

Special Feature

A-Spirit: Contributing to the Maximization of Intangible Assets

# The A-Spirit of Team Pimel: The force behind the adoption of Pimel™ in the world’s most cutting-edge technology

Intangible assets are the source of value creation for Asahi Kasei. Our greatest intangible assets are our human resources who enthusiastically take on a variety of businesses. They are driven by the “A-Spirit,” a spirit of undertaking challenges that is the core of our corporate culture. The flagship product of our electronic materials business, Pimel™ illustrates the strengths of our intangible assets fostered in an open-minded and dynamic organization as we took challenges at the world’s cutting-edge of technology.

## Pimel™ as a product characteristic of Asahi Kasei’s high technological capability

Pimel™ is a photosensitive polyimide used to protect the surface of the chips on which the fine electronic circuits inside semiconductor devices are formed, and to insulate the redistribution layer that connects the chip to external terminals. When applied as a protective film on the surface of a chip, the film thickness is 5 to 10 μm, approximately one-tenth the diameter of a human hair. Because it needs to provide the specified performance under various conditions, this is an extremely challenging product in all aspects of technological development, manufacturing, and quality control.

Pimel™ was developed in 1988 utilizing Asahi Kasei’s unique technologies, such as photosensitive resins and polymer chemistry. Having overcome severe changes in the external environment, such as the bursting of the dot-com bubble and the global financial crisis, in recent years the Pimel™ unit has seen its business performance grow steadily with the spread of smartphones and data centers. Pimel™ plays an integral role in the evolution of cutting-edge semiconductor devices for smartphones, which require miniaturization, high integration, and high speed. This is truly a product that creates new value for tomorrow.

In materials business such as electronic materials, once a customer has chosen to use a given material, it

takes a long time to convince them to switch to another. Hence, one of the materials business’ defining characteristics is building relationships of trust over the long term and continuing to improve products collaboratively. “Taking on challenges swiftly, decisively, and ambitiously for the sake of our customers” is a culture that permeates the company. As a chemical company, this is a formidable strength of Asahi Kasei, and we have differentiated ourselves through our communication with customers and ability to make proposals.

## Adoption by a major global foundry, and frustration at inability to meet customer needs

In 2015, Pimel™ was adopted by a global leader in semiconductor contract manufacturing. However, Asahi Kasei’s true strength was put to the test in August 2017, when the company was approached about being a candidate for a “key material” to protect cutting-edge semiconductor chips for use in completely new applications.

“We want to do whatever it takes to meet our customers’ expectations.” This was the sentiment shared by all members of the Pimel™ team at Asahi Kasei, including



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those in charge of marketing, technology development, quality control, and manufacturing. However, the quality inspection details required by the customer exceeded Asahi Kasei's conventional standards. Although the team came extremely close to meeting those standards, they were unable to clear the final performance criterion, and their development by trial-and-error continued for several years.

Their success or failure to seize this opportunity would have a major impact on future business growth for Pimel™. The department head at the time gave a rousing speech to the team members, convincing them to do whatever it took to win the project.

A-Spirit as the source of customer service capabilities

Members of the Technology Development Department visited the customer's plant overseas and made continual improvements to prototypes. Every day, from morning to night, questions and requests from the customer were immediately shared with team members in Japan. Asahi Kasei was able to bring together its technical capabilities and manufacturing expertise to provide prompt answers and solutions to problems. By repeating this process, department members finally completed a lab prototype that met all requirements.

"I just wanted to make a difference in some way," says Isao Sakata of the Quality Control Section, looking back on those turbulent days. When asked how the Pimel™ team were able to win out over their competitors, Shunji Ooi, Head



of the Electronic Materials Plant, remarks, "We all endured those tough times together and banded together to keep moving forward, which is why we have strong lateral ties that go beyond our individual duties. The driving force behind our speedy response to our customers is an organizational culture that naturally allows people to share what they need to do and what they require at a given time."

Actual mass production also presented challenges. Test production was started, but there were slight quality discrepancies between the prototype and the product. "After we have all worked so hard to get this far, we can't fail now." With that pinpoint focus, Masaki Honda of the Production Technology Section pushed through the establishment of manufacturing conditions and the creation of rules for work processes, and together with numerous on-site staff, he managed to complete a supply system capable of meeting the necessary quality standards. Regarding the many colleagues he worked with, Honda says, "No one ever said anything negative, and everyone earnestly provided constructive opinions."

