reconsidered. We believe that energy conservation and CN are important indicators in corporate management, and are issues that should be fundamentally tackled. The Tokyo Electric Power Company Group is regrouping in Thailand the knowledge and all the contacts it has cultivated in Japan's electric power and energy-related businesses, and supporting the Only One energy conservation and CN promotion plan for customers outside Japan as well.



Experience

In Japan, the Tokyo Electric Power Company Group has been developing services that provide a wide variety of energy conservation and renewable energy values to industrial factories. In 2019, we expanded into Thailand with the aim of providing services similar to those in Japan. Since then, we have provided many customers with services such as the installation of solar power generation systems on their premises, consultation services on energy conservation, and renewable energy power certificates.

Industry: Various services related to energy saving and CO2 reduction
Website: https://www.tepco.co.jp/en/hd/index-e.html
Contact: aoki.yoshitaka@tepco.co.th
Affiliated Company in Japan: Tokyo Electric Power Company Holdings, Inc.
Address: 11/2 P23 Building, 12A Fl. Unit C, Sukhumvit 23, Sukhumvit Road, Klongtoey Nua, Wattana District, Bangkok 10110

Thai Mitsui Specialty Chemicals Co., Ltd.

Plant-based biomass plastic raw material Bio-polyol “ECONYKOL®”

Message

Mitsui Chemicals, established in 1955, is a diversified chemical manufacturer with businesses in basic chemicals, mobility, healthcare, food & packaging, and new generation businesses. We have about 100 affiliated companies in Japan and abroad. In Thailand, we established a company (TMSC) about 30 years ago, they are developing their business in the industrial resin-related and urethanerelated fields, focusing on functional products. We also have its own R&D department to develop products. In the coming future, the company will focus on products to contribute to the realization of a sustainable society

Service and Technologies

Through the research and development on plant material utilization, Mitsui Chemicals has succeeded in creating plant-based polyol that can be used in actual applications.
While the existing urethane material uses 100% petroleum polyol, bio-urethane replaces it with plant-based polyol (“ECONYKOL®”).

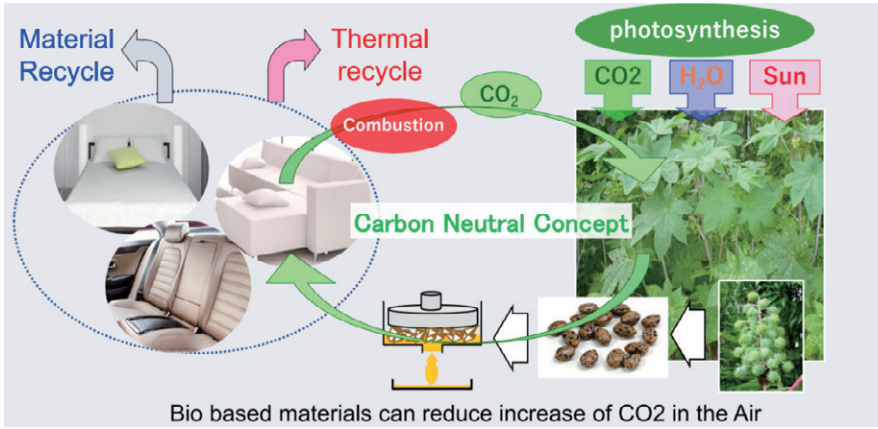
As Thai Mitsui Specialty Chemicals (TMSC) possesses technologies to adjust characteristics such as density, hardness,and elasticity, they can provide products that match customers’ demands as a total system. They answer to customers’ needs for pursuing both environmental effort with sustainable product development and market expansion

Sustainability

Based on life cycle assessment, this product can reduce CO2 emission by half as compared to petroleum-based polyol (based on Carbon Neutral Concept). Therefore, this will contribute to concerns about increase of carbon dioxide in the atmosphere.The company and Mitsui Chemicals group are also considering a circular model, where they will tear into fine pieces bio-urethanes used in products such as beds and use prepolymer (adhesive) that contains plant components to congeal the fine pieces to be recycled as rebonded foam. The rebonded foam can then be reused as part of a new bed.

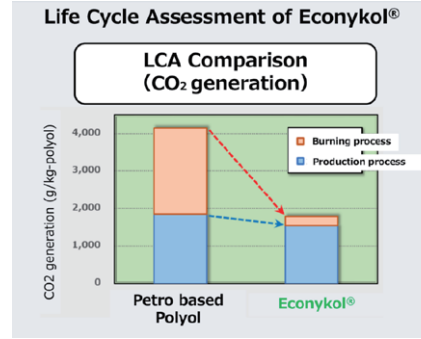
Experience

Apart from its adoption in the cushion of office chairs and cosmetic powder puffs, the technology was also the first to be used in the cushion of car seats, which requires a high durability. With the increasing importance of reducing environmental burden, adoption of the technology in various products can be expected. Non-edible plant material is selected



Bio based materials can reduce increase of CO2 in the Air

as the source for this bio-urethane, so it does not hinder any effort in resolving food issues. In 2013, they built a polyol manufacturing factory in India, the country of origin of the material, and ensure a stable quality and supply capability.



