



**REMATEC
GROUP**

2017 CSR REPORT

Innovation for the Earth



Japan's Minister of the Environment has recognized the REMATEC Group as an environmental leader in its industry.



REMATEC supports Fun to Share—a climate change campaign designed to realize a low-carbon society through resource recycling.



This document has been printed using a waterless printing process.



– Predicting the Future –

What can we do now for the future?
 What actions do we need to take?
 Predicting the future makes us aware of our mission.
 At the REMATEC Group, we all work together to promote innovation.

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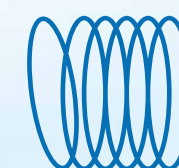
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REMATEC Group logo

Our group logo expresses the process by which a zero-waste society is built through a chain of circles, each of which represents a small cycle. The logo shows our commitment to contributing to society through each of the resource recycling services provided by our group. Based on reliable technologies and know-how, as well as on the experience and achievements that we have acquired, the REMATEC Group will make further efforts to create customer value. We will contribute to improving our customers' corporate value as their business partner and strive to the utmost to build a sustainable society with our stakeholders.

The REMATEC Group supports sustainable development goals.

SDG icons

Sustainable Development Goals (SDGs) are the 17 goals and 169 targets that need to be achieved by humankind by 2030. These SDGs are included in the 2030 Agenda adopted at the UN Sustainable Development Summit in September 2015. All UN countries have made it a goal to work toward these SDGs from 2016 to 2030 through cooperation between public (government) and private (companies and citizens) sectors. See page 14 and onward for information about the goals related to our group's business activities.

SUSTAINABLE DEVELOPMENT GOALS

17 goals to transform our world

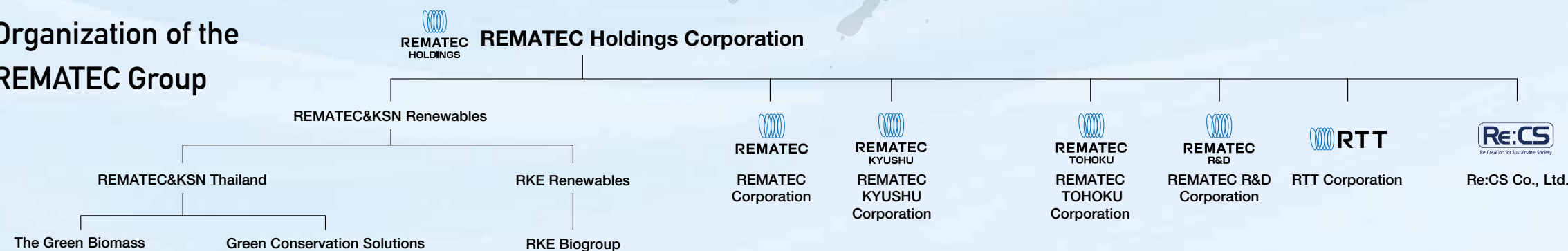


Global Network of the REMATEC Group

The global operation of the REMATEC Group is underpinned by eight key businesses in Japan and five others abroad.



Organization of the REMATEC Group



Business operation in Japan

RF business



REMATEC transforms industrial waste collected from nearby factories into reclaimed fuel (RF), which is supplied to cement factories. This solution reduces environmental loads including CO₂ emissions. Recently, our group has been providing technical assistance to Asian countries.

Environmental restoration business



The REMATEC Group has developed an integrated scheme for processing a large amount of waste from natural disasters, including transport, analysis, precision screening, and recycling. Such all-round capabilities were mobilized in response to the Great East Japan Earthquake and the sediment disaster in Hiroshima. Our recovery and restoration assistance protect both the livelihood of local residents and the environment.

Network and logistics business

Our transport service emphasizes safety and quality to underpin the network of the REMATEC Group to RF, and recycle waste and other resources.



Biogas power generation business



This business generates electric power and heat from biogas collected from the methane fermentation of organic waste. This solution offers many advantages, such as no additional CO₂ emissions involved in power generation and efficient energy production from wet organic materials.

Solar power generation business

Solar power generation is being carried out in Kumamoto, Kagoshima, and Okayama to reduce environmental loads by cutting CO₂ emissions and use of fossil fuel.



Tireless Innovation for the Environment

Chumei Tanaka, our late founder, was a fisherman in Naoshima facing the Inland Sea, Setouchi. During Japan's high-speed economic growth in the 1970s, he began to remove oil from the Bay of Osaka, which had become so polluted fish could no longer be caught. This marked the beginning of Kinki Environmental Industry, or REMATEC today. This section traces our group's history over the past 43 years and many innovative efforts made along the way.

1996

South Korea - PJ

In Ulsan Metropolitan City, South Korea, the REMATEC Group built RF plants for a major petroleum refining plant, transferred its technology to the company, and supported it in operating the plants.

1997

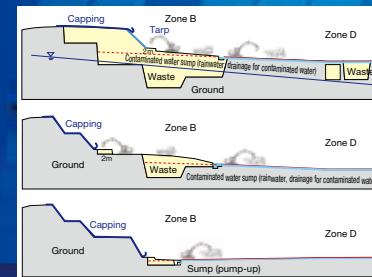
Nakhodka - PJ Spill of about 50,000 drums of heavy oil Collection of heavy oil spilled from the Nakhodka



The Russian tanker Nakhodka broke and drifted into the Sea of Japan off Japan's Honshu Island, and the REMATEC Group collected, treated, and disposed of the spilled heavy oil. The oil covered the Sea of Japan, and the amount of material collected totaled approximately 59,000 tons, including seawater, garbage, and oily mud and sand. In seven cases including ship transport, our group responded to this accident at ten locations nationwide. The treatment and disposal work done by our group included restoring the sea to its original state and recycling the collected oil and other materials.

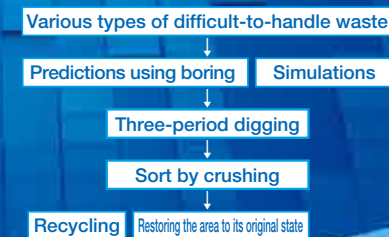
2002

Iwate-Aomori boundary - PJ Illegal dumping of about 820,000m³ of waste



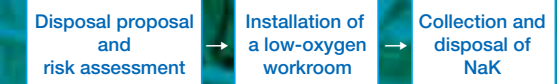
Iwate-Aomori boundary illegal dumping: Construction work supervision and design and building of sorting and water treatment plants in the project to restore the area to its original state

Types of disposed or buried waste are estimated by a calculated matrix and simulation to design the sorting flow and basic sorting system. The original condition was restored after roughly 11 years while minimizing risks involved in the work and for the surrounding area.



2009

NaK - PJ Dismantling of nuclear facilities and appropriate treatment of NaK



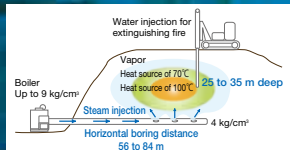
* NaK refers to an alloy of sodium (Na) and potassium (K). This substance is difficult to handle because it reacts explosively and ignites when exposed to air and water.

Disposal of NaK, which had been studied as a cooling agent for reactors, became an issue to be addressed, and the REMATEC Group proposed a disposal method. Based on safety measures and disaster-prevention drills, it conducted simulations of the disposal work. It created a low-oxygen workroom on its own and installed it on the spot, achieving safe collection of NaK.

2010

Restoration of the original condition after illegal dumping in Gifu - PJ

Prior to the treatment, illegally dumped waste was found to be generating heat. Restoration of the area to its original condition was carried out by adopting a newly devised auxiliary method to extinguish fire by locally injecting water.



2015

MF Power 1 began operation as a biogas power plant

The project began by imposing a feed-in tariff on biogas power generation for the first time in Osaka.

2014

Solar power generation began.

Our past data and expertise on efficient and stable power generation are fully mobilized to contribute to society by providing an environmentally friendly and safe source of electric power.

2014

Post-disaster recovery in Hiroshima - PJ

Waste from the sediment disaster caused by heavy rains in Hiroshima was properly treated.

2012

Otsu, Shiga - PJ

Illegally dumped trash filling about 450 drums was removed to be recycled into fuel or incinerated.

Kingdom of Thailand

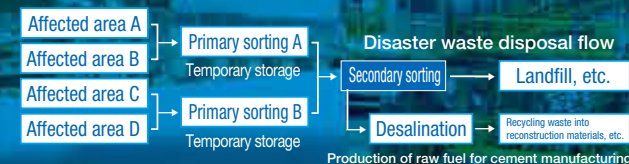
Following a fact-finding survey, a demonstration project for producing refuse derived fuel (RDF) was initiated with a waste composition analysis and wet classification system.

2011

Recovery from the Great East Japan Earthquake (Iwate Prefecture) - PJ Amount of treatment Ofunato: about 0.84 Mt Rikuzentakata: about 1.19 Mt

In this project, a plant is designed and constructed with necessary assistance from REMATEC to desalinate debris that had been in seawater (disaster waste), along with a secondary sorting plant for disaster waste in temporary storage sites, and a classification plant for tsunami deposits. Waste treatment was carried out by secondary sorting (about 0.84 Mt in Ofunato and about 1.19 Mt in Rikuzentakata) and desalination (about 0.935 Mt).
* Waste accepted from Ofunato, Rikuzentakata, Miyako, Yamada-machi, and Otsuchi-cho

Secondary sorting of disaster waste



Classification of tsunami deposits



1992

Kansai Airport - PJ

Management of the treatment of waste from the construction of the Kansai International Airport on an island.

1993

Reclaimed fuel production in Taiwan - PJ

A technology for reclaiming fuel from waste was transferred to Kaohsiung, Taiwan.

1995

Treatment of earthquake disaster waste - PJ

Management of earthquake disaster waste from Ashiya, Nishinomiya, Takarazuka, and other affected cities.

2000

Recycling of waste milk - PJ

Management of the treatment of waste milk after a food poisoning scandal.

2001

Hashimoto - PJ

Management of the treatment of illegally dumped waste in the site contaminated by dioxin in Hashimoto.

2006

Kitakyushu PCB - PJ

Operation and management of a treatment plant for soil contaminated by PCB.

2007

BOF Ofunato - PJ

Design, construction, and operational assistance of the facility for producing biomass and oily sludge fuel (BOF) at the Ofunato Plant.

2007

Sumoto - PJ

A project for harnessing energy from methane fermentation by subcritical water treatment.

2008

3S (Tri-S) - PJ

Proposal of an on-site waste treatment and recycling system for the New Sakai Plant of a consumer electronics manufacturer.

2010

Subcritical plant - PJ

Construction and operational assistance of a subcritical pilot plant.

2010

Change of the company name to REMATEC Corporation

2013

REMATEC & KSN Thailand (RKT) was established as an overseas subsidiary.

2014

Development of materials for secondary cells - PJ

Development of technology for producing low-cost waste-derived materials for secondary cells.

2014

Shift to the holding company system under the name "REMATEC Group"

2015

Establishment of Green Conservation Solutions (GCS) (a joint venture between SCG and RKT)

REMATEC GROUP History

1974

Establishment of Kinki Environmental Industry Co., Ltd.

Kinki Environmental Industry Co., Ltd. (later renamed REMATEC Corporation) was established to treat waste oil and liquid, the principal cause of marine pollution.

CSR in Figures

For detailed data, refer to page 35 →



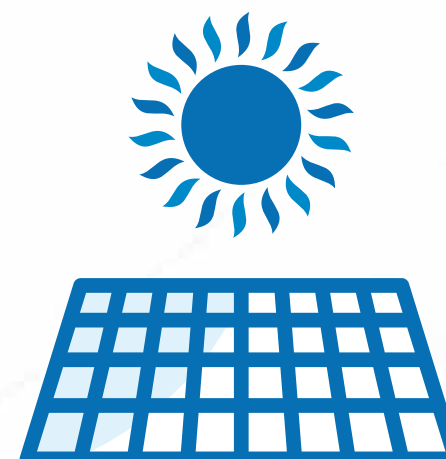
RF shipments

Target organizations : REMATEC Corporation and REMATEC KYUSHU Corporation



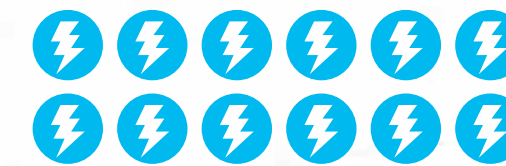
109,118t/year

■ Target value for FY 2016 : 98,000 t/year



Solar power generation

Target organizations : Kumamoto power plant, Kagoshima power plant, and Okayama power plant

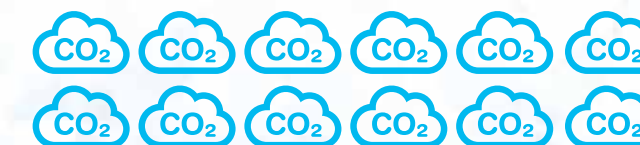


5.920MWh/year

■ Target value for FY 2016 : 5,425 MWh/year



CO2 reduction (Solar power generation)



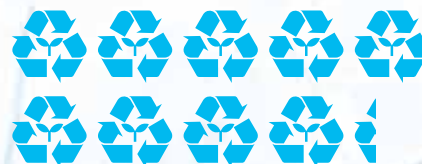
2,986.6t-CO₂/year

* The amount of CO₂ emissions reduced by solar power generation was calculated based on the Labeling Guidelines (FY 2016) by Japan Photovoltaic Energy Association.



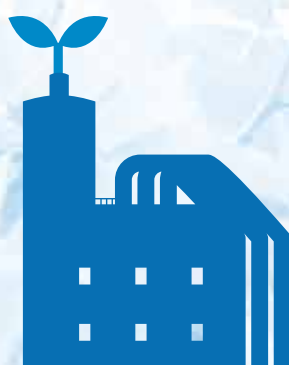
Recycling rate

Target organizations : REMATEC Corporation and REMATEC KYUSHU Corporation



92.3%

■ Target value for FY 2016 : 97.0%



Power consumption per ton of RF

Target organizations : REMATEC Corporation and REMATEC KYUSHU Corporation



25.4kWh/t

■ Target value for FY 2016 : 27.4 kWh/t



Fuel efficiency of collection and transport vehicles

Target organizations : REMATEC KYUSHU Corporation and RTT Corporation



3.3km/L

■ Target value for FY 2016 : 3.6 km/L

RF shipments

Despite some trouble with equipment and so forth, REMATEC Corporation was able to reliably produce reclaimed fuel and it achieved the shipping target. REMATEC KYUSHU also began full-fledged operation in December 2014. The shipped amount exceeded the target thanks to the stable production. Further increase in production will be sought by reinforcing daily inspections and maintenance.

