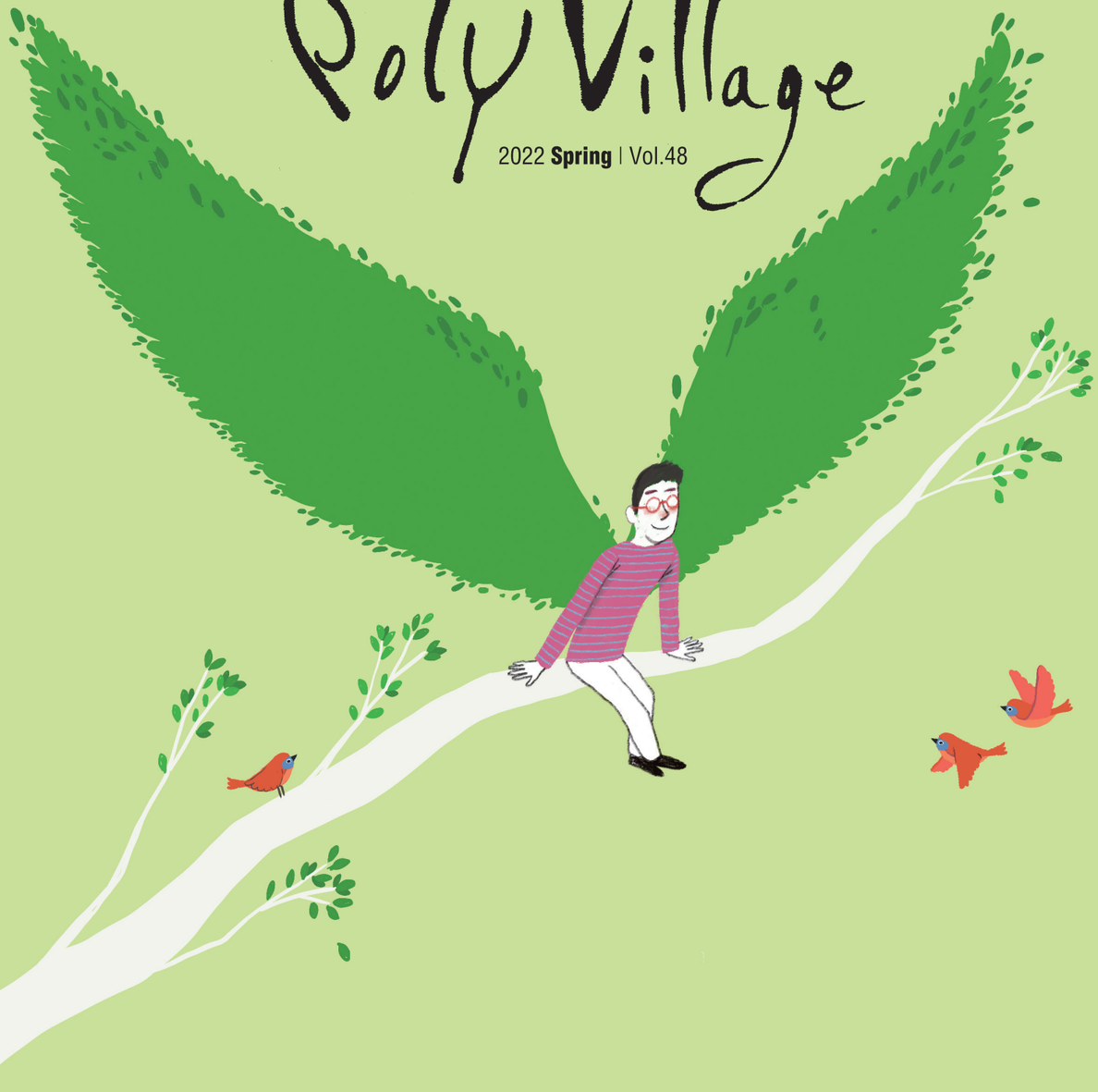
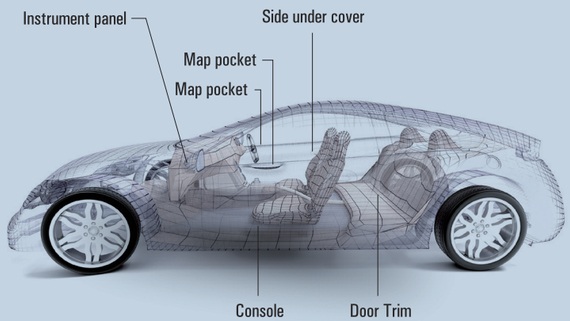
Poly Village

2022 **Spring** | Vol.48



Hifax EP246P for EV Car interior trim

Innovation PP with low Shrinkage and high Gloss



Hifax EP246P is an impact copolymer with excellent dimensional stability and high gloss properties.
It is an innovative product suitable for electric/electronic products as well
as interior/exterior materials for eco-friendly premium automobiles such as EV cars.

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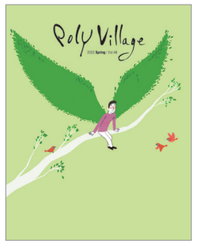
With Poly PEOPLE & ISSUE



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Dear PolyMirae business partners, staff, and executives

The year of the black tiger, 2022, has dawned. I sincerely hope that it will be a very fruitful year, and all your plans get accomplished with the courageous and gallant spirit of the black tiger infused widely into our society. Moreover, I pray that your family will be overflowing with good health and blessings.

