



The Gunbai symbol was registered as a trademark in 1927



Products featuring the Gunbai symbol

The origins of the Gunbai symbol, which represents prosperity for business and agriculture alike

Gunbai is short for “gunbai uchiwa,” a military fan used by Japanese commanders to direct troops from the late middle ages to the early modern period. In modern times, it is used by referees in sumo matches. Why is this the “Gunbai Column”? Denka’s history with the Gunbai symbol dates back to the beginning of the Showa era (1926 – 1989).

At the time, sales of lime nitrogen were sluggish, and one of the plans to rectify this situation involved creating a trademark that would appeal to customers. Kihei Abe, a member of the Commercial Affairs Section, was ordered to come up with a design. While struggling to come up with an idea, Abe heard one of his colleagues mention that he was going to see a sumo match. In that moment, an image of a gunbai flashed into Abe’s head. Due to their association with rich harvests, gunbai are auspicious symbols for farmers. Abe immediately ordered an artist to draw up the design, which was eventually adopted by the company. The Gunbai symbol was added to one product after another, and these were shipped to agricultural communities across the land.

Since then, the gunbai symbol has become a familiar sight to Denka employees. One of Denka’s in-house newsletters, which was first published in 1959, is also named “The Gunbai.” The creator of this newsletter, Ichiyo Kubo of the Osaka Sales Office General Affairs Division, commented, “The Gunbai symbol represents the growing field of electrochemistry and a connection between all of our staff.” A portion of The Gunbai is still delivered to staff online today. The times might change, but the Gunbai remains a symbol of the bond shared by Denka employees.

The DenkaWay

Winter

2020 | Vol.02



The Unknown World of Specialty Cement Additives

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Challengers for Denka Value-Up

“The Near Future” of our Specialties That Continue to Evolve

In line with Denka's management plan, “Denka Value-Up,” we are aiming to “become a specialty-fusion company with a strong global presence.”

What kind of specialties do we possess now at Denka, where we take bold steps towards unknown possibilities in science?

Here we introduce some examples.

World Share **No.1**

Judgement time **5** minutes

5 minutes

Denka Seiken's “QuickNavi™-Flu 2” makes influenza diagnoses possible in just five minutes. This rapid diagnostic kit holds the top share domestically.

Our ultra-high purity acetylene black, which has high electrical and thermal conductivity. It holds the No. 1 share worldwide.

Capable of withstanding over

1.5 million flexes



Domestic Share **95%**

An accelerator for the shotcrete used on construction sites. It holds a 95% share within the country.

Used in **60** countries around the world



60 countries around the world

Denka was the first company in Japan to commercialize vinyl tape. VINI-TAPE® is now being used in 60 countries around the world.



Important technology

Influenza vaccines, diagnostic kits

We have been producing vaccines for around 70 years, and diagnostics kits for 50, which have continuously helped to protect people's lives.



Important technology

Ultra-high purity acetylene black

This is used as a conductive material in the rechargeable lithium-ion batteries essential for electric cars, and contributes to efforts to reduce global warming.



Important technology

NATMIC Series

These products greatly contribute to task efficiency on construction sites through their quick setting capabilities. They have an overwhelming share.



Important technology

Evolmer®

The first new high-performance elastomer in over 30 years. Among other features, it offers incredible durability and low exothermicity.



Important technology

Cold-resistant, thin-wall harness tape

The thinnest vinyl tape in the industry for bundling up wiring harnesses in automobiles. It contributes to weight savings.

Life Innovation, Business Promoting Dept. In 2016, I was involved in the establishment of a joint venture company that provided a service testing for cancerous gene mutations, and currently consider strategies to expand Life Innovation even further. I bring together expertise and technology from both within and outside the company, searching for new business possibilities.

A pioneer searching for new businesses



Shuntaro Komura

Electronics & Innovative Products, High Functional Films & Adhesives Dept. As well as continuing to propose the adhesive HARDLOC SGA to elevator and motor manufacturers as a sales representative, I am also involved in the development and sales of adhesives that can bond different materials, helping to meet the weight-saving demands in the automotive industry.