Recycling rate

The group-wide target of bringing the recycling rate to 97% could not be achieved despite our eco-first commitment and improvements by REMATEC Corporation compared to the previous year. This is due to the trouble we experienced with equipment. Meanwhile, REMATEC KYUSHU did achieve its target level by maintaining the same performance as previous years. Both companies will strive to improve the recycling rate.

Power consumption per ton of RF

The introduction of large equipment and the associated increase in power consumption are still affecting the REMATEC Corporation. Meanwhile, REMATEC KYUSHU succeeded in reducing power consumption with stable round-the-clock operation from December 2014 and streamlining efforts. Still, there is still room for improvement for both companies. Further reduction in power consumption will be sought step by step.

Solar power generation/CO₂ reduction

All power plants were operated in earnest in fiscal year 2016 to achieve the annual target set forth in the three-year plan. The total annual output of 5.92 MWh can serve about 1,200 households each consuming an average 4.936 kWh.*¹ We were able to contribute to a low-carbon society with a reduction in CO₂ emissions by 2,986.6 t/year thanks to the abundance of solar power. This amount corresponds to the CO₂ absorption of about 213 cedar trees.*² Power output depends on the amount of sunlight and so is greatly affected by weather conditions. We will continue our efforts to achieve our target by effectively using data from string monitoring units, early discovery and response to trouble experienced by power plants, among other efforts, in order to stably generate power.

*¹ The Energy Data and Modelling Center, the Institute of Energy Economics, Japan, FY 2016

*² See Shinkyusan on the official website of the Ministry of the Environment (a 50-year-old cedar tree annually absorbs about 14 kg of CO₂)

Fuel efficiency of collection and transport vehicles

Fuel efficiency could not be enhanced to achieve the target despite the efforts made in fiscal year 2016 to eliminate waste, unreasonable strain, and unevenness in driving by using digital tachographs and conducting onboard guidance. We will continue our efforts to enhance fuel efficiency by encouraging environmental-conscious and safe driving practices.



In front of the RKE Head Office in the Kingdom of the Netherlands

Staying true to our corporate mission of using eco-innovation to address social challenges, we have contributed to resolving social issues in various environmental fields in Japan, especially in waste-related businesses. However, recent global trends, such as SDGs and the Paris Agreement, are shifting from managing specific issues to resolving more comprehensive issues.

In order to respond to these global trends while continuing our business activities, we believe it is essential to set our goal from a long-term perspective and to make steady efforts to achieve that goal. Therefore, the REMATEC Group has started to incorporate what is known as a "backcasting" approach into our business decision making. To that end, by focusing on 2050 as a target, we discuss what technologies, systems, and lifestyles will be required in our society in 2050 and deduce what we need to do now by backcasting from the future.

In 2050, vehicles that use fossil fuels may not be sold on the market in our society, with nearly all energy generated from renewable energy resources and the concept of waste eliminated. In fact, some developed countries have already determined to ban the sale of gasoline and diesel vehicles in the near future. We are figuring out what we need to do now in order to continue to contribute to society amid great changes in society that may occur within the short period of a little over 30 years, and are implementing various programs to move in that direction.

Our overseas business is one such program. In an effort to develop our overseas business at an accelerated pace, we founded REMATEC & KSN Renewables Corporation in 2017 as an overseas business hub with the aim of integrating overseas business resources within our corporate group.

In recent years, we have focused our efforts on business development in Southeast Asia—in particular, the waste

Transitioning into a corporate group that supports the use of a zero waste infrastructure

Yasunori Tanaka
President and CEO
REMATEC Holdings Corporation

田中 靖訓

recycling business in Thailand and the business of producing pellet fuel from unused biomass in Malaysia. In April 2017, we completed the construction of our first waste sorting plant in Thailand. With verification tests having been successfully conducted in a pilot plant for fuel pellet production, the construction of our first commercial pellet manufacturing plant has already started in Malaysia. In the future, we plan to construct our second and third plants both in Thailand and Malaysia and continue to proactively contribute to resolving environmental issues in the two countries. Meanwhile, businesses in developing countries not only require an enormous amount of time for project development, but also involve risks unique to developing countries (risks in obtaining authorization and permission, political risks, etc.). Therefore, to mitigate the risks involved in our group's overseas business development, we also focus on businesses in developed countries with the aim of building a balanced business portfolio. More specifically, directing our attention to renewable energy business in Europe, we founded a local subsidiary RKE Renewables B.V. in the Netherlands to develop renewable energy projects centered on biogas power generation in the United Kingdom, Germany, and the Netherlands. Europe is also leading the world in building zero waste infrastructure through circular economy initiatives and other programs. Accordingly, there are many technologies, systems, and

projects that attract our attention in Europe. Through our activities in Europe, we plan to acquire cutting-edge technologies and systems and incorporate them into the business activities of our group as a whole.

The world is beginning to change. Taking up business challenges in various countries enables us to better understand that change. For this reason, the REMATEC Group has set a medium-term management vision for transitioning into a corporate group that supports the use of zero waste infrastructure in society. As such, we would like to continue to contribute to society in our fields of expertise by leveraging our experience in waste-related businesses to change world.

Meanwhile, in a rapidly changing society, we need to change ourselves by fully leveraging our own strengths and experience. To change ourselves, we will promote open innovation by continuing to actively collaborate with other companies and facilitate mutual understanding with our partners. At the same time, we will make management decisions to achieve the optimum balance among different businesses of the REMATEC Group in a broad sense of the term, which includes our business partners.

We will strive to the utmost to continue to work as a corporate group that can contribute to society and meet its needs. Going forward, we hope that we will continue to enjoy the guidance and support of all our stakeholders.



To clearly define the ideals envisioned by the REMATEC Group, we have established a management philosophy and vision. We promote our corporate value based on our philosophy and vision, thereby continuing to uphold our philosophy as the foundation of the REMATEC Group's decision making. By further promoting our philosophy, we aim to develop technologies and accelerate open innovation in the environmental business with the aim of creating innovations that address social challenges related to the environment.

Innovation for the Earth

Management philosophy

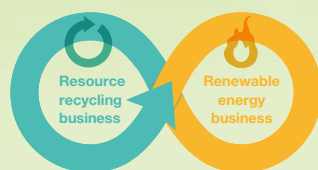
With the aim of contributing to the creation of a sustainable society, the REMATEC Group is mobilizing its core technologies for recycling materials to promote the economic and efficient use of global resources.

Building the society we envision

- ◎A society where people can live safely and comfortably
- ◎A sustainable society where economic development can be achieved without harming the environment
- ◎A recycling society that is in harmony with nature

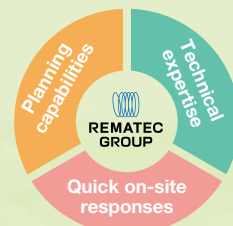
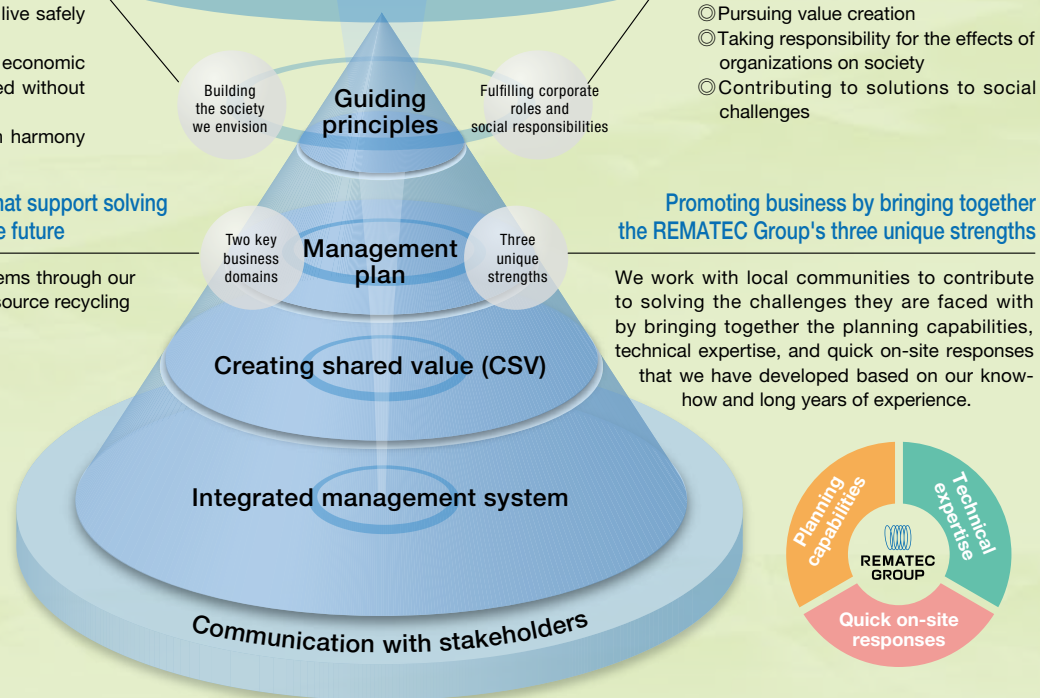
Two key business domains that support solving local problems and create the future

We tackle environmental problems through our two main lines of business—resource recycling and renewable energy.



Fulfilling corporate roles and social responsibilities

- ◎Pursuing value creation
- ◎Taking responsibility for the effects of organizations on society
- ◎Contributing to solutions to social challenges



Corporate slogan and concept for CSR commitment

Innovation for the Earth

Mission of the REMATEC Group

Use eco-innovation to address social challenges

The REMATEC Group believes that it is our most important mission and responsibility as members of society to create innovations through business. Accordingly, we have adopted the corporate slogan, "Innovation for the Earth," as our basic CSR concept. We aim to promote CSR activities as an integral part of our occupational activities.

Compliance policy

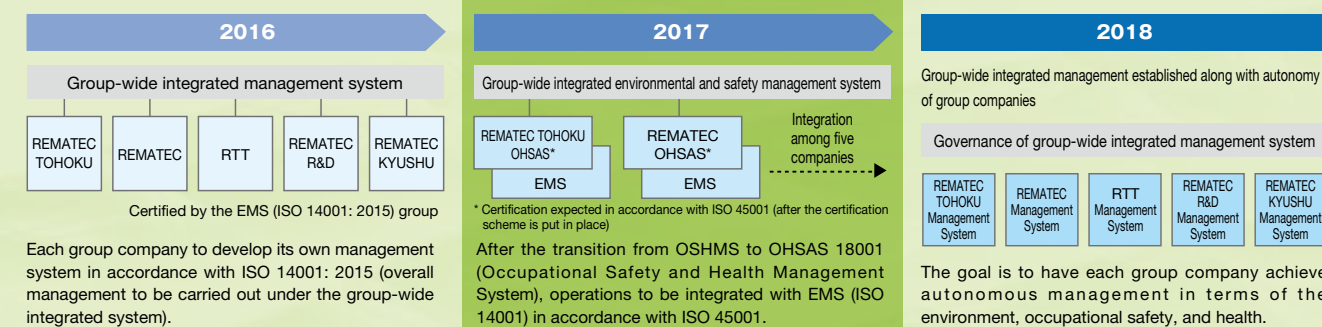
The REMATEC Group recognizes that relationships with stakeholders are very important and need to be respected, and that we must fulfill our social responsibility to comply with laws and regulations.

To ensure compliance not only with regulations, statutes, and company rules, but also with social norms, we have established a compliance policy, thereby raising awareness among executives and employees and developing compliance systems.



CSR Management System/Introduction of a 3-year plan aimed at having group companies operate their management systems autonomously

In accordance with this 3-year plan, the REMATEC Group is developing management systems that will encourage partnerships and autonomous initiatives among its member companies.



Safety and health principles

As it strives to contribute to society through its business and other activities, the REMATEC Group recognizes that the health and safety of its employees forms the basis of the company and its social responsibilities. Out of respect for all people, the REMATEC Group promotes health and safety under the guiding principles of "safety first" and "comfortable working environment."

Environmental principles

The REMATEC Group recognizes that conservation of the global environment is a key priority for humankind to achieve sustainable development. Therefore, in accordance with its basic environmental principles for helping to create a sustainable society, our group carries out its business and other operations in harmony with the environment while working to reduce the environmental loads and to save energy and resources.

Philosophy and vision

Based on our corporate philosophy, we focus on addressing social challenges in the environmental business, including resource recycling and global warming prevention, as our major business domains.

In fiscal 2010, we made it the REMATEC Group's new mission to create innovations to address social challenges related to the environment, adopting "Innovation for the Earth" as our corporate slogan.

Medium- and long-term business goal

We have defined our medium- and long-term business goal as transitioning into a corporate group that supports the use of zero waste infrastructure. To achieve this goal, we bring together technologies and know-how that we have acquired through our core businesses (resource recycling and renewable energy), along with our three strengths (planning capabilities, technical expertise, and quick on-site responses). Our aim is to develop social infrastructure and to efficiently utilize unused resources. Through these activities, we promote open innovation in collaboration with other companies,

including developing new businesses and investing in them.

By continuing to develop businesses based on our philosophy, we believe we can ensure stable profits and contribute to building a sustainable society. Based on this belief, we aim to fulfill the social responsibilities of the REMATEC Group.

Integrated management system

The REMATEC Group has been working to develop daily business activities and to solve problems from three perspectives by integrating three management systems (business management, environmental management, and occupational health and safety management). To further enhance environmental and safety management, we launched a new initiative to prevent occupational and environmental accidents and avoid business risks by managing the group as a whole in accordance with new international standards. In fiscal 2016, we reconstructed the environmental management system (EMS) in operation at our business sites in Osaka and Kyushu and expanded it to our group as a whole, thereby creating an integrated management system that meets the revised ISO

requirements. With the aim of enabling each company to operate and manage the system on its own, we provided management system training to all group company employees, including the group's internal audit committee members. As a result, we were certified as an organization that meets the ISO 14001: 2015 (JIS Q 14001: 2015) standard in November 2016.

In fiscal 2017, to prevent occupational and environmental accidents, we developed a plan to promote risk management by managing our group as a whole in accordance with international standards. We made efforts in our daily activities to obtain OHSAS 18001: 2007 and ISO 14001: 2015 certification for the integrated system (scheduled to be awarded the certification in December 2017). To this end, we started the certification evaluation procedure all over again for the integrated business processes. To obtain the OHSAS certification, we constructed the system in accordance with the ISO 45001 standard, which is scheduled to be published in March next year.

In the future, each group company will construct an independent management system. We will operate the system designed to manage the group as a whole to further enhance governance.