PolyMirae was confronted with a highly challenging and difficult situation due to the increased influence of a negative market environment that had not been experienced prior to the COVID-19 pandemic. Intensified competitiveness within the petrochemical industry arose from the large-scale global expansion of polypropylene plants, and there was also a lack of containers and ships in 2021.

Nonetheless, we were able to accomplish outstanding performance that exceeded our expectations not only in the areas of safety, environment, and health, which we consider the foremost values, but also in the aspects of sales and finance, with assistance from our stockholders, affiliated companies, customers, local residents, and all of our staff and executives who gave their upmost to fulfil their respective responsibilities. At the same time, we were able to provide our outstanding products and values to global customers by supporting our expansion strategy through successful operation of a new 400,000-ton capacity production line, entering into partnership with SK Advanced to establish Ulsan PP Co., Ltd. as a joint venture. This enabled us to further fortify the competitiveness of PolyMirae.

It is forecast that internal and external uncertainties will be even greater in 2022, and substantially more time is required for our society to fully return to the normal daily life and business environment we enjoyed prior to the COVID-19 pandemic outbreak. However, PolyMirae will strive to continue to progress energetically by coping flexibly with forthcoming changes, without fearing the various difficult external factors or new challenges. We are determined to overcome the crisis we are confronted with by undertaking bold challenges through full utilization of our innovative DNA.

The law on punishment for serious disasters has been implemented since January 27, 2022. As we have always done while executing business in the areas of safety, environment and health, we have also made our best efforts to prepare for the enforcement of the law on punishment for serious disasters. We will utilize this as an opportunity to further strengthen our system in the areas of safety, environment, and health, and accomplish more mature and safer business sites that everyone will respect and envy.

Furthermore, we are actively pursuing a new business project for recycling of plastic through cooperation with our stockholder company based on the direction of the government's carbon neutrality strategy. We expect that this will provide us an excellent opportunity to accomplish continued growth and maximize PolyMirae's specialization in polypropylene.

We pledge to sincerely execute our role as a leader in order to resolve the pending issues we are currently confronted with, enhance our corporate values, and achieve sustained growth. In addition, we declare that all the members of PolyMirae will make the greatest efforts to realize our vision of [becoming the most respected company in the Asian polypropylene industry on a foundation of outstanding performance, highly capable personnel, and social responsibility].

We look forward to your continued encouragement and assistance, and I would like to convey my sincerest wish that your families will be filled with good health, happiness, and success in the new year. We will strive to ensure that 2022 will be remembered as one of the most dynamic and successful years to be enjoyed with you.

Yours sincerely,

March 2022

BH Kim President & CEO

"We will be responsible for the Specialty products that PolyMirae manufactures!"

It is said that the most important thing when crossing a desert is the 'companion you are traveling with', rather than food and water. Respect and consideration for one's fellow workers are the most fundamental elements. We will have an opportunity to look closely at Production 1 Team, the culmination of communication that contributes towards PolyMirae becoming a globally leading polypropylene company based on the best team work.

PolyMirae has 4 manufacturing processes with different product portfolios, with each manufacturing process being operated by Production 1 Team (Yeocheon Plant, Line 1/2), Production 2 Team (Yongseong Plant, Line 3) and Production 3 Team (Pyeongyeo Plant, Line 4). Of these teams, Production 1 Team operates 2 manufacturing processes with a polypropylene production capacity of 340,000 tons. Having installed 2 GPR(Gas-phase reactors) in Line 1, Team 1 is mostly manufacturing the raw materials used in the production of plastic components for automobiles and electronic products.

In particular, the Metocene and Melt blown products manufactured in Line 2 are used as the raw materials for masks and filters, thereby firmly establishing them since the outbreak of COVID-19 pandemic as premium PolyMirae products.

The members of Production 1 Team and their respective roles are as follows:

- JY Park, Production Team Manager: Overall management of Production 1 Team
- YW Ha, Operations Manager: Operations management, on-site facility monitoring and manufacturing planning
- HI Hwang: Quality control and execution of investment projects
- HP Kim: Management of procedural safety data and preparation of external auditing
- KS Kim: Safety management of on-site tasks
- HC Lee: Management of production cost, computation of quantities, and management of production team documents

Tasks and roles of the shift work teams are introduced below. There are 4 shift work teams, with each team composed of 8 members, making a total of 32 staff. They play a central role in the operation of the 2 manufacturing processes.

- Shift Assistant Manager: Overall management of the worksite and procedural issue reporting
- Shift Technician: Facility maintenance and management, and issuance and management of work permits
- Boardman: Safe and efficient procedural operation through DCS system
- Fieldman: Manipulation, management, and inspection of onsite facilities

Although these positions each have their respective individual tasks, personnel will unify to solve issues and problems that occur in the team.

So, what is the daily routine of Production 1 Team? Let's tag along and see! Let's Go!
Production 1 Team's tasks can be divided broadly into their morning and afternoon schedules.