Industry: Chemical
Website: https://jp.mitsuichemicals.com/en/
Contact: sakawaki@tmsc.co.th
Affiliated Company in Japan: Mitsui Chemicals, Inc
Address: Address: 12th Fl., Sathorn Thani Bldg. 2, 92/28-29,
North Sathorn Rd., Silom, Bangrak, Bangkok 10500 Thailand

Thai Nippon Steel Engineering & Construction Corporation Ltd.

CO_2 Capture and high purity Regeneration Energy-saving CO_2 capture equipment (ESCAP®)

Message

We are plant engineering and EPC company in oil and gas and petrochemical industry, with 38 years of history in Thailand. To achieve a carbon neutral society, we will introduce the unique technologies of Nippon Steel such as CO_2 capture technology (ESCAP) and bioethanol manufacturing technology for decarbonization society.

Service and Technologies

Energy-saving carbon dioxide capture system that uses chemical absorption method, capable of manufacturing 99.9% or higher purity carbon dioxide from impure feedstock gas, for purposes including food and carbonic drink, all while reducing heat consumption by more than 40% compared to the existing technologies. The captured CO2 can also be utilized as chemical feed stock, EOR (Enhanced Oil Recovery) and CCS (Carbon Capture and Storage).

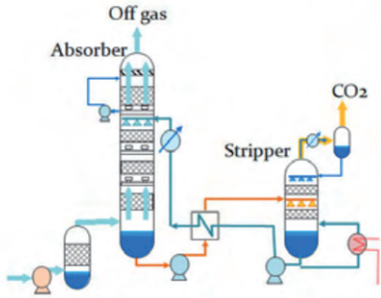
Sustainability

Our technology can reduce CO2 emissions from such as power plants, cement plants and steelworks, and able to regenerate carbon dioxide at a low temperature (below100°C) and with heat consumption. It can contribute greatly to concepts such as carbon credits and carbon offsetting.

Experience

Based on the energy-saving carbon dioxide recovery technology developed by COURSE50 (development of environment-friendly process technology), which is a research commissioned by the National Research and Development Corporation New Energy and Industrial Technology Development Organization (NEDO). For commercial achievements, we completed construction of a 120 Ton- CO2/day plant in Hokkaido prefecture in 2014 and a 143 Ton- CO2/day plant in Ehime prefecture in 2018.

Results (Typical Model)



1. **New Absorbent: "RN"**
   (Developed by **RITE**(*1) and **NSC**(*1)
   - **17% less heat of reaction** compared to the conventional solvent(*2)
   - **30% more CO_2 absorption** than the conventional solvent(*2)
2. **Process Optimization**
   - **38% more CO_2 absorption rate** compared to the conventional solvent(*2)

43 % Reduction of Heat Energy

(*1) **NSC:** Nippon Steel Corporation
RITE: Research Institute of Innovative Technology for the Earth
(*2) Conventional solvent = MEA: mono-ethanol amine

Other technology

Bioethanol from cellulosic inedible raw material 2nd Generation ethanol manufacturing technology using biomass as its material, which would not conflict with food material such as cellulose and food waste. It has a high yield of over 250 liter per dry ton of biomass raw material. In Thailand, it can be a supporting technology for the BCG economic initiatives that the government has, by mixing the ethanol made with cellulose produced as agricultural residue. An experimental plant has already been built in the Philippines.

Industry: Construction industry (construction, civil engineering, equipment etc.)
Website: https://www.eng.nipponsteel.com/english/
Contact: tanaka.hirokazu@thainippon.co.th (Tanaka)
anuphanp@thainippon.co.th (Anuphan)
chanon-k@thainippon.co.th (Chanon)
Affiliated Company in Japan: Nippon Steel Engineering Co., Ltd.
Address: 909 Ample Tower 5th Fl., Debaratna Road, Bangna-Nua, Bangkok 10260 Thailand

Thai Takasago Co., Ltd.

The Utilization of the “Hydro Creator®” Water Electrolyzer Ishikari City Atsuta District Microgrid

Message

We are a Thai subsidiary of Takasago Thermal Engineering, which has been in the air conditioning business for 100 years in Japan. In Thailand, we are an integrated construction company. We deal with many projects regarding air conditioning, including not only general air conditioning but also special air conditioning such as clean rooms and dry rooms based on customer needs.

In the future, we will also focus on hydrogen utilization as part of our efforts towards carbon neutrality. Our company sells the water electrolyzer “Hydro Creator®”, which make it possible to create, store and use hydrogen. By using solar power and renewable energy, it is also possible to create green hydrogen.