REMATEC Group companies' business sites are located in areas across Japan and overseas, with each company developing activities rooted in its own area. The group brings together all available resources to further expand the community network from local societies to the entire world. We also hope to build close relationships with a wide range of stakeholders and gain their trust by facilitating communication with them.

Interaction with stakeholders



Eco-First in Kansai information exchange meeting



Facility tour at a regular meeting of the Oita Prefecture Association of Companies in Different Industries (Hoshinkai)



Students visiting our group company from the University of Twente in the Netherlands

Initiatives for improving product quality



RF mixing experiment



Product samples after mixing

Corporate citizenship activities



Eco-First Sustainable Café in Kansai

Eco-first companies in the Kansai area and some 50 university students participated in study sessions to report activities and introduce companies and held a report discussion to talk about legacies for future generations in Japan.

Mental health and diversity

To help individual employees focus on improving operational efficiency and productivity and maximizing their performance within a limited amount of time, we work to create better workplace environments, including reducing the total working hours and increasing the percentage of employees who take paid annual leave.

The REMATEC Group strives to improve the welfare of employees and offers various support services to promote work-life balance. For example, the carryover paid annual leave system allows employees to use the amount of overdue paid annual leave for their own medical care and the nursing care of their families. 62.1% of REMATEC Group employees took paid annual leave in fiscal 2016.

(Percentage of workers who took paid annual leave in Japan in fiscal 2016: 48.7%. See Ministry of Health, Labour and Welfare, Results of a General Survey on Working Conditions in 2015)

Percentage of REMATEC Group employees who took paid annual leave

62.1%

Internship program

Intern comments

When I visited REMATEC R&D for the first time in April with my professor at Osaka Prefecture University to introduce myself, I felt very uneasy upon seeing the lab on the first floor, because chemistry is my least favorite science subject. Furthermore, I specialize in automotive engineering, which is very different from recycling, so I was not sure whether I would be able to understand the operations.

However, when I actually joined the internship program, REMATEC Group employees explained chemistry to me in an easy-to-understand way, dispelling my initial anxiety.

I learned the basics of methane fermentation in a lecture and gained an understanding of manufacturing processes through on-site work. I also acquired deep knowledge about the kaizen project.

I think the REMATEC Group's waste recycling technologies are excellent and environmentally friendly. I hope to contribute to Thai society by using the technologies and approaches that I learned through this program.



Student from Thai-Nichi Institute of Technology

Mr.Woraset Pongpunsanti



Interaction with stakeholders

To continue to be a corporate group that is needed by society, we believe it is important to understand stakeholders' opinions, expectations, and needs and to benefit from this understanding to improve the quality of products and services. As part of such efforts, we provided a factory tour at a regular meeting of the Oita Prefecture Association of Companies in Different Industries (Hoshinkai). In addition, at the 15th information exchange session of Eco-First in Kansai, we made a presentation on our eco-first commitment initiatives and conducted a tour of a biogas power generation plant. Also, a total of 21 visitors from the University of Twente in the Netherlands, including students and professors, came to REMATEC R&D on a tour to learn about advanced environmental technologies and culture in Japan. The visitors took great interest in the advanced environmental technologies, environmental issues, and our group's business activities.

Initiatives to improve product quality

The REMATEC Group's RF fuel is manufactured using an original method by mixing various types of waste in a specific ratio. To further reduce RF fuel production costs, our group studies various mixing methods and conditions that match the nature of the waste and intermediate products. Changes in the type of waste and temperature affect product quality. We are examining what technologies are capable of reducing production costs while also ensuring stable product quality.

Corporate citizenship activities

The REMATEC Group hopes to contribute to environmental conservation in collaboration with those who support the future of our society through active communication with children and students. As part of such efforts, we are developing initiatives for the future that we envision while maintaining a balance between corporate activities and environmental activities through interaction with local communities. Our initiatives include participating in Eco-First Sustainable Café in

Kansai, a program aimed at exploring and studying environmental issues from the perspective of young people (university students), and joining the 2016 briefing session and experiment facility tour for the Project to Regenerate the Ocean Environment in Osaka.

Responsibility toward employees

In recent years, organizations, institutions, and other systems are undergoing dramatic transformations as a result of rapid changes in business conditions surrounding companies. Under such circumstances, we believe it is of utmost importance to ensure occupational health and safety, including mental health, and to respect diversity in the workplace. The REMATEC Group recognizes the importance of ensuring employees health and safety for the sustained development of companies. Based on this recognition, we are continuing our efforts to create environments that enable diverse personnel to work together with a sense of purpose. To that end, we implement proactive measures to maintain good workplace environments, to ensure employees' safety, and to maintain and promote their health.

Internship program

Due to the shrinkage of the domestic market, increasing numbers of Japanese companies are working to expand their overseas business in recent years. However, Japanese companies, especially medium- and small-size firms, are faced with serious shortages of personnel with global perspectives. The REMATEC Group believes that utilizing personnel with global perspectives contributes to enhancing corporate competitiveness and helps to develop overseas business and to create innovations from new perspectives.

In April 2016, we accepted students from Thailand for a project to support students enrolled in Thai-Nichi Institute of Technology and undertook an internship program for approximately five months. With a view to changing our ways of thinking through cross-cultural communication and creating knowledge required to expand overseas business and promote new development, we will continue to contribute to developing personnel with global perspectives and promoting international business.



Staying true to our environmental principles, the REMATEC Group is engaged in environmental activities, always considering what actions to take in light of the relationship between business activities and the environment. We make sure that the things we can do as a group are put into practice step by step, thereby producing significant effects. We aim to proactively contribute to global environmental conservation and to become a corporate group respected by many local community residents.

REMATEC Remembrance Day in FY 2017

It has been 20 years since the fire and explosion accident occurred on July 28, 1997. To keep the lessons learned from the accident from falling into oblivion, interested parties from REMATEC Group companies gathered together this year to commemorate the REMATEC Remembrance Day 7/28 at REMATEC KYUSHU. In the training session held in the afternoon, participants joined an education program designed to shift their attention from accident response to accident prevention. In the program, they enumerated all sources of risks facing each company to accurately evaluate the need to implement safety measures based on risk assessment.



Ensuring safety

Demolition and development of treatment plants: Collection and reuse of chemicals

Chemicals have been found in industrial waste generated in the process of dismantling and developing waste treatment plants subsequent to the disaster waste treatment project in 2011. To ensure operational safety, staff members with expertise conducted a preliminary survey (types of chemicals, possibility of reuse, treatment methods, risk assessment, etc.) prior to dismantling and determined dismantling procedures. This made it possible to collect chemicals safely and quickly at a low cost and to dismantle plants without incident, thereby enabling the effective reuse of the chemicals.



Certificate awarded for zero accident record



Scenario-based fire drill



Reforestation for global environmental conservation



Volunteer activity for biodiversity preservation



History of initiatives for environmental conservation and occupational safety

Since its founding, the REMATEC Group has been working to address various social problems in environmental business. For the purpose of reporting on our group's CSR activities to all stakeholders, we started publishing environmental reports in 2000. Since fiscal 2009, we have disclosed relevant information in our CSR reports.

1999	Osaka Plant obtained ISO 14001 certification
2000	Kyushu Plant obtained ISO 14001 certification
2007	Sakai SC Plant obtained ISO 14001 certification
2008	The REMATEC Group certified as an Eco-First company
2009	Obtained OSHMS certification (Osaka, Sakai SC, and Kyushu Plants)
2016	The REMATEC Group obtained ISO 14001: 2015 certification
2017	Scheduled to obtain ISO 14001: BS-OHSAS 18001 certification (December 2017)

Volunteer activities for global environmental conservation

To maintain its rich forest environment full of trees for the next generation, Oita Prefecture is developing a reforestation

program to protect the lives of prefectural residents and preserve the global environment by using forest environment tax funds. To support this program and promote reforestation, the REMATEC Group participates in a reforestation project called Community Forest.

Volunteer program to protect biodiversity

In September 2017, REMATEC Group employees participated in a volunteer program to exterminate alien fish species breeding in Lake Biwa. This program was developed by ten Eco-First-certified companies headquartered in the Kansai area. This was the fifth year of the program. Participants enjoyed competing in fishing, catching a total of 948 alien fish weighing 23.4 kg, including bluegills and black bass. Alien fish caught in fishing are processed into fish flour at welfare facilities for the disabled to be effectively used as compost and other products.

Occupational safety

Staying true to its safety and health principles, the REMATEC Group is working to enhance measures to prevent accidents from recurring. Accidents that occur during work operations

Our Eco-First commitment

In accordance with our social responsibility as a company that recycles industrial waste, we are committed to complying fully with all laws and regulations, as well as undertaking the initiatives described below in order to proactively contribute to society through activities designed to continuously reduce the environmental loads.



Commitment 1 Initiatives for forging a recycling-oriented society

* Applicable to REMATEC Corporation and REMATEC KYUSHU Corporation

- Consistently recycle 97% or more of the industrial waste we accept from waste generators.
- Advance our research into the production of fuel by recycling as many kinds of industrial waste as possible to realize a recycling-oriented society.
- Carry out initiatives to forge a recycling-oriented society.

Commitment 2 Initiatives for curbing global warming

* Applicable to REMATEC Corporation and REMATEC KYUSHU Corporation

Increase reclaimed fuel (RF) shipments to cement manufacturing plants and elsewhere by 5% compared to the current level by 2019. Leverage our proprietary technology to recycle a wide range of industrial waste from various plants, including waste that is usually incinerated or disposed of in landfills. Reduced use of coal and other fossil fuels at factories translates into reduced greenhouse gas emissions, which ultimately assists efforts to realize a low-carbon society.

Commitment 3 Initiatives for making effective use of waste that contaminates soil and water and reducing the environmental burden

* Applicable to REMATEC Corporation, REMATEC KYUSHU Corporation, REMATEC TOHOKU Corporation, and REMATEC R&D Corporation

Focus on developing technologies to recover energy from biomass contained in waste.

Commitment 4 Initiatives for raising environmental awareness both inside and outside our group

* Applicable to REMATEC Corporation, REMATEC KYUSHU Corporation, REMATEC TOHOKU Corporation, and REMATEC R&D Corporation

- Develop human resources that can address society's environmental challenges by organizing our own environmental awareness initiatives, including REMATEC Future Academy.
- Plan and organize guided tours of our plants to increase the public's understanding of waste recycling.

Achievements as an Eco-First company in FY 2016

	Commitment	Item	Target	Achievements in FY 2016
1	Assist in the pursuit of a recycling-oriented society	Recycling rate of industrial waste	Maintain at 97%	REMATEC 85.2% REMATEC KYUSHU 99.3% Group total 92.3%
		Research into the production of fuel by recycling as many kinds of industrial waste as possible	—	Conducted R&D regarding waste recycling
2	Tackle global warming	Reclaimed fuel (RF) shipments	Increase 5% compared to the current level by 2019	REMATEC 54,654 t REMATEC KYUSHU 54,464 t Group total 109,118 t
3	Effective use of waste	Initiative for the development of energy collection technologies using biomass	—	Biogas power generation using food waste and other materials
4	Environmental awareness initiatives	Organize our own environmental awareness initiatives	—	Introduce a new management system and implement an in-house environmental education program developed by the REMATEC Group
		Plan and organize guided tours of our plants on a regular basis	—	Facility tours at individual factories and plants for visitors from inside and outside Japan

in group companies are reported to the Safety, Health, and Environmental Committee office immediately after their occurrence, with accident reports presented afterward on the group bulletin board. By sharing recurrence prevention analysis data and follow-up reports, we study effective measures to prevent accidents from recurring.

We conduct scenario-based fire drills twice each year. In December 2016, we conducted training on how to report fires to relevant fire stations, along with a fire drill using hydrants and fire extinguishers. As a result, we discovered changes that needed to be made to procedures as well as defects that needed to be corrected, which led us to revise manuals and to take other measures to enhance safety. Thanks to these ongoing efforts, we were recently commended by Taiheiyo Cement Corporation's Oita Plant for our zero accident record over the past 27 years. We would like to express our gratitude to Taiheiyo Cement Corporation and the Institution for Occupational Safety and Health for their support and guidance. Each of our employees will continue to extend the zero accident record under the "Safety First" slogan.

Our Eco-First commitment

REMATEC Holdings Corporation was recognized by the Ministry of the Environment as an environmental leader in its industry for its Eco-First commitment in 2008 and has undertaken eco-first initiatives since then.

We monitor the progress of these initiatives and periodically announce their outcomes in CSR reports and on our corporate website. In addition, we also submit reports to the Ministry of the Environment.

We will continue to implement advanced initiatives as we promised to the Ministry of the Environment. At the same time, we will also promote collaboration between Eco-First companies with the help of the Ministry and contribute to further advancing global environmental conservation initiatives in Japan, including measures to prevent global warming.



Messages from Group Company Presidents



REMATEC

REMATEC Corporation | Yoshiyuki Yabu President

Since the construction of a waste treatment plant in 1983, REMATEC Corporation has been supplying reclaimed fuel (RF) to cement companies by using waste as resources and by developing innovative, original technologies. We promote our business activities based on our commitment to the corporate philosophy of mobilizing our core technologies for recycling materials to promote the economic and efficient use of global resources. Our mission is to contribute to the creation of a sustainable society at a more specific level.

Currently, our company's core business is waste recycling. However, we have also launched disaster recovery support and biomass power generation businesses, acquiring experience and achieving tangible results in these fields.

Through promoting waste and resource recycling, we would like to serve as a company that can address social problems and more flexibly respond to changes by furthering our experience and know-how in order to continue to contribute to society.

REMATEC
R&D**REMATEC R&D Corporation** | Daisuke Ito President

To further expand the scope of our business and support the use of zero waste infrastructure, we need to improve our expertise and promote collaboration with partner companies specializing in different fields. In particular, to resolve diverse environmental issues that are unique to each country and region, it is essential to work based on our experience as experts to create value that can be shared with stakeholders, thereby building a close relationship of trust with them. To that end, we address issues with a strong commitment to reforming ourselves in step with changes in society to create a bright future. We are willingly accountable for the content and results of our initiatives and actively create opportunities to receive candid advice. By using fresh and creative ideas based on technological grounds, we will address environmental issues and continue to take up the challenge of resolving them in order to contribute to society.

REMATEC
KYUSHU**REMATEC KYUSHU Corporation** | Shinichiro Yano President

Our company is currently working under the slogan, "We must change," developing activities to improve our corporate capabilities to quickly respond to changes in the surrounding environment.

