From April 2018 to March 2019

CSR Report 2019

Every Contribution Is One More Step Toward a Brighter Future

Polyplastics

The Polyplastics Group around the world

R&D/Technical Solution Center
6 sites

Production
7 plants

Sales
19 sites

Employees (Group)
2,100

Consolidated net sales
141.6 billion yen

Founded
Since **1962**

Consolidated operating income
18.5 billion yen

* There are two sales offices in Frankfurt and two plants in Nantong.

Corporate Outline (Current as of March 31, 2019)

Company Name:	Polyplastics Co., Ltd.
Established:	May 1964 (Founded: June 1962)
Capital:	3 billion yen
Shareholders:	Daicel Corporation (55% shareholding) Celanese Corporation (45% shareholding)
Representative:	Toshio Shiwaku, Representative Director and President
Number of Employees:	2,100 (Polyplastics group)
Business Operations:	Manufacturing and sales of various types of engineering plastics and polymers

Contents

Editorial Policy: The Polyplastics group strives to embody its corporate philosophy through its business activities, thereby contributing to the realization of a sustainable society and enhancing its corporate value for a diverse range of stakeholders in society.
This report contains information about the activities the group conducted in this year, presented from a range of perspectives.
We would appreciate readers' frank feedback on any part of this report.
Please note that the term "employees" as used in this report refers to all those who work in the Polyplastics group.

Applicable Period: April 1, 2018 to March 31, 2019

Organizations Covered: The Polyplastics group members (excluding WinTech Polymer Ltd.)

DURACON® POM
POM (Acetal Copolymer) — Global Share No.1

A leading engineering plastic widely used in place of metals

DURACON® POM has well-balanced mechanical properties, self-lubrication, and oil-resistance. Today, it has a wide range of applications from daily household goods to industrial products. Especially, in recent years, it is used for fuel system components and interior parts of automobile. It has the largest global market share* with about 19% of overall sales.

DURANEX® PBT
PBT (Polybutylene Terephthalate)

A multipurpose resin that can be adapted to a wide variety of functions

DURANEX® PBT is characterized by its heat resistance and outstanding electrical properties. Its excellent compatibility with various kinds of reinforcement and additive agents means that it can be given many different properties according to specific customer needs. This versatile product is utilized in a wide range of areas, from wire harness connectors in automobiles to all kinds of electronic components, and also in more familiar daily items, such as make-up brushes and paper laminate food packaging.

DURAFIDE® PPS
PPS (Polyphenylene Sulfide)

A super engineering plastic attracting attention for its excellent resistance to heat and chemicals

DURAFIDE® PPS is a super engineering plastic with superior mechanical strength, heat resistance, chemical resistance, and high dimensional accuracy compared with typical engineering plastics. Its applications range from peripheral automotive engine parts and electrical components in hybrid and electric vehicles to water mixing valves in baths.

LAPEROS® LCP
LCP (Liquid Crystal Polymer) — Global Share No.1

A top-performing super engineering plastic found in the latest IT devices

LAPEROS® LCP is characterized by its thinness and high flowability beyond typical engineering plastics. It has heat-resistance and a unique attribute where the mechanical strength becomes greater as the product becomes thinner. It is often used in super-miniature precision connectors for ever-smaller IT devices. It has the largest global market share* with about 37% of overall sales.

TOPAS® COC
COC (Cyclic Olefin Copolymer)

A non-crystalline resin with superior transparency and moisture-proof characteristics

TOPAS® COC is a transparent and extremely pure plastic. With its superior water vapor barrier, chemical resistance, and safety properties, it is deployed in a wide range of applications from the healthcare and pharmaceutical fields where quality standards are rigorous to packaging and electronics.

FR-PET® GF-PET
GF-PET (Polyethylene Terephthalate)

A resin with strong heat resistance and superior electrical properties

FR-PET® GF-PET is based on polyethylene terephthalate resin. Blending PET resin with glass fibers can dramatically increase the mechanical strength and heat resistance. It also has superior electrical properties and is an extraordinarily moldable material.

* Source: "Outlook and Global Strategies for Engineering Plastics Market in 2019", Fuji Keizai

Shaping a Sustainable Society with Our Plastics

"We contribute to building an abundant future society by innovation and developing talented and responsible people, through pursuing the unlimited potential of engineering plastics." In order to achieve this corporate philosophy, Polyplastics approaches CSR from two perspectives: contributing to society through our business activities, and offering opportunities to improve society by using corporate resources.

By contributing to society through our business activities, we mean not only meeting our customers' needs through our daily duties but also providing solutions to social issues and contributing to society as our customers' trusted solution partner in engineering plastics.

Also, from the perspective of offering opportunities to improve society by using corporate resources, we intend to support national and regional government initiatives and to carry out our social responsibility in a way that only Polyplastics could.

In order to proactively carry out our responsibility as a corporate citizen, we not only ensure compliance and keep our promises to our customers, but also take pride in being a leading company in engineering plastics, continuing to consider what new values we should bring to society and our customers while constantly striving to stay on the right path.

We want to be a player on the world stage so that engineering plastics can continue to bring value to society in the future as in the past. In order to achieve this, all divisions of the Polyplastics Group around the world must work together in a cooperative network with exchanging technology, information, and human resources, and generate a driving force to take on new challenges. We are working to create a more sophisticated management organization from a global viewpoint, including people of all cultures, in which each and every employee is able to take pride in being a member of the team.

We will make a society that uses engineering plastics in a valuable way and for the long term.
I hope that our employees around the world will take this on as a common practice, allowing them to contribute to creating a more abundant future society.

Toshio Shiwaku
Representative Director and President

Highlights of FY2018 1

In 1968, our Fuji Plant was the first in Japan to begin manufacturing engineering plastics. This year marks the 50th anniversary of the plant. In recent years, our operations have expanded globally and our production sites have shifted overseas, and there have been changes of the environment surrounding the Fuji Plant, as well as the role required of it. Given this, we have been thinking about the future we want to achieve for the Fuji Plant, and so we decided to launch the Fuji Plant Restructuring Project.

(From left) Obayashi, Yabe, Nishikawa, Nishioka, Adachi, Furugohri, Fuji Plant Restructuring Promotion Office

Rebirth of the Fuji Plant Restructuring Project Kicks Off!

Project Launch Background

In recent years, many Japanese companies, including manufacturers, are shifting their production sites overseas. As we too build our global manufacturing system, it became necessary for us to reconsider the reason for being of the Fuji Plant, which drives the Polyplastics Group. What makes our company so competitive is that this plant is full of the knowledge, experience, and efforts of all our employees, including those who used to work with us. At this moment, IT systems are expanding as well, and we are facing a major revolution in what it means to be a manufacturer. If the Fuji Plant does not innovate in the way that the future demands, then there will be no path to stable growth for the Group as a whole. Given this, we have been exploring possibilities for the ideal of the Fuji Plant and how to achieve it, and so we decided to launch the Fuji Plant Restructuring Project.