AM The morning routine begins with checking any peculiar issues from the previous day and the tasks to be performed for the day. As soon as the staff report to work, they check whether there have been any peculiar issues overnight and whether the operating data is stable through use of trend data. In addition, they assess risk factors that can occur in advance by reviewing the on-site tasks to be carried out for the day.
Next, the shift work team and day worker will hold a meeting in the conference room to share and discuss work precautions to be exercised, issues related to the company, and work procedures.
At this time, everyone shouts the slogan "Safety First" prior to and after the morning conference to renew and fortify safety maintenance volition in the plant.
Following the meeting, the Production 1 Team manager and operations manager circulate the worksite to check the status of tasks to be performed for the day. Team members conduct their respective duties including preparing reports, computing, and preparing for external auditing. As the team members actively engage in safe work monitoring and provision of worksite support, the morning hours pass very quickly.

PM Once the afternoon routine begins, the Production 1 Team manager periodically assesses progress with the tasks conducted and shares any messages to be passed onto team members. Team members then plan and execute their afternoon routines based on the messages passed over to them.
Additionally, there are numerous tasks for the production team that are executed through collaboration with other departments.
The production team manager holds a meeting with other departments to improve the processes, while the operations manager adjusts production schedules with the business asset management team and each of the team members executes their respective tasks such as preparing necessary legal compliance documents with various other teams including the safe environment team. Once all these tasks have been completed, and if there are no peculiar issues detected in the procedures, the members of Production 1 Team will return home safely, just as they reported to work in the morning.
The production team pays extensive attention to accident-related issues, since numerous high-temperature and pressure facilities are being operated. Moreover, since there are many situations in which tasks are conducted in conjunction with others rather than alone, the production team requires extensive cooperation with, and consideration for, colleagues, and they must always maintain high concentration levels.

"We are executing a wide range of safety-related activities, including holding a Safety Inspection Day every month, exhaustive change management and operation inspections, and forwarding messages for safety-related activities, as well as shouting the slogan "Safety First!" prior to and after every meeting, making sure to hold onto railings when walking up and down stairs, and holding Tool Box Meetings (TBM) prior to commencing work in order to establish a safe workplace."

Shall we now hear some opinions from the members of Production 1 Team? Production 1 Team has been operating the plant for almost 30 years now, hasn't it? What has been the most memorable year in the past?

That was 2020, as we managed to achieve numerous milestones, including the 20th anniversary of the company, 3,000 accident-free days, and the highest plant operation rate. Among these, the most meaningful and proud accomplishment was the production of masks with Metocene, a product that was the result of our utmost efforts and dedication, developed to combat the COVID-19 pandemic and thereby making a contribution towards global health.

The foremost issue in the petrochemical industry is safety. What efforts are Production 1 Team making to ensure safety at work?

All the members of PolyMirae, ranging from management to staff, place foremost priority on safety. We are engaged in diverse activities such as holding a Safety Inspection Day every month, exhaustively managing changes and carrying out operation inspections, and forwarding messages for safety activities, to ensure establishment of a safe workplace. In addition, we are making our best efforts to ensure an accident-free workplace by enhancing safety awareness among everyone, beginning with trivial issues.
For example, we are executing diverse safety activities including shouting the slogan "Safety First!" prior to and after every meeting, making sure to hold onto railings when walking up and down stairs, and holding Tool Box Meetings (TBM) prior to commencing work. As a result of such efforts, we were able to receive the PSM 'P' rating and Class A rating for the safety and health coexistence cooperation program, and achieve 3,600 accident-free days.

We are meeting newly recruited staff who have recently been assigned to a permanent position after joining the company in 2021. What is the view of Production 1 Team from your perspective as a newly recruited staff member?

YS Cho, staff member: Production 1 Team is overflowing with vitality because all the members are always working energetically on the foundation of their specialist knowledge and expertise, without losing either their composure or leisurely attitude in spite of circumstances filled with tension around the clock. I am making my best effort to become a team member capable of calmly solving varied issues in any situation I find myself in, and to maintain my vivaciousness by modeling myself after senior staff.
DS Heo, staff member: Production 1 Team can be defined by a single word, 'communication', because the team manages to perfectly complete its assigned tasks by ceaselessly communicating through wireless devices in spite of highly hectic schedules. I believe it has been possible to operate the plant without accident due to this harmonious communication among all the members. I also would like to achieve growth personally as a member capable of stably operating the plant through continuous communication with others.

What are Production 1 Team's goals in 2022?

Our goal is execution of safe turn around (TA). Turn around over a period of 20 days is planned in the latter half of this year. During this turn around period, plant operation is stopped to inspect and maintain devices and equipment that require repairs. In addition, tasks are carried out for procedural improvements that could not be executed during normal working days. Since a diverse range of tasks are carried out simultaneously and a greater number of staff members are assigned to the worksite, this thereby requires greater attention to be paid regarding accident risks.
We looked into Production 1 Team in detail. We sincerely hope that the team will be able to achieve greater growth this year than last, in terms of both individual capabilities and production indices through more efficient manufacturing in a harmonious, accident-free atmosphere.