Our first aim is to raise the quality of intermediate treatment by improving our production skills. Our second aim is to ensure stable production and supply of recycled fuel for cement companies. Our third aim is to take up the challenge of developing new businesses for the next generation and to participate in revitalizing local communities.

In the maintenance business, we are also working to reduce the burden of industrial waste treatment for our customers by proposing integrated treatment from construction to waste collection.

Finally, we will draft a business continuity plan (BCP), which is required by society in our line of work, and construct a system that enables us to fulfill our public mission as a corporate citizen with the aim of creating a company that can meet the expectations of all stakeholders.



RTT

RTT Corporation | Isamu Hisanaga President

In 2050, our society will need a system for utilizing carbon-free hydrogen energy. To that end, we have launched an initiative for low-cost and environmentally friendly hydrogen transportation required to build a hydrogen supply chain. We are fully mobilizing the know-how to improve operating rates and turnover rates that we have acquired through our experience in the waste collection and transportation business, as well as our relationships of trust with venous and arterial logistics companies. By using these assets, we plan to focus on the last mile in our business to deliver energy supplies to end users in Japan. Furthermore, to solve the shortage of drivers and vehicles, we are also developing business models focused on sharing rather than owning. Predicting the future of hydrogen societies always involves difficulties due to factors such as uncertainty in the peak-oil period. Despite such difficulties, we will keep our minds open to change without fearing what the future may bring. Our aim is to contribute to developing Japanese industries supported by industrial innovation, realizing a recycling economy, and building zero waste infrastructure.

REMATEC
TOHOKU**REMATEC TOHOKU Corporation** | Tomokazu Nomura Director

REMATEC TOHOKU Corporation has entered the final fiscal year of its three-year medium-term management plan and is preparing to draft a plan for the coming 2018–2020 period. Over the past three years, we have focused on creating a corporate system that provides a basis for a sustainable company as well as on developing the personnel required to mobilize the system. Although we have not as yet reached our goal, we believe we are making steady progress toward it.

We were also working to launch a local renewable energy business. However, we have recently come to the conclusion that it is not feasible to establish such a business as an independent company. Therefore, we are reviewing the possibility of starting it as part of a complex business. In addition, we are also embarking on initiatives aimed at creating new value in resource recycling. Thus, our new business activities have diversified to such an extent that they no longer fit into any existing category of industry. We will strive to further develop new businesses in Tohoku in collaboration with people working in all local industries.

Re:CS
Re-Creation for Sustainable Society**Re:CS Co., Ltd.** | Yorihiro Shiomi President

Having been founded by integrating the sales divisions of three companies including REMATEC, Re:CS Co., Ltd. has entered its third fiscal year.

By fully mobilizing the network that we have developed over the years, we provide a streamlined and efficient resource recycling flow. To that end, we use an integrated management system supported mainly by the Re:CS Group designed to effectively use existing infrastructure, to develop new local recycling zones, and to manage supply chains. Our company has an important role to play in light of the current circumstances where recycling structures are not well established in urban areas in Japan. We believe we can contribute to society by building optimal zero waste infrastructure while also achieving sustainable development of our company as an indispensable entity for society.

With a view to creating a company that inspires employees to dream and instills them with pride, we will strive to the utmost to further develop our business activities under our corporate slogan, "Re-Creation for Sustainable Society," from which our company name is derived, thereby earning the trust of society and all our stakeholders.



REMATEC Corporation

- Industrial waste treatment
- Reclaimed fuel (RF) production
- Biogas power generation business
- Environmental restoration

REMATEC Corporation further strives to usher in a sustainable society for the benefit of all stakeholders by continuously making our recycling technologies more sophisticated.

REMATEC Corporation has been taking environmental initiatives to tackle social issues by developing recycling technologies to handle diversifying industrial waste. Building on its rich experience gained through assisting in post-disaster recovery, reconstruction, and environmental restoration, the company strives to work with its group companies to pass on a better environment to the next generation.

Reduction of environmental loads in RF production process

We are making efforts to reduce environmental loads through the following two activities:

- (1) Regular measurement with an odor measurement device
- (2) Odor control during discharging of vehicles [suction of exhaust gas from a vehicle pump with deodorizing equipment]



(1) Regular measurement with an odor measurement device

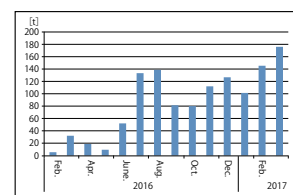


(2) Odor control during discharging of vehicles

Biogas power plant

Another way we contribute to society is by recycling more organic waste (e.g., sludge) with reliable collection of methane and carbon dioxide gases from the fermentation process.

In anticipation of an emergency at the biogas power plant, drills are conducted by simulating situations such as spills from gutters and practicing the countermeasures for them, like sandbagging.



Amount of waste received



Prevention of spills from gutters

Kumamoto Project

The Kumamoto Project aims to treat 0.83Mt of disaster waste from the Kumamoto Earthquake of April 2016. The waste is accepted at five temporary storage sites for intermediate treatment like sorting and pulverization. In order to complete the treatment by the end of March 2018, five REMATEC employees experienced in disaster waste treatment were loaned to Konoike Construction Co.,Ltd. as our contribution to the reconstruction of Kumamoto.



Move forward Kumamoto, one step at a time!



Wood pulverization

Employee comments

Shingo Kobayashi Assistant Manager, Production Department

This is my 20th year with the company and I am in charge of biogas power generation. I still struggle getting use to my new assignments as they are quite different from what I used to do, but I just make sure to carry out my work with passion and dedication, just like the national keyword for this year, which was "earnest." Biogas power is generated by burning combustible gas from the fermentation of waste, contributing to the recycling of local resources.

The safety of equipment is ensured by various safety monitoring systems. But workers must detect invisible signs of danger. We will enhance our skills to prevent accidents and build local trust in our company.



2017 TOPICS

Efforts to reduce power consumption

Constant operation of the mixer in the plant was a major cause of wasted power. In fiscal year 2016, we began to manually turn off the mixer during breaks, which achieved a reduction of 19.51 MWh (2%) compared to the previous year. This is equivalent to 9.9 t of CO₂.

In fiscal year 2017, further reduction can be expected, because the automatic intermittent operation of the mixer became possible by adding a program to the control system.



Mixer



Addition of a control program



Evacuation to a shelter on foot

Ensuring BCP

Among the various threats that disrupt our recycling business, we envisage emergencies involving natural disasters and ensure our business continuity by building a preparedness system with predefined responses. To this end, we conducted evacuation drills of employees, checked routes for evacuation on foot, and obtained relevant data such as time required for evacuation.

Efforts to build an integrated management system

In fiscal year 2016, our system was upgraded to JIS Q 14001: ISO 14001: 2015, which was successfully certified after the upgrade review by JICQA. In anticipation of the introduction of ISO 45001, our preparation to switch from OSHMS based on JISHA to an integrated management system in line with BS-OHSAS 18001: 2007 began in the latter half of fiscal year 2016. Our organization-wide extraction method for risk assessment, ledger sheets, and records were reviewed and revised to plan for activities related to occupational safety, health, and environment with ever higher standards. Our system construction began in 2017. In the latter half of the year, we plan to complete certification and registration by undergoing the review of our integrated management system (ISO 14001 and BS-OHSAS 18001).



Award for Employee Excellence from the National Federation of Industrial Waste Management Associations

During the 7th ordinary meeting of the National Federation of Industrial Waste Management Associations on June 16, 2017, our company received the Award for Employee Excellence. Excellent employees are identified based on their years of service, exemplary performance, contribution to their employers, and other defined criteria.



Stakeholder comments



Mr. Yoshihiro Kadoya
Director, Alliance of Konoike Construction, Maeda Industry, Maeda Environment Clean, and Kyushu Sanko-Unyu, Ajioka Construction

Since November 2016, we have been undertaking the treatment of waste from the demolition of houses affected by the Kumamoto Earthquake. This project contracted by Kumamoto City aims to treat 0.83 Mt of waste produced by the earthquake by the end of March 2018. We have been able to carry out the task smoothly so far thanks to support from the REMATEC Group led by REMATEC Cooperation. We appreciate their excellent planning and technical support from the beginning of the project. Their five experienced employees loaned to us are fulfilling crucial roles in earthquake waste treatment at each of the five temporary storage sites in Kumamoto City.

Over the years we have partnered with REMATEC in providing environmental services, we have been impressed by the creativity and planning abilities demonstrated by their employees on site. Such strength is uncommon among general construction contractors, and is frankly, quite enviable. Over half of the work that needs to be done for this Kumamoto Project is complete. We would like to complete our work with REMATEC and leave a positive legacy in the local community.

We sincerely wish for the continued development of the REMATEC Group as they continuously strengthen their on-site capabilities.



REMATEC KYUSHU Corporation

- Industrial waste treatment
- Reclaimed fuel (RF) production
- Industrial waste collection and transportation
- Environmental restoration
- Equipment maintenance

Gratitude, sincerity, and evolution

With recycling at the core of its business portfolio, REMATEC KYUSHU produces reclaimed fuel for cement producers by applying our original intermediate processing technology to process industrial waste on behalf of waste generators. Our production facility with an advanced safety system is licensed as a production plant of hazardous materials. In the spirit of co-existence and co-prosperity with the local community, we strive to become a company without any accidents and disasters, and thereby gain trust from all stakeholders.



Safety

Elimination of risks by risk assessment and patrols

◎Improvement of safety blocks for performing work at height

In response to the request for improved safety of work carried out at heights in the plant, we collected opinions from employees performing such work and engaged in a series of discussions with a manufacturer. Better work safety was able to be ensured by overhauling the basic design of safety equipment.



◎Anti-slip treatment at the plant entrance

On the slope near the plant entrance, vehicles used to slip when there was freezing or rainy weather. In response to requests from employees in charge of transport, anti-slip treatment was applied to the slope.

Environment and quality

Introduction of a mercury measurement device

In April 2018, it is expected that the Air Pollution Control Act will be partially amended to keep pace with international efforts to reduce mercury emissions and to properly manage mercury in accordance with the Minamata Convention. Accordingly, we introduced a mercury analyzer in March 2017 to ensure the safety of our product (RF). We developed a system to control mercury concentration by keeping track of the mercury content of the waste accepted for fuel production and by adjusting the proportion of the mixture. Our business partners appreciate our enhanced environmental and quality performance.



Mercury vapor analyzer MA-3000 by Nippon Instruments Corporation



2017 TOPICS

Local area

Local activities

◎Participation in the third Hometown Festival

On August 14, 2017, the Miyakomatsu Development Council organized the third Hometown Festival. Our company also joined the festival as a member of the Environment Group and a sponsor. Because of the rainy forecast, the main venue was relocated to the local gymnastics hall. Our barbeque stand was set up under a tent outdoors. Luckily, it didn't rain and a total of 360 local residents and visitors came to enjoy the lively festival. Our ever-popular barbeque stand served many people. It was a rare occasion to deepen communication with local community members. In the continued spirit of symbiosis, we will proactively join local events and help build a bright and joyful community.



◎The 17th Ground Golf Cup organized by REMATEC

On April 13, 2017, REMATEC organized a ground golf game, which is now a local tradition. In nice weather with cherry blossoms at their best at kiccyomu Land in Notsu, Usuki, Mayor Nakano from Usuki made an opening speech before the lively game played by a total of 224 players from the ground golf associations in Tsukumi, Usuki, and Notsu. Our employees enjoyed interacting with local players as they tried, sometimes successfully, to get the ball where they wanted it to go on unfamiliar ground.

Comments from a new recruit

Kouhei Adachi Production Team, Production Department

Wasting no time to become a reliable member

It has been half a year since I joined REMATEC KYUSHU after graduating from a local high school. At first, I was overwhelmed by all the unfamiliar words and equipment. But my understanding is growing deeper thanks to the guidance from senior employees as we work together. My regular assignment is receipt of waste delivered to the plant and waste sampling for analysis before it is conveyed to the storage tank. I obtained a license to operate a forklift for loading waste, and now they entrust me with the organization of drums. In the course of obtaining many more qualifications as a professional, I am becoming keenly aware of our obligation to ensure safety. My goal now is to learn every job in the Production Department and become a reliable member of this company. To do so, I will try to resolve any questions on the spot, develop my skills day by day, and familiarize myself with assignments.



Comments from the community



Mr. Terumi Nonaka
President, Mayor Board of
Miyakomatsu

Expansion of local employment as a community member

Since my appointment as the president of the mayor board of Miyakomatsu last year, I have been carrying out my duty to stimulate the local economy by participating in the management of the local promotion council, of which I am also a member. With the decline of agriculture as the core industry, Miyakomatsu has been experiencing depopulation combined with an increasing ratio of elderly people as youths continue to leave the community. In 2015, a promotion council was set up to revitalize the local community. The closed Miyakomatsu Elementary School was transformed into the Exchange Center, where local people get to enjoy time together. To promote health, we are trying to deliver unique local products such as perilla, black garlic, and sweet tea. We sincerely appreciate the generous support from REMATEC KYUSHU for the continuing activities of the promotion council. Revitalization of the local economy must be underpinned by vibrant local companies. With the continued prosperity of REMATEC KYUSHU, I believe the local economy will be stimulated thanks to the expansion in local employment. We sincerely hope for the continued growth of the REMATEC Group.



REMATEC TOHOKU Corporation

- Contracting work related to resource recycling
- Coordination of waste recycling
- Business related to local renewable energy system construction



Disaster recovery in Ofunato

In pursuit of new business and value through cooperation with stakeholders

In our fourth year of operation, REMATEC TOHOKU is steadily developing its business foundation at Ofunato. In fiscal year 2016, we developed an environmental management system. Starting in fiscal year 2017, we will develop an occupational safety and health management system, to be followed by the integration of these two systems.

Our main business is the contracted recycling operation at Ofunato Plant of Taiheiyo Cement Corporation. In addition, we continue to propose recycling of various kinds of waste, as well as ideas to combine renewable energy with new business opportunities.

We have also begun to create new value in pursuit of enhanced resource efficiency.

Some examples are presented below.

Proposal of the reduction of resource consumption by turning waste into valuable resources

We began to recycle waste liquid from printed circuit board manufacturers and vinyl chloride plastics that used to be landfilled. By turning them into valuable resources, we are able to reduce costs for our clients, the amount of resource consumption, and the amount of resulting waste. By offering such new solutions, clients began to seek our help with other kinds of waste.

We would like to achieve a better material cycle by proactively proposing reliable solutions for our clients.