Service and Technologies

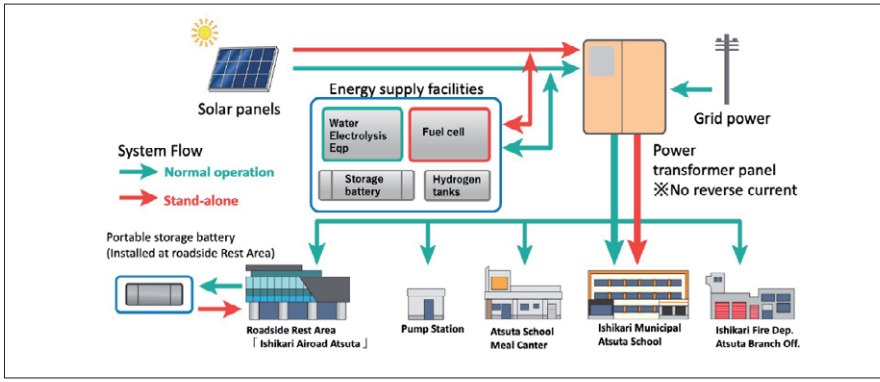
This microgrid system creates, stores, and connects green hydrogen. The system consists of solar panels as renewable energy, water electrolyzer, hydrogen tanks, storage batteries, and fuel cells. It is a system that enables power supply, not only for normal use but also during disasters.

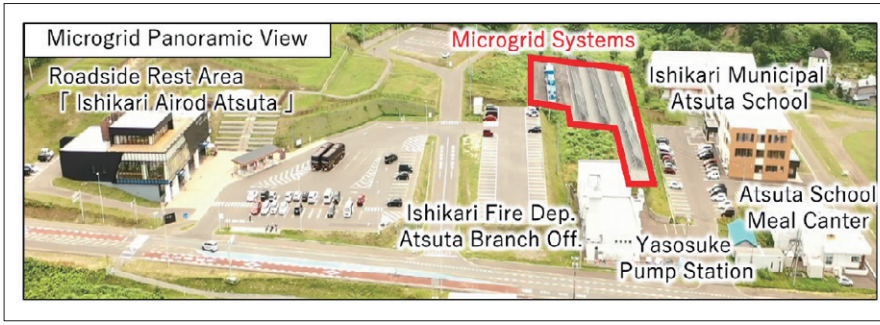
Sustainability

Using electricity from renewable energy makes it possible to produce green hydrogen without emitting CO2, thus contributing to carbon neutrality.
The produced green hydrogen can be used on production lines and, by storing hydrogen, it can also be used for power supply during disaster, making it compatible with BCP measures.

Experience

We installed a microgrid system using our water electrolyzer “Hydro Creator ” in the Ishikari-Atsuta area (Hokkaido), which faces issues maintaining a stable supply of energy, such as long-term power outages during large-scale





disasters. This project provides energy services through SPC (Special Purpose Company) and we operate by receiving only electricity charges from Ishikari City.

Industry: Construction Industry, Air Conditioning / Satellite / Electricity, Special Air Conditioning
Website: https://www.thaitakasago.co.th/
Contact: shu_kobayashi@tte-net.com
Affiliated Company in Japan: Takasago Thermal Engineering Co., Ltd.
Address: Bangna Tower C 16th floor, 40/14 Moo 12, Bangna-Trad Rd., Bangkaew, Bangplee, Samutprakarn 10540

บริษัท ไทยทากาซาโก จำกัด
THAI TAKASAGO CO., LTD.

Thermalytica Inc.

Revolutionary Superinsulation Material TIISA®

Service and Technologies

Achieving an environmentally friendly "hydrogen society" requires insulation materials capable of maintaining liquid hydrogen at -253°C. Additionally, insulation materials that enhance the energy efficiency of buildings, vehicles, and clothing are essential to prevent global warming. At Thermalytica, we provide a new type of insulation material with world-class performance, named "Thermal Insulation Inflatable-Solid-Air" or TIISA® for short, contributing to the realization of a hydrogen society and significant energy savings.

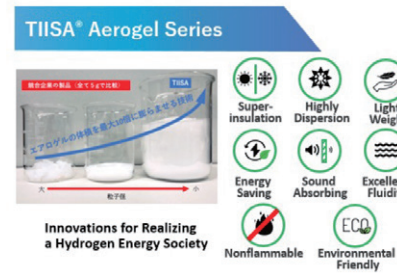
Sustainability

We are aiming to address climate change issues through the social implementation of TIISA®. In the short term, we will achieve immediate improvements by raising the level of energy efficiency, while also contributing to a smooth transition to clean energy for the future. By working on these two fronts, we are building a sustainable energy foundation for future generations.