As the Pimel™ team neared the end of the product adoption process, the inspection phase at the plant was also a constant source of challenges. Not only did inspection preparation, which usually takes more than three months, have to be completed in just one week, but the list of inspection criteria numbered in the hundreds, more than double the number that would normally be required. Sakata from the Quality Control Section and Chihiro Sakakibara from the Quality Assurance Section introduced new inspection equipment and significantly revised work processes and personnel deployment. Making matters worse was the outbreak of COVID-19, but progress forged ahead thanks to the flexible response and close communication of Reiko Mishima from the Marketing Department.

After that, the A-Spirit of the entire team in marketing, technology development, quality control, manufacturing, and the desire to meet customer needs have continued to drive the company forward, allowing it to continue to respond promptly to the exacting demands of a major

global foundry. As a result, the team has been able to bring to market a new Pimel™ product with higher performance.

Reinforcing technology, intellectual property, and brand strength together with the customer

In December 2020, Asahi Kasei was selected as an outstanding supplier by the major global foundry. This is a prestigious award that is only given to a dozen or so companies out of the hundreds that do business with that foundry.

"It's rewarding precisely because it's difficult. That is the prevailing view among the engineers and other human resources at Asahi Kasei. Each individual has a great deal of discretion, and they aren't bound by fixed methods. This allows us to exceed customer expectations," says Takahiro Sasaki, head of the Technology Development Department. Yoshito Ido, also from the Technology Development Department, further adds confidently, "Our strength lies not only in our technology and knowledge, but that the trust we have for our colleagues extends to the mindsets we hold. That teamwork will surely be conveyed to customers and help build trust." Asahi Kasei's human resources have the curiosity to not flinch from the challenges of the unknown. The curiosity of each individual creates an enterprising spirit, leading to unconventional, flexible thinking and the ability to take action, which in turn leads to high commendation from Asahi Kasei's customers.

Furthermore, what "Team Pimel" has achieved is not just a temporary recognition as an outstanding supplier. Being selected by the team's customers as a business partner means being able to quickly listen to their rapidly changing needs and constantly develop cutting-edge technology. By leading the electronic materials market in this



way, we will be able to accumulate further expertise and knowledge and obtain patents ahead of the competition. Competitiveness leads to customer trust and brand strength, which form a powerful multi-layer of intangible assets, and will lead to the next challenge to be undertaken as well as greater value for other businesses.

Further strengthening competitiveness through DX

Going forward, DX will form the driving force behind the Digital Solutions business including Pimel™. The company is now working to strengthen its quality competitiveness and customer responsiveness through a unique shared communications platform that centrally manages manufacturing information, quality control information, and customer inquiries from its various global sites. In addition, existing issues are also being resolved, such as by using generative AI to streamline business processes.

In these transformations as well, "human resources are everything." This is why Asahi Kasei, which attracts highly motivated human resources, is sure to be able to achieve a major transformation through DX.

Marketing, technological development, manufacturing, quality control, and quality assurance—these inimitable intangible assets, and the "A-Spirit" that underpins them, all contribute to the growth of the Pimel™ business.



Maximizing Use of Intangible Assets

Overview of Asahi Kasei’s intangible assets

The intangible assets of Asahi Kasei, the source of its growth, comprise 1) motivated human resources involved in various businesses, 2) wide-ranging technology, intellectual property, and manufacturing expertise, 3) contact points in various markets, and 4) digital platforms accelerating co-creativity and transformation.

