03 Business Driven by Co-creation

Here we introduce Resonac's business and the initiatives that drive its competitive advantage.

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Dialogue: Resonac's Co-creation "Kata"

The Present and Future of Resonac's Co-creation "Kata", Driven by PSC and PMiC

Resonac's co-creation: creating new value through customer dialogue and turning it into products.
The Packaging Solution Center (PSC) is the origin of that approach, carefully listening to customer feedback and often offering forward-thinking proposals.
This approach has come to set a new benchmark for development within the industry.
In 2023, the Power Module Integration Center (PMiC), which focuses on the mobility field, began full-fledged operations. This is ushering in a new phase in the evolution of our co-creation model, or "kata."
Three leaders in co-creation share their vision for Resonac's distinctive approach, drawing on their experience and perspectives.

A co-creation model built step by step over more than 30 years

Fukushima: Our goal is co-creation. The backbone consists of the Packaging Solution Center (PSC) and the Power Module Integration Center (PMiC). It started around 30 years ago. Setting up equipment and systems to evaluate customer products was a groundbreaking move for a functional materials company at the time. Hatakeyama-san, you have been with the PSC since you joined the company, correct?

Hatakeyama: That's right. The Electronic Packaging Center, the predecessor organization to the PSC under the former Hitachi Chemical, was established in 1994. I joined Hitachi Chemical in 1997 and was assigned there. However, when the Mounting Center was first established, it did not have the presence that the PSC commands today. There were initial concerns internally about our company, a materials manufacturer, venturing into semiconductor packages, a finished product, and taking on their evaluation. But from the early 2000s, gradual changes began to occur. Our evaluations led to the creation of new products and the adoption of our materials by new customers. These developments made the results of our efforts increasingly tangible. In the late 2000s, the focus shifted from the materials themselves to their applications. This enabled us to offer customers proposals that included usages of these materials. I believe this process provided the PSC with a prototype for today's co-creation model.

Fukushima: Particularly in the semiconductor field, it would be hard to create something from scratch that could fulfill the role of the PSC. We have a rich history, well-developed equipment, and a co-creation framework established with our customers. No other environment compares to this. A major strength in advancing our business is our ability to co-create with customers, which effectively enables us to engage with the market. We aim to showcase the value, future potential, and social and environmental contributions of the PSC as the Resonac Pride Product and Services.

P127 / Resonac Pride Products & Services

	PSC (Packaging Solution Center)	PMiC (Power Module Integration Center)
Location	Shinkawasaki, Kawasaki City, Kanagawa Prefecture 	Oyama City, Tochigi Prefecture  Entrance  Evaluation Room
Establishment	October 1994	July 2021
Functions	● Advanced packaging material development promotion (development collaboration) ● Promoting certification through customer co-creation projects (external co-creation)	● Power device material development promotion (development collaboration) ● Promoting certification through customer co-creation projects (external co-creation)  Co-creation Room  Showroom
Major external co-creation activities	● JOINT2 (ending in 2026), US-JOINT (starting operation in 2025) P75 ● Ongoing individual projects ● Annual visitors: 265 companies (2023), 255 companies (2024)	● Ongoing projects with customers ● Academic-industry projects in planning ● Annual visitors: 13 companies (2024)

Dialogue: Resonac's Co-creation "Kata"

Hara: For example, in the mobility business I oversee, our main customers are automakers. Customers often know what they want to achieve but lack clarity on whether the right materials exist, if new ones can be created, or how to combine materials effectively. There might have been cases where development stalled because customers were unaware of existing materials that met their needs or how to use them. Not only do our customers lose out in such situations, but so do we, and that is something we must avoid. Engaging with customers to quickly identify their challenges lays the foundation for developing essential products.

Co-creation benefits both companies and developers

Fukushima: Not only in mobility business, but also in semiconductors and other businesses, it is the customers themselves who are at the cutting edge of innovation. That is why engaging directly with customers enables us to be the first to pinpoint and delve into the technologies that need development. From a developer's perspective, this means being able to start testing a hypothesis quickly. Conversely, without these leads, starting hypothesis testing from a vague position almost always leads to failure. You may fail to develop the desired product, or if you manage to develop it, the process may take longer and cost more than planned. In today's fast-paced development environment, moving slowly is not an option. The co-creation framework we have built directly captures customer needs and enables most rapid hypothesis testing. This is more than just collaboration; it functions as a strategic tool to boost development productivity and success rates.

Hatakeyama: Additionally, from the developer's perspective, this environment plays a crucial role in boosting their motivation. For developers, working with cutting-edge technology is the ultimate joy. Witnessing new ideas emerge from newfound knowledge is a truly rewarding experience. When work feels enjoyable like a hobby, that is when innovation and new discoveries emerge. Another advantage is that this research is market-connected, allowing us to observe customer reactions as we progress. No matter how intriguing a technology might be, if it is not market-connected, the direction of the research will veer off course. You have to consider why you're developing it, and what the development is supposed to achieve. Clearly defining goals and making each step tangible is essential for maintaining developer motivation.

Fukushima: In that sense, I believe our launch of JOINT2 is having a positive impact on developers. JOINT2 is a consortium comprising 14 companies engaged in developing semiconductor packaging materials, substrates, and equipment. By pooling their knowledge and collaborating on research, diverse companies and developers can witness moments of new insight together. I believe this will reveal a wide range of possibilities. Say for instance Company A can't meet a request with its materials alone, but it finds that combining them with Company B's materials would make it feasible. Company A and Company B can then collaborate to propose a solution to the customer. This offers clear advantages to customers because it allows them to receive the products they're waiting for more quickly. Even companies that are usually rivals can collaborate to engage with the market. This is another example of the co-creation model.

We have a rich history, well-developed equipment, and a co-creation framework established with our customers. No other environment compares to this. [Fukushima]

It is crucial to develop and test our own hypotheses from customer dialogue to anticipate future trends and have the right information ready. [Hatakeyama]

Hara: Japanese companies have traditionally conducted research and development independently, often resulting in multiple firms investing significant time and money to develop similar products. Budget and other constraints limited the scope of development, preventing progress from reaching full speed. As our co-creation model gains traction, it can eliminate inefficiencies, propose solutions for unnoticed customer challenges, and generate new development themes, leading to diverse applications.

The PMiC as a future growth driver

Fukushima: The PMiC is the key to this. Hatakeyama-san, alongside your role at the PSC, you have served as the head of the PMiC since June 2024. Hatakeyama-san, alongside your role at the PSC, you have served as the head of the PMiC since June 2024. You are expected to rapidly advance the co-creation model within the PMiC.

Hatakeyama: That's right. The PMiC officially began operations in 2023. The PSC has established a successful co-creation model and is gaining traction with collaborations and demonstration experiments with various manufacturers. But it has taken 30 years from its predecessor organization to reach this point. The PMiC is tasked with the challenge of rapidly replicating and advancing the co-creation path that the PSC has developed over 30 years. However, customers in the semiconductor field, which the PSC mainly serves, and those in the mobility field, which the PMiC mainly serves, have distinct characteristics. The latter essentially consists of new customers, and what has been developed at the PSC may not always be applicable. How can we propose solutions that resonate with new customers and cultivate sustainable relationships with them? We aim to carefully consider this while working to establish a solid co-creation model within the next four to five years.