Our attitude in preparation for implementation of the law on punishment of serious disasters

The law on punishment of serious disasters that will impose more severe punishments on business operators and managements that fail to fulfill their obligation to prevent serious accidents was implemented on January 27, 2022.

HSE team, **JY Lim**

Core issues that the law on punishment of serious disasters requires are as follows:

1. Leadership of the business administrator
2. Establishment of an organization in exclusive charge of health and safety
3. Measures to be taken for execution of duties by personnel responsible for health and safety management
4. Assignment of specialized health and safety personnel
5. Confirmation and improvement of harmful/risk factors
6. Compilation and execution of health and safety budget
7. Listen to the opinions of employees
8. Measures to be taken in the event of serious industrial accidents occurring
9. Assurance of health and safety through subcontracting, services, and consignment of relevant tasks

The law on punishment of serious disasters assigns the responsibilities and obligations for 'establishment of a health and safety management system' and 'systemic management' thereof to the personnel responsible for management of the company, in addition to the obligations to take specific measures for health and safety in worksites stipulated under the existing Industrial Health and Safety Act. After the law was enacted on January 26, 2021, with an enforcement order on October 5 of the same year, it has been fully implemented for business sites with more than 50 employees as of January 27 this year.

We have been fortifying all our safety-related capabilities by strengthening our powerful execution capabilities and continuing with necessary investments by putting the foremost values and policies in the areas of health and safety in order to make our workplace even safer and establish PolyMirae worksites that everyone will respect and envy. In particular, as a result of systematically executing the following activities, we managed to achieve a record 3,600 accident-free days as of February 12, and acquired and maintained the highest rankings in all institutional evaluations (PSM, P/SMS, A/coexistence cooperation: Class A rating given to the top 10% of companies).

1. Powerful safety management volition and leadership
2. Exhaustive change management and inspection prior to operation
3. Fortified evaluation of work-related risks and worksite Tool Box Meetings (TBM)
4. Continuous system maintenance and training to cope with crises
5. Back to Basics Rule Campaign_Shouting of slogan "Safety First" during official meetings
6. Regular LyondellBasell safety inspections and improvements
7. Assertive company investment in HSE

In addition, we have been pursuing a thorough legal understanding and making exhaustive preparations thereof for the scheduled implementation of the law on punishment of serious disasters. Through such processes, we are further strengthening our system in the areas of health and safety.

All the staff and executives at PolyMirae will take up implementation of the law on punishment of serious disasters as an opportunity to solidify a safety culture in the company that is a step more advanced, by sincerely adhering to the basics and principles without making compromises under any circumstances in relation to health and safety. PolyMirae held a meeting in January to discuss the status of our preparations and means of taking additional measures in relation to implementation of the law on punishment of serious disasters in depth. Issues deduced for improvement during the meeting will be executed through exhaustive preparations and planning. Details of key issues that will be fortified and pursued in the future are as follows:

1. Further strengthen inspections prior to operation and onsite safety management of risky tasks for implementation
   - Make sure to execute risk evaluation and exhaustive TBM prior to work
   - Infuse sufficient time and personnel for inspections prior to operation
2. Fortify assertive company support for identification and improvement of risk factors
3. Exhaustive safety activity record and message management
4. Continuous fortifying and regular training on the system to cope with crises
5. Improve safety culture through exhaustive compliance of company safety regulations
6. Effective management-led communication and on-site safety inspection
   - Visits to plant by CEO 2 times a month – Conference on management performance / on-site inspection and communication with staff
   - Strengthen management of cooperative companies – Reflect safety management costs, evaluate work risks in advance, and plan safe work procedures

PolyMirae will make the greatest effort to maintain a pleasant, accident-free workplace by preventing and managing risk factors in advance through exhaustive on-site inspections and safety-related activities, on a foundation of the management principle of placing foremost priority on health and safety and key action principle of [One Winning Team].

Our activities place foremost priority on safety

In-house education on the law on punishment of serious disasters

In order to prepare for implementation of the law on punishment of serious disasters, we have been making exhaustive preparations through a thorough understanding of the law. Through such a process, we are further strengthening our system in the areas of health and safety.

Shouting the slogan "Safety First"!

We shout the slogan "Safety First" during all our official meetings as the first step in fortifying our ability to execute further safety in the workplace.

Execution of company-wide crisis management drill

We will be making the greatest effort to ensure that a pleasant accident-free workplace is maintained by preventing and managing risk factors in advance through continuous strengthening and periodic training on risk countermeasure systems.

Our journey to establish a circular economy

We cannot imagine a world without plastic nowadays.
Since first developing and manufacturing plastic, people have been using plastics increasingly extensively due to its convenience and economic value. However, plastic has become a major challenge to humanity due to environmental pollution and climate changes arising from carbon emissions from the disposal of plastics. In order to resolve such problems and to accomplish sustainable human growth, numerous countries around the world are making efforts to establish a circular plastic economy.