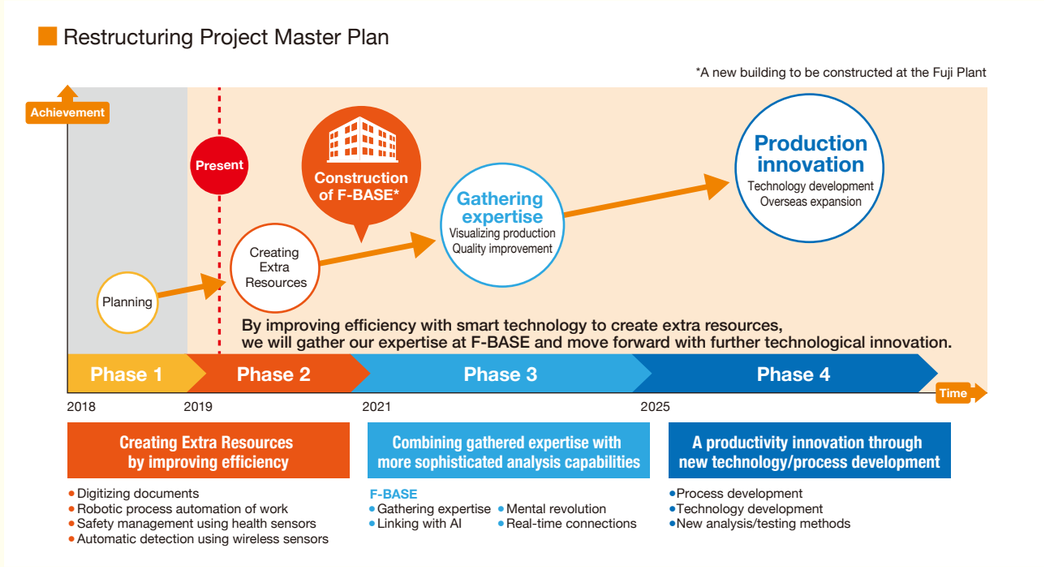
Lively Debates on the Future of the Fuji Plant

The Restructuring Project began when 15 members of the 11 divisions in the plant gathered together to discuss "the role required of the Fuji Plant" and "the future ideal of a plant". At the same time, they conducted an employee survey for perception of the current situation and picked up 347 issues to address. As they investigated these issues, the project members conducted debate after debate until they were all convinced. With a shared awareness of the true nature of the challenges, they ultimately summarized the issues into seven categories. It was amazing for them to discover that although they belonged to different divisions, on a deeper level, they shared the same feelings, thoughts, and concerns. They proceeded to organize the issues and determine the concept that would serve as the compass for this project.

Raita Nishikawa
Project Leader
Fuji Plant Restructuring Promotion Office

"We want to create a culture of change, being free from the past working styles"

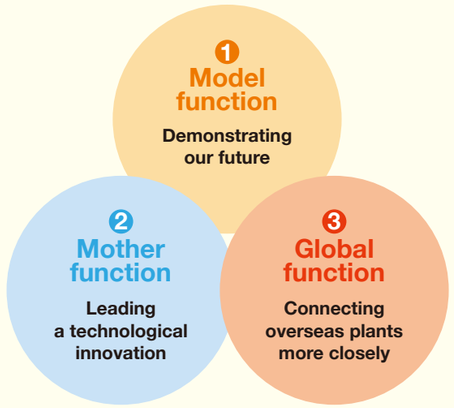
This is a grand-scale project spanning a decade, but its spirit can be expressed in one phrase: "We want to create a company culture of change free from the past working styles." To realize this, it was essential that every individual employee experience a mental revolution, feel interested in the activity, and corporate with one another. We want to make the Fuji Plant into an organization that can meet customers' expectations, win the love of the people of local communities, and that, even 50 years ahead, will inspire vitality and joy in all its employees.



Future Concept and Vision

The concept of this project was to set three functions for the Fuji Plant to fulfill in the future.

1	Model function	By combining the manufacturing capabilities we have built up over the past 50 years with state-of-the-art IT systems, we will establish a model of manufacturing that can only have come from Polyplastics.
2	Mother function	By gathering expertise from inside the company and through sophisticated analysis by vendors, we will bring forth a technological innovation that will improve productivity dramatically.
3	Global function	Spreading information on "the Fuji Plant's manufacturing" to overseas plants to accelerate the growth of the Group as a whole.



Toward the overall achievement of the Restructuring Project, We received five billion yen of financing through a syndicated loan from financial institutions located in the Fuji Plant area. Our business activities will continue to contribute to the abundance of the community that serves as a platform for our business.

Our Path Forward

The Restructuring Project was divided into four phases based on the plan above. One big part of this revolution is the construction of "F-BASE", which is planned for Phase 2. The divisions that are dispersed among the different areas of the plant (operation, maintenance, technology, testing, logistics, and safety) will be integrated into one floor in an effort to gather expertise about manufacturing. We spur innovation through inter-departmental information exchange with a sense of speed in order to achieve better quality and stable production. We expect that engaging extensively with the R&D and with vendors as an open plant will allow the Fuji Plant to be the birthplace of further technological innovation. To achieve this, we are currently working on automating and digitizing work using AI and wearable devices, thereby creating extra resources in our operations. In the future, we will improve productivity tremendously and the Fuji Plant will play an even bigger role as a source of information for overseas plants.

Image of F-BASE

Highlights of FY2018 2

In recent years, vehicles are required to have not only fuel efficiency and environmental performance, but also safety performance, which is necessary to achieve a safer, more secure society free from traffic accidents. Vehicles with such safety performance need the functions to avoid the collisions and/or reduce the damages by detecting the distance between the vehicle and any potential obstacles. One of the technologies that supports such functions is DENSO Corporation's millimeter-wave radar sensor which uses Polyplastics' DURAFIDE® PPS.

Kouji Suda (center), Shinji Kitano (right), AD&ADAS Engineering Div. 2, DENSO Corporation
Daisuke Usui (left), Unit 1, Japan Business Unit, Polyplastics Co., Ltd.

Toward a Society Free from Traffic Accidents

We interviewed DENSO Corporation which uses Polyplastics resins.