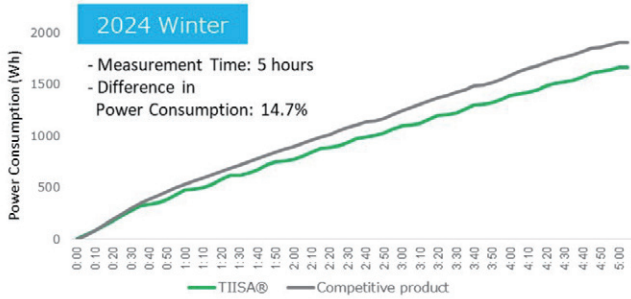
Experience

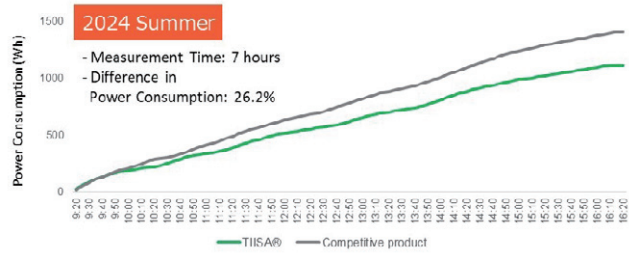
A PoC was conducted with Tsukuba City using insulation paints. Two simple prefabricated structures were set up: one coated with a competitive insulation paint and the other with TIISA® superinsulation paint. The difference in energy consumption was measured while maintaining the same room temperature. The results demonstrated a 14.7% reduction in energy consumption for heating during winter after 5 hours of measurement and a 26.2% reduction for cooling during summer after 7 hours of measurement.

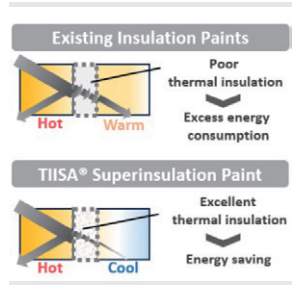
Producing Superinsulation Paint with TIISA® Technology



Innovations for Realizing a Hydrogen Energy Society







Industry: New materials, sustainability, environmental
Website: https://www.thermalytica.com/home-en/
Contact: info@thermalytica.com
Affiliated Company in Japan: Same as above.
Address: 3-13 Sakura, Tsukuba, Ibaraki, JAPAN

Thermalytica

TOWING Co., Ltd.

Sustainable agriculture using microorganism cultivation technology high-performance biochar “Soratan”

Message

TOWING Co., Ltd. is a green and agri-tech venture company established in 2020 with the mission of “realizing sustainable circular agriculture on both Earth and in space.” It is a spinout from Nagoya University and focuses on developing and commercializing high-functioning biochar “Soratan” to achieve greenhouse gas emission reduction, reduce chemical fertilizers, and facilitate organic conversion in soil improvement materials.

Service and Technologies

We are developing and commercializing high-performance biochar “Soratan” to achieve sustainable circular agriculture. The features of Soratan include the utilization of unused biomass (such as rice husks, livestock manure, and wood chips), reduction of chemical fertilizers and accelerate organic conversion, and reduction of greenhouse gas emissions, which are necessary for realizing circular agriculture. Soratan is produced by adding a unique screening of soil microorganisms into biochar and cultivating microorganisms using organic fertilizers. By creating an environment where multiple microorganisms can coexist, the decomposition efficiency of organic fertilizers can be increased by over eight times compared to conventional methods in just one month, thereby improving crop yield and quality.

Sustainability

Soratan is mixture of soil microorganisms, biochar, and organic fertilizers. Biochar is produced by carbonizing biomass (such as rice husks, livestock manure, and wood chips) which is agricultural residues that were conventionally discarded or incinerated in the region. Furthermore, the characteristics of biochar enable the fixation of carbon into the soil through application, contributing to the reduction of greenhouse gas emissions. Moreover, the activity of microorganisms within Soratan improves the decomposition efficiency of organic fertilizers, ensuring a yield that is 1.2 to 1.7 times higher compared to chemical fertilizers. As a result, it becomes possible to reduce chemical fertilizers and transit to organic fertilizers, thus preventing global issue, soil degradation, caused by the continuous use of chemical fertilizers. These functions of Soratan contribute to achieving

sustainable agriculture.

Experience

Soratan has already been introduced in 30 prefectures in Japan, and its effectiveness in various regions, soils, and crops has been confirmed. The use of Soratan has led to increased vegetable yields and a reduction in chemical fertilizers, resulting in economic benefits for farmers. Furthermore, incorporating Soratan into agricultural operations does not impose a significant burden on farmers, leading to a good product-market fit and widespread adoption. Regarding carbon credits, projects based on the methodology of "application of biochar to agricultural land" have been approved under the J-Credit system, in accordance with the Green Food System Act. This marks the first case of J-Credit approval for a biochar project by an entity certified as an establishment operator under the Green Food System Act. Internationally, similar considerations for business viability are being pursued in various regions, mirroring the domestic efforts.

<Supports and Awards>

- Selected by J-startup CENTRAL
- Designated as an establishment operator under the Green Food System Act by the Ministry of Agriculture, Forestry and Fisheries
- NEDO Research and Development Project (STS, SBIR)
- Ministry of Agriculture, Forestry and Fisheries Stardust Program, among others

Industry: Agriculture, Forestry and Fishery
Website: https://towing.co.jp/
Contact: Contact: s.okishio@towing.co.jp
Affiliated Company in Japan: Same as above.
Address: Nagoya University Incubation Facility, Furo-cho, Chikusa-ku, Nagoya, Aichi

土と、緑で、未来を彩る。
TOWING

Tromso Co., Ltd.