Sustainability Team, **GY Ha, Director**

Until now, plastic has been dealt with through the linear economic model of 'collection of resources – mass production – disposal'. On the other hand, a circular economy is an environment-friendly economic model that establishes a 'virtual circulation of resources' through retrieval of used resources and energy, reuse and recycling of the waste generated thereof, and promotion of recycling industry growth. The Korean government strengthened regulations on the use of disposable plastic products, fortifying the responsibility of producers to promote reduction of plastic and use of recycled raw materials in the midst of its policy to undergo transition to a circular economy through implementation of the basic law on resources circulation in 2018. At the end of December last year, the Ministry of Environment and the Ministry of Trade, Industry, and Energy announced a 'Plan for implementation of a Korean (K)-circular economy' as a means of realizing the goal of carbon neutrality in the mid to long-term by 2050. Accordingly, an obligation to use recycled raw materials will be levied to companies manufacturing plastics, as in the case of those manufacturing paper, glass, and steel products, from 2023.

In alignment with social trends of circular economy establishment for carbon neutrality and relief of environmental pollution, PolyMirae has established a sustainable growth team in exclusive charge of the circular economy with the assertive support of two stockholder companies, commencing a long journey towards circular economy establishment by setting mid- to long-term plans. In order to establish a circular economy through plastic recycling, it is necessary for chemical recycling and mechanical recycling to act mutually and supplementarily. However, chemical recycling needs to overcome current technological limitations and the investment management environment, and a long-term approach is necessary to achieve this. PolyMirae, which manufactures PP products of outstanding quality, has the vantage point in the development of technologies and products for promotion of circulation. As requests for outstanding recycled materials through PolyMirae continue to increase, we are dedicated to assist the accomplishment of our customers' sustainable goals.

Mechanical recycling refers to the process of manufacturing recycled plastic through mechanical processing procedures, including sorting, cleaning, and shredding of already used plastics. Separated plastic wastes that consumers disposed for collection are used in such mechanical recycling processes. Although there are differences in mechanical recycled PP products, it is possible to reduce 30%~80% of CO_2 emissions generated throughout the full cycle of a product in comparison to newly manufactured synthetic products. Moreover, it is reported that mechanical recycling can reduce consumption of water for cooling and energy, prevent approximately 60% of acidification, and reduce more than 90% of fossil fuel use during manufacturing. However, in spite of these extensive advantages, mechanical recycling is confronted with an enormous amount of tasks to overcome, including weakening in the original properties of the materials like impact, tensile, and flexural strength, changes in color due to oxidation, defective external appearance, sorting of collected plastic waste, defective cleaning, and contamination in the course of recycling. Fortunately, with rapid advancement of recycling-related technologies in recent years, the scope and value of uses have been widening and increasing rapidly. PolyMirae is also making the following efforts to overcome such limitations of mechanical recycling and to commercialize recycled PP with higher added value.

The first approach is to manufacture and evaluate virgin PP products appropriate for sustainable goals through product optimization and highly enhanced functionalization. As such, we are pursuing highly functional PP development for supply of products with improved durability and oxidation stability, ensuring that the physical properties and colors do not change so that recycling and multiple uses are possible. For example, we are developing a method of reducing demand for plastic fundamentally through weight reduction by using HCPP products as well as those that make recycling easier by virtue of improvement of shrinkage rate and processibility through application of mono material. Moreover, we are developing Hifax products that can compensate for negative aspects, including reduction of the original physical properties such as impact, tensile, and flexural strengths, color change due to oxidation, and defective external appearances as products undergo recycling. Furthermore, we are continuously developing and supplying products appropriate for transition to circulated materials, including development of a substance to improve the flow-ability for reducing the use of energy during processing.

The second component is to accumulate diverse data by converting various physical characteristics for each color including white and black as well as natural color, for each source by securing pelletized materials through sorting, cleaning, shredding, and separating plastic waste following use in daily life, as well as waste that has been left after being used for original purposes at industry sites, and by analyzing the molecular weight of the substances, ingredients of materials, and original material characteristics. We are supplementing the shortcomings of recycled resins by combining appropriate virgin PP based on the physical properties obtained as above, and manufacturing products more stably and reproducibly in order to apply them as more diversified industry materials. The majority of the recycled materials being distributed have non-uniform qualities due to recycling and limited uses. As such, it is necessary to compensate for these weakened physical properties in order to manufacture circulated material PP that is appropriate for the characteristics that customers want. In addition, it is important to establish a stable supply network to analyze for proper assessment of the raw materials' characteristics in order to develop materials that are suitable for the customer's final product.

The third element is to develop composition recipes for developing high-quality PP that can satisfy customer requirements. PP has highly diverse applications and composition recipes that are capable of supplementing the weaknesses of the PP collected for recycling, which is necessary due to the differing characteristics required for each use. Accordingly, we are making efforts to establish PolyMirae as a supplier of differentiated circulation materials for PP recycling by customizing the circulated PP materials according to customer requirements. Since it is not possible to produce recycled PP with the physical properties that customers want with only recycled materials alone, we are developing products equipped with the necessary physical properties and processibility by discovering the appropriate mixing ratio of the recycled PP with high-quality PolyMirae PP.

The fourth aspect is to have a manufacturing recipe for the recycled product developed undergo manufacturing processes to make customer use easier, using facilities such as a mixer, extruder, and pelletizer for thorough dispersion of recycled products, physical property improvement agents, and functional additives to be used. Mechanically recycled products are manufactured through various quality examinations, including black specks, flow index, and external appearance. Products that pass the targeted specifications evaluating physical properties and characteristics will undergo a customer evaluation procedure for use in automotives, housewares, household appliances, textiles, and flexible packaging, as well as other industrial uses throughout the country.