Waste liquid from printed circuit boards



Waste vinyl chloride plastics

Recycling and optimal treatment of illegally dumped waste and earthquake waste in local communities



In a joint project with local companies, we proposed a solution to recycle and optimally treat illegally dumped waste mixture (plastics, tires, home appliances, concrete, etc.) in fish ports along the coast of Kesennuma and underwater debris and other objects deposited after a tsunami that are difficult to treat.

We aspire to become the first point of consultation for clients whenever they face any challenges. To this end, we will carry out daily assignments in earnest while considering cooperation with each client to be of great importance.

REMATEC TOHOKU participated in the Symposium for Building an Environmentally Conscious City of the Future in Greater Kesennuma

On March 20, 2017, the Symposium for Building an Environmentally Conscious City of the Future in Greater Kesennuma was organized at Rias Hall in Ofunato. Our representative participated in the event as a panelist to explain our activities since 2014 and future plans in front of the audience from the Kesennuma area.



2017 TOPICS

Future activities

◎Building up our business foundation

Following the development of the environmental management system last year, we are working to develop an occupational safety and health management system. Usually, a separate management system is employed because of the difficulty in integrating an existing management system with ISO standards and the like. But our company is trying to devise a way to make integration with common management systems possible by building on the integration of management systems for the environment, and occupational safety and health as planned for this year.



Certification and registration

◎After the Ofunato Project

Our initial idea of running a local renewable energy business with methane fermentation was deemed infeasible as a standalone project. Accordingly, we are exploring a combination of multiple businesses using a common resource. As the demand for reconstruction in Tohoku is winding down, we are exploring a viable business that benefits local communities.

◎Challenge to create new sustainable value

Companies typically carry out environmental activities as a part of their CSR programs divorced from business operations. REMATEC is taking up a new challenge of creating value that leads to the reduction of local environmental loads and enhanced resource efficiency in such a way that it also makes sense as a business.

REMATEC seeks to create value that leads to a departure from a throwaway lifestyle in the short term, while trying to propose materials that enhanced resource efficiency in the long run. Although durability of materials is certainly important for achieving value that displaces the throwaway lifestyle, REMATEC is focusing its attention on design in order to turn recycled materials into items that people don't get tired of even after using them for a long time. We proposed the use of such novelty items as promotional items for companies and local communities.

Today, we are preparing a website to introduce these activities to attract project partners who agree with the new value we are trying to embody.



Waste materials



Calendars made from waste materials

Employee comments

Yusuke Murayama Sales Department

REMATEC TOHOKU proposes waste treatment and recycling utilizing its extensive network, and other new ideas for handling waste. The ongoing reconstruction work generates materials that cannot be treated easily. Some of these materials do not clear acceptance criteria for producing recycled cement. In order to clear the necessary standards, we proposed a pre-treatment method after conducting a preliminary test with a manufacturer. Ultimately, we were able to recycle them for use in cement. In collaboration with local companies, we actively engage in optimal treatment of waste mixture and other operations by mobilizing our group-wide experience and know-how. We intend to continue our recycling and other activities hand-in-hand with local community members with the aspiration of becoming a reliable advisor for them. We'd like to hear people say: "Let's ask REMATEC TOHOKU. They can help us solve this problem."





REMATEC R&D Corporation

- Overseas operations
- Development of new businesses and technologies



Open innovation to create new environmental technologies for the next generation

REMATEC R&D is addressing various environmental challenges by creating new environmental businesses and technologies for the next generation. The company actively seeks open innovation to combine the technologies and know-how cultivated by the REMATEC Group with findings and technologies of other stakeholders to offer innovative solutions for increasingly multifaceted and complex environmental problems. We will continue our endeavor to work with other group companies and various stakeholders to build zero waste infrastructure, while always remembering the perspectives of ESG*. In this way, we believe the mission of the REMATEC Group will be fulfilled.

* ESG: Environment, Society, and Governance

Shaping a recycling-oriented society

Planning and studies to become a hub for innovation

In the recycling, renewable energy, and other environmental businesses in which we specialize, innovation cannot take place easily by relying on technology alone. Our company seeks out innovation by serving as a hub that matches technologies and know-how found in and outside of the REMATEC Group while identifying hidden social problems both in Japan and abroad (see the table below).

Notably, there are two major overseas projects in their implementation phase. In preparation for the fast approaching plant construction in these projects, we work particularly closely with REMATEC & KSN Thailand, which is responsible for the management of the group's business operations in South East Asia.

	Overseas	Japan
Implementation phase	<ul style="list-style-type: none"> Phra Samut Chedi Project EFB Project (see pages 30 and 31 for more details) 	<ul style="list-style-type: none"> Mantenmaru® Project (see the page on the right for more details) Consulting on disaster waste treatment
Study phase	<ul style="list-style-type: none"> ISO/TC 300 Minamata Convention Secondary cells 	<ul style="list-style-type: none"> Household hazardous waste Introduction of IoT and AI into the RF business ISO 45001

Development of waste-derived materials for making low-cost batteries

We need to promote the practice of the 3Rs (reduce, reuse, and recycle) to build a robust recycling-oriented society. Following our discovery of rare metals in otherwise unused waste, our company has been trying to develop and commercialize an integrated production process for making batteries by recovering rare metals as valuable materials.

In a pilot project for demonstration and evaluation in fiscal year 2016, we confirmed that the desired materials can be made at a low cost from multiple raw materials.



Raw material



Intermediary material (waste-derived)



2017 TOPICS

◎Fusion between fishery and cement industries Mantenmaru® Project

Japan used to enjoy a bounty of fishery resources. But, they are on a decline due to the loss of seagrass beds, tidal flats, and so forth.

In collaboration with Taiheiyo Cement Corporation, our company is trying to address the problem by developing Mantenmaru®, an aggregate that supplies the nutrients needed by marine creatures. The product is made by processing biomass (byproducts from the recycling process of wood waste and fish dregs) with a cement coating technology. Mantenmaru® encourages the growth of seagrass and attracts fish and shellfish, thus playing an important role in restoring coastal environments.

REMATEC also works with Osaka Prefecture University and non-profit organizations. In fiscal year 2016, we began a three-year initiative as part of the Project to Regenerate the Ocean Environment in Osaka in a program by JST-RISTEX to design a sustainable society that will last generations.

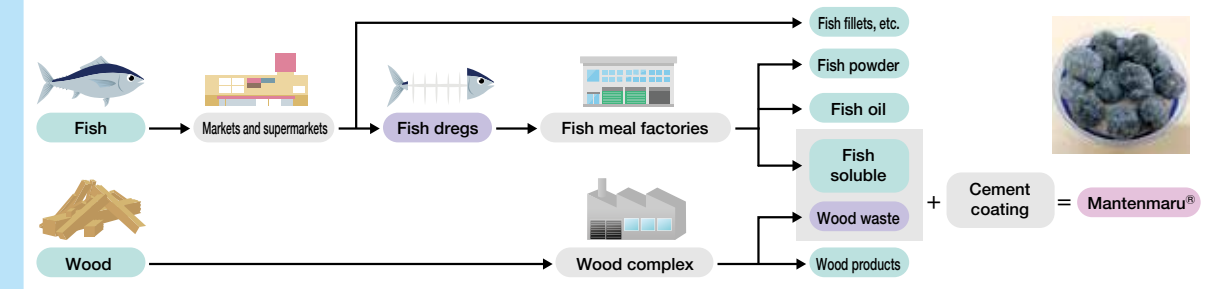
Stakeholder comments



Mr. Hiroyuki Takano
General Manager, R&D Department 3
Central Research Laboratory
Taiheiyo Cement Corporation

The recent decline in the fishery output in Japan is the result of the deteriorating environment in nearshore waters. To tackle this problem, our company worked with REMATEC R&D to develop Mantenmaru®, a spherical cement aggregate made with fish dregs to supply important nutrients like amino acids. It attracts fish and shellfish to help create a better marine environment. Currently, a demonstration is being carried out in the Bay of Osaka with financing from JST. The business feasibility depends on the availability of fish dregs and other raw materials in local waters. In this regard, cooperation with REMATEC R&D is essential. We will try to expedite further technological development to turn our idea into a commercial reality.

Flow of materials



◎Sharing our technologies in Japan and beyond

REMATEC R&D tries to share the experience we gain from our efforts and technologies to tackle problems both in Japan and beyond. That's why we welcome study tours by other companies, civic groups, JICA, and other visitors to our plant. In addition, we make presentations at various workshops. We believe that presentations on how the REMATEC Group's technologies are applied is the best way to propose solutions for stakeholders who are facing serious challenges in waste treatment.



◎Environmental education inside the company

In December 2016, thanks to cooperation from stakeholders, we were able to organize a study tour to learn about facilities beyond our company to stimulate further innovation for tackling environmental challenges. Plants our employees visited transformed waste into energy in different ways from ours. These excellent recycling and management systems served as useful references for our future activities.



Comment from our employee

One of the things in common between our hosts was that they all promoted automation to save labor. The practice not only helps keep down fixed costs, but also prevents accidents caused by human errors. I'd also like to keep this lesson in mind as our company tries to commercialize our ideas.



RTT Corporation

- Industrial waste collection and transportation
- General cargo transportation
- Equipment cleaning



Messages from our employees



Kazuhiro Yanagida

We are making the best use of our inventiveness so that everyone can work together with a smile.



2017 TOPICS

Enhancing transport skills for building a new energy logistics infrastructure

The Energy Innovation Strategy started off in Japan as a measure to curb global warming by striking a balance between environmental constraints and growth. Accordingly, it is essential to build low-cost transport infrastructure to, for instance, deliver hydrogen to small- and medium-sized plants as a new source of energy, and to convey thermal energy from exhaust heat.

As a first step, we intend to propose reductions in CO₂ emissions and transport costs by leading in the formation of the joint logistics network for industrial waste, byproducts, and general cargos. The network will serve consigners of Re:CS, Sangi Tuuun Co.,Ltd., and Mori Shoji Co.,Ltd. For instance, the network will help match transport routes of affiliated companies, effective use of drivers and vehicles during busy and low seasons, in addition to setting up a training center for new recruits to ensure that they feel comfortable in their work, and thereby secure necessary human resources. The effective use of this joint logistics network can create a small-lot logistics market in the new energy sector in the Kansai area, home to small- and medium-sized plants.

In order to shape such a joint logistics network, this fiscal year we started to learn about various technologies involved in truck transport. This is an important step to growing into a truck transportation company with sophisticated technologies and set up the training center for new recruits. We are expanding our capabilities by applying the technologies and know-how of Sangi Tuuun for transporting powder and granular materials on bulk vehicles, and those of Mori Shoji for transporting poisonous materials on chemical tanker trucks.



Employee comments

Shuichi Kitamura Traffic Control Department, Osaka Branch

Acquisition of technologies for transporting poisonous materials on chemical tanker trucks

It has been nine years since I joined this company. I was mainly in charge of the collection and transport of waste oil (industrial waste) with ordinary tanker trucks until I was assigned to transport hydrofluoric acid, which is classified as a poisonous material, on chemical tanker trucks.

What surprised me first was the greater difficulty in operating chemical tanker trucks compared to the trucks I used to operate. There are many procedures and checkpoints to be remembered for safe operation because of the numerous levers and valves, and differences in hose connections. Moreover, I learned that hydrofluoric acid needs to be handled extremely carefully because if this highly hazardous material gets on skin, it can easily penetrate into the body and eventually dissolve bone.

Initially, I was surprised and confused about many things. I was worried if I could even handle the job. But, thanks to helpful guidance from Mori Shoji Co.,Ltd., I acquired the skills I needed to transport poisonous materials.

I will try to enhance my skills as I pass them on to other crew members. I will try to win the trust of clients by doing this new job without causing any leaks or chemical injuries so that they can confidently entrust more jobs to us.



Stakeholder comments



Mr. Hiroyuki Mori
Executive Director
Mori Shoji Co.,Ltd.

With a spirit of “we will handle it!”

Ever since our establishment in 1950, we have been offering logistics services in the venous industry. Throughout the evolution of the industry, we have tried to meet market expectations for compliance, security, safety, on-site flexibility, and so on.

Meanwhile, people are grumbling about the current labor shortage in all kinds of industries, including logistics. Our company partnered with RTT to overcome this problem by sharing our skills and labor forces. We then started assisting in service delivery mainly in the Chubu and Kinki regions.

We mostly handle inorganic poisonous materials. My guess is that RTT wasn't familiar with the properties of strong acids. But, we were impressed with the enthusiasm of RTT staff lead by President Hisanaga who tirelessly and scrupulously learn every detail of new tasks (and chemical properties). Our clients also highly evaluated our joint effort.

Our company has lived up to our belief: “Only we can do it, that's why will handle it!” We were deeply inspired by President Hisanaga who demonstrated the same attitude. We would like to continue to share our skills and labor forces to cater to client needs and prosper together.

President Hisanaga and colleagues from RTT, let's upgrade our skills with the spirit of “we will handle it!”





REMATEC & KSN Thailand Co., Ltd.

- Planning, development, and investment in resource recycling businesses in Thailand and throughout Asia



Serving as a social innovator in the environmental industry in South East Asia

REMATEC & KSN Thailand (RKT) mainly engages in the planning and promotion of waste recycling businesses in Thailand, development of businesses for making use of unutilized resources in Asia, and investment into these businesses.

From fiscal year 2016 to 2017, many projects that had been prepared by RKT reached their implementation phase.

In Thailand, a recycling plant for unutilized residue was constructed for the ongoing trial operation by Green Conservation Solutions (GCS), a joint venture with SCI ECO Services Co., Ltd. from the Siam Cement Group, the largest corporate group in Thailand. Also, the Phra Samut Chedi Project will get rolling shortly after the joint preparation with municipalities, REMATEC R&D, and NEDO from Japan.

In Malaysia, a pilot study was completed for the Empty Fruit Bunch (EFB) Pelleting Project jointly conducted with our local partner The Green Biomass Sdn. Bhd. (TGB), and Taiheiyo Cement Corporation from Japan. The construction work has already begun.

Commitment of upper management



Environmental Innovation for Asia

Chanet Rattakunjara

REMATEC & KSN Thailand Co., Ltd. CEO

Thailand lags behind Japan in waste treatment and recycling, which fact resulted in major environmental problems. REMATEC & KSN Thailand strives to help improve and conserve the environment by tailoring a waste treatment system for the country with the experience shared by the REMATEC Group and Kansai Saisigen Network (KSN).

Going beyond Thailand, we are working with a joint venture in Malaysia (The Green Biomass Sdn. Bhd.) to produce fuel from empty fruit bunches generated in the course of palm oil production. In this way, we are trying to offer an environmental solution to the challenge posed by conventional landfill disposal.