Challenging the world with new technologies
Connecting the circle of ecology with rice husks for warmth

Grind Mill•Rice husk solid fuel production equipment

Message

Tromso was established as a spin-out from a manufacturer of heat exchangers for ships in Innoshima (Onomichi, Hiroshima Prefecture), where the shipbuilding industry is thriving.

Our management philosophy is to develop "rice husk solutions" developed from the technology to solidify rice husks inherited from our founder, add value to agricultural residues such as rice husks, and run "businesses that solve environmental and social issues" that contribute to the effective use of resources and the improvement of agricultural productivity.

The scope of our business has expanded significantly, focusing on rice husk utilization technologies, such as the development and manufacture of highly functional rice husk-activated carbon, the development and sale of water purifiers using rice husk-activated carbon, and the development of "biochar production machines" using various agricultural residues as raw materials.

Service and Technologies

Equipment (hereinafter referred to as a Grind Mill) that uses electricity or tractor engine power to grind rice husks and compression mold them to produce solid fuel that can replace firewood and charcoal.

Rice husk contains a lot of silica, which normally causes mechanical parts to wear out quickly, but we extend the lifespan of parts that come into contact with rice husk by applying a special surface hardening treatment to the parts. Furthermore, by supplying the raw material rice husks to the grind mill, it is possible to produce solid fuel without the need for auxiliary materials such as adhesives (binder). Because Grind Mill has a simple structure, it rarely breaks down and can be operated even by operators without specialized knowledge or skills.

Sustainability

Effective use of discarded rice husks and creation of added value. Production of rice husk briquettes (momigalite) with excellent combustion power.
Grinding and solidifying can be done continuously in one unit, it's movable to the place where rice husks are located, installed, and operated. By removing the nozzle and heater, ground rice husks can be manufactured for use as natural organic materials.
Because rice husk solid fuel uses only rice husk, which is biomass, as a raw material, it is a "carbon-neutral" fuel that does not emit new greenhouse gases when burned. Although CO2 is emitted from the electricity used for power or tractor fuel, complete carbon neutrality can be achieved if renewable energy and biofuels become widespread in the future.

Experience

- 2013 - JICA SME project, Tanzania "Investigation of the introduction of solid fuel manufacturing equipment using rice husks"
- 2014 - JICA SME project, Tanzania "Promotion and demonstration project of solid fuel manufacturing equipment using rice husks"
- 2022 - JICA Project feasibility study (SME support type adopted), Madagascar - Project feasibility study related to rice husk briquette machine using power from tractors

Other technology

General biochar-related services for agricultural use
In the agricultural field, biochar is used as a soil improvement material and has proven effects such as improving soil water retention, adjusting pH, improving nitrogen utilization efficiency, and reducing soil pollution. Highly effective in dry areas and soils with low pH. Furthermore, according to the 2019 revised IPCC guidelines, biochar is defined as "a solid substance produced by heating biomass at a temperature of over 350°C under an oxygen concentration controlled to a level that does not burn." We aim to become a business that manufactures and sales of biochar production equipment, agricultural business and carbon credit creation support services related to the application of biochar to farmland and can provide analysis services related to contracted GHG emissions analysis, etc. from next year. We are continuing to conduct demonstration experiments on biochar farmland application under various conditions.

Industry: Manufacture and Sale of Rice Husks Solid Fuel Production Equipment
Website: https://tromso.co.jp/en/
Contact: info@tromso.co.jp
Affiliated Company in Japan: Same as above.
Address: 5265 Innoshima Shigei-cho, Onomichi-city, Hiroshima, 722-2102 Japan

TSURUMI PUMP (THAILAND) Co., Ltd.

Sludge dehydrator that can significantly reduce the amount of sludge generated in water treatment
JD Series

Message

We manufacture and sell environmental devices and accessories such as sludge dehydrators and submerged aerator - main products being the submersible pumps used in water treatment facilities and sewage treatment factories, as well as water treatment facilities in condominiums and shopping complexes. We provide products developed with our own technology to the US, EU, Asia and other parts of the world, supporting various sites. The product has also been adopted by large-scale public projects too. For this occasion, we would like to present our sludge dehydrator that is capable of significantly reducing sludge volume in water treatment processes.

Service and Technologies

Dehydrator that turns sludge generated from the wastewater treatment facility in plants and sewage water treatment facility into dewatered sludge cake (volume reduction to 1/15). With the multiple disc dehydrator mechanism, a dehydration method originated in Japan (patented), it eliminates possibility of performance degradation caused by clogging, and can handle a wide range of sludge properties. Inside the main body of the dehydrator, multiple “filter rollers”, consisting of resin disks, small stainless steel disks, and large stainless-steel disks, are arranged on the upper and lower shafts. Compared to other methods, this system not only drastically reduces power consumption, cleaning water, and dewatered cake disposal costs, but also reduces the overall water treatment load as the SS value contained in the filtrate is low.