The fifth requirement is transparency of the recycled products in terms of the source of raw materials, changes during manufacturing, and reliability, including prevention of contamination and composition, since products are diverse in terms of the place from which the raw materials have been secured. Accordingly, we prepare a technical data sheet (TDS), physical property table, stability data (MSDS), and product performance report for conveyance of reliable sales information, and pursue certification of Global Recycled Standards for collection, separation, extrusion, and manufacturing of composite recycled materials in order to track the aforementioned processes and sales of the final products.

Based on these activities, PolyMirae developed and has currently commenced trial sale of 4 recycled PP using Post Industrial Recycled (PIR) materials. Moreover, we are developing 5 types of circular PP customized to the requirements of our customers for various uses including automotive parts, household appliances, housewares, and industrial products, using Post-Consumer Recycled (PCR) materials that have been segregated after use in daily living environments.
We are planning to accomplish sustainable goals through collaboration with customers through the process of commercialization of these materials after undergoing sequential trial production and customer certification from March.

PolyMirae is planning to secure recycling technology, make investments in a timely manner, and cultivate competent personnel to comply with mid- to long-term national goals and satisfy legal requirements for the period 2030 to 2050. For this purpose, PolyMirae will maintain our sustainable growth as a company specializing in PP and make our greatest effort to contribute to humanity and society as well as fulfill our social responsibility in coping with climate changes through establishment of a circulation economy and carbon neutrality.

News briefing +PolyMirae

2022 Spring

Safety environment performance

PolyMirae accomplished 3,300 accident-free days (11 times), 9 continuous accident-free years in 2021, and 3,600 accident-free days as of February 11, 2022. This is a highly valuable result obtained through efforts everyone has made to establish a safe work environment.
We coped with major and minor external examinations including the Yeosu City special safety inspection, SMS rating evaluation, regular inspection of harmful chemical substances, and atmospheric/water quality environment spot check, and we managed to complete them without any major problems being pointed out. We assessed and improved risk factors on the worksite through in-house inspections (events on safety inspection days, full inspections prior to operation, and integrated internal auditing) conducted periodically. Procedural facilities such as pressurized containers, elevators, and hoists are also inspected periodically, and facilities for which problems were found are repaired.
We reduced risks arising from erroneous operation by replacing aged fire extinction facilities through the CAPEX investment project, making sure that there were no contaminant leakages via rainwater by installing a facility to reduce nonpoint pollution sources.
In particular, we held the PMC Safety Day, an event in November, in order to have an opportunity to execute practical disaster countermeasure training and practice the use of newly installed rescue and safety equipment, dividing roles among participants based on accidents scenarios. It was a highly meaningful event with participation not only by the staff at the plant but also at the headquarters.

Subin Jang, HSE

Work environment measurement in the latter half of the year by the Korea Industrial Safety Association

PolyMirae executed work environment measurement in accordance with the Industrial Health and Safety Act in August and September 2021. It is obligatory to execute work environment measurement on a semi-annual basis to check to what extent workers are exposed to harmful factors in their working environment. Efforts need to be made to minimize the harmful factors that the workers are exposed to by improving facility installation or facilities in accordance with the measurement results.
There are a total of 12 harmful factors in the work environment of PolyMirae including noise and dust The quantity of harmful factors that the workers are actually exposed to is analyzed by collecting specimens in accordance with each harmful factor via staff who are working for a period of 1 to 8 hours. Results of measurements taken on the work environment in the latter half indicated that all harmful factors were either not detected or detected at levels below the relevant standards, thereby confirming that such factors are managed well. In the case of noise, it was found to be at a level similar to the standard value, thereby resulting in instruction that emphasized earmuffs to be worn to reduce exposure, and safety signs were additionally posted to prevent workers from staying in high-noise zones for prolonged periods of time.

Subin Jang, HSE

Acquisition of Class A rating for the coexistence cooperation program (top 10%)

PolyMirae participated in the coexistence cooperation program organized by the Korea Occupational Health & Safety Agency held throughout the year in 2021 and attained the highest ranking of Class A (top 10%).
The coexistence cooperation program is a project executed by the Korea Occupational Health & Safety Agency with the goals of preventing industrial disasters by establishing a health and safety coexistence cooperation program led by the mother company for cooperative companies that lack the ability to invest in and provide information on health and safety, and by pursuing technical and financial support for the cooperative companies accordingly.
Acquisition of a Class A rating for the coexistence cooperation program (top 10%) is an index that illustrates that the company has accomplished the aforementioned purpose of the project by having each relevant team assertively cope with various issues presented by the consultative organization of cooperative companies. As such, it is a result that demonstrates a high level of safety management by PolyMirae.