Functions of Millimeter-Wave Radar Sensor and Performance Required of Resins

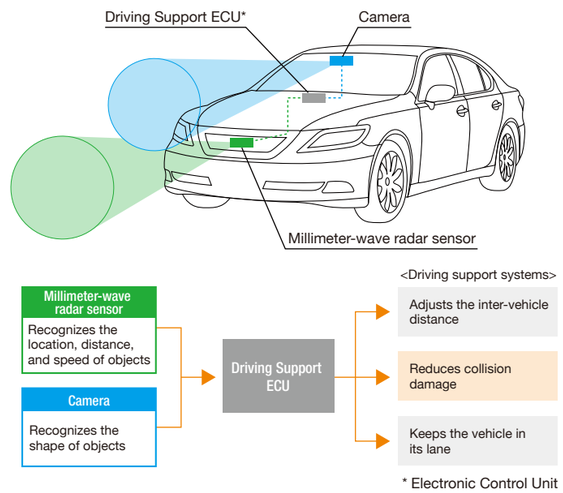
Millimeter-wave radar sensor unit

Millimeter-wave radar sensor emits radio waves from the front side of the product, and these waves reflect off pedestrians and vehicles ahead and bounce back. Based on the time this takes, the device detects the distance between a vehicle and any objects. This radar is used in collision damage reduction systems (which detect unavoidable collisions and slow the vehicle to reduce collision damage) and inter-vehicle distance control systems (which maintain a certain amount of distance with the vehicle ahead) that can be installed in vehicles.
Millimeter-wave radar sensor devices are generally installed behind the emblem on the vehicle anterior, and therefore are exposed to sunlight as well as heat from the engine compartment. For this reason, the antenna, the heart of the radar is installed inside the housing parts to be protected. Polyplastics' PPS resins are used in the radome which is one of the housing parts and located directly ahead of the radar. Radome materials need high strength to protect the electric parts inside, but also must allow the radio waves transmitted by the antenna to pass through. There is a wide variety of other performance demands that cannot be achieved with metal, so we selected PPS which has a good balance of these characteristics.

Performance Required of Radomes

Low dielectric	Radomes need to be a substance that allows radio waves to pass through easily, and that can remain stable under a variety of environments without deteriorating.
Formability	If radomes have any warping, radio waves can be refracted. Therefore, they require a material with excellent moldability. (Even a small change in the angle of the radio waves can cause the significant distortion in the way that the radar perceives objects detected hundreds of meters ahead.)
Heat resistance	Radar devices are sometimes installed in locations that are exposed to extremely high temperatures.
Chemical resistance	It is assumed that radar devices will come into contact with liquids during maintenance as they are installed near the engine compartment, so they must be resistant to a variety of chemicals.

Driving support system



How it works

[When the driving support system works/ millimeter-wave radar sensor in combination with a camera]

1. The millimeter-wave radar sensor emits radio waves
2. The radio waves are reflected back, and obstacles are detected based on the reception time and angle
3. The brake pressure is increased while the camera's image recognition function checks for obstacles

If an obstacle is present, the brake is applied to avoid collisions and/or reduce damages.

Technical/Development Support

For these reasons, radome for millimeter-wave radar sensor is required to have a wide variety of performance, so it was necessary to gather individual physical property data during product design. Because Polyplastics already had basic physical property data, there was no need to spend time gathering them and we were able to speed up development. For dielectricity data which was especially important, Polyplastics showed great adaptability; they handled our request promptly before obtaining detailed experimental data at an external organization. Specifically, Polyplastics used its own facilities to confirm beforehand whether DURAFIDE® PPS would meet our expectations for characteristics. We think that this kind of consideration made design development go very smoothly.
Polyplastics even gathered weather resistance data in order to confirm that the laser-printed part of the radome would not deteriorate when exposed to sunlight, rain, or wind. With its highly technological capability, Polyplastics also met our specialized demands. These made it possible for us to commercialize a millimeter-wave radar sensor.

Future Issues and Outlook

In order to achieve a safer, more secure society, we believe that it is necessary to develop sensors that can be installed on any vehicle. This means they need to be compact, lightweight and for a low price.
Unfortunately, because there is not yet a material that can meet these conditions, metal is used for unit parts other than the radome. But there are growing needs to make this part out of resin too.

Future Expectations for Polyplastics

We have high expectations for Polyplastics to continue to develop and provide resins that can achieve miniaturization and weight reduction. We also hope that Polyplastics will keep providing us with prompt information. Also, while there is already a great emphasis on robustness, it is poised to become even more important in vehicle design in the future. Robustness means the mechanism or property of resisting the effects of external factors. Since vehicles are used in a variety of environments and over the long term, it is important that they are robust in order to prevent external changes from causing performance deterioration or malfunctions. And for PPS, we used experiments and data to confirm that, for example, its performance would remain stable even if the resin took in moisture from the air, and that the shape and strength would not change even under the environment of the engine compartment area. This made it clear that we were using a resin that was truly highly robust. We have high expectations for the robust functional resins that Polyplastics will develop in the future.

Polyplastics CSR

In the aim of achieving CSR worthy of Polyplastics, we will not only follow social rules but also strive proactively to contribute to solving social issues.

Polyplastics CSR Approach

Our mission under our corporate philosophy is **to contribute to building an abundant future society by innovation and developing talented and responsible people**, **through pursuing the unlimited potential of engineering plastics**. This clearly shows our commitment to contributing to society through engineering plastics.
Any company must fulfill its social responsibility in order to contribute to society, and for Polyplastics, fulfilling our corporate social responsibility (CSR) overlaps with our efforts to achieve our corporate philosophy. For this reason, Polyplastics approaches CSR activities from two perspectives: **Contributing to society through our business activities, and offering opportunities to improve society by using corporate resources.** Polyplastics wants to fulfill our corporate social responsibility as a member of society.

Corporate Philosophy

Mission

We contribute to building an abundant future society by innovation and developing talented and responsible people, through pursuing the unlimited potential of engineering plastics.

Vision

The No.1 solution provider for engineering plastics
We will continue to provide our customers with the best solutions for engineering plastics, in technology, quality, services, supply, and all other aspects.

Value

1. The "Polyplastics Way": We create value together with our customers.
2. The "Polyplastics Family": The best teamwork

Polyplastics Group Code of Conduct

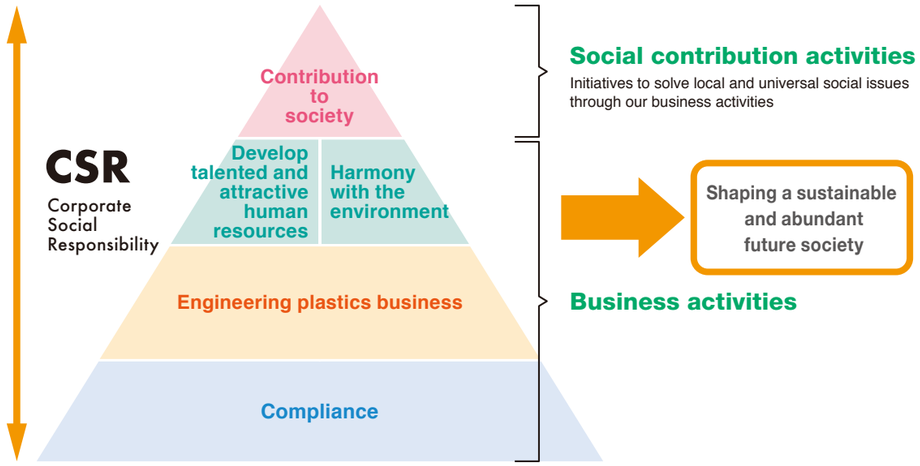
Efforts to realize our Corporate Philosophy

Overlap with

CSR

In the course of our business activities, Polyplastics promotes CSR based on the following five basic fields.