Adhesive professional



Erina Hata

Infrastructure & Social Solutions, Special Cement Additives Dept. After a period at Denka Infrastructure Technologies in Singapore, I returned to Japan. I am currently focusing on next generation special cement additive products to improve the quality of our concrete even further.

The engine driving the development of next generation special cement additives



Masataka Ishida

Elastomers & Performance Plastics, Elastomers Dept. My main responsibilities currently include sales of neoprene rubbers in the Taiwan and Vietnam regions, and development of the Evolmer® market. While working with the research department, I explore new utilizations that will bring together Denka's seeds and our customers' needs.

The Evolmer® “Evolmer”



Chien Chung Chen

Living & Environment Products, Advanced Tape Dept. During this period of rapid change in the automotive industry, I am aiming to increase the global share of our Wire Harness Vinyl Tape for automobiles, and also working towards the development of new products along with the Polymer & Processing Technology Institute.

A key person in the drive to reduce the weight of automobiles



Ryuhei Marumoto

See the next few pages for our talk session with all of these young employees about the future of our specialties!

Talk Session

Each and every person has their own area of specialty.
By bringing together
all five of our divisions,
we can open up new possibilities.



Our Threefold Growth Vision



Shuntaro Komura
Business Promoting Dept.
Life Innovation Omi Plant

Chien Chung Chen
Elastomers Dept.
Elastomers & Performance Plastics

Toshio Imai
Denka Value-Up Promotion Dept.
Director, Managing Executive Officer

Masataka Ishida
Special Cement Additives Dept.
Infrastructure & Social Solutions

Erina Hata
High Functional Films & Adhesives Dept.
Electronics & Innovative Products

Ryuhei Marumoto
Advanced Tape Dept.
Living & Environment Products

Towards the realization of the management plan, “Denka Value-Up,” Denka aims to focus on two goals; “accelerate growth of specialty businesses” and “specialize our key operations.” Employees at each base are continually attempting to specialize further, but what is important to succeed in producing specialty products? We invited Director Imai from the Denka Value-Up Promotion Dept. to act as a facilitator and talk to these young employees from our five different divisions.

Challengers for Denka Value-Up

Considering what to make is not the only way of specializing

Imai What is everyone currently doing towards further specialization?

Marumoto As a sales representative, I am involved in the development of new wire harness tape products for automobiles. The automotive industry is currently undergoing huge evolutions such as automation and electrification. I gather information from close talks with our customers, and share everything I learn with research departments. I am constantly considering **how best we can leverage the skills our company possesses.**

Hata I am involved in the development of new adhesive products, also in the field of next generation automobiles. During this period of increasing demand for lighter components, there has been a rapid move towards multi-material car bodies

A Denka that can foresee the needs of the future and avoid getting caught up in fixed ideas.

using plastics and resins. As a result, the welding methods used previously for joining metals together will need to be replaced by adhesives that can bond components of differing materials. There are many different issues that need to be solved, such as differences in the expansion and contraction of materials when heated, and changes to the surfaces’ conditions, **but we will continue our trial and error process.**

Ishida Speaking of times of change, the civil engineering and construction industries are in a similar position. The special cement additive products our division manufactures make up for the problems with cement and concrete. On infrastructure construction sites, we are starting to see real staff shortage problems and environmental issues, but a variety of changes are also underway, such as labor-saving initiatives, i-Construction, and efforts to reduce CO2. However, if the business environment changes, new features will be required from special additives. I think it is essential that **we foresee the needs of the future and avoid getting caught up in our fixed ideas.**

Komura I feel the same way. One of the charac-



Our five divisions coming together is the driving force to create new things.



teristics of the medical and health care fields that our division is involved with is that it is totally free of economic trends. However, our sales are still relatively low when compared to the rest of the Group. In the future, as well as developing new business areas through initiatives such as open innovation, it is necessary that we make use of the expertise and technology in our Group and expand our business. **In that respect, I think it is really important that we explore many possibilities in the future, leaving behind the status quo.**

Chen In 2019, our division started sales of the high-performance elastomer, Evolmer®. This is the first new elastomer in nearly 30 years. Making use of its strengths in highly dynamic environments, we are expecting it to be used in industries such as iron and steel. I think we can continue exploring new avenues from a wide variety of angles, asking questions such as what values and possibilities Evolmer® can provide, and **how we should make**

use of the seeds of innovation that only our company possesses.