Sustainability

The sludge generated from factory wastewater treatment and sewage water treatment contains various solid substances such as organic/inorganic substances, fatty substances, fibrous materials. With the conventional dehydrator, it would cause clogging and eventually lead to lower performance. However, this product solves these problemsand achieves reduction in dewatered cake treatment costs. As this new innovative dehydrator reduces CO2 emissions antd manpower for maintenance and managementas well as saving energy and cleaning water, it is safe to say that it excels in the SDGs/BDG aspect too. The technology to

dehydrate excess sludge is garnering attention from different fields as it will contribute to improving the global environment.

Experience

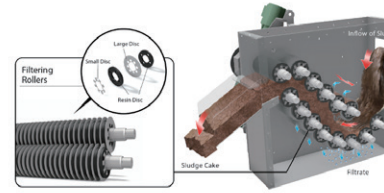
The technology has been adopted in Japan, China, EU, South Korea and Taiwan at numerous industrial wastewater treatment facilities and sewage water treatment facilities, such as food factories, petroleum and chemical factories, automotive-related plants, pig farms, paper factories and so on.

Other technology

“Non-clog type of submersible cutter pump CZ”

Conventional submersible pumps for sewage is designed to attain passage performance by providinga large clearance (passage diameter), however at the cost of pump efficiency.

The new cutter pump is equipped with a smash mechanism (patented) developed based on anew concept in the pump section, which secures passage performance and provides high pump efficiency, effectively overcoming a pre-existing problem for submersible pumps for sewage.



Industry: Normal machiner equipment manufacturing
Website: https://www.tsurumi-global.com/
Contact: t.adachi@tsurumipump.co.th
Affiliated Company in Japan: TSURUMI MANUFACTURING Co.,Ltd.
Address: 587/3 RAMA III ROAD, BANGPONGPANG, YANNAWA, BANGKOK, THAILAND

TSURUMI PUMP

Vioce Co., Ltd.

Small-sized biogas system that can fit into a container
Small-sized methane power plant

Message

We, Vioce Co., Ltd. is a company that engages in waste treatment as its main business. With a large-scale water treatment facility in operation, we collect, transport, and treat various types of waste from across Japan. We are an environmentally friendly company that promotes the "loop of resource circulation", whereby we give back to the farmland by recycling any organic resources that remain after the treatment, into fertilizer.

Service and Technologies

A compact and simple biogas system that has every equipment stored in a 20-feet ocean freight container. It is an on-site system that can easily carry out waste treatment at the site where waste is being generated. Also, with its unique dual-pipe heating system, it is compact yet highly functional.

Sustainability

This small-sized methane gas power plant carries out methane fermentation of waste and reuse it as energy in biogas form. This enables reduction of greenhouse gas emissions and use of renewable energy. In addition, the digested liquid that remains after energy use can be returned to farmland as liquid fertilizer, thus contributing to the construction of a circular society.

Experience

This product has abundance of experience in Japan including sales to NTT group and Toyota group. In the example at a cut vegetable factory, before the implementation of this product, when vegetables are being cut for production, it would produce residues that weighed around 2 tons per day, and the cost of incinerating these vegetable residues would be incurred each day. After implementing this product, the organic waste that had been disposed of by incineration is now being reused as biogas energy through methane fermentation with the cost of waste disposal being reduced to zero. The products enables an environmentally-conscious waste treatment that helps reduce waste, minimize greenhouse gas emissions, and supply renewable energy. For its cost effectiveness, return on investment is expected to be in about 10 years.

RENEWABLE ENERGY

WASTE REDUCTION

Industry: Other manufacturing
Website: https://vioce.jp/en/
Contact: muraoka@vioce.jp (Muraoka)
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Address: 295-9 Nishinosho,Wakayama,
Wakayama 640-0112

Zeroboard Inc.

Visualizing GHG Emissions from Products and Overall Business Operations

A Solution for Calculating and Visualizing Greenhouse Gas Emissions

Message

Due to the global megatrend aiming for net zero, many industries, especially the manufacturing industry, are being forced to transform their industrial structures. As a GHG data platformer, we support the decarbonization efforts of companies across the entire supply chain, and we have a mission to turn these efforts into business opportunities together with many partner companies. We will continue to earnestly take on the challenge of resolving the common human issue of climate change.