Hara: Our business unit development teams and sales representatives are already visiting customers with the PMiC in mind, creating opportunities for co-creation. We hear from many customers that this is exactly what they wanted.

Fukushima: Securing a foothold in both the semiconductor and mobility markets, despite their differences, is immensely significant for us due to their global importance. This initiative is essential for Resonac to compete globally.

Hatakeyama: That is why it is important to anticipate future trends based on insights gained from customer dialogue. It is crucial to develop and test our own hypotheses, ensuring we have the right information ready. It is too late to act only after a customer asks if we are able to do something.

Fukushima: Can we swiftly identify and address emerging customer issues by monitoring industry trends and engaging

Dialogue: Resonac's Co-creation "Kata"

in dialogue? That is where we differentiate ourselves. If you can immediately say, "We have a solution for that," the customer's response is totally different. But if the only answer you can give on the spot is vague, the customer will not want to collaborate with Resonac.

Hara: In the not-too-distant past, sales representatives would engage with customers' purchasing departments by casually bringing up insights and stories they had heard within the Company. However, that approach no longer works. Development speed is rapidly increasing every day. The era when material manufacturers could thrive by selling materials alone is over. Instead of merely delivering what is requested, we must actively engage and generate profits through co-creation.

Potential for expansion led by heat management

Fukushima: In mobility, heat management is crucial for the transition to electric vehicles, presenting significant opportunities for us. In heat management, the prevailing view has long been that heat is undesirable and must be managed. The development goal thus focused on preventing heat generation and efficiently cooling any generated heat. However, in recent years, there has been an increasing focus on how to effectively utilize generated heat, highlighting the rapid changes in the environment. The PMiC will enable us to navigate these turbulent times together with our customers.

Hara: Frankly, until recently, only a handful of people in the mobility sector were engaged in research and development for heat management. Internal combustion engine vehicles were first mass produced in 1908. Over the course of more than a century since then, the idea that a car is synonymous with an internal combustion engine became common wisdom. However, as the shift to electric vehicles gains pace, there will be a shift in perception. Cars will increasingly be seen not as machines powered by internal combustion engines, but as systems driven by batteries and electric management devices.

In times of such transformation, you can't set out to create an environment for co-creation with automakers who are directly driving that transformation. Automakers themselves undoubtedly feel a strong sense of urgency that the status quo is unsustainable. If customers clearly perceive the value of co-creating with us, we can anticipate further growth.

Fukushima: And if we can develop a third and fourth co-creation framework following the PSC and PMiC, Resonac will undoubtedly grow into a globally renowned company. Of course, we must continue to hone our accumulated technological capabilities and material development capabilities.

Hara: However, as an integrated company, Resonac faces the challenge of fragmented responsibilities, with experts in each field dispersed across the country. In such situations, research and development often leads to inefficiencies. It is not unusual for stalled development at one business site to be swiftly resolved using knowledge from another. Then it becomes a case of "Why were we spending so much time on this?" To expand our third and fourth co-creation frameworks, it is essential to clearly understand our strengths. To address these challenges, we are focusing on developing and establishing "Technology Landmarks." Technology Landmarks virtualize our internal structures, creating an environment where each team can recognize and leverage specialized technical expertise. This approach eliminates waste in the knowledge we have built up over many years, leveraging it into a greater strength.

Develop talent that can fully leverage the co-creation environment

Fukushima: We have discussed the third and fourth co-creation frameworks expanding from the PSC and PMiC. However, we have to remember that these frameworks are merely structures. These structures are only as valuable as the people who can use them effectively and the environment that supports their optimal utilization. Resonac plans to define "co-creation talent" and systematize rotations and skill development to offer diverse experiences and perspectives. Additionally, by developing the Technology Landmarks, that visualize internal knowledge assets, we are working to prevent duplication and isolation of insights while promoting internal co-creation. It's about business, organization, and talent evolving together as one. That is what Resonac achieve to be chosen in the next era.

Hara: Building diverse experiences through cross-cultural exchange is key. Instead of focusing solely on development or sales, we need to create systems that facilitate interaction across various fields and with diverse customers.

Fukushima: This area in particular requires consideration. Developing technological capabilities takes time, but focusing solely on technology hinders the growth of desired talent. It is important to take the time needed to learn technology and gain experience. But there must also be opportunities to step out and engage in roles like sales or marketing that involve co-creating with customers, as well as advancing by exploring new technologies.

Hatakeyama: That is why at the PSC we ensure new employees are encouraged to develop expertise in a specific area where they can excel beyond others. We want each of them to deepen their knowledge to the point where they are considered the top expert at Resonac in their field. We aim to instill in them an awareness that broadens the base of their knowledge.

Fukushima: While diverse experiences are important, groundbreaking innovation requires a deep technical focus. We aim to further develop human resources that respect and are respected by both the sales and technical fields.

In this time of transformation, it is not easy to build co-creative relationships with the automakers, who are directly driving that transformation. [Hara]

• About this dialogue

Participants: Masato Fukushima, Chief Technology Officer (CTO); Satoshi Hara, General Manager, Mobility Business Headquarters; Keiichi Hatakeyama, Head of Packaging Solution Center/Head of Power Module Integration Center
Aim: Look back on the co-creation model cultivated at the PSC, discuss further development of the said model and the challenges facing PMiC, and present a growth strategy from the present into the future

• Keywords of the dialogue

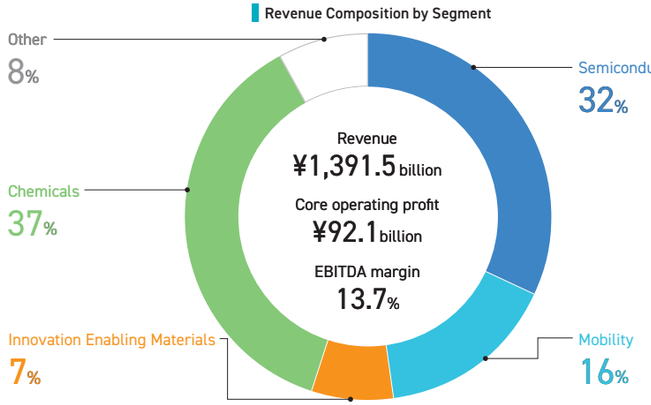
A 30-year path to building co-creation	Venturing into finished products, proposing ways to use materials, and visualizing through Resonac Pride Products and Services	Rapid response through dialogue with the market	Start testing hypotheses quickly, and anticipating customer issues
New possibilities for heat management	Automobiles to be increasingly seen as systems driven by batteries and electric management devices, and the value of co-creating with Resonac	Structures of co-creation and human resource development	Technology Landmarks, people who can effectively use structures, and business, organization, and talent evolving together as one

Overview of Resonac's Business

At the Board of Directors meeting held on November 26, 2024, the Company resolved to voluntarily adopt the International Financial Reporting Standards (IFRS) in place of Japanese Generally Accepted Accounting Principles (JGAAP) for the preparation of the consolidated financial statements and consolidated financial statements as set forth in the Companies Act. The figures on this page are also based on IFRS.

2024 Overview

Revenue Composition by Segment



Previous fiscal year (2023)

Revenue
¥1,295.4 billion
Core operating profit
¥9.9 billion
EBITDA margin
8.2%

Semiconductor and Electronic Materials

Revenue: ¥445.1 billion (¥338.1 billion in the previous fiscal year)

Front-end Semiconductor Materials: ¥86.4 billion
Back-end Semiconductor Materials: ¥209.4 billion
Device Solutions: ¥106.5 billion

Core operating profit: ¥73.7 billion (¥3.3 billion in the previous fiscal year)

EBITDA margin: 25.9% (13.0% in the previous fiscal year)

Mobility

Revenue: ¥215.5 billion (¥219.0 billion in the previous fiscal year)

Core operating profit: ¥6.7 billion (¥7.0 billion in the previous fiscal year)

EBITDA margin: 11.7% (11.5% in the previous fiscal year)

Innovation Enabling Materials

Revenue: ¥97.0 billion (¥93.0 billion in the previous fiscal year)

Core operating profit: ¥11.3 billion (¥8.7 billion in the previous fiscal year)

EBITDA margin: 17.7% (15.8% in the previous fiscal year)

Chemicals

Revenue: ¥517.2 billion (¥519.4 billion in the previous fiscal year)

Olefins and Derivatives: ¥329.8 billion
Basic Chemicals: ¥87.1 billion
Graphite Electrodes: ¥100.2 billion

Core operating profit: ¥10.1 billion (¥6.1 billion in the previous fiscal year)

EBITDA margin: 5.9% (4.8% in the previous fiscal year)

* Core operating profit is calculated by excluding gains and losses arisen from non-recurring factors from operating profit. Gains and losses from non-recurring factors refer to other income, other expenses, and impairment losses (included in cost of sales, selling, general and administrative expenses).

Business Portfolio Optimization

Some changes were made to our disclosed segments in 2025. The former Olefins and Derivatives subsegment was turned into an independent segment following the launch of Crasus Chemical, and the former Graphite Electrodes and Anode Materials subsegments were combined to form the Graphite subsegment.
We establish investment policies and target EBITDA margins according to portfolio attributes, and manage each business accordingly.

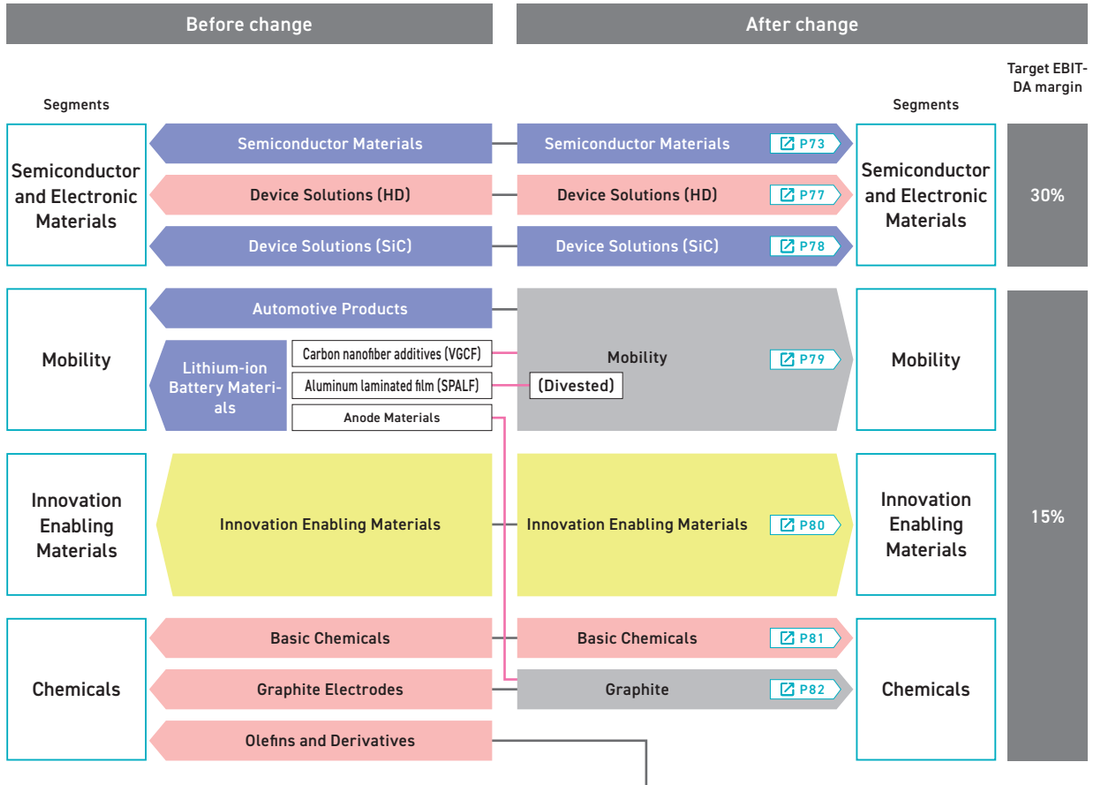
Portfolio attributes

Core Growth businesses
Businesses we will actively invest in to pursue significant future growth

Stable Earnings businesses
A revenue base that generates stable profits, producing funds for investments for the entire company

Fundamental businesses (technologies/ materials)
Technology platform businesses that support business innovation

Undergoing structural reforms
Businesses we will restructure based on the rapidly changing market environment



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CRASUS CHEMICAL
Dialogue: Choosing to Execute a Partial Spin-off

Crasus Chemical Business Briefing (Video)

Business Strategies

Semiconductor and Electric Materials

Front-end / Back-end Semiconductor Materials

Hiroyuki Yamashita
General Manager,
Electronics Business Headquarters

Please visit our website for more details.

Vision for the future (2030)

- **Supply advanced semiconductor materials to support the advancement of the digital society, such as the rapidly growing AI demand, and realize a sustainable society by contributing to energy conservation and reducing environmental impacts.**

Issues to Be Addressed

- Driving the semiconductor materials industry as a leader in co-creation
- Aim to gain an overwhelming position in next-generation semiconductors by strengthening our product capabilities
- Contributing to energy conservation and reducing the environmental impact of semiconductors by enhancing the performance of semiconductor materials
- Amid geopolitical risks such as soaring raw material, energy, and logistics costs and supply chain disruptions, we are working to further strengthen our supply chain management system

Results in 2024

- Revenue and profit increased year-on-year due to the acceleration of demand for AI and server applications
- Decided to invest ¥15.0 billion to expand the production capacity of advanced semiconductor materials
- Pursued product portfolio reform to increase the weighting of high-margin products in total sales and strengthen our revenue base
- Announced the establishment of US-JOINT as part of efforts to strengthen marketing for key customers and global R&D activities
- Completed the introduction of a global supply chain management (SCM) enhancement system at bases in Japan
- Fostered organizational culture and developed human resources through workshops and top interviews

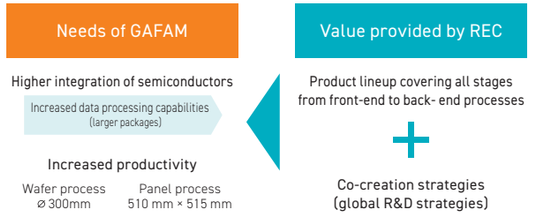
Plans for 2025

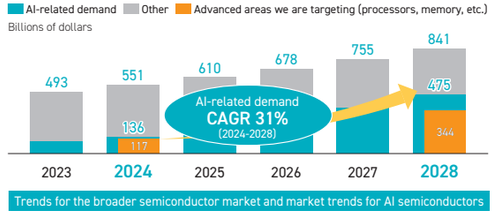
- Pursue product portfolio reform to aim for a business that generates even higher profits
- Aim to achieve steady growth of strategic products and actively introduce new products in next-generation fields to become the de facto standard
- Strengthen and implement co-creative marketing for key customers
- Move forward with preparations to start US-JOINT operations in 2025
- Introduce a global SCM enhancement system for multiple products at overseas bases
- Foster a sense of unity at business headquarters and develop human resources through global town-hall meetings and other activities
- Strengthen manufacturing capabilities by fully utilizing SPC (Statistical Process Control)
- Hold supplier meetings for the first time to build strong, sustainable co-creative relationships with suppliers

Strengths and Competitiveness for Realizing our Long-Term Vision

- Because we have a lineup of products that cover a wide range of semiconductor processes from front-end to back-end and we own several products that command the top market share, we can anticipate growth exceeding the increase in the number of chips as the number of components used rises with the higher integration of semiconductors. (Average growth rate of AI semiconductors from 2024 to 2028: 31%/year)
- With the limit to density increases in front-end processes becoming apparent as semiconductor design processes become more sophisticated and complex, attention has been turning to moves aiming for higher integration through the evolution of back-end technologies. As our particular strengths lie in our ability to make proposals for back-end materials, we are able to flexibly respond to customer needs.
- Japan and the U.S. lead JOINT, a consortium of material, equipment, and substrate manufacturers aimed at establishing next-generation semiconductor packaging and evaluation technologies. We use our expansive network to quickly grasp changes and create high-value-added products that meet the needs of our customers

Customer Needs in AI Semiconductors





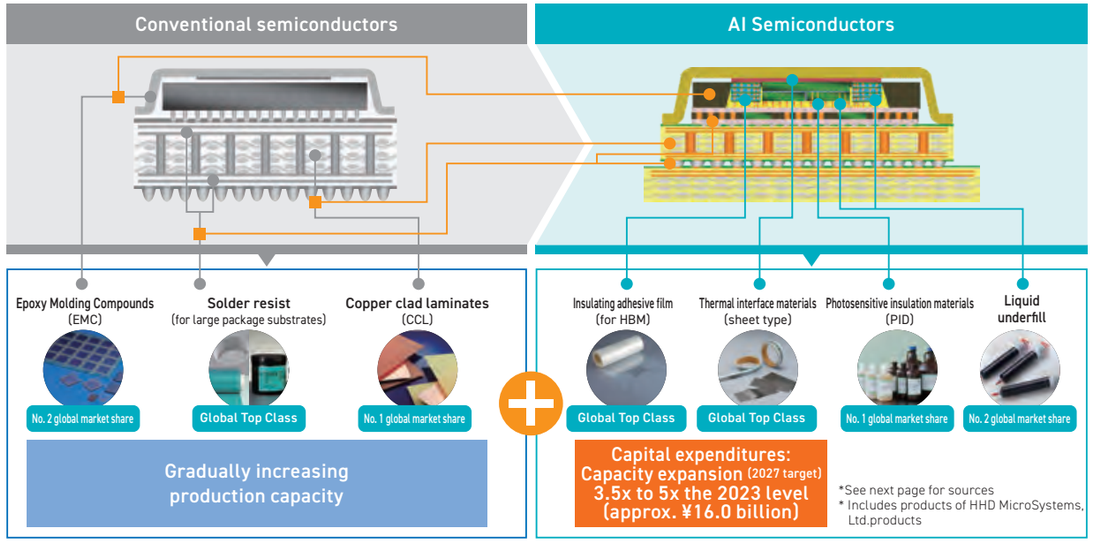
Trends for the broader semiconductor market and market trends for AI semiconductors

Resonac Semiconductor Materials are Becoming More Prevalent in AI Semiconductors

Compared to conventional semiconductors, AI semiconductors have a higher number of components and larger packages, which will lead to increased demand for semiconductor materials. We will continue to lead the semiconductor materials industry, as we have multiple products with top market share in both materials used in conventional semiconductors and AI semiconductors, as well as materials for AI semiconductors.

Evolution to realize functions for entire packages through the full utilization of back-end technologies

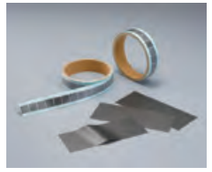
Accelerating growth by strengthening industry-leading materials and production foundations



*See next page for sources
* Includes products of HHD MicroSystems, Ltd.products

Accelerating New Product Development and Increasing Production Capacity for Advanced Semiconductor Packaging Materials

We are gradually increasing our production capacity for NCF insulating adhesive films and TIM heat dissipation sheets, which are attracting attention as materials for AI semiconductor packages, from 3.5x to 5x, with the aim of strengthening our stable supply capacity. We will continue to increase our production capacity in a timely manner to meet the rapidly expanding demand in the AI semiconductor market in a bid to further strengthen our market advantage. Additionally, we will accelerate our development of new products for advanced semiconductor packages, aiming for contribution to improving semiconductor performance from the materials side.



Next-generation TIM

Technology for vertical alignment of carbon

- Vertical alignment technology that supports high thermal dissipation
- Adhesion design that achieves low thermal resistance
- Sheet shape that enhances workability

Thermal conductivity and reliability against temperature changes

Differentiated technologies that support cutting-edge devices

Thinner film

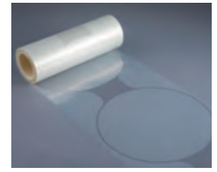
- Contributing to the multilayering of HBM* chips through ultra-thin film processing

* High Bandwidth Memory

Resin design

- Ensuring high reliability through narrow gap filling
- Further differentiation through the enhancement of thermal radiation properties and expansion of applications to next-generation devices

High-performance material that balances workability and connection reliability



NCF with high thermal dissipation

Co-Creative Development Strategy

We are leading JOINT consortium activities in Japan and the U.S. together with external semiconductor material manufacturers, equipment manufacturers, and substrate manufacturers. Furthermore, the Packaging Solution Center, which possesses semiconductor manufacturing equipment, can verify technology during the manufacturing process, and as such serves as a hub for co-creation. Resonac will promote the co-creative development of cutting-edge technologies in a bid to continue leading the semiconductor materials industry..

P65/Discussion: Resonac's Co-creation "Kata"

Resonac will promote the co-creation and development of cutting-edge technologies in a bid to continue leading the semiconductor materials industry

Co-creation activities

JOINT (Ending 2026)

Development of advanced PKG technology

RESONAC, AIMECHATEC, YAMAHA, UYEMURA, Aji, tok, DNP, DISCO, JOINT2, SHINKO, Panasonic CONNECTA, EBARA, IMEC, NAMICS, ORC

Co-creation hub

Packaging Solution Center

US-JOINT (Launching 2025)

3M, RESONAC, ULVAC, Packaging Open Innovation in Silicon Valley, KLA, TOWA, US-JOINT, Kulicke & Soffa, TOPPAN, tok, IMEC, MLI, NAMICS

Heat management/microbump technology

We are conducting co-creative research and development with IMEC (Interuniversity Microelectronics Centre), an international research Institute based in Belgium.

Photoelectric fusion

We participate in IOWN (Innovative Optical and Wireless Network) Global Forum, Advanced Photonics Coalition and Micro Photonics Center to strive technological development of photoelectric integration.

Hybrid bonding technology

We are the first Japanese manufacturer and materials company to participate as a strategic partner in the Texas Institute for Electronics (TIE), which aims to advance the roadmap for cutting-edge semiconductor technology by five years and to develop it in the U.S.

Back-end process automation and human resource development

We are involved in the Semiconductor Assembly and Test Automation and Standardization (SATAS), d.lab at the University of Tokyo , X-NICS at Tohoku University , SEMI, and other collaborative research, and are also engaged in manufacturing process development and human resource development through a comprehensive partnership with Yokohama National University .

Resonac Corporation and Yokohama National University concluded a comprehensive partnership agreement

Results of JOINT2 Activities

JOINT2 is a consortium aimed at developing next-generation semiconductor packaging technology joined by 14 Japanese companies. By promoting the mutual use of technology and information, we succeeded in creating a chip-embedded interposer* prototype with a view to increasing the size. This prototype uses 510 x 515 mm panels, with 20 bridge dies mounted on each panel, and insulating film and copper wiring were formed to demonstrate high-density wiring technology. We expect to commercialize this between 2027 and 2028, ahead of which we will work to enhance performance and establish mass production technology.

*510 x 515 mm panel chip-embedded interposer

US-JOINT: Building Relationships and Forums for Customers and Consortium Members to Chat Casually in the U.S.

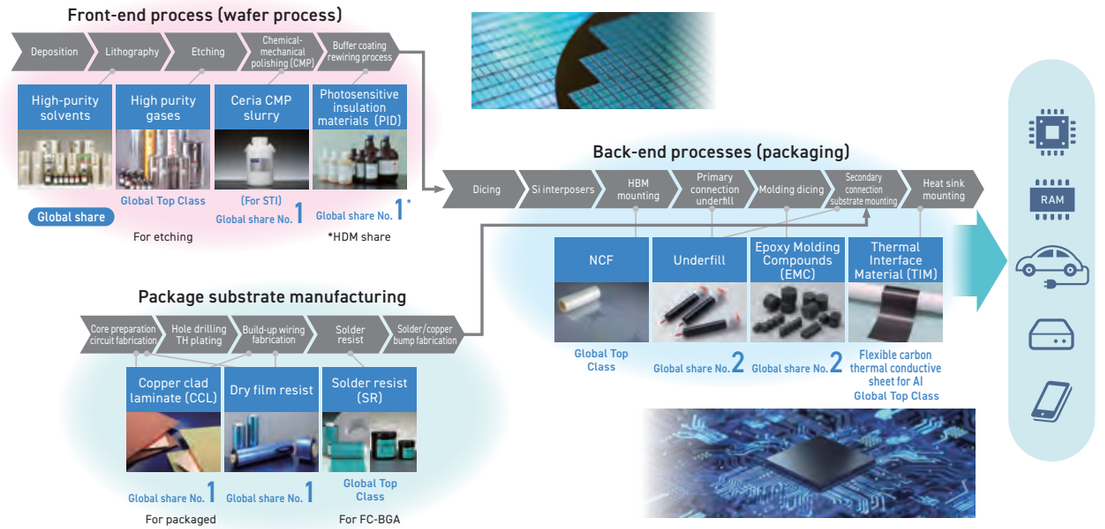
US-JOINT is a consortium for joint research on next-generation semiconductors, and is scheduled to start operations during 2025. By working closely with hyperscalers and major semiconductor manufacturers based in Silicon Valley and elsewhere in the U.S., and through co-creation with the 12 participating material- and equipment-related companies, we will contribute to realizing the concept of next-generation semiconductor packages ahead of the rest of the world.

In recognition of the consortium's efforts, Resonac received the Special Consortium Award at the 2025 3D InCites Technology Enablement Awards.

Please see A "Great Alliance from Japan and Silicon Valley. Don't Miss the New Trend in Semiconductors" (in Japanese only)

Resonac's Semiconductor Material Lineup for Semiconductor Manufacturing Processes

We offer an extensive lineup of materials for semiconductor manufacturing, covering both front-end and back-end processes, and also have several products that command top global market share. This enables us to respond to customer requests by combining our material technologies.



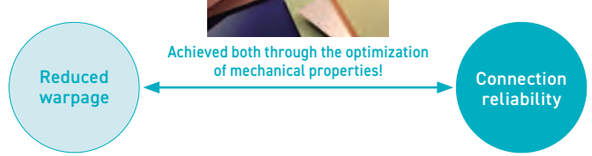
Source: Fuji Chimera Research Institute "2024 Electronics Jisso New Material Handbook",
- Photosensitive insulating materials*(PID), Buffer Coat/RDL Material, Actual Shipping Quantity of 2023 achieved **No.1** share on a volume basis.
  *HD Microsystems products: HD Microsystems L.L.C. is Joint venture between Resonac and DuPont.
- Underfill, Underfill for Primary Jisso, Actual Shipping Amount and Quantity of 2023 achieved **No.2** share on a volume and value basis.
- Epoxy Molding compounds (EMC), Semiconductor Molding Material, Actual Shipping Amount and Quantity of 2023 achieved **No.2** share on a volume and value basis.
- Copper clad laminate (CCL), Copper Clad Laminate for Package, Actual Shipping Amount of 2023 achieved **No.1** share on a value basis.
- Dry film resist, Dry Film Resist, Actual Shipping Amount of 2023 achieved **No.1** share on a volume and value basis.

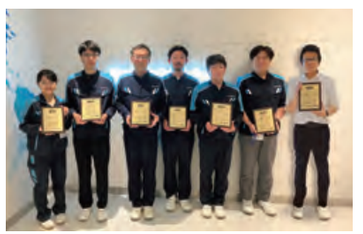
Source: Fuji Keizai "2024 Current Situation and Future Prospects of Semiconductor Material Market"
- Ceria CMP slurry (for STI), CMP slurry (for STI) Actual Sales Amount of 2023 achieved **No.1** share on a value basis.

TOPICS 2024

Awarded Outstanding Interactive Presentation Paper at the 74th ECTC

The Electronic Components and Technology Conference (ECTC) is the world's largest international conference on semiconductor packaging and mounting technologies. The award ceremony was held at the ECTC 2025 event held in Dallas, U.S. in May. The increasing size of AI semiconductor packages presents the challenge of controlling warpage while maintaining connection reliability. By optimizing the mechanical properties of our MCL products, we proposed and demonstrated a solution that can address the above issues, which was appreciated for the award.





▶ See here for co-creation examples for NCF and hard disk.

P21/The unsung heroes behind the increase in NCF production: The power of collaboration between HD, image analysis, and NCF!

Business Strategies

Semiconductor and Electronic Materials: Device Solutions

Hard Disk Media

Yasushi Makabe
General Manager, Hard Disk Business Unit

Please visit our website for more details.

Vision for the future (2030)

- Meet increasing data storage demand as a large-capacity media technology leader by accelerating the development and mass production of next-generation recording technologies HAMR and MAMR media
- Quickly and strategically adapt to market and customer changes to gain a competitive advantage
- Reduce GHG (Greenhouse Gas) emissions in production processes

Issues to Be Addressed

- Through the development of our proprietary technology, achieve a thinner substrate with the aim of accelerating the increase in recording density and increasing the number of media in the drive for HAMR and MAMR
- Establishing strategic partnerships with customers and key suppliers
- Speeding up decision-making at five global bases
- Responding flexibly to fluctuations in demand

Results in 2024

- Sales of HD media increased significantly due to a recovery in demand for data centers
- Transferred the business in July 2024 through a company split with the aim of speeding up decision-making as well as stabilizing and optimizing business operations
- Commenced solar power generation (PPA agreement) at Resonac HD Singapore
- Switched the solvent used in the lubricant application process to an eco-friendly alternative at full scale

Plans for 2025

- Gain world's first certification for max capacity PMR
- Accelerate joint development of HAMR with three customers with an eye to full-scale mass production from 2026 onward
- Improve productivity of media and aluminum substrates, strengthen cost competitiveness, and establish a flexible supply system at all bases
- Explore and implement labor-saving and automation measures
- Formulate a GHG emission reduction plan for SBTi certification
- Decide on fuel conversion at the Yamagata Plant

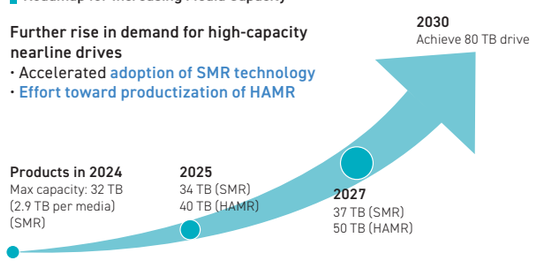
Initiatives to Strengthen Competitiveness and Examples

We possess the technological capabilities to develop and mass produce the world's most advanced media ahead of the rest of the industry, and provide Best Fit products optimized to meet customer needs through close cooperation with all three HDD customers

In current magnetic recording, combining a customer's shingled magnetic recording (SMR) technology with our own proprietary media has enabled the said customer to achieve the first certification for the max capacity program.

To meet the further rise in demand for high-capacity nearline drives expected going forward, we are conducting joint development with the three customers for next-generation HAMR technology. By combining this with our proprietary technology, we aim to continue our efforts to achieve world's first certification for the max capacity program.

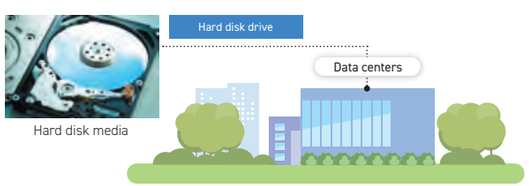
Roadmap for Increasing Media Capacity



* When magnetic particles are made smaller to achieve a higher recording density, the thermal stability of a hard disk deteriorates and data cannot be stored for long periods of time. Meanwhile, using a type of magnetic material with high thermal stability would make it impossible to write to the recording medium. Microwave Assisted Magnetic Recording (MAMR) and Heat Assisted Magnetic Recording (HAMR) are recording technologies that solve this recording density problem and support writing to the recording medium.

Relationship Between Our Products and Daily Life

HD media is incorporated into hard disk drives and is used in data centers, corporate data servers, and surveillance cameras, among others.



▶ See here for co-creation examples for NCF and hard disk.

P21/The unsung heroes behind the increase in NCF production: The power of collaboration between HD, image analysis, and NCF!

Business Strategies

Semiconductor and Electronic Materials: Device Solutions

SiC Epitaxial Wafers

Makoto Takeda
General Manager, Device Solutions Business Unit

Please visit our website for more details.

Vision for the future (2030)

- SiC epitaxial wafer technology leader to lead the industry's technological innovation
- Provision of high-quality products and solutions that meet the customer (power semiconductor manufacturers) demands for more advanced and specialized chips
- Maintaining "Best in Class" for eight-inch (200 mm) SiC epitaxial wafers, demand for which is growing rapidly in automotive applications

Issues to Be Addressed

- Maintaining and expanding our technological advantages (industry-leading low levels of surface-defect density and basal-plane dislocation, etc.)
- Strengthening technology collaborations and our ability to align with customers
- Differentiating from rivals, and improving productivity of eight-inch SiC epitaxial wafers

Results in 2024

- Sales grew due to increased shipments of SiC epitaxial wafers
- Commenced reliability testing of epitaxial wafers for power devices in addition to the evaluation of materials for power modules at the Power Module Integration Center (PMiC)

P65/Discussion: Resonac's Co-creation "Kata"

- Constructed a new production building for SiC wafers at Resonac Hard Disk's Yamagata Plant (scheduled for completion in September 2025)

Plans for 2025

- Enhance ability to supply high-quality SiC epitaxial wafers to meet customer requirements in line with growth of the power semiconductor market
- Accelerate technology development to realize "Best in Class" in mass production of eight-inch SiC epitaxial wafers

Initiatives to Strengthen Competitiveness and Examples

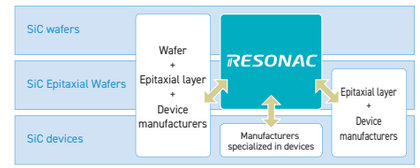
Strengths as a Manufacturer Specialized in Epitaxial Wafers

As a manufacturer specialized in epitaxial wafers that does not handle SiC devices, we attract device manufacturers that manufacture wafers and epitaxial wafers in-house as customers. This unique business model allows us to improve quality and accumulate expertise by gathering the needs of multiple customers and aligning specifications. In 2022, we began test shipments of eight-inch (200 mm) SiC epitaxial wafers, which contribute significantly to larger wafer diameters while enabling us to achieve industry-leading quality by fully utilizing technology that reduces defects.

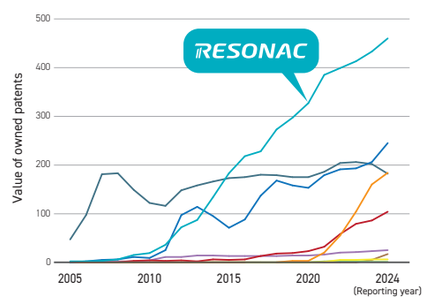
Utilization of IP Landscape in SiC Epitaxial Wafers Businesses and Evaluation of Intellectual Property Value

The value of our patents (PAI = Patent Asset Index*: registered trademark of Lexis Nexis) in the field of SiC epitaxial wafers, acquired as a result of our pioneering technological developments, more than doubled that of industry peers in 2024, demonstrating our competitive advantage. Furthermore, France-based KnowMade, which specializes in the analysis of patents and scientific information, highly rated our IP position in the development of larger diameter, low-defect SiC epitaxial wafers.

Resonac's Business Model as a Manufacturer Specialized in Epitaxial Wafers



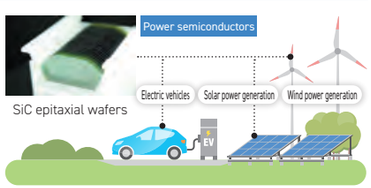
Comparison of the patent asset value of SiC Epitaxial Wafers for Power Semiconductors versus rival companies.



* Evaluation of valid patents using Lexis Nexis' PatentSight+ patent database; PAI is calculated based on Technology Relevance of each patent and Market Coverage.

Relationship Between Our Products and Daily Life

SiC epitaxial wafers are mainly used as substrates for power semiconductor devices and contribute to energy conservation in various fields, such as renewable energy and electric vehicles (EVs).



Business Strategies

Mobility

Mobility

Satoshi Hara
General Manager, Mobility Business Headquarters

Please visit our website for more details.

Vision for the future (2030)

"Unleashing the Power of Chemistry to Reinvent Acceleration, Steering, and Braking"

- Acceleration: The challenge of realizing a highly efficient powertrain
- Steering: Lowering the unsprung mass (for better ride quality) while ensuring driving safety
- Braking: Providing next-generation environmental performance and peace of mind

Issues to Be Addressed

- Contributing to the improvement of basic vehicle performance by making full use of the Group's material, processing, and evaluation technologies
- Achieving a business portfolio that combines sustainable growth, high profitability, and capital efficiency with a focus on areas that are resilient to structural changes in the automotive market
- Promoting structural reforms to optimize business sites and strengthen price negotiation capabilities

Results in 2024	Plans for 2025
● Sales of automotive products declined, impacted particularly by the situation in Thailand ● Negotiated price revision and product withdrawals centered on low-margin products as part of structural reforms ● Revised our business portfolio and sold the SPALF aluminum laminate film business ● Started co-creation with customers on terminal blocks and cooling modules realized by DSI* molding technology	● Moderate year-on-year growth of the automobile market expected as pullbacks in demand ease in various areas ● Expand aluminum suspension materials and environmentally-friendly disc brake pads as core growth businesses ● Promote new businesses through co-creation with customers, such as next-generation heat management systems and next-generation motor cores

* Die-Slide Injection: An injection molding technology that enables the integrated molding of hollow bodies with complex structures and laminated structures

Initiatives to Strengthen Competitiveness and Examples

We are working to develop technologies such as materials and components that significantly improve the basic performance of mobility, such as "Acceleration, Steering and Braking", by utilizing the Group's wide range of materials technologies, including organic, inorganic, and metals, as well as processing and evaluation technologies.

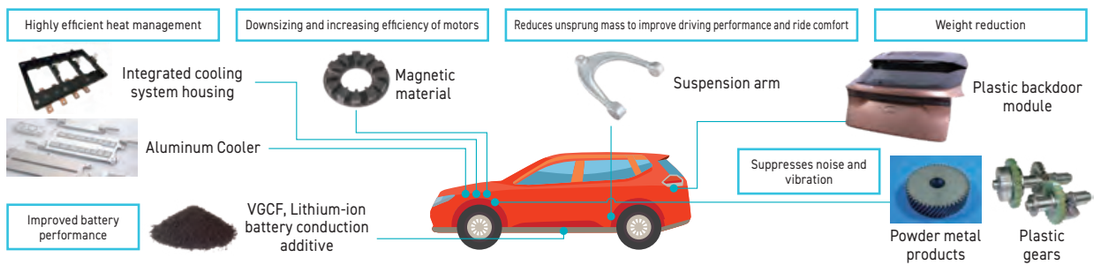
Technological Development Resonac is Focusing On

Acceleration	Steering	Braking
● Development of next-generation heat management system for efficient cooling ● New development of next-generation motor cores that do not use electromagnetic steel sheets ● Development of unique high-strength materials and plastic gears utilizing organic fibers and thermosetting resin	● Material innovation from steel to aluminum through our alloy technology ● Development of lightweight, high-strength aluminum suspension arms ● Development of linkage parts using aluminum suspension arm technology	● Development of brake pads with excellent environmental performance that comply with EURO7 ● Popularization and expansion of green pads that are friendly to people and the planet ● Participation in the development of next-generation brake systems in collaboration with Tier 1 suppliers

Development of High-performance Disc Brake Pads for EVs

We have developed high-performance disc brake pads for EVs by making full use of our wide range of material technologies. They feature high braking performance and wear resistance, low environmental impact, and excellent low noise performance. With a view to mass production in 2026, we are providing samples to Tier 1 brake system manufacturers in Europe to evaluate the suitability of these products for electric brake systems.

Relationship Between Our Products and Daily Life



Business Strategies

Innovation Enabling Materials

Innovation Enabling Materials

Takafumi Sakurada
General Manager, High Performance Materials Business Headquarters

Please visit our website for more details.

Vision for the future (2030)

- Consistently create new materials and technologies as a vessel that supports the Group's innovation and enhanced competitiveness
- Consistently maintain profitability with an EBITDA margin of 15% or more as a leader in specific sectors

Issues to Be Addressed

- In next-generation semiconductor materials and promising domains, strengthen our development and manufacturing capabilities for organic and inorganic materials to be used as components in these domains
- Initiatives to improve profitability, such as the optimization of production lines and fixed costs, and portfolio revision with an eye to business growth backed by our competitive edge

Results in 2024	Plans for 2025
● Promoted the development of materials centered on next-generation semiconductor materials through in-house co-creation and identified commercialization barriers ● Achieved EBITDA margin target (17.9%) ● Year-on-year increase in sales and profit due to passing on soaring raw material prices to product selling prices and an increase in sales volume	● Deepen material development, primarily for next-generation semiconductor materials, through in-house co-creation and promote the commercialization of new materials ● Optimize management resource allocation aimed at creating new businesses and strengthening development capabilities, and establish a framework for efficient utilization ● Although demand is expected to remain strong, we forecast year-on-year sales growth but lower profit due to rising personnel costs

Initiatives to Strengthen Competitiveness and Examples

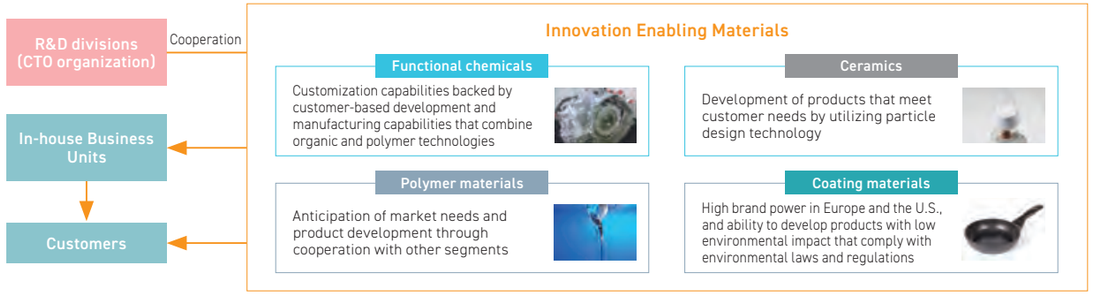
Strengthening On-site Capabilities Through the Promotion of DX and Citizen Development

In the manufacturing section of the Ceramics Business Unit , activities are being carried out to improve work processes through citizen development of RPA and BI tool apps that the operators themselves have learned and developed. These activities contribute greatly to safe and stable operations, ensuring absolute quality, and increasing production efficiency. In order to further expand these activities, the High Performance Materials Business Headquarters has established a DX Promotion Officer to strengthen cooperation with the CDIO organization. This is expected to expand beyond production departments to other operations and business units such as SCM, accounting, general affairs, development and sales, thereby improving customer convenience and contributing to the creation of businesses for the future.

Creation of Vaneetect, Vacuum Insulated Glass Sealing Agent That Enhances Environmental Performance (Low Melting-Glass)

Vaneetect, which enables sealing at low temperatures and does not contain substances restricted by the RoHS Directive, is used as a sealing material for vacuum insulated glass (VIG), which is becoming increasingly popular in building construction. We expect this to improve environmental performance by lowering energy consumption during VIG production, reducing CO_2 emissions by shortening processing times, improving the insulation performance of window glass, and enabling glass recycling. In collaboration with R&D divisions, we are also studying its application to sealing and bonding for electronic devices and sensors.

Relationship Between Our Products and Daily Life



Business Strategies

Chemicals

Basic Chemicals

Hiroshi Adachi
General Manager, Basic Chemicals Business Unit

Please visit our website for more details.

Vision for the future (2030)

- Stably supply products that support the daily lives and social infrastructure in the Tokyo metropolitan area
- Contribute to realizing a decarbonized society and circular economy through the promotion of plastic chemical recycling and carbon neutrality
- Co-create on the global stage based on our technologies as a leading urban chemical park in Japan

Issues to Be Addressed

- Thorough implementation of measures to strengthen our supply system with the aim of ensuring the stable supply of products that support the daily lives and social infrastructure
- Acceleration of cutting-edge initiatives utilizing our technologies geared toward achieving a decarbonized society
- Expansion of our contribution to realizing a circular economy by supplying products derived from plastic chemical recycling

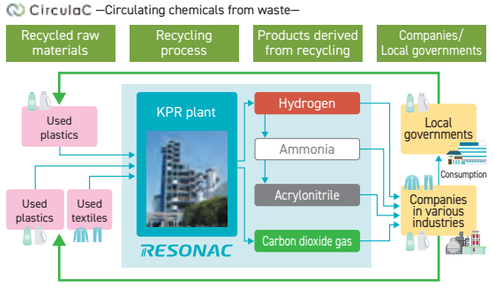
Results in 2024	Plans for 2025
● Demand remained strong. Profit decreased despite having passed on raw material price increases to selling prices for some products ● Continued to implement planned maintenance as part of our efforts to strengthen our supply system ● To meet strong demand, expanded facilities for sodium hypochlorite for tap water and sewerage and liquefied carbon dioxide, which support the infrastructure vital to people's daily lives	● Demand expected to remain strong ● Although raw material and fuel prices are expected to continue soaring, we will respond by passing on these increases to product prices, among other measures ● Launched new brand CirculaC, a circular business model for used plastics and textiles ● Promotion of examining plans aimed at decarbonization and improved recycling, such as fuel conversion of power generation facilities and increasing the mixture ratio of raw materials derived from used plastics

Initiatives to Strengthen Competitiveness and Examples

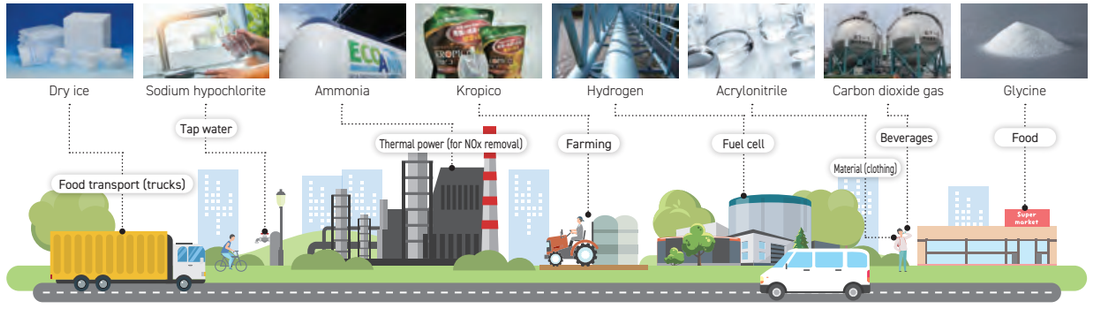
Launched CirculaC, a Circular Business Model for Used Plastics and Textiles

We launched CirculaC, a circular business model for used plastics and textiles. This is a new brand expanding the circle of resource circulation with the aim of realizing a sustainable future. In 2003, we established technology to recycle used plastics into hydrogen and carbon dioxide at the Kawasaki Plant, and by January 2023, we processed over one million tons of plastic in total. Going forward, we plan to sell these products under the CirculaC brand and expand resource recycling through co-creation with external partners. We aim to help build a sustainable society with an eye to achieving carbon neutrality.

Related article:



Relationship Between Our Products and Daily Life



Business Strategies

Chemicals segments

Graphite

César Castiñeira
General Manager, Graphite Business Unit

Please visit our website for more details.

Vision for the future (2030)

- We supply industry-leading Graphite Electrodes and Electric Arc Furnace (EAF) optimization services to steelmakers around the world, supporting the transformation to sustainable steel production and economic growth
- We supply synthetic graphite products for use in multiple industrial applications, promoting decarbonization in the manufacturing process.

Issues to Be Addressed

- Achieving a stable profit structure
- Optimizing product mix in response to expansion of electric furnace market
- Evolving into a business model that offers electric furnace optimization services
- Growing global demand for large-diameter electrodes, reducing carbon emissions in steelmaking, and addressing energy efficiency challenges

Results in 2024	Plans for 2025
● Both sales volume and price decreased due to the weak market condition, resulting in the decrease in operating income; operating loss reduced due to a reversal of inventory write-downs ● Accelerated the integration of AMI's automation solutions to enhance EAF efficiency and optimize electrode consumption ● Expanded renewable energy usage, implemented waste reduction projects, and strengthened data-driven operational efficiencies ● Advanced local production/local consumption strategies to reduce transport-related emissions	● Implement measures to improve profit margin ● Advance/Expand AMI-powered digital optimization at scale to further enhance productivity and energy efficiency in EAF operations ● Expand local supply chains to reduce logistics-related emissions ● Develop new AI-driven automation solutions to support more sustainable steel production

Initiatives to Strengthen Competitiveness and Examples

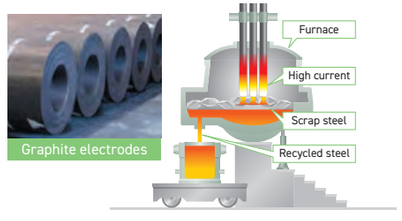
We leverage our unique strengths and competitive advantages to solidify our position as a world-class functional chemical company and a leader in the global graphite electrode market.

- Advancing Sustainable Steelmaking: Resonac is leading the global push for decarbonization as demand for large-diameter Graphite Electrodes in EAF steelmaking accelerates
- Global Production with Local Impact: With production sites in every region worldwide, we maintain strategic inventories to ensure consistent operations and reliable delivery
- Local Production for Local Consumption: Our strategy prioritizes producing close to our customers, reducing emissions, improving efficiency, and enhancing supply chain resilience
- Innovation & Digitalization: The AMI Automation acquisition enhances internal digital transformation while providing advanced Graphite Electrode optimization solutions to customers
- Sustainability: Driving positive impact for society and the environment through expanded renewable energy use

Evolving value proposition through synergies with AMI

The integration of Resonac's Graphite Electrode expertise with AMI Automation's world-leading EAF automation technology strengthens our ability to deliver comprehensive, value-added solutions tailored to the evolving needs of the steel industry.

Beyond product integration, we are also co-developing tailored service offerings with AMI — from EAF startup support to best practices in GE handling. These services are particularly relevant for customers entering the EAF space for the first time, reinforcing our role as a full-scope partner.



Relationship Between Our Products and Daily Life

Graphite Electrodes (GE) are essential to sustainable steelmaking. Traditionally used for melting scrap steel in EAFs, they are increasingly vital in the production of new steel from Direct Reduced Iron (DRI), especially in regions transitioning to low-carbon methods. Whether for recycled or new steel, GE remain critical to decarbonizing the industry.