Employee comments

Utaree Norkam CSR-Team Leader

For clean environment at Phra Samut Chedi

I am the CSR team leader for the Phra Samut Chedi Clean Environmental Technology Demonstration Project*. Our main role is to advertise optimal waste treatments to municipalities and local community members for the benefit of the next generation.

By demonstrating enthusiasm, sincerity, and humility with a smile on my face, I am trying to gain support and respect for the project from team members, fellow citizens, municipality staff, and all people involved.

* Reference <https://www.newcleanforprasamutchedi.com/>



2017 TOPICS

◎Completion of the GCS Onnut Recycling Plant

In May 2017, GCS, a joint venture between RKT and Siam Cement Group, completed the construction of a recycling plant for landfilled residue from local composting plants.

The plant was designed and constructed by SCI Eco Services. RKT is conducting training and operational guidance for the plant staff with support from the REMATEC Group and KSN in Japan.



◎An introduction movie was completed for the Phra Samut Chedi Project.

An introduction movie was completed for the Phra Samut Chedi Project jointly carried out by NEDO and REMATEC R&D in Japan, as well as local municipalities and GCS in Thailand. In the video, a rubbish fairy as a mascot briefs a girl on the project and explains the importance of recycling in simple terms.

The video will be shown to plant visitors once the project starts. We invite you to watch the video, which will also be published on the website of the REMATEC Group.

Stakeholder comments



For co-existing with environment

Mr. Loi Tien How, jeff

The Green Biomass Sdn. Bhd. Managing Director

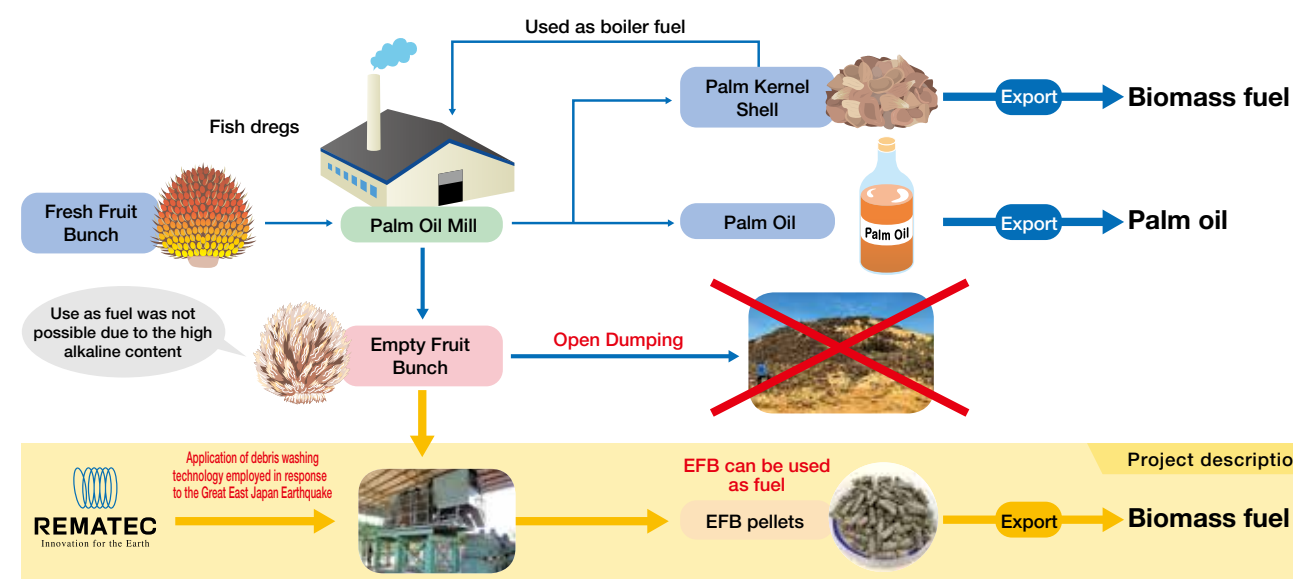
I am Jeff, the president of The Green Biomass established in 2010. Our company is now a joint venture with RKT. My role is the management, operation, and strategic planning of the company.

The palm industry is one of the key industries underpinning Malaysia's economy. At the same time, the industry puts a great load on the environment.

To relieve the environmental burden, The Green Biomass is working with the REMATEC Group to produce fuel from palm waste. Our partner constantly impresses us with their excellence in technological application.

We would like to contribute to the efforts to enable the palm industry to better coexist with the environment.

◎Overview of the EFB Pelleting Project





Re:CS Co., Ltd.

●Zero waste solutions



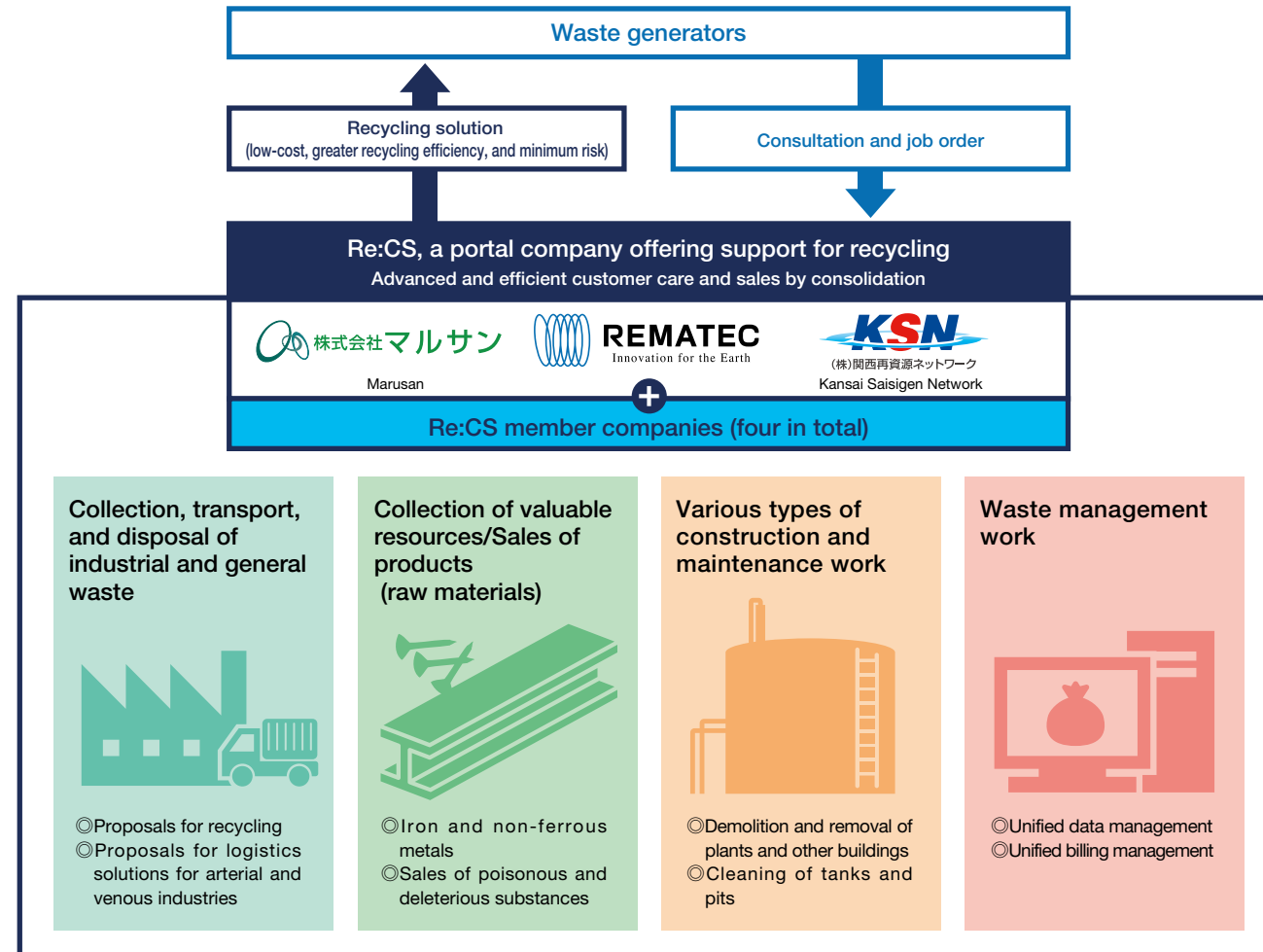
Corporate Slogan

Working toward “Re-Creation for a Sustainable Society”

In March 1, 2016, three Kansai-based recycling companies—REMATEC Corporation (Kishiwada, Osaka), Marusan Co.,Ltd. (Suita, Osaka), and Kansai Saisigen Network Co.,Ltd. (Sakai, Osaka)—integrated their sales operations to found Re:CS. We have reached our third fiscal term. We will try to provide an optimal recycling service among a wide range of choices for each client while constantly enhancing the quality of our services. We strive to be a close and reliable partner for our clients by addressing their recycling problems.

Re:CS's strength: A comprehensive resource recycling service

Seven leading waste treatment companies in the Kansai region work together with a view to providing waste generators with customized and optimal solutions.



2017 TOPICS

◎Reinforcement of human resources

Adapting to major changes in social landscape, working environment, and so forth, Re:CS is taking initiatives to recruit and train new sales workers. We strive to enhance our professionalism and on-site abilities by conducting OJT and in-house training on sales.



◎Enhancing services through the eyes of clients

We are trying to become an even more reliable partner by providing optimal recycling services. To this end, we introduced a sales management tool to successfully streamline our daily sales activities and consolidate the know-how of sales workers. In this manner, the know-how of three companies can be fully passed on to all sales workers to provide better services through the eyes of clients.

◎Joining the JPTA (Japan PCB Total Disposal Association)

Re:CS joined the JPTA with a commitment to end the disposal of polychlorinated biphenyl (PCB) by March 31, 2021. We mainly assist in PCB disposal on behalf of storage operators in the Kansai region. We propose the best services for tackling challenges involving PCB waste.

- (1) Counting the total number of lighting devices
- (2) Examination of stabilizers and PCB sorting, as well as packaging mode for transport to JESCO (Japan Environmental Storage & Safety Corporation)
- (3) Proposal for treatment of waste containing a low concentration of PCB



Employee comments

Masashi Nishimura Assistant Manager, Sales Department

It has already been one and half years since the foundation of Re:CS. Sales staff transferred from the three original companies (including myself) and new recruits to Re:CS are trying to ever broaden our horizons as we gain experience by handling waste for companies in diverse industries. Personally, I cherish the conversations I have with the many new companies and clients I encounter through my job. I will try to hone my sales skills by gaining diverse experience to contribute to the continued growth of our company. I hope that your reading this message does not end there, but that you feel a connection to our company. Our Re:CS team would be glad to be at your service.



Stakeholder comments



Mr. Tomohiro Ohmae
Director, Settsu Works
Marusan Co.,Ltd.

I am Tomohiro Ohmae, the director of the Settsu Works of Marusan. Let me introduce you to Marusan's business portfolio. We handle industrial waste treatment, as well as the collection and transport of general waste from Suita. We take the industrial waste we receive and sort and pulverize the waste plastic and other waste mixtures, followed by intermediary treatment by volume reduction before proceeding to recycling or RPF production. The joint establishment of Re:CS enabled us to make a broader range of proposals to address diverse challenges, which is expected to translate into more business opportunities. In order for this to happen, we need to collaborate to propose solutions as an integrated network of three companies specialized in the handling of solid, liquid, and food waste. Marusan looks forward to further collaboration with the Re:CS group for our mutual prosperity.

Environmental performance data from RF business

Target organizations: REMATEC Corporation, REMATEC KYUSHU Corporation, and RTT Corporation

INPUT

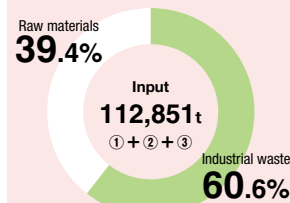
Resources

※Not subject to the Act on the Rational Use of Energy

Gasoline (kℓ)	22
Light oil (kℓ)	56
A heavy oil (kℓ)	78
Heating oil (kℓ)	0
Electricity (kWh)	2,774,711
Industrial water (m ³)	11,128

	REMATEC	REMATEC KYUSHU
Gasoline (kℓ)	5	17
Light oil (kℓ)	32	24
A heavy oil (kℓ)	0	78
Heating oil (kℓ)	0	0
Electricity (kWh)	1,085,705	1,689,006
Industrial water (m ³)	0	11,128

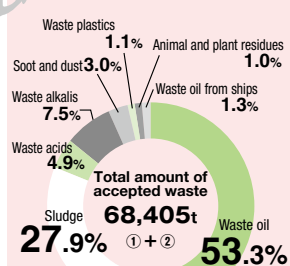
Materials for RF production



① Industrial waste (t)

Waste oil	36,453
Sludge	19,119
Waste acids	3,380
Waste alkalis	5,141
Soot and dust	2,026
Waste plastics	728
Animal and plant residues	661
Cinders	17
Scrap metal	0

② Waste oil from ships (t)



③ Raw materials (t)

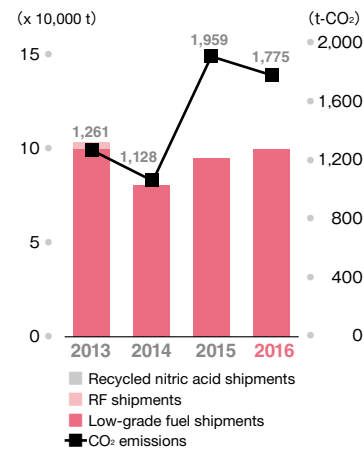
Recycled fuel	44,446
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Collection (transportation) business

Light oil consumption (kℓ)

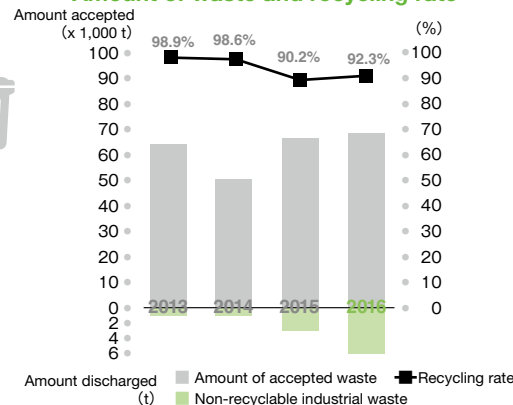
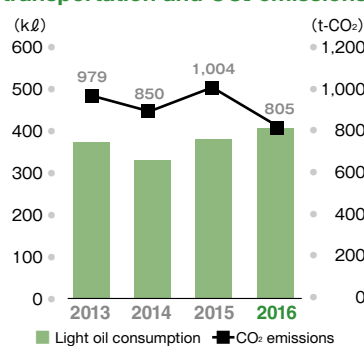
	RTT	REMATEC Kyushu	RTT Osaka Branch	RTT Kyushu Branch
Light oil consumption (kℓ)	409	101	178	130

