

## ZEON Group (Japan)

### RIMTEC Corporation

#### Introduction to RIMTEC Corporation

RIMTEC Corporation is a wholly owned subsidiary of Zeon Corporation headquartered in Tokyo. It has a subsidiary, Zeon Rim Co., Ltd., and laboratory located on the premises of Zeon Mizushima Plant's plant No. 2, and also has three overseas sales centers, one at Telene S.A.S., a subsidiary in France with an R&D arm, one at Zeon Trading (Shanghai) Co., Ltd. in Shanghai, China, and one at ZCLP in the U.S.

The company's core business is the global development and sales of PENTAM<sup>®</sup>, METTON<sup>®</sup>, and TELENE<sup>®</sup> liquid molding resins for reaction injection molding (RIM). These products use high-quality dicyclopentadiene (DCPD) as their main ingredient, which is extracted from C5 fractions\* using Zeon Mizushima Plant's proprietary technologies.

RIM is an innovative means of producing large molded parts in which polymerization of DCPD and molding take place at the same time in the mold. Reaction injection molded DCPD-based plastics have a smaller environmental footprint than thermoplastics as they can be molded using only half the energy.

\* C5 fractions

Hydrocarbon molecules containing five carbon atoms. They are the byproduct of thermal cracking, or breaking down, of naphtha, and also include ingredients for raw materials of synthetic rubber and resin.



President Masanori Sakurai



#### Environmental and Safety Activities

##### 1. Energy Conservation

RIMTEC's Mizushima Plant is working with Zeon Rim to reduce their collective energy consumption. In 2013, as in fiscal 2012, the two sites turned off unused lights and devices, and engaged in measures to reduce industrial waste. From fiscal 2013, we began carrying out export container maintenance work internally, which meant that the amount of waste before volumetric reduction increased over fiscal 2011. However, as a result of various initiatives, we were able to reduce CO<sub>2</sub> emissions by 10% over 2012. We will continue to contribute to the global environment through a variety of activities.

##### 2. R&D for the Global Environment

Since plastics created with RIMTEC products consume less energy than thermoplastics, we will continue our contribution to the global environment through active research and development. In fiscal 2013, we started to produce combined purification tanks in Suzhou, China. We have made a full-scale start on activities to employ combined purification tanks in Europe. This will benefit the global environment as it will reduce energy usage and preserve water quality.

### 3. Environmental Data

RIMTEC Corporation		FY2009	FY2010	FY2011	FY2012	FY2013
Substances covered by PRTR law	Number of substances	0	0	0	0	0
	Consumption (tons)	0.0	0.0	0.0	0.0	0.0
	Amount emitted (tons)	0.0	0.0	0.0	0.0	0.0
Industrial waste	Amount generated (before volume reduction) (tons)	48	52	29	52	49
	Amount sent to landfill (tons)	1.9	3.6	3.4	15.2	2.4
Water resources (Industrial water + Ground water + Waterworks) consumption (1,000 m <sup>3</sup> )		-	-	4.4	3.6	2.2
CO <sub>2</sub> emissions (tons)		213	187	167	188	160
Energy consumption (crude oil equivalent, kL)		180	160	145	160	138

### Activities with the Local Community

#### 1. Participation in Omoshiro Taiken (Fun Experience)

We were present at the Omoshiro Taiken (fun experience), which is held every year at Techno Support Okayama. In 2013, around 400 children experienced a mysterious liquid which changes into plastic.

This year, the children put on white coats in order to more strongly experience the fun of chemicals, and it made a strong impression as they participated, while their eyes shined even more brightly than they did last time.

Through these events, the company aims to convey to children, the innovators of the future, the enjoyment and the miracles of science, and also promote interest in creating things, which will thereby contribute to the ongoing development of local industry.



Children take a keen interest in the mysterious experience of chemicals

#### 2. R&D through industry-academia collaborations

RIMTEC's Mizushima research lab is continuing joint research with the local Okayama University. In fiscal 2013, as in 2012, RIMTEC had its own booth at the Okayama University Knowledge Fair 2013, where it showcased the fruits of its research. People from all areas, including the corporate and government sectors, those associated with the university, and students, attended the fair and showed keen interest in RIMTEC's innovative technologies.

At Okayama University, research is being carried out through collaboration between industry and academia. The institute is briskly moving forward with contributions to industry



RIMTEC booth at Okayama University Knowledge Fair in 2013

through the development of new technologies. RIMTEC also plans to forge ahead with the development of new technologies through industry-academia collaborations.

### 3. Creating New Industry in the Chugoku Region

To bring the results of our joint research with academia closer to practical deployment, we hold regular study meetings with Okayama University, Hiroshima University and the Chugoku Industrial Innovation Center. We continued these efforts in fiscal 2012 and hope to spur progress toward creating new industry founded on technologies developed in the Chugoku region, and in so doing revitalize the local economy.



One of many study meetings to be held with Okayama University and the Chugoku Industrial Innovation Center

### 4. Next-generation Power Semiconductor Research Group

From fiscal 2013, we participated in the Next-generation Power Semiconductor Research Group, which is implemented by the Chugoku Regional Research Center along with the Chugoku Bureau of Economy, Trade and Industry as an activity to create industry in the Chugoku region.

As our company's product uses a materials with a unique feature known as thermosetting olefin resin, we hope that it can be applied to SiC-type power semiconductors\* as a next-generation high heat-resistant electric insulating material.

By means of this project, we are contributing to stimulating local industry by creating new industries through RIMTEC materials technology developed in the Chugoku region.

The research group was also selected for assistance in the Chugoku Regional Research Center's "2013 Project Start-up Assistance."



An announcement is made at the Next-generation Power Semiconductor Research Group

\*SiC Power Semiconductors

Power semiconductors refer to the semiconductors used for power control in electric power converters, such as converters and inverters. SiC (silicon carbide) is noted for its energy conservation properties, which surpass that of current Si (silicon) materials.