- Engineering plastics business
- Harmony with the environment
- Compliance
- Contribution to society
- Development of talented and attractive human resources



Business activities

Contributing to society through our business activities

1. Contribute to the creation of an abundant society through engineering plastic solutions.
2. Contribute to the development of talented and attractive human resources through the utilization of human resources.
3. Reduce the environmental impact and carry out business operations in harmony with the environment.
4. Emphasize compliance and carry out business in a manner that is fair to society.

Social contribution activities

Offering opportunities to improve society by using corporate resources

1. Contribute to the prosperity of local areas, which are the foundations of our business activities.
2. Offer a platform to nurture the next generation to secure the human resources that will sustain society in the future.
3. Support social contribution activities through the voluntary initiative of individual employees.

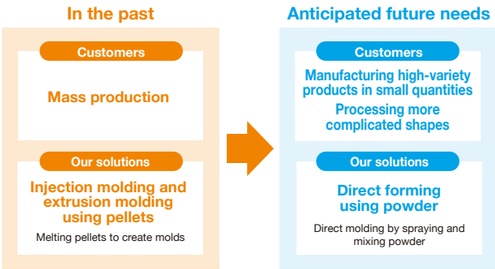
In order to create a sustainable and abundant future society, we will engage in activities focusing on the above fields based on the individual CSR activities of our sites.

Stand Closest to Our Customers

Polyplastics will work together with our customers to create value as an expert in engineering plastics that can make the customers' potential ideas a reality.

New Solutions with Fine Powder Engineering Plastics

In the past, Polyplastics has provided engineering plastics in pellet form which is suitable for injection molding and extrusion molding for mass production. We have also offered a variety of alternative materials to contribute to weight reduction and cost reduction of electrical appliances and vehicle parts.
But in the future, more customers will have needs for manufacturing of high-variety products in small quantities, as well as processing of more complicated shapes. Therefore, we can anticipate an increase in needs for manufacturing using 3D printing and direct forming technology with powdered materials.
Normally, engineering plastics have high mechanical strength. This means it is difficult to use methods such as pulverization to render them into a well-formed (spherical) shape that is also fine (minute with narrow particle size distribution). Polyplastics is using the experience and knowledge we have accumulated to promote the development of a technology that can manufacture fine powder engineering plastics. We believe that our fine powder engineering plastics will be able to serve our customers in the near future.

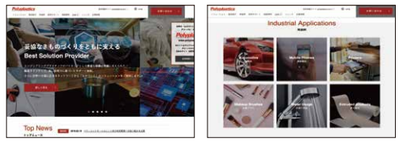


Future of Fine Powder Engineering Plastics

Because engineering plastics materials are molded and processed at high temperatures, it was difficult to add PP and other olefin resins that have comparatively low heat resistance. In powder form, however, they can be added at a lower temperature than conventional materials. Also, adding a large amount of inorganic filler (bulking agent) will reduce the flowability dramatically and make extrusion molding impossible. However, if inorganic filler is blended with fine powder engineering plastics, then press molding becomes possible.
Given this, fine powder engineering plastics might be an innovative solution that could make our customers' potential ideas a reality, even those that would previously have been impossible.

Launched the Polyplastics Global Website

We have launched a new version of the Polyplastics global website to be easier to read and understand.
With responsive web design, it displays well not only on computers but also smartphones and tablet devices. The design is a simple one, with lots of photos, making it easy to learn all about us. For the technical information, physical property data, and other such data will still be available on our technical information site.



Global Website: https://www.polyplastics-global.com
Technical Information Site: https://www.polyplastics.com

Online Technical Support: WEB@TSC®

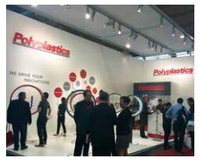
WEB@TSC® is our website that provides free customer support for members anytime, 24 hours a day, 365 days a year. It includes a variety of technical information, such as detailed information on physical properties, design support tools for resin parts design, and case examples of trouble-shooting. With a wealth of data and experience, we answer inquiries about products and even chemical substance usage investigations.

50 countries and areas around the world
More than **30,000** members

Responds to over **15,000** inquiries per year

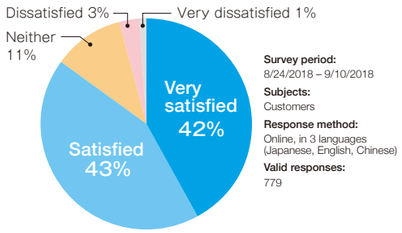
Holding and Participating in Exhibitions

We proactively participate in exhibitions to present our latest materials and solution technologies directly to our customers. We also host annual Innovation Shows at the Technical Solution Center in Fuji, and visit our customers to hold many seminars and private shows to introduce our technologies. We will continue to proactively participate in exhibitions because we value these chances to communicate with our customers.



Customer Satisfaction Survey

We regularly conduct a Customer Satisfaction Survey to provide our customers with services that will meet with their satisfaction. This year a total of 85% of respondents answered either "very satisfied" or "satisfied". As to why they continued to use our products, their comments included "Because of the high-quality and stable materials" and "Because their technical support was able to solve our problems".
We will take the results of this survey sincerely and work hard to further improve customer satisfaction on a group-wide basis.



Awards from Customers (in order of date awarded)

- BEST SUPPLIER AWARD, ANDEN CO., LTD.
- [VA-VE AWARD] EXCELLENCE AWARD, HI-LEX CORPORATION
- BEST SUPPLIER AWARD, Xiamen Hongfa Electroacoustic Co., Ltd.
- Partnership AWARD, CHINA SYNTHETIC RESIN ASSOCIATION
- EXCELLENCE COST AWARD, Aisin Seiki Co., Ltd.

We will continue to meet our customers' expectations as the No. 1 solution provider in engineering plastics.

Initiative for Global Ratation

Global rotation is an initiative in which Polyplastics implements group personnel changes across borders to realize “Appropriate person for Appropriate job”. We conducted the global rotation for 20 employees this year.

Experience of Transferring to Another Group Company

We interviewed to an employee who transferred from Shanghai, China to the Tokyo H.Q. in November 2018.

In Shanghai, Speed Was Always the Top Priority

Sales activities in Shanghai require a sense of speed. We have come to provide the most suitable solutions through a process of trial and error in cooperation with the local technical solution center.

Shanghai, China
↓
Tokyo H.Q., Japan

Ejo Zhu
Unit 1, Japan Business Unit,
Global Marketing Team

Successful Laser Transmittance Evaluation, Which Considered Impossible

When I began working on a development project for a customer in Japan, I was shocked to learn that Polyplastics succeeded at laser transmittance evaluation, something I had considered impossible. I also achieved other sophisticated types of analysis and evaluation that had seemed impossible. I am now gaining practical experience while studying the knowledge and facilities of technical bases in Japan, as well as how Japanese sales and technology divisions work together.

Providing More Innovative Solutions to Our Customers

“Being so deeply involved in support for our customers' product development allows me to feel the potential of the value that the group can create and provide.” This is one of the great strengths of the global rotation initiative. My experiences here allow me to serve as a bridge to continuously share information with the Shanghai team, and it helps us to deepen understanding within the group. The local team members are the most suitable for providing the best solutions to our customers in China. With the combined power of the Polyplastics whole group, we can aim create to even greater value.