C Park, HSE

3rd party verification of greenhouse gas emissions at PolyMirae

PolyMirae executed on-site 3rd party verification of a plan for computation of greenhouse gas emissions for 2021 during October 12~13, 2021. PolyMirae has been participating in the program for greenhouse gas emission target management systems from 2015, when the greenhouse gas emission trading system was first implemented to the current 3rd planned period, and has been continuously executing activities to reduce emissions. As such, we are executing diverse activities, including investing into facilities to minimize steam emission to reduce indirect greenhouse gas emissions by reducing energy consumption from the present level.
The 3rd party on-site verification of the plan for computation of emissions quantity executed in October last year was the specialized verification institute stage authorized by the government, which visited the PolyMirae worksite to assess the current status of greenhouse gas emission facilities, acquiring the approval of the Ministry of Environment. The verification results meant we were able to acquire approval from the Ministry of Environment without any inappropriate issues being pointed out. We will continue with our diverse efforts to make contributions towards establishing a clean and safe carbon-neutral local society by continuously executing greenhouse gas emission monitoring and reduction activities.

JH Jung, HSE

Filmax visited Yeosu Plant for safety environment/quality benchmarking

Filmax, a client company of PolyMirae, visited our Yeosu Plant on October 26 last year to benchmark PolyMirae's safety environment, health, and quality control system. Benchmarking was conducted through introduction of the safety environment/quality system and visiting worksites. In particular, 'essential safety rules' and 'shouting of the safety slogan prior to commencement of all meetings', which are campaigns for improvement of safety culture that PolyMirae has been fortifying in recent years, were introduced and both companies have an excellent and beneficial opportunity for continuous exchanges in the future.

C Park, HSE

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Participation in promotional exhibition organized by the Korean Institute of Chemical Engineers

PolyMirae participated in the 2021 Autumn General Assembly and International Symposium organized by the Korean Institute of Chemical Engineers and held at Kim Dae Jung Convention Center in Gwangju from October 27 (Wed.) to 29 (Fri.), 2021. This event is the largest academic event in the Republic of Korea, with participation of more than 2,500 interested parties, including students and professors from numerous schools and employees of the chemical industry. During the symposium, approximately 1,200 theses were presented, and 25 companies installed booths for promotion, exhibition, and demonstration of devices, as well as on-site interviews.

Through this event in which a large number of interested parties participated, PolyMirae had the opportunity to enhance company recognition by engaging in product promotional activities.

JY Yu, HR&ER

Safety Day event and Company-wide crisis management(or response) drill

PolyMirae held a Safety Day event under the theme of health and safety at the Yeocheon Plant on November 23 last year.

During this event, under the theme of 'return to the basics', education on prevention of electrical accidents and cultivation of safety culture, occupational training in enclosed spaces, training on measures to be taken to prevent falling, and remote automatic control monitor spraying training were executed during the morning while crisis management training under the worst scenario was executed in the afternoon.

Crisis management training was composed of Part 1, on-site fire extinction training (fire suppression and evacuation training, and rescue & first aid training); Part 2, plant crisis management and countermeasure field training (training on on-site countermeasures and responding to bereaved families and mass media); and Part 3, training for crisis management and countermeasures at headquarters.

In the training on responding to bereaved families and mass media, arbitrarily composed reporters and interested parties presented questions that imparted pressure on the spokesperson to provide answers. Through this training, the employees had an opportunity to further pledge that accidents should never occur and that utmost efforts need to be made to prevent subsequent accidents.

Comments made by the CEO and external experts after the training were greatly helpful in further understanding the significance of this training session.

TS Kim, HSE

Visit to Coperion plant for Extruder technical meeting

PolyMirae visited Coperion, an extruder manufacturer, to hold a technical meeting on October 20, 2021. PolyMirae is using 3 extruders supplied by Coperion on its manufacturing lines 1, 2, and 3. Coperion is the best extruder supplier with the largest number of extruders supplied throughout the world. Coperion is also supplying extruders to the Ulsan PP that began operation recently. Hans-Peter Neuberger of Coperion PolyMirae has a background as a technical engineer and was in charge of Coperion Middle East for 10 years from 2010. He was transferred to the Seoul office with a schedule to commence his post in charge of the Asian market, beginning from September 2022. PolyMirae is always making the greatest effort to manufacture the highest-quality products and, as such, has been maintaining a close relationship with Coperion in order to maintain extruders in their best condition as they impart important effects on product quality. Discussions on various issues related to maintaining extruders included barrel wear and time of replacement, means of replacing screws and securing spares, and an Extruder PLC Control System Upgrade was carried out during this visit.

DB Ha, Process/QA

Pyeongyeo Plant acquired Class A rating in SMS evaluation

PolyMirae underwent safety management system (SMS) evaluation at Pyeongyeo Plant SMS by the Korea Gas Safety Corporation over 2 days from November 10~11. The evaluation concluded with the Pyeongyeo Plant acquiring the highest rating of Class A. As such, all of PolyMirae's factories have acquired the highest SMS rating, including Class A by the Yeocheon Plant in 2019 and the Yongseong Plant in 2020. SMS is a system introduced for the purpose of execution of differentiated management in accordance with ratings given to industrial sites by a government institution (Korea Gas Safety Corporation) evaluating the safety system and the extent of operations thereof at sites in 4-year intervals in order to prevent serious industrial accidents. As such, differential management is executed by categorizing the ratings into 3 categories of [A/B/C]. Class A in SMS is the highest rating granted only to the top 10~20% of companies evaluated. Such an achievement is the result of prevention of risk factors in advance through exhaustive on-site inspection and safety activities on the foundation of a management principle of placing the foremost priority on health and safety. Acquisition of Class A ratings for all 3 factories at Yeocheon, Yongseong, and Pyeongyeo is highly meaningful in that it is proof that they are equipped with the same safety level.