Service and Technologies

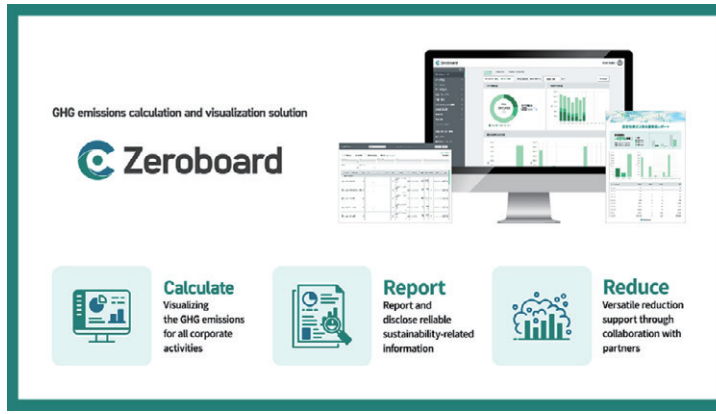
"Zeroboard" is a software that allows companies to calculate, visualize, and reduce their supply chain GHG emissions simply by Settings activity data or setting up data linkage. Without relying on expensive consulting or package products, it is widely used from small and medium enterprises to group Company management of major companies.
The AI chatbot 'Dr. Zero,' powered by ChatGPT API will provide the answer calculation questions.
Dr.Zero has learned from more than 50 types of domestic and international specialized materials such as those from the Ministry of the Environment and the WBCSD, and is able to respond in accordance with current systems and interpretations.

Sustainability

Calculating and visualizing GHG emissions, a contributor to global warming, not only enhances corporate value but also facilitates effective cost reduction.
Zeroboard is a service that calculates GHG emissions based on international standards and manages initiatives aimed at reduction efforts.
Additionally, it offers customizable outputs, such as compliance reports for environmental laws and regulations in Japan and Thailand and data exports for comprehensive reports.

Experience

More than 12,500 listed companies and small-and-medium-sized companies, including group/affiliated companies, which are required to disclose their Scope 1-3 emissions, are utilizing this platform.



Industry: Cloud Service
Website: https://zeroboard.jp/
Contact: shintaro.suzuki@zeroboard.jp
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Address: 〒108-6310, 5 Mita 3 - chome, Minato-ku, Tokyo
Real estate Tokyo Mita South Tower 10 floor

Zeroboard

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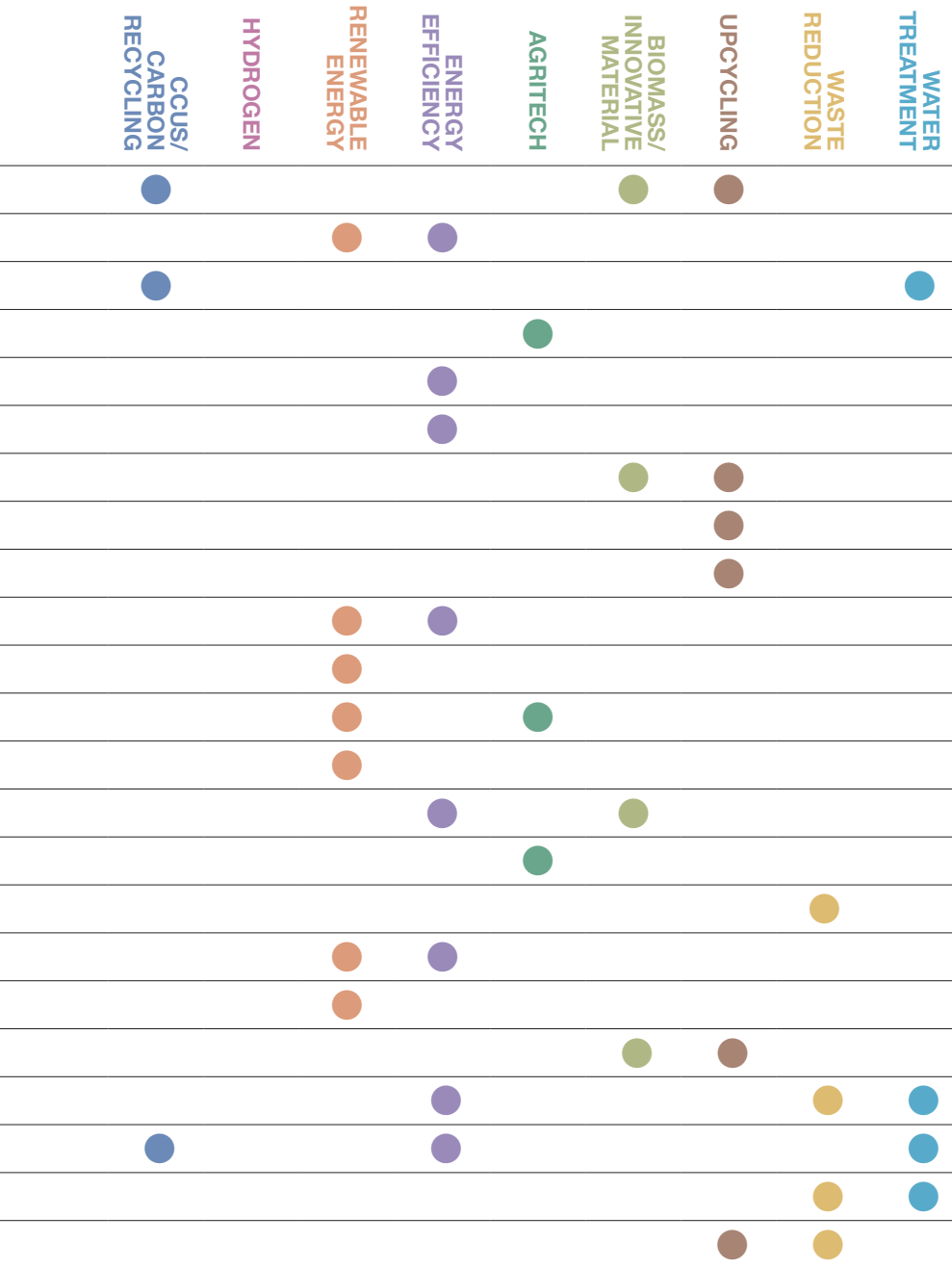