Toward a Fruitful Rotation

HR Department provides various supports for the eligible personnel.

Key to the success of this rotation is communication.

We are carefully working to share information so that employees will be able to approach their work with positivity after their transfer.
To give them a deeper understanding, HR explains the purpose of the transfer, and the operations they will take charge of, as well as intercultural issues, and business practices. With the previous workplace also providing comprehensive support during their stay, we are using communication to relieve the anxieties of the employees and supporting them so that they can thrive in their local workplaces.

Shirley Xu
HR Department,
Shanghai, China

Successful Workplace for Diverse Employees

At the Fuji Plant, we expanded our recruitment targets starting this year, and were able to add two employees with intellectual disabilities to our team. We also established a new organization called the Job Support Team, made up of these new employees as well as members of the HR Department. The HR Department selected duties that would utilize their strengths. From document filing and office equipment management to cleaning of quality testing analysis equipment, creating bulletin board, and a wide range of other tasks, the role of the Job Support Team is growing day by day.

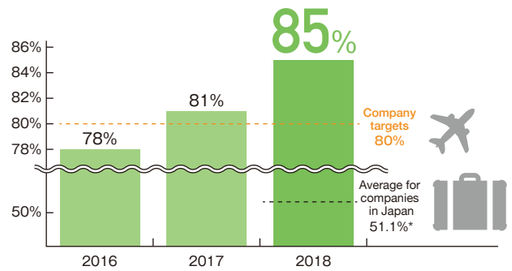
Job Support Team

At work

Topics for Polyplastics Japan

Paid Leave Utilization Rate (Employee Average)

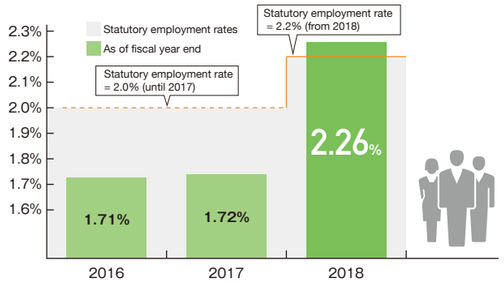
We encourage employees to proactively take their paid leave. This year our paid leave utilization rate reached 85%, far exceeding the average for companies in Japan.



*According to the Ministry of Health, Labour and Welfare's FY2018 General Survey on Working Conditions

Percentage of Employees with Disabilities

We are working to create an environment where people with disabilities can feel comfortable working.
As of the end of this year, people with disabilities make up 2.26% of Polyplastics employees. We intend to continue our proactive hiring practices in the future.



Forum to Promote the Success of Women in the Workplace

Listening to a lecture

As the first step in achieving a level of diversity and inclusion worthy of Polyplastics, we held a forum to promote the success of female employees on the administrative track. There were lively discussions over the two days program, with many opinions exchanged.

Toward a “Polyplastics Way of Work”

At Polyplastics, we consider work to be a major element in improving quality of life. Based on this idea, we named this work style “Polyplastics Way of Work”. We want our employees to feel pride and a sense of purpose in their work. Based on the concept of “every person feeling happiness in their work”, we are building up the environment and reinforcing the systems that will help each and every employee to find happiness in their work.

See our website for employees' comments and other details!

Greener Material for Automotive Interior Parts

Polyplastics received Greener Material certificates in the Chinese automotive industry for the second consecutive year.

Hong Sun (left) CHINA TSC, Tomohiro Monma (center) Research and Development Center

We are working on the development and manufacturing of products with reduction on environmental impact for a sustainable society.
Japanese, European, and North American automakers have long been working to reduce the volatile organic compounds (VOC) in interior air of vehicles as an important issue. In response to this, we have also researched, developed, and begun market sales of the low-VOC grade "LV series".
Recently, with awareness of health and environmental issues growing, the Chinese government has been making full-fledged progress on related measures, including legislation on VOC concentration in car interiors. Specifically a government-run organization called CATARC*1 has established conformity standards and evaluation methods to publicize materials with low VOC emissions. We have been cooperating for years with CATARC's evaluation research and with building a framework to select low VOC materials. Through this initiative, we have supported the market expansion of resins that can contribute to environmental harmonization. This resulted in a meeting hosted by our compound plant in China, which invited members of CATARC to study topics like the characteristics of polyacetal resins, quality management, and VOC evaluation methods. Then, in March 2018, CATARC certified DURACON® POM M90LV as the first plastic material to be a "Greener Material For Automotive Interior Parts (Low VOC)".
Then, this year another DURACON® POM product was newly certified. As a result for the second consecutive year, we received an award for greener material certified corporations at an international forum*2 held in Tianjin in March. We expect that this will lead to improving the vehicle interior environment as the VOC materials certification system for the Chinese automotive market becomes more widespread. We will continue our cooperation in this area in the future.
Also at this forum, we gave a presentation about the future direction of engineering plastics expected in the automotive industry on behalf of the Association of International Chemical Manufacturers in China. We hope to utilize our technology in China as well and make proposals for fuel efficiency through light-weighting materials and for low emissions through vehicle electrification, so as to contribute to the development of vehicles that are in harmony with the environment.


荣誉证书

宝理塑料株式会社：

依据《车用绿色材料（低VOCs）评价规程》（2017版），经过专家委员会评审，授予贵司生产的聚甲醛产品M90LV 2018年度"车用绿色材料（低VOCs）"称号。

特发此证！

中国汽车技术研究中心有限公司
工业节能与绿色发展评价中心
二〇一八年三月

*1 CATARC: China Automotive And Technical Research Center
*2 International Forum on Chinese Automotive Materials (Xiqing)

Energy-Saving Activities

Reusing Flash Steam Contributes Significantly to Energy Saving and Cost Reduction

The Fuji Plant's main sources of energy are the steam and electric power generated by its boilers. Previously the drain (high-temperature water droplets) generated by the boiler steam was collected in the water supply tank and reused. However, the flash steam* generated by this recovery process was released into the atmosphere. This year we decided to focus on this issue and set up a new system (three steam compressor units) that can recover this flash steam and reuse it as energy. By repressing boiler operation in this way, we have been able to significantly reduce the amount of LNG used, thereby contributing to energy saving. (This is anticipated to result in a 113 million yen decrease annually.)

Before

After

*Flash steam which can also be described as re-evaporated steam is the steam that results when drain occurring from steam in a high-pressure, high-temperature boiler is exposed to a low-pressure, low-temperature environment.

Reducing Industrial Waste

Initiatives to Reduce Waste by Selling Used Product Bags

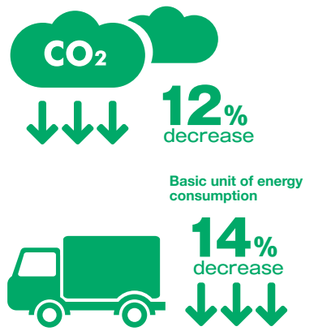
The Fuji Plant is promoting initiatives to reduce industrial waste. Since FY2014, the plant has been reviewing ways to reduce the amount of product bags (e.g. paper bags used for raw materials, paper bags used in plant processes) which conventionally were disposed of. Ultimately it was decided to ensure separation of waste and sell these bags. This year we successfully sold approximately 55% of our used product bags. We will continue to work to further reduce waste in the future.