C Park, HSE

Yeocheon and Yongseong Factories underwent safety inspection by the Korean Fire Protection Association

PolyMirae factories underwent regular safety inspections for 2021 by the Korean Fire Protection Association on December 13, 2021. Pyeongyeo Plant was exempted from regular inspection in 2021 as it was found to be outstanding in its safety management in the inspection in 2020. As such, only the Yeocheon and Yongseong Factories were subjected to regular safety inspections. Regular inspection by the Korean Fire Protection Association plays the role of coming up with means of preventing various risks arising from fire in advance and providing rational insurance planning by investigating data necessary for fire insurance contracts for special buildings. For this purpose, it is executed regularly every year. The regular safety inspection for 2021 was completed without any specific abnormalities due to assertive countermeasures taken by the relevant teams, in addition to exhaustive safety management at the sites of PolyMirae's factories.

C Park, HSE

News briefing + PolyMirae

2022 Spring

Technical exchange meeting with LyondellBasell

PolyMirae held an online technical exchange meeting with the R&D Center of LyondellBasell situated in Ferrara, Italy from October 26 to 28 last year. GY Ha, an executive director in charge of technology at the company, as well as relevant teams at PolyMirae's headquarters and manufacturing division, participated in the meeting to carry on in-depth discussions on each relevant area. As a result, the company was able to share the latest information in diverse areas including the latest products developed and progress in the project for development of a new catalyst being researched by LyondellBasell, as well as the current status of regulations on chemical substances in Europe. In particular, there were broad-ranged discussions on sustainable growth during this meeting, discussing the latest trends in recycling technologies as well as products currently being developed and sold in Europe and Korea. As such, the company was able to mutually exchange applications and technical knowledge on recycling of plastic products in the manufacturing process of products for which lifecycle has ended (PIR) prior to sales and recycling of plastic products for which the lifecycle of the completed product has ended through consumption (PIR).

It was possible to fortify the foundations on which to develop differentiated products and strengthen product groups including automobile components, packaging materials, textiles, medical products, and general consumption materials through discussions of success cases and technical issues of products developed in 2021, and the current status of development of new products for 2022. In addition, the company had the opportunity to seek out means of securing specialty product-centered technologies through in-depth discussions of cases of introduction of LyondellBasell's new catalyst technologies.

By making preparations for 2 major changes in carbon neutrality and technology innovation through assertive technical exchange with LyondellBasell in spite of difficult external circumstances, PolyMirae will stride towards the goal of becoming the most respected company in the polypropylene industry.

SY Park, ADTSI

Selected as the company with the best safety track record in the safety environment inspection by Yeosu City government

PolyMirae underwent a safety inspection of petrochemical companies in Yeosu Industrial Estate that was organized by the Yeosu City government in the latter half of 2021. This included inspection of facilities associated with safety, ranging from pressurized gas pipelines to electrical facilities, as well as system management details of the company's procedures and regulations. No particular issues or measures to be taken were pointed out as a result of this, thereby confirming PolyMirae's outstanding safety management status. It can be seen as the result of having applied high-level safety requirements through safety inspections by diverse authorities, including the Yeosu City government, every year.

In particular, it can be seen as a result achieved through the ardent efforts and cooperation of all staff to make worksites cleaner and safer. PolyMirae has been making the greatest effort in all activities related to safety and environmental health and, as a result, achieved the feat of being selected as the company with the best safety track record in the inspection by Yeosu City government. We will continue to make efforts to ensure a safer and cleaner workplace in 2022 without being content with the current status quo.

JH Jung, HSE

Completion of project for advancement of IT Infrastructure system

PolyMirae has pursued an advancement project to improve its IT infrastructure system environment in order to address problems assessed and issues to be supplemented in the existing infrastructure system, enhance work efficiency, and cope with continually changing work environments (COVID-19 pandemic).

This project began in September 2021 and key changes are as follows:

- Improve vulnerable aspects of system security to protect company IT information assets and to provide harmonious services.
- Improvement of user computing environments (mail service (including mobile environment), office environment, cloud storage space) in accordance with conversion of some systems into cloud services
- Improvement of video conference service to enhance work efficiency
- Establish framework for IT environment capable of easily coping with an IT environment that will change in the future (composition of hybrid environment ➡ composition of mixture of cloud service and local system service)

At the same time, simulations were carried out on the means of composing a multifaceted system to enhance the improvements and work efficiency assessed while using the previous system in order to realize a system environment that considers security improvement along with convenience of user tasks.

The system was opened sequentially from January 2022 following commencement of the project, which was successfully completed at the end of February.

Scope of this improvement of infrastructure system advancement executed under the supervision of the Planning Team included all infrastructure systems with the exclusion of the SAP system, thereby taking measures for hands-on workers to more easily adapt to the work environment through cultivation of super users and establishing a framework for making contributions towards realization of an IT environment that can be further advanced in the future.

JS Park, Planning