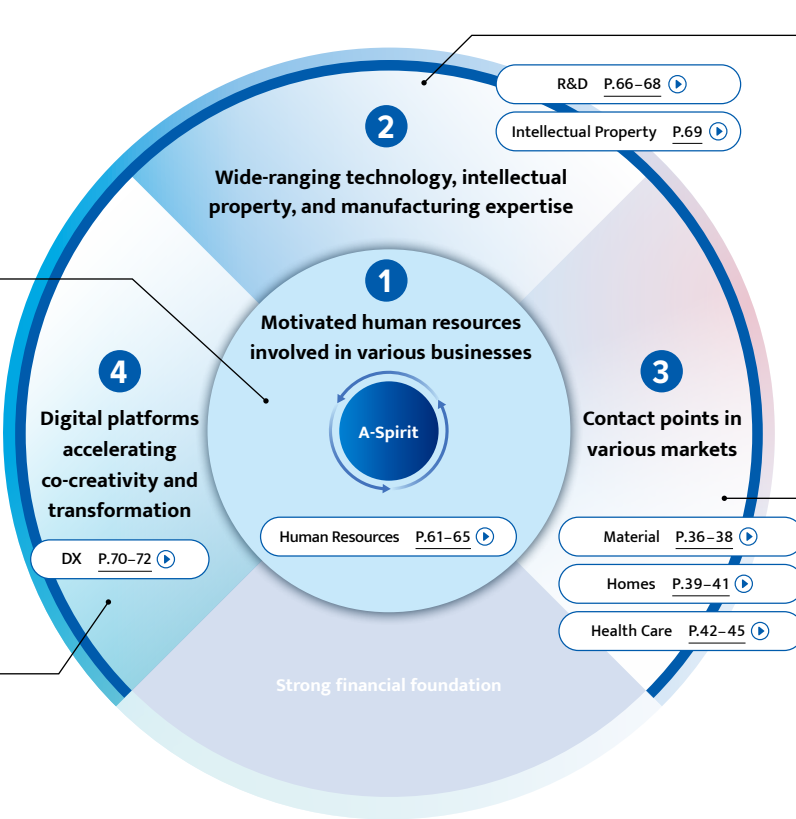
The motivated human resources involved in a diverse range of businesses around the world guided by “A-Spirit”—the spirit of taking on challenges that is at the core of the culture of Asahi Kasei—are our greatest intangible asset. The stimulation and co-creation arising from different cultures within the Asahi Kasei Group, including the rotation of human resources across sectors, connects these extensive intangible assets, thereby facilitating the creation of new value.

1 Motivated human resources involved in various businesses

Strengths	<ul style="list-style-type: none"><li>Global human resources (percentage of overseas employees: &gt;40%<sup>1</sup>)</li><li>Highly specialized human resources (number of Group Masters: 347<sup>1</sup>)</li></ul>
Policy and Strategy	<ul style="list-style-type: none"><li>Lifelong growth and co-creativity → Discovering the future with lifelong growth and co-creativity of diverse individuals</li></ul>

4 Digital platforms accelerating co-creativity and transformation

Strengths	<ul style="list-style-type: none"><li>Management innovation through DX (DX-related investment [3-year total]: Approx. ¥30 billion)</li><li>Number of digital professional human resources: 1,728<sup>1</sup></li></ul>
Policy and Strategy	<ul style="list-style-type: none"><li>All members × on-site initiative × co-creation → Continuously sparking transformation through on-site initiative in using digital technology</li></ul>



2 Wide-ranging technology, intellectual property, and manufacturing expertise

Strengths	<ul style="list-style-type: none"><li>Accumulated core technologies and patents (number of patents held: domestic, 6,807<sup>2</sup>; overseas, 7,818<sup>2</sup>)</li><li>Strong R&amp;D capabilities (R&amp;D expenses: ¥106.6 billion<sup>1</sup>)</li></ul>
Policy and Strategy	<ul style="list-style-type: none"><li>Intellectual property: Safeguard business profit and contribute to maximizing business value through collaboration between Corporate IP and the Intellectual Property Intelligence Department</li><li>R&amp;D: Create new value by integrating tangible and intangible assets</li></ul>

3 Contact points in various markets

Strengths	<ul style="list-style-type: none"><li>Uncovering new needs</li><li>Inter-sector knowledge and data</li><li>Brands trusted by customers and partners</li></ul>
Policy and Strategy	<ul style="list-style-type: none"><li>Create new business models and customer experience by utilizing expertise and marketing knowledge from diverse industries group-wide</li></ul>

<sup>1</sup> Fiscal 2023 or March 31, 2024  
<sup>2</sup> December 2023