Imai How far can we get involved in the megatrend of “change?” Can we make Denka’s seeds match our customers’ needs? It is important to keep in mind these two questions when developing our specialties. However, the thing that I really want to everyone to remember is that **considering what to make is not the only way of specializing.** If the demand for anything drops, even a



high added-value product, profits will also fall. As a result, we must develop all the time and continue to produce new specialty products. For example, expanding special additive products which have a solid standing in Japan to overseas markets, or venturing into new business areas through collaborations with other companies. Asking questions about where and how we will do things are also acceptable forms of specialization. I would like everyone **to continue pursuing various possibilities through flexible thinking.**

We have a wide business foundation, and making use of experience in each area is our strength

Imai “Denka Value-Up” lays out our goals up until FY2022. In order to achieve them, which of our company’s strengths do you think it is necessary we preserve?

Marumoto **Having a wide business foundation.**

By sharing our ideas frankly with each other, something new will be born.

In our five completely different divisions, we each have unique technology and expertise.

There is also the cross-divisional Automotive Materials & Solutions Dept. which helps with new ideas in the field of next generation automobiles, for example. **If we can bring together the strong parts of each of these fields, I believe we can produce totally new things.**

Hata In the automotive field, new adhesive products usually take more than five years to be implemented. As a result, sales don’t progress, so all members of the sales team gathered the other day to talk about what we can do in response to this problem. As I like musical instruments, I

Let’s create a “story” focusing on megatrends, technology, and needs.

suggested that maybe we could find some way into the musical market, or maybe something related to familiar furniture or building materials. Of course, **it would be surprising to find the perfect area to develop our specialties in right away, but I have a hunch that by sharing our ideas with each other, something new will be born.**

Komura Definitely. Regardless of years of experience or division, it is important to have opportunities for various kinds of discussion. It does not even have to be on a set theme. I feel that **connections between people in different divisions often lead to innovative sparks soon after.**

Ishida I think it is important for us not just to look at technology within our own company, but also to

I want to make use of expertise and technology both inside and outside the company and open up new possibilities.



keep our eyes out for things going on outside.

In sales, there is a tendency for every day to get clogged up handling all of the customers. Recently, even if I have to force myself, I try to make time and go to exhibitions and academic conferences. There are a lot of products that started with a small idea but have turned into big hits. In order to broaden our field of view, I think it is essential that we also understand trends outside of our own field of business.

Chen I think considering things by yourself sounds easy, but is actually remarkable difficult. Currently, I am talking to lots of customers with a view to developing new uses for elastomers, and even though I have studied my field in great detail, there are times when I do not know what to say in response.



Considering our own fields of specialty will help make Denka stronger.

In order for dreams not to remain just dreams and to open up new possibilities, as everyone else has said, I feel that **continuing to bring in expertise and technology from outside of the company is also indispensable.**

Imai **Megatrends, technology, needs**—these three things are important components when developing our specialties. However, what is in question is **whether we can create a “story” using all of them,** without leaving a single one out. There are products that are born from seeds, and there are also products that match social situations. I believe there are also products that resolve the issues of particular customers. Whatever the origin is, if we do not ask questions such as “what in society are these products contributing to?” “which of Denka’s strengths are we making use of?” and “what can we make possible for our customers?” and produce this story, there is no way they will continue to be innovative products. This can be said not just about new products, but also existing ones. **Making use of our company’s strengths in a wide range of business areas, I would like everyone to come up with their own stories.**

Everyone must have their own area of specialty

Imai Finally, what do you feel following this talk session?

Komura I felt that **considering my own field of specialty was important.** In order for us to “become a specialty-fusion company with a strong global presence” in line with “Denka Value-Up,” I think it is essential that all employees are facing in the same direction. While considering a story that incorporates megatrends, technology, and needs, **if everyone individually clarifies what is expected of them, and what it is they must do,** applying this to customers’ needs and market trends, I think Denka will become even stronger. I think that all employees in our company are people who can achieve that.