Green Logistics

Reducing CO_2 Emissions and Basic Unit of Energy Consumption in Logistics

This year the Fuji Plant was able to curb CO_2 emissions in product transport and other logistics processes down at about 88% over the previous year. It also reduced the index of the basic unit of energy consumption (against sales volume)* to about 86% over the previous year. As a background, we started importing some of our products. It enabled us to shorten the truck transportation distance. We are working toward environmentally friendly logistics through our ongoing modal shift initiatives and by continuing innovative efforts such as proactively utilizing return vehicles with our logistics partners (raising distribution efficiency by shipping materials and purchased goods on product transport return vehicles).

*Basic unit of energy consumption = Energy used (equivalent in kiloliter of crude oil) / Sales volume



See our website for more details!

FY2018 Environmental Impact Reduction Targets & Status of Achievement

Minimizing the effects on the environment by Polyplastics' business activities is our top priority. Aiming for that we are working to preserve the environment in our daily duties.

Measures	Target	2016	2017	2018
1. Reducing Emissions of Chemical Substances (PRTR Substances)				
PRTR Law*1	By the end of FY2019, reduce the basic unit*2 of atmospheric emissions of PRTR substances by 30% over FY2016	Reference Year		35.5% increase
2. Energy Saving Activities and Reducing CO_2 Emissions				
Energy Saving	Reduce the basic unit of energy consumption by 1% or more per year over FY2016 (the reference year)	Reference Year		0.3% increase
Reducing CO_2 Emissions	Reduce the basic unit of CO_2 by 1% or more per year over FY2016 (the reference year)	Reference Year		13.3% decrease
3. Reducing Waste and Promoting Recycling				
Industrial Waste Output	Reduce the basic unit of industrial waste by 1% or more per year over FY2016 (the reference year)	Reference Year		6.8% increase

*1 Abbreviation for "Pollutant Release and Transfer Register." A system for recording and reporting the volume of chemical substances released into the environment by plants and the volume of chemical substances in industrial waste

*2 Release, usage, and/or generation per production volume

1. Reducing Emissions of Chemical Substances (PRTR Substances)

This year the basic unit of PRTR substances increased by 35.5% over FY2016 (the reference year). We are doing all we can to achieve our group-wide goal in FY2019, including confirming and reviewing the effects of the system we introduced this November, which is expected to help reduce PRTR emissions.

Emissions of PRTR substances
(Compared to FY2016)
Basic unit **35.5%** increase

2. Energy Saving Activities and Reducing CO_2 Emissions

This year the basic unit of energy consumption increased by 0.3%, and the basic unit of CO_2 decreased by 13.3%. With last year's energy facility changeover, Fuji plant was able to switch from producing electric power internally to purchasing it externally. While this did reduce the basic unit of CO_2, on the other hand, energy efficiency fell, leading to a slight increase in the basic unit of energy consumption.

Basic unit of energy consumption
(Compared to FY2018 target)
0.3% increase

Basic unit of CO_2
(Compared to FY2018 target)
13.3% decrease

3. Reducing Waste and Promoting Recycling

Our group is working together to reduce waste by recycling waste materials and by reducing the amount of waste. This year our basic unit of industrial waste increased by 6.8%. It has been suggested that the cause of this increase was mainly an initiative to improve delivery quality, in which we switched to disposing of each resin pallet as waste, while some plants had previously recycled them. We will continue working to balance delivery quality while recycling these pallets as much as we can.

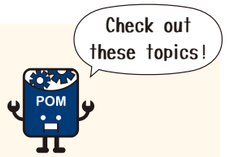
Basic unit of industrial waste
(Compared to FY2018 target)
6.8% increase

Environmental Accounting

Here we will introduce some special cases from the Fuji Plant's major facility investments and activity costs for environmental preservation.
(See our website for details on environmental accounting.)

Environmental Preservation Costs

Investments	Costs
176 million yen	1,561 million yen



Global environment preservation costs

Contributed to energy saving by investing about 50 million yen in a flash steam reuse system. (See p.16.)

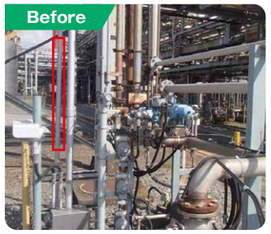
Resource recycling costs

Includes costs for replacing waste separation equipment (electric sieve) and purchasing furnishings such as containers for industrial waste.

Pollution control costs

This year we strengthened countermeasures for soil contamination by the 1,4-Dioxane from the cleaning agents used in our PBT plant. By changing to thicker piping lines for waste water treatment facilities, we were able to take thorough countermeasures against the occurrence of in-process leakage of waste water from the bilge pit.


Bilge pit



Environmental impact reduction costs

Costs: 147 million yen

Includes the initial cost difference caused by replacing the mercury vapor lighting in the interior of the plant with LEDs.

Environmental preservation costs for administration

Costs: 151 million yen

Includes ISO14001 audit costs as well as personnel expenses related to environmental target education, analysis costs for atmospheric and water pollution, etc.

See our website for more details!

Initiatives to Prevent Serious Accidents

In order to achieve our goal of zero occupational disasters, Polyplastics defines common targets across the group, and works toward raising the safety awareness of all the people who work for us.

After serious accidents occurred in FY2015 and FY2016 (including falling from high place and collisions between a person and forklift), in FY2017, we invited an external lecturer with experience as an automaker's senior safety executive to give lectures and training as to safety management. Based on this training, this year we began activities that incorporate the approach of preventing serious accidents*.

Specifically each division conducts overall inspection of facilities and operations on the premises from the perspective of preventing serious accidents, and collects facilities or operations with the risk of leading to serious accidents. There is also a system to evaluate by scores and determine priority from the perspective of the accident's severity (the likelihood of it leading to death), the frequency of the operation, and the level of risk (state of facilities/workers), and we make plans to handle them.

Also in order to create safety standards for facilities we have collected past examples of accidents and problems and worked toward standardizing facility safety with consideration for countermeasures. So far, this has only taken place at the Fuji Plant, our mother plant, but in the future, we intend to expand it to group company plants as well.

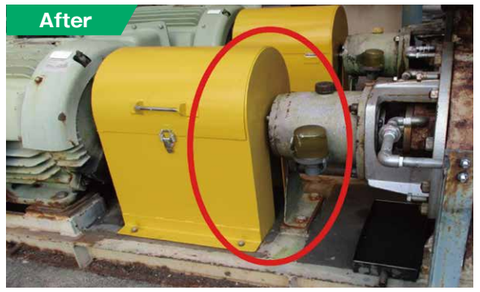
List of Risks

- Falling
- Catching or crushing
- Contact with high/low-temperature materials
- Contact with hazardous substances
- Flying or falling objects
- Traffic accidents (collisions with vehicles)
- Heat stroke

*Serious accidents are defined as incidents that involve the risk of death or lasting after effects.