RF production

Recycled materials and CO₂ emissions

Breakdown	REMATEC	REMATEC KYUSHU
① Industrial waste (t)	35,858	31,667
Waste oil	22,628	13,825
Sludge	7,032	12,087
Waste acids	2,688	692
Waste alkalis	2,649	2,492
Soot and dust	139	1,887
Waste plastics	722	6
Animal and plant residues	0	661
Cinders	0	17
Scrap metal	0	0
② Waste oil from ships (t)	0	880
③ Raw materials (t)	20,076	24,370
Recycled fuel	20,076	24,370

Amount of waste and recycling rate

Light oil consumption for collection and transportation and CO₂ emissions

OUTPUT

CO₂ emissions (t-CO₂)

1,775

Recycled material shipments (t) 109,118

RF shipments (t) 109,118

Low-grade fuel shipments (t) 0

Recycled nitric acid shipments (t) 0

RF shipments 100%

Recycled material shipments 109,118t

Non-recyclable industrial waste (t) 5,584

Recycling residues 5,514

Empty containers 70

Waste plastics 66

Wood waste 4

Paper waste 0

Fiber waste 0

Empty containers 1.0%

Non-recyclable industrial waste 5,584t

Recycling residues 99.0%

Valuable scrap metal (t) 924

Recycling rate (%) 92.3%

Recycling rate (%) 85.2

Recycling rate (%) 99.3

CO₂ emissions (t-CO₂) 1,065

RTT 260

REMATEC Kyushu 469

RTT Osaka Branch 336

RTT Kyushu Branch

Collection (transportation) business

CO₂ emissions (t-CO₂) 1,065

RTT 260

REMATEC Kyushu 469

RTT Osaka Branch 336

RTT Kyushu Branch

Collection (transportation) business

CO₂ emissions (t-CO₂) 1,065

RTT 260

REMATEC Kyushu 469

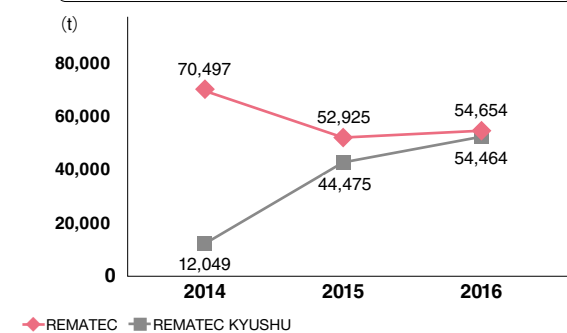
RTT Osaka Branch 336

RTT Kyushu Branch

Data Results of the REMATEC Group for FY 2014-2016

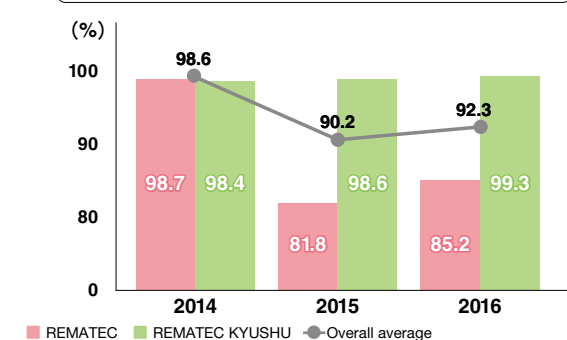
RF shipments

Target organizations: REMATEC Corporation and REMATEC KYUSHU Corporation



Recycling rate (%)

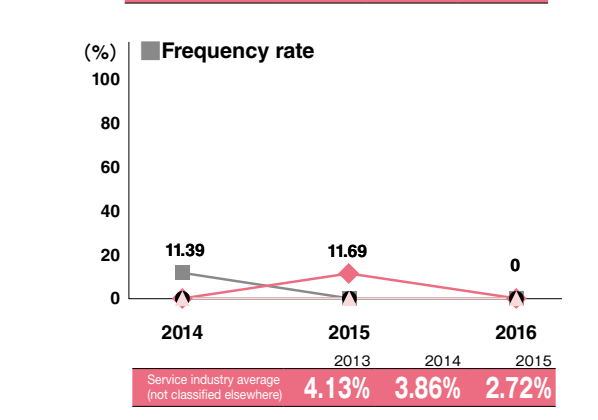
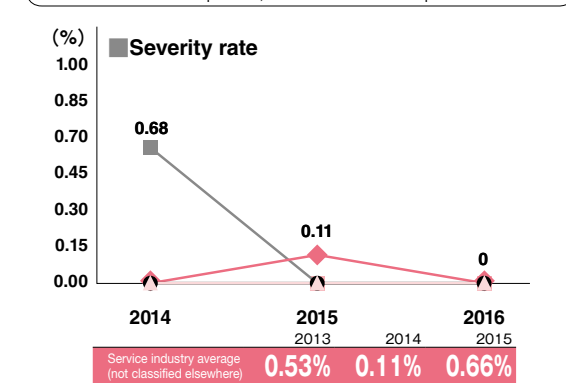
Target organizations: REMATEC Corporation and REMATEC KYUSHU Corporation



Severity rate & frequency rate

*Data collection period: January to December of each year

Target organizations: REMATEC Corporation, REMATEC KYUSHU Corporation, REMATEC TOHOKU Corporation, and REMATEC R&D Corporation

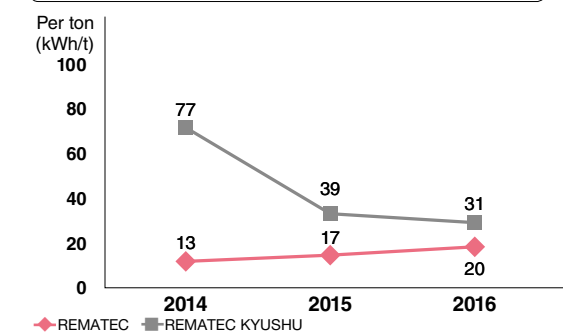


*Severity rate: Indicates an accident's severity based on the number of workdays lost per man-hour.

*Frequency rate: Indicates the frequency of accidents based on the number of casualties resulting from industrial accidents per man-hour.

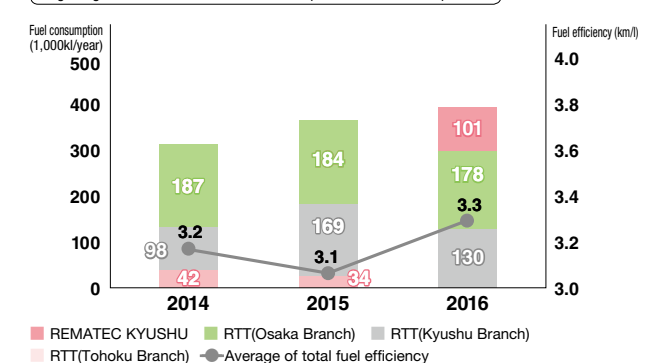
RF power consumption

Target organizations: REMATEC Corporation and REMATEC KYUSHU Corporation



Fuel consumption and fuel efficiency

Target organization: REMATEC KYUSHU Corporation and RTT Corporation

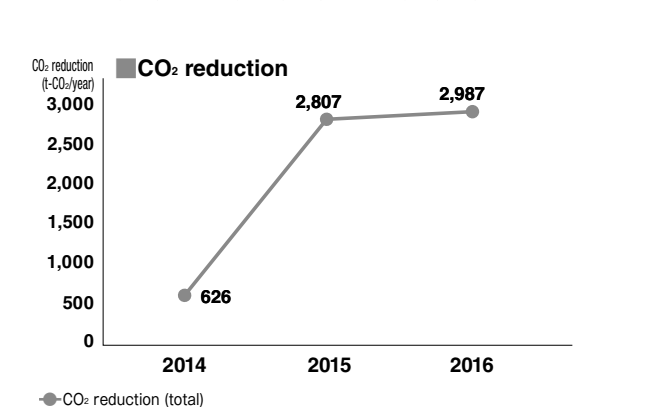
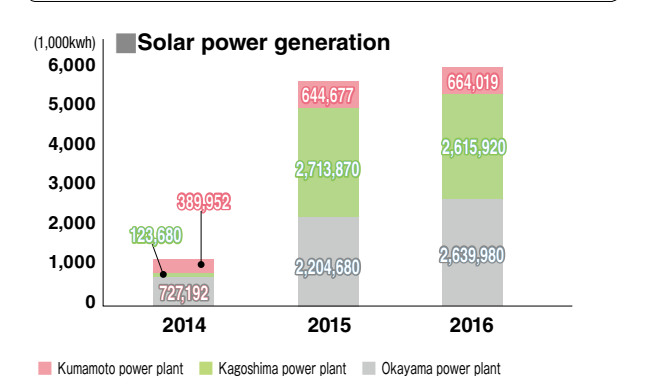


*The Tohoku Branch will be closed from FY 2016. Started industrial waste collection and transportation business in REMATEC KYUSHU from October, 2016.

Solar power generation & CO₂ reduction

*Data collection period: January to December of each year

Target organizations: Kumamoto power plant, Kagoshima power plant, and Okayama power plant



*The Kumamoto power plant went into operation on August 22, 2014, the Kagoshima power plant on November 27, 2014, and the Okayama power plant on March 27, 2015.

■ Achievements in FY 2016 (examples of key initiatives)

REMATEC

	Social issues addressed	Goal/target	Plans for implementation item	Results	Status
Environmental management activities	Prevention of the depletion of natural resources by recycling	Shipping target for reclaimed fuel: 53,880 t	Prevention of the depletion of natural resources by reliable RF shipment	RF: 54,654 t	○
	Prevention of the depletion of natural resources by recycling	Power output from methane fermentation: 1,033,392 kWh/year	Enhancement of the efficiency of power generation with methane fermentation at the MFP plant	Power output from methane fermentation: 1,120,650 kWh/year	○
	Prevention of depletion of natural resources (power saving)	Power consumption per ton of reclaimed fuel produced: 17.1 kWh	Power consumption sharply increased following the introduction of large equipment in fiscal year 2015	Power consumption: 20.1 kWh on average	×
	Regulatory compliance (Offensive Odor Control Act)	Odor measurement: Site boundary (odor index less than 10), exhaust port (less than 38)	Odor measurement: Twice a year in April and October	Measurement confirmed compliance with the standard.	○
Safety and health activities	Item	Goal/target	Plans for specific implementation items	Results	Status
	Disaster prevention	Prevention of disasters triggered by earthquakes	■ Disaster response drill: Once a year ■ Confirmation of emergency response procedure	Carried out in Osaka Plant (March)	○

REMATEC KYUSHU

	Social issues addressed	Goal/target	Plans for implementation item	Results	Status
Environmental management activities	Local environmental conservation activities	Complaints about noise and odor: 0	■ Confirmation of operational status of deodorizing equipment ■ Ensuring the closing of doors and shutters after work ■ Examination by regular environmental patrols	0	○
	Prevention of water and soil pollution	Leaks: 0	■ Daily on-site patrols and planned equipment checkup ■ Checkup during loading for collection and transport, and regular vehicle maintenance	2	×
	Contribution to cement recycling	Supply interruption for which the company is at fault: 0	■ Daily on-site patrols and planned equipment checkup ■ Checking of properties of RF prior to supply (pH, viscosity, etc.)	1	×
	Prevention of water pollution	Discharge of effluent (rainwater) that cannot clear the water quality standard: 0 (pH: 5.8 to 8.6; transparency: 500 mm or higher)	■ Regular maintenance of rainwater treatment equipment ■ Water inspection by a third-party institution observed by three parties (nearby residents, local government, and our company)	0 (pH: 5.8 to 8.6; transparency: 500 mm or higher) (Water inspection by a third-party institution: Water standard was cleared)	○
Safety and health activities	Item	Goal/target	Plans for specific implementation items	Results	Status
	Safety	Accidents/disasters: 0	■ Risk assessment by each department ■ Improvement of equipment for eliminating risks ■ Regular safety training and on-site patrols (patrols by the president)	0	○
	Health	Individual health target achievement: 85% or more	■ Management of the progress in the achievement of individual health targets, and interviews with industrial doctors and health nurses ■ Stress checks	96%	○
	Disaster prevention	Disaster response drill (fire, etc.): Once a year (100%)	■ Emergency response drills by simulating fire accidents ■ Development of safety confirmation email systems in preparation for earthquakes	100%	○
	Transportation	Traffic accidents and serious violations: 0	■ Examination of cases of accidents in each department ■ Participation in Toyonokuni Safety Challenge (50 persons in 10 teams) ■ Participation in traffic safety campaigns (street guidance by 56 persons in 8 rounds)	1	×

RTT

	Social issues addressed	Goal/target	Plans for implementation item	Results	Status
Environmental management activities	Prevention of global warming	Reduction in fuel consumption: Fuel efficiency 3.57 km/L	Elimination of muri (overburden), muda (waste) and mura (irregularity) by onboard guidance	3.60 km/L	○
Safety and health activities	Item	Goal/target	Plans for specific implementation items	Results	Status
	Achieving a society where people can live safely in peace	Elimination of injuries and fatal accidents: 0 accidents	Confirming basic operation by onboard guidance, raising awareness, gaining understanding of employees, and conducting other guidance	0	○

REMATEC R&D

	Social issues addressed	Goal/target	Plans for implementation item	Results	Status
Environmental management activities	Curb global warming	Commercialization of rare metal recovery business (achieved 60% of target)	Demonstration of integrated process for producing battery materials from waste	The development was completed	○
	Provide information	Commercialization of energy recovery business using biomass (achieved 25% of target)	Construction of a plant was commenced for testing the production of fuel from municipal solid waste in Thailand	The construction could not be started (delay from the initial plan: Construction expected in fiscal year 2018)	×
	Provide information	Increased awareness of environmental technologies	Actively welcoming study tours of the plant	Fully attended	○
Safety and health activities	Item	Goal/target	Plans for specific implementation items	Results	Status
	Workplace risk reduction activities	Patrols conducted every month	Identification of unsafe spots and failures on site and necessary improvements	Conducted every month	○
		Development of improvement proposal system and establishment of improvement cycle	Keeping track of inspection equipment and devices and prevention of omissions in inspections	9	×
		List of devices, and records of calibration and inspections	Keeping track of inspection equipment and devices and prevention of omissions in inspections	Conducted every month	○
	Disaster prevention	Submission of implementation report	■ Training and drills covering the concept of BCP ■ Traffic hazard prediction and aptitude diagnosis test	■ Leakage drill and earthquake evacuation drill: 1 each ■ Traffic hazard prediction: 2 times ■ Aptitude diagnosis test	○
		Three-year maintenance plan	Drafting of a plan	Not implemented	×
Safety and health activities	Disaster prevention	Traffic hazard prediction: Twice a year, Aptitude diagnosis test: Once a year	Traffic hazard prediction and aptitude diagnosis test	■ Traffic hazard prediction 2 times ■ Aptitude diagnosis test	○
	Diversity	Three-year maintenance plan	Drafting of a plan	0	○