Ishida One’s own field of specialty—that’s an in-



teresting thought. I think mine is cheerfulness. Until July of this year, Denka was relatively unheard of in Singapore, where I had been appointed. However, when we approached people cheerfully, everyone was willing to accept us. I was really happy.

Marumoto In that sense, I guess my specialty is being a sort of buffer. I feel that not everyone in the company has to be totally creative. I think people who are able to look around them are also important.

Chen I am originally from Taiwan, so I have a lot of questions about things that most Japanese people might consider to be “the norm.” For example, the tendency for Japanese people to be a bit ambiguous. It might be to protect other people’s feelings, but when delivering instructions, it can end up being a little bit of an obstacle. I think I might be useful from the point of view of developing work-style reforms, too.

Hata I have been involved in adhesives ever since I joined the company. I think building up experience and realizing the development of new products is probably my unique specialty.

Imai The products that everyone is involved with have been continually built up by over a hundred years of predecessors. We must also make and leave behind specialty products for our successors—those who join the company in the future. **If everyone gets involved with the confidence that they have their own area of specialty, we will definitely be able to become a specialty-fusion company with a strong global presence.** This is what I believe.

Dreams of the Future

The future, when we have specialized even further. What kind of products will Denka be producing? We asked all the participants of this talk session what their dreams were.

I am aiming for sales figures of over ¥100 billion! Through the combination of expertise from inside and outside the company, including divisions like the Denka Innovation Center, I would like to contribute to our “Business Portfolio Shift.”



“I want to bond things quickly with adhesives!” “I am still working so I don’t want it to set yet!” In order to handle these conflicting needs, I would like to develop an adhesive that bonds things together easily but is also very workable!

I would like to make special additive products based on unique ideas. Products that absorb harmful things such as radiation, or that can set cement with just one drop. I will definitely anticipate future needs!



“Plastic and rubber are not kind to the environment.” In order to do away with this image, I will try my hardest to make new products such as biodegradable plastics, which are both strong and are friendly to the environment!

I would like to develop a totally new wire harness tape that is as thin and as light as possible! It may only be tape, but it can be really important. It contributes to electrification, automation, and weight savings in the automobile industry.



No.02

Don't Knock It Before You Try It

Actor



Tetsuya Bessho

Born in 1965. Made his acting debut in the musical *The Fantasticks* while studying at Keio University. He went on to perform in a wide range of productions, including the US-Japan joint film *Solar Crisis*, the play *Les Misérables*, and the musical *Miss Saigon*. In 1999, he founded the Short Shorts Film Festival, for which he received an award from the Commissioner for Cultural Affairs. He is also a navigator on J-WAVE TOKYO MORNING RADIO, which features a Denka-sponsored segment called Denka MORNING VISION (Mondays to Thursdays, 7:40 – 7:45).

From business to acting, all because of Tarzan

You might say that getting into acting was an innovation. Most of my relatives are bankers, so I grew up with the intention of joining a trading company. That all changed during my university years. In order to improve my English, I decided to join an English drama club. That's where I learned the joy of expression. The role of Tarzan made me consider questions that had never crossed my mind before, such as "What is civilization?" or "What does it even mean to be human?" I came up with my own answers and used my performance to share them with the audience. This experience was so fascinating that I decided to pursue a career in acting. Naturally, my parents were against it. They didn't believe I could do it. I had my own doubts of course, but in the end, my desire to pursue acting outweighed those doubts.

If it doesn't exist, make it from scratch.



After graduating from university, my actions were bold. I tried out at various auditions and eventually secured a role in the US-Japan joint film *Solar Crisis*. I traveled to America for the shooting and ended up staying there for about one and a half year. In America, I learned two important life lessons. The first is "If it doesn't exist, make it from scratch." In Japan, we tend to create new things by building on or improving on the works of others. In contrast, there's a different mindset in the US. For example, if they want to express something but lack the tools to do so, they'll simply say, "Okay, let's make some new

tools." Then, they'll boldly spend their budgets, and the director, actors, and production staff will collaborate to realize a new idea. The US has long been a source of new technologies and culture, and I believe this is partly due to their willingness to create something from nothing.