Example of Catching/Crushing Countermeasures (At the Opening of an Industrial Water Pump)

There was a risk of employees' hands getting caught when put in the opening, so we added a cover to remove the source of the accident.



Risk Simulation Training

We conduct Risk Simulation Training, an experience-based education program, to raise the safety awareness of all the people who work for us and our partners. We have expanded these initiatives from the Fuji Plant to group company plants, and the group is working together as one to further improve safety awareness.

A scene from Risk Simulation Training at our Nantong Plant in China (PTM/PNL)

In order to make our employees understand the importance of wearing helmets, we dropped objects on a dummy with helmet.

ESH Audits

We conduct mutual ESH audit at group company plants every year, sharing our knowledge of safety and environmental issues. This year an audit was conducted at our Nantong Plant in China (PTM/PNL). The audit participants include not only the persons in charge of safety and environment of each plant, but also employees from other divisions who can utilize the knowledge of group plants in their own field.

Comment from employee participated in the audit from the Fuji Plant's Manufacturing Division

This was my first time participating in an overseas plant audit. I learned things from the case examples that could also be useful to the Fuji Plant such as setting up a security gate at the plant entrance. Meanwhile, I was also able to point things out such as that the method of loading pallets could lead to serious accidents. I got to learn about the safety approaches and initiatives of overseas plants. It was a good experience.

Product Safety

50,000 Certifications Issued Yearly

We issue a range of certificates to ensure product quality and safety, including certificates on legal compliance and content/amount of chemical substances in products. This year we issued 50,000 such certificates, up 10% over last year. We will continue this initiative so that our customers can use our products safely and with confidence.

See our website for more details!

Aiming for a Sustainable Society

"As a corporate citizen, Polyplastics wants to provide opportunities to make society better." Based on this idea, our employees around the world are working on social contribution activities that meet the needs of local communities.

Coexisting with Local Communities

Nantong, China — Started "Benevolence Month" to foster the employees' awareness on Social Contribution

After collecting issues based on local needs, we designated May as "Benevolence Month" to work on social contribution activities and make it easier for more employees to participate in such activities.

Donated Clothes and Shoes to Disaster Areas

Donated clothes to primary school students in earthquake-damaged mountain areas of Qinghai Province. Employees participated proactively with 31 people donating 133 garments.

Blood Donation Volunteers

After hearing from employees who had volunteered in local blood donation activities, we teamed up with the Nantong Red Cross to hold our first blood donation event as a company.

Donated to Local Stray Animal Rescue Center

Donated 1,300 RMB collected from employees to Nantong local stray animal rescue center.

Voice
Chun Jin
FA Department

This year we created a system called **"Micro Public Good"**. The purpose of this system is for **the company to provide volunteer activity opportunities and make it easy to participate on an individual level so that our employees can express their benevolence through their actions.** We believe that activities which start out very small can build up and lead to major results.

Fuji, Japan — Communication Activities with Local Communities Over Many Years

We hold the Environmental Monitoring Meeting every year to explain environmental data and our plant's environmental initiatives to local residents and show them our plant. As we have held it for more than 40 years, we will continue to exchange opinions through these activities and work to foster sustained relationships with local communities.

Mr. Tadaaki Tokita,
Environmental Monitor, Vice President of the Tagonoura Area Administrator Association of Fuji City and Mayor of Shinbama ward

Voice from participant

Seeing the thorough cleaning and orderliness of the premises made a strong impression on me. It seemed each and every employee behaves with great awareness. I also think that Polyplastics is making some great efforts like the changeover to environment-friendly energy facilities and promoting the employment of people with disabilities. I hope that Polyplastics continues to participate proactively in cleanup activities and other social contribution activities, and that it makes the Fuji Plant a more environment-friendly plant for Fuji city, Japan, and the world.

Cultivating the Next Generation

Shanghai, China — Showing Children the Joy of Reading

1. **Polyplastics (Shanghai) donated 4,288 RMB to a primary school.**
2. **Employees donated 21 second-hand books to a primary school.**

We believe that children are the future of our country, and so we made a donation of 4,288 RMB to a farming village primary school to purchase books and supplies. This initiative was made possible by an organization called the Shanghai True Love Dream Education Foundation which was introduced to us by the Jing'an district of Shanghai. In addition to the donation from the company, employees also stepped forward to donate second-hand books. We hope to continue contributing to the growth of children by helping to maintain their educational environment and showing them the joy of reading.

Sending the books collected from employees

Students at the primary school that received the donation

Voice
Joyce Qiu
HR & GA

When we, employees, were bringing in books they no longer needed, we talked with our own children about primary school students living in mountain areas. We told them how hard these children work at their studies despite the harsh environment they live in. Once our children understood this, we saw them adjust their own attitude toward studying and show higher academic motivation. **The 21 books collected from the employees were sent to the primary school through a charity organization before the start of the new semester.** I hope that those children are surprised and happy to see these books.

Other Activities

Providing Work Experience Opportunities to Local Students

Donation of €2,000 to a Children's Cancer Care Program

Donation to a Local kindergarten School to Install a Sand Field Sunroof

Donation of 18,000 RMB for Educational Support for Loacl Primary School Children (12th Consecutive Year)

Supporting Employees in Volunteering

Bangkok, Thailand Donated Money and Goods to NPO that Supports Mothers and Children

When we thought about what kind of contribution activities we could do for Mother's Day, we learned the activities by NPO to support the daily lives of mothers and children in Bangkok who have been victims of crime. We wanted to share this activity with our employees and lend our support, and so we made a donation of goods and money. We collected a variety of resources that employees no longer needed, such as clothes, shoes, children's toys, sports goods, stationery, and daily necessities. In addition to all these resources, the total of 3,000 THB collected from employees to donate to the support organization.

"It's a small gesture, but I hope it can be of use", said employees as they collected a variety of goods.

Employees with the donations they collected

Voice

Siriporn Chuaklangyai
HR & GA

We are regularly working on social contribution activities that our employees can participate in voluntarily. They participated proactively in this activity too, and I saw them improve each other's motivation. This made it easier for more staff members to participate, and they exchanged opinions about the initiative. As the person in charge, this made me happy. I was also asked about our next contribution activity, which made me feel that this was effective at supporting employees in volunteering. I also felt that consciously building up such initiatives helped to improve the sense of unity among employees.

Participated in Charity Run

Kuantan, Malaysia

53 employees participated in a charity run held by the state government.

Kaohsiung, Taiwan

45 people participated in a charity run held by NGO, including employees and their families.

Bangkok, Thailand

30 employees participated in a charity run to support people with visual impairments.