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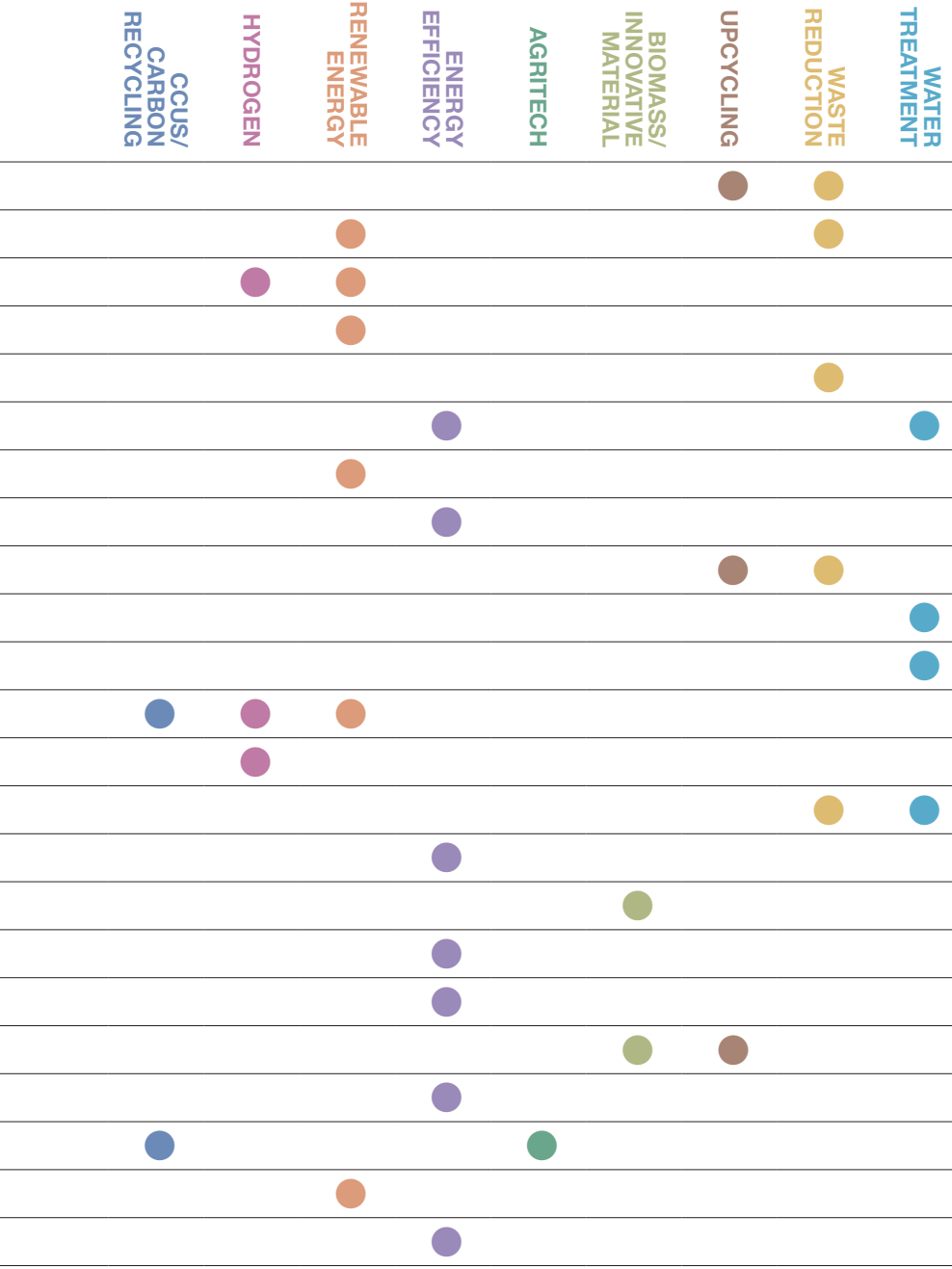

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Sustainable Business for Carbon Neutrality
For a virtuous cycle of environment and growth Vol.4

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