The other lesson was "Don't knock something before you try it." One day during that period, a friend of mine invited me to a film preview. At first, I wasn't even sure if it was worth my time. However, when I reluctantly accompanied my friend to the festival, I ended up being completely blown away. In just a few minutes, I discovered

multiple works that completely shook up my values. I realized just what a small world I had been living in so far.

Based on this experience, I gained a new dream: to host an international short film festival in Japan. I imagined that there were many people like me who disliked short films without even giving them a chance. So, starting from scratch, I created a new venue to convey the charm of these films. Some people were worried about my acting career and advised against this project, but

once again, my desire to pursue this dream outweighed my doubts. Every day, I made multiple international calls, sent faxes, and held meetings in family restaurants. I had to select and import films, create advertisements, and plan budgets... Before I knew it, I had become the businessman that my family always wanted me to be! And I'm happy to report that the short film festival I started lives on today.

Create things from scratch. Don't knock it before you try it. And do things with passion. Those are my rules for innovation, and I'm going to continue taking on new challenges.

Beyond the Future

Special Edition

The Unknown World of Special Cement Additives

Cement and concrete are found at construction sites around the world.

Closely examine any highway or high-rise building, and you'll find beautifully evenly spread cement.

This is thanks to Denka's special cement additives.

So what exactly are these additives that contribute to the durability and safety of structures?

Amazing
the
World
with Innovation

Adding value to cement and concrete

The Illustrated Guide to Special Cement Additives

Denka's special cement additives have a wide range of functions to meet the needs of every construction site, including expandability, rapid hardening, shrinkage prevention, and high durability.

What are special cement additives?

Special cement additives are mixtures that cover the shortcomings of cement and concrete.

For example, the concrete used to harden soil and rocks in tunnels usually takes 2-3 hours to set. However, with Denka's special cement additives, this can be shortened to a few seconds. We

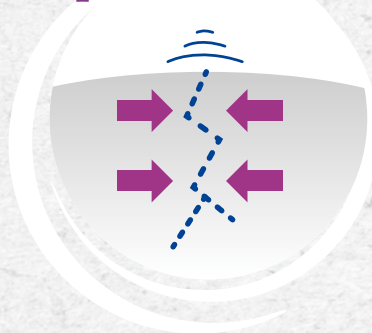
have a 95% domestic market share in this field, and our special cement additives are used in most tunnels in Japan.

Denka began selling special cement additives in 1968. Before that, construction sites around the world were plagued by cracking, a major draw-

back of concrete.

The Special Cement Additives R&D Center in Denka's Omi Plant solved this problem. Even today, they are continuously carrying out experiments with cement, concrete, and special additives to create new functionality.

Expansion



[Denka CSA: Expandability] Expands to prevent cracks

A special cement additive that retains water and expands volume. This prevents cracking due to drying shrinkage and autogenous shrinkage.

Reinforcement



[Denka Σ1000: Strengthening] Strongly hardens at 3x the speed

A special cement additive that strongly hardens concrete. Since it only needs to be mixed in, no special machinery is required. It is resistant to vibrations and contributes to safety during construction.

Quick setting



[Denka Natmic: Quick setting] Immediately hardens concrete after being sprayed on

A special cement additive that quickly sets concrete to secure rocks and soil in tunnels. It only takes a few seconds to set. This contributes to improved work efficiency and safety.

Quick hardening



[Denka Tascon: Quick hardening] Quickly repairs water leaks due to cracks

A special cement additive that quickly hardens concrete. Since it is strong enough to withstand water pressure, it is used for urgent repairs during tunnel construction.

Immediately strengthening



[Denka Super Cement: Super quick hardening] Quick hardening to prevent traffic obstructions

A special cement additive that rapidly strengthens concrete. Practical strength is achieved in around three hours. This additive plays a role in low-temperature environments where concrete tends not to harden.