Topics for Polyplastics Japan Expanding Social Contribution Activities in Line with Polyplastics CSR Approach

Donated the Emergency Generator to the Local Community Center

This year we visited Fuji City municipal office to expand our social contribution activities based on local needs. When we asked about local issues and needs, we learned that the Fuji Minami Community Center, located the former site of our company dormitory, was lacking some essential items. Many of our employees still live in the area served by the community center, so it is a place of interaction that also serves as a local disaster prevention base. We donated the emergency generator and a rice cooker for emergency food distribution in order to enhance the functions of the community center and contribute to the local community. In September we received a certificate of thanks from the mayor of Fuji City.

Emergency generator

Mr. Yoshimasa Konagai (right) Mayor of Fuji city, Mitsuuchi (center) Fuji Plant General Manager, Yamamoto (left) Chief of General Affairs Department

Communicating the Fun of Work and Manufacturing to Children

One cause of concern in Japan in recent years is that children are turning away from science. As a company in the manufacturing industry, we worked together with the Fuji Chamber of Commerce this year to hold lectures on career education for local junior and senior high school students in order to help raise the next generation of people that will support manufacturing in the future.

Fuji Yoshiwara First Junior High School

Our employee gave the lectures on career education as technical engineer, talking about his work experiences. He also gave a cheerfull message to the students who are full of potential.

Lecturer
Takashi Fujita
TSC Market Development Group

Introducing the future of vehicles through familiar topics

Students show keen interest in actual stories of automotive parts and experiences working overseas

Shizuoka Yoshiwara Technical High School

Speaking on the topic of "Automatic Driving: Present and Future", he introduced how our resins are applied in automotive parts. He also told about the skills necessary for the engineers who will support the automotive industry of the future, as well as the students' own career development.

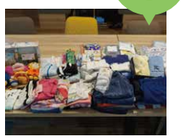
Lecturer
Fukashi Masuda
TSC Market Development Group

Students also asked specific questions such as "In the future, what will happen when we see a mix of driverless cars and normal cars?"

Goods Donation Event: Initiatives Against Wastefulness

At Polyplastics, we are working as a company to back up our employees' mind to contribute to society as individuals. This year all of our offices and plant in Japan participated in an internal event called "Initiatives Against Wastefulness", in which employees were asked to donate goods for NPO. In total, 6 events were held and we collected a variety of donated items, including a large amount of food products, approximately 120 pieces of children's clothes, and foreign currency totaling the equivalent of about 141,000 yen. While social contribution activities like these had previously been carried out on an individual site level, this was the first time for Polyplastics Japan to work together as one on such an activity.

Mr. Yamamoto, representative of NPO Mottainai Japan with the donated goods



A scene from an event

See our other social contribution activities

Compliance Awareness Month for the Whole Polyplastics Group

Polyplastics has a yearly Compliance Awareness Month. Its purpose is to remind all group company employees of the importance of compliance and to focus on our efforts toward the implementation of compliance.

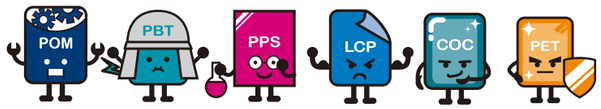
This year's main two initiatives

1 Group discussion using familiar case examples

We created group discussion topics (case studies) using case examples that have occurred at group companies. These efforts were very popular with employees, who gave comments such as "I was able to think about the problem as if it were my own," and "We debated what we should do not only from the perspective of compliance with company rules, but all the way back to the corporate philosophy."

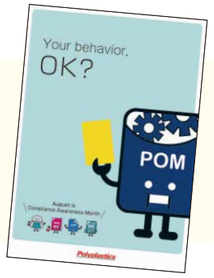
2 Gathering employee opinions

We conducted a Compliance Survey of all group employees to hear their frank opinions on compliance issues that may be difficult to bring to their supervisors or to report through the Whistleblowing System. We reviewed the opinions collected, considered whether we could handle the issues as a company, and both gave feedback about the results and implemented necessary countermeasures.



Other Programs

- CEO Message
- Compliance Awareness Month Posters
- Compliance Training for Top Executives and Department Managers
- e-Learning
- Compliance Self-Check & Survey



Compliance Awareness Month Poster

Corporate Governance

In order to ensure that operations are carried out efficiently and to improve the transparency of company management, we have implemented a corporate governance system.

Establishment of Group Company Management Regulations

From the perspective of ensuring efficient management and corporate governance and in order to clarify the relationships between Polyplastics and group companies, we have newly established Group Company Management Regulations and clarified items that require headquarters approval, items to report to headquarters, and Polyplastics group-wide regurations.

Compliance

We have also issued a Group Code of Conduct to ensure not only that we comply with laws and regulations, but also that we respect the social norms and ethical values that govern corporate behavior. We give an explanation of this code in a booklet called the Polyplastics Commitment, which is distributed to our employees. This year we revised the booklet to include a usage guide as well as development exercises. The General Administration Department, Legal Department, and other related departments are working together on compliance education, including familiarizing the Polyplastics Commitment.

Promotion of Clarification of Company Regulations

In order to organize the company regulations logically and ensure compliance with appropriate establishment/revision approval in line with the regulations, we have established the Rules of Company Regulations Management for Polyplastics Group.
By organizing the company regulations logically and clearly we hope to promote better understanding among employees and ensure effective and continued compliance.

Risk Management

Promotion of Risk Management

In order to handle the various risks surrounding our business activities, we have regular review carried out by the CSR Committee. The committee classifies risks into "business strategy risks" or "operational risks," and rolls out risk management activities for them based on their handling priority. In the future, we will monitor changes in the business environment and social conditions in order to work on risk reduction activities and countermeasures.

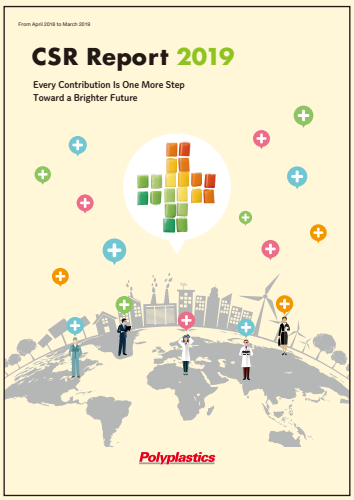
BCP (Business Continuity Plan)

We have formulated a Business Continuity Plan (basic BCP document) and a variety of manuals to ensure the continuation of our business activities in the event of a crisis such as the anticipated Nankai trough earthquake or an earthquake that directly hits the Tokyo area. We ensure that employees are familiar with this in order to ensure the continuity and early recovery of services in an emergency.

Internal Control

We have established the Internal Control Basic Policy based on which we ensure suitable business management. All group companies conduct self-checks every November, and at the end of the term each division and group company is requested to submit a self-assessment report to confirm the effectiveness of internal control. We also regularly conduct internal audits to evaluate the effectiveness of internal control, and are working together with our parent company, Daicel Corporation, to deploy a global audit system in order to further improve the quality of our audits.

See our website for more details!



Our Concept in Catchphrases

According to Polyplastics CSR Approach, each and every employee can contribute to society through their own duties or through their private activities.
We believe that the accumulation of these contributions will lead to a sustainable and abundant future society.

Polyplastics Co., Ltd.

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