REMATEC TOHOKU

	Social issues addressed	Goal/target	Plans for implementation item	Results	Status
Environmental management activities	Local environmental conservation activities	Cleaning activities were carried out.	■ Picking up garbage on roads around the plant and river banks	■ Joint cleaning with TCC (June and November) ■ All-around in-plant cleaning (once a month)	○
	Environmental conservation in contracted work	Work carried out with consideration for the surrounding environment: 0 complaints	■ Prevention of dust ■ Optimal treatment of oil ■ Suppression of noise and vibration ■ Preventing cloudy water from entering the river ■ Reduction in fuel consumption by heavy machinery	■ 0 complaints ■ Fuel consumption data obtained for each piece of heavy machinery	○
	Contribution to cement recycling	Optimal pre-treatment in all contracted work: 0 rejections	■ Preventing and addressing trouble with company equipment	■ 0 rejections achieved	○
Safety and health activities	Item	Goal/target	Plans for specific implementation items	Results	Status
	Safety	Elimination of hazardous spots in the workplace Reinforced routine safety activities and practice of rules 0 property damage accidents involving heavy machinery and vehicles	■ Hazard prediction before starting work ■ Pointing and calling out before starting work and after breaks ■ Mutual reminders ■ Five-minute meeting after work	■ Ensuring all employees understand the hazard prediction procedure ■ Patrols to check for omissions in records	○
		Individual health target achievement: 85% or more	■ Making sure to carry out hazard prediction before starting work ■ Practice of pointing and calling ■ Getting the basics right again ■ Attending external training	■ Property damage accidents involving contact with heavy machinery: 5	×
Safety and health activities	Health	Individual health target achievement: 85% or more	■ Setting targets for individual health management and encouraging prevention of lifestyle-related diseases	■ Target achievement: 90%	○

■ Three-year targets [FY 2017 to FY 2019] (examples of key initiatives)

REMATEC

	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Environmental management activities	Power (Power consumption per ton of RF)	Production	18.5 kWh	18.5 kWh	18.5 kWh	18.5 kWh	18.5 kWh	18.5 kWh
	Decrease in the proportion of blended raw oil to more effectively use waste (blending ratio of raw oil)	Production	31%	31%	30%	31%	31%	30%
	Offensive Odor Control Act (measures against odor)	Environmental Safety	Odor index on site boundary: Less than 10 Odor index at exhaust port: 38 or less			Odor index on site boundary: Less than 10 Odor index at exhaust port: 38 or less		
Safety and health activities	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
	Workplace risk reduction activities	Production/ Environmental Safety	■ OHSAS 18001 certification ■ Severity rate: 0.025%	■ Reinforcement of training and skill evaluation ■ Severity rate: 0%	■ Reflecting aging of equipment in the plan for 2018 to 2019 ■ Severity rate: 0%	■ Certification by passing the comprehensive review ■ Status of industrial accidents Severity rate: 0.025%	■ Preparation for the introduction of ISO 45001 ■ Status of industrial accidents Severity rate: 0%	■ Planned implementation of ISO 45001 ■ Status of industrial accidents Severity rate: 0%

REMATEC KYUSHU

	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Environmental management activities	Reduction in power consumption (per ton of RF)	Production	35.87 kWh	34.04 kWh	33.00 kWh	■ Discussion for achieving power consumption target to meet the RF production target every month and implementation of necessary measures ■ Power saving through intermittent operation of a tank agitator ■ Consideration of replacement of equipment with power-saving ones		
	Encouraging stable operation (achievement of the RF production target)	Production	46,000 t/year	47,000 t/year	48,000 t/year	■ Ensuring stable operation of production equipment by appointing maintenance staff and carrying out regular inspections and improvement activities ■ Ensuring monitoring of the tank's internal properties (pH, pressure, temperature, etc.) to prevent abnormal responses ■ Certification of production skills (on-the-job training)		
	Compliance with water standard for effluent (rainwater)	Environmental Safety	pH: 5.8 to 8.6; transparency: 500 mm or higher			■ Regular maintenance of rainwater treatment equipment ■ Close monitoring of effluent (rainwater) (pH: 5.8 to 8.6; transparency: 500 mm or higher) ■ Water inspection by a third-party institution observed by three parties (nearby residents, local government, and our company)		
Safety and health activities	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
	Workplace risk reduction activities	All departments	Accidents/disasters: 0			■ Elimination of risk factors after comprehensive risk assessment ■ Cultivating awareness for preventing similar accidents by effectively using a calendar to remember accidents and disasters ■ Automation of equipment on the RF production line, etc.		

RTT

	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Environmental management activities	Reducing power consumption	Operation	Fuel efficiency: 3.60 km/L			Elimination of muri (overburden), muda (waste) and mura (irregularity) by onboard guidance (target will be to maintain status quo because of the recruitment of inexperienced new recruits and aging vehicles)		
Safety and health activities	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
	Workplace risk reduction activities	All departments	Accidents/disasters: 0			Confirming basic operation by onboard guidance, raising awareness, gaining understanding of employees, and conducting other guidance		

REMATEC R&D

	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Environmental management activities	Reducing power consumption	All departments	5% reduction from the previous year (annual average of 11,138 kWh or less)	3% reduction from the previous year (annual average of 10,804 kWh or less)	2% reduction from the previous year (annual average of 10,588 kWh or less)	5% reduction from the previous year (annual average of 11,138 kWh or less)	3% reduction from the previous year (annual average of 10,804 kWh or less)	2% reduction from the previous year (annual average of 10,588 kWh or less)
	Contribution to resource recycling	Business development Technology	Commercialization of energy recovery business using biomass			Thailand: Designing of a plant for testing the production of fuel from municipal solid waste Thailand: Designing of a plant for testing the production of fuel from municipal solid waste Thailand: Data collection from the demonstration of fuel from municipal solid waste		
Safety and health activities	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
	Elimination of accidents and disasters	All departments	Accidents/disasters: 0			■ Hazard prediction and regular patrols ■ Risk assessment, and preparation, update, and announcement of a hazard map ■ Emergency response drills	■ Compliance with laws and regulations ■ Training and skill evaluation	
Safety and health activities	Health management of employees	All departments	■ Stress check carried out once a year ■ Health check conducted for all employees ■ Individual health target achievement: 80%	■ Stress check carried out once a year ■ Health check conducted for all employees ■ Individual health target achievement: 80%	■ Stress check carried out once a year ■ Health check conducted for all employees ■ Individual health target achievement: 85%	■ Introduction of stress check system ■ Undergoing regular medical checkups	■ Stress check and follow-up ■ Undergoing regular medical checkups	■ Individual planning and implementation of health targets by employees

REMATEC TOHOKU

	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
Environmental management activities	Environmental conservation through contracted work	Production Operations	■ Preventing muddy water from entering rivers to ensure zero complaints from contractor ■ Reduction in fuel consumption by heavy machinery: Reduction by 5% compared to the last fiscal year	■ Preventing muddy water from entering rivers to ensure zero complaints from contractor ■ Reduction in fuel consumption by heavy machinery: Reduction by 5% compared to the last fiscal year	■ Preventing muddy water from entering rivers to ensure zero complaints from contractor ■ Reduction in fuel consumption by heavy machinery: Reduction by 6% compared to the last fiscal year	■ Regular checking of water released to the river after rains and taking necessary measures ■ Emergency response drills (leak drills) ■ Prevention of dust and suppressing noise and vibration ■ Discussion of measures to reduce fuel consumption by heavy machinery and their implementation		
	Contribution to resource recycling (according to business challenges and customer needs)	Sales Production	■ Contribution to reconstruction ■ Optimal pretreatment of all waste from reconstruction project ■ Rejection: 0			■ Zero rejections of waste from reconstruction projects ■ Contribution to recycling at cement plants, proposal of new treatment methods ■ Reliable treatment of delivered and pre-treated		
	Local environment conservation and contribution	All departments	Participation in cleanup activities for the area around the plant: twice/year or more			■ Participation in cleanup activities (garbage collection) on roads around the plant ■ Cleanup activities along river banks		
Safety and health activities	Item	Organization	Target value			Plans for implementation items		
			FY 2017	FY 2018	FY 2019	FY 2017	FY 2018	FY 2019
	Maintaining the record of zero industrial accidents	All departments	Frequency rate/severity rate/incident rate: 0%			■ Implementation of measures against human errors, hazard prediction and confirmation of rule compliance (patrols by executives) ■ Implementation of safety measures and proposed improvements by changing equipment and flow, etc.		
Safety and health activities	Achievement of zero property damage accidents	Production	Reduction of property damage accidents involving heavy machinery: 0 property damage accidents			■ Reliable implementation of hazard prediction before work begins ■ Attending specialized training (Komatsu Iwate)	■ Regular practice of pointing and calling out ■ Getting the basics right again	
	Health management of employees	All departments	Individual health target achievement: 80% or more		Individual health target achievement: 85% or more	■ Individual planning of health targets and carrying out necessary activities ■ Undergoing regular medical checkups		

**Ms. Konoe Fujimura**

Co-President
Japan Association of Environment
and Society for the 21st Century

The business development perspective presented in this year's CSR Report, along with a message from the President, is more global and longer-term than ever before. Considering the rapidly increasing need for proper waste treatment and recycling resulting from such factors as population decline in Japan, out-migration of businesses (including manufacturers and service providers), as well as economic development overseas and the massive expansion of urban populations, it is only natural for President Tanaka, who has achieved great success in Japan and is broadening his global and long-term perspective, to embark on business development overseas.

Meanwhile, three years after the reorganization of REMATEC Group companies in Japan into a holding company system, the roles and tasks of each company are relatively clearly presented. Messages from employees, associated companies, and local residents also suggest that daily operations are properly managed. In addition, these daily operations are described in relation to SDGs. These descriptions can be highly regarded as new features that meet the needs of the times.

On the other hand, the relationship between overseas development and domestic group company businesses is not very clear. For example, how does the group intend to develop its domestic group companies' technologies overseas, and how does it plan to develop the required personnel? In terms of practical effectiveness and social contributions, the employment of local personnel is very important. However, it is also important for the future of the group

to consider how it will develop personnel in Japan who can also work in the global arena.

Moreover, due to its nature as a CSR report, this booklet must clearly define the social mission of the REMATEC Group. President Tanaka's message defines its mission as "transitioning into a corporate group that supports the use of zero waste infrastructure." However, some of the messages from group company presidents and corporate news are merely business reports. It would be more desirable for each group company to properly recognize its social responsibilities and report on whether it is fulfilling its responsibilities as well as what it lacks. In particular, as President Tanaka himself writes, considering that global trends, such as the Paris Agreement and SDGs, are shifting from managing individual issues of waste treatment to resolving more comprehensive issues, at least the top management of group companies need to clearly understand the meaning of such trends and the relationship of their tasks and roles to the global trends in order to develop their businesses. Properly describing these tasks and roles will better clarify their relationship with individual SDGs on the upper right of each page.

There is also a problem with the data. The data presented at the end of this report is limited to the RF business. However, it would be best to provide data on the business of the REMATEC Group as a whole. In particular, as I have pointed out earlier, it is necessary to gather all data on CO₂ emissions generated by group companies' plants, offices, vehicles, and other facilities, and report the total emissions of the REMATEC Group as a whole. To achieve not only the domestic goal, but also the reduction required by the Paris Agreement, it is essential to provide data on the emissions of individual companies.

The REMATEC Group's company system has changed dramatically over the past several years. Changes are inevitable to adapt to global trends. I hope the REMATEC Group will continue to work as a group to take up challenges without losing its corporate philosophy and good traditions amid the global changes.

that messages about the social responsibilities of individual group companies are not clearly conveyed to the public. As you pointed out, the responsibilities of individual companies are not stated adequately enough in this report. We recognize that we need to reconfirm the primary role of CSR reports and make efforts to use more specific expressions to convey our messages to readers.

Currently, in response to progress in various programs inside and outside Japan, including the Paris Agreement and the Japanese government's Global Warming Prevention Plan, which was approved at a cabinet meeting, our industry is developing a variety of programs for different categories of business. Regarding the last issue that you pointed out about carbon emissions management, as part of the above-mentioned programs developed by our industry, we will examine what systems are needed for more comprehensive emissions management for our group as a whole.

We recognize the importance of CSR reports as a tool for disclosing information to the public at large. Based on the opinions you have provided and on the comments received from stakeholders inside and outside our company group, we will strive to publish reports that are easier to understand and more comprehensive.

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Editorial policy

The REMATEC Group discloses information on its CSR activities in order to report them to all stakeholders.

This CSR Report for fiscal 2017 was edited mainly by female members. Our editing policy was to publish a CSR report that all our stakeholders, including employees, can easily understand. In this year's feature articles, we created pages for the REMATEC Group Network and CSR in Figures to indicate the location of the business sites of our group companies that are developing business worldwide, as well as to show the REMATEC Group's CSR activities in figures, designing the pages to visually attract readers' attention. We also created new report items about SDGs. We closely examined the relationship between SDGs and the REMATEC Group's businesses and

- Target organization: REMATEC Group
- Date of publication: December 1, 2017
- This report describes the REMATEC Group's CSR programs and initiatives. For updates on the business and daily operations of our group companies, please visit our website <http://www.rematec.co.jp>
- Reference guidelines:
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activities to present the relationship on some of the pages.

In the second half of this report, we provided pages for each group company to introduce its initiatives regarding environmental issues. Pages about group company information were created by each company, from designing the page layout to writing drafts, to emphasize the company's characteristics. As a result, these pages may give readers the impression of a lack of consistency. However, readers may also find their differences interesting.

It is our hope that this report enables you to better understand the CSR activities of our group. Your candid opinions and comments are greatly appreciated.

The Environmental Reporting Guidelines 2012, published by the Japanese Ministry of the Environment
The Planning Guidelines for Regional Countermeasures against Global Warming, published by the Japanese Ministry of the Environment

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