Time variable



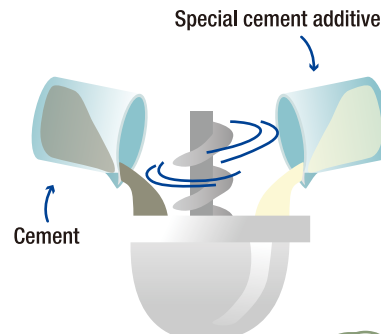
[Denka Setter: Workability] Reduces water leakage from cracks

A special cement additive that allows one to adjust the setting time. It can be freely set to anywhere between two hours and twenty-four hours, allowing workers to spend more or less time depending on the difficulty of the task.

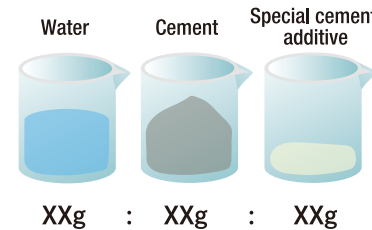
A look inside the Special Cement Additives R&D Center

Experiment method

Overcoming the shortcomings of concrete and cement by adding the additives



1. Add a special cement additive to cement, concrete, or mortar and mix well.



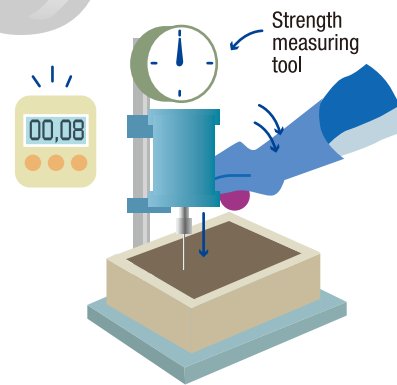
Water : Cement : Special cement additive
XXg : XXg : XXg

3.

Improve the composition of the special cement additive based on the results of the previous step.

2.

Measure how fast the mixture sets and how strong it becomes.



Trivia

Cement An ingredient of concrete and mortar. It is made from materials such as limestone and chemically hardens when mixed with water.

Mortar A paste made of cement, sand, and water. Used to connect bricks and other masonry units.

Concrete A mixture of cement, aggregates (sand or gravel), and water. It is relatively strong compared to mortar.

Amazing the World with Innovation

A world created by special cement additives

Roads, high-rise buildings, and sewage systems...
Denka's special cement additives are used to create many things that we take for granted.



Bridges

Rainbow Bridge

Bridges need to endure the vibrations of cars and trains and the pressure of water, so periodic maintenance is essential. Denka Hardloc is used to repair cracks, and Denka Tascon is used for cross-sectional repairs.



Airports

Haneda Airport's fourth runway

Haneda Airport's fourth runway was built on a pier facing the ocean. The pier was constructed with SUQCEM ultra-high-strength fiber-reinforced concrete, which is five to eight times stronger than regular concrete, to prevent salt penetration.



Castles

Osaka Castle

The Denka re-alkalization method was used on about 5,000 square meters of the outer wall of Osaka Castle, the symbol of Osaka. We contribute to maintaining historic buildings by protecting concrete from deterioration due to neutralization reactions.



Pick Up!

Hydroelectric Power Plants

Malaysia

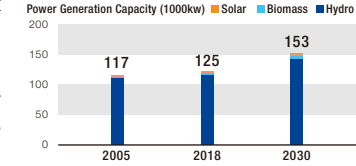
Kuala Lumpur, the capital city of Malaysia. Here, special cement additives were used to construct the longest headrace tunnel in Southeast Asia, which draws water from a source 45km away over a 1,200m mountain.

Pick Up!

Denka's Eco-friendly Hydroelectric Power Plant

We are promoting the expansion of clean energy sources, taking the initiative in protecting the environment, and aiming to contribute to the development of a sustainable society. Currently, we operate fifteen (ten solely-owned, five jointly-owned) hydroelectric power plants in Niigata and Nagao Prefectures. In FY2018, these plants generated approx. 125,000kW, which is enough to power approx. 200,000 households. Construction of two new power plants is currently underway, and once they are put into operation, we expect to be able to reduce CO2 emissions by approx. 35,000 tons per annum.

Long-term Outlook for Renewable Energy (Power Generation Capacity)



*Kurobegawa Electric Power