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

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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.

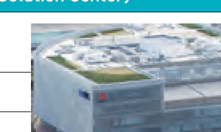
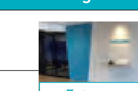
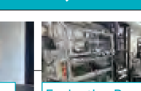
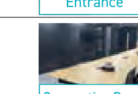
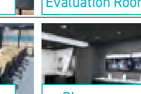
A co-creation model built step by step over more than 30 years

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)

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.
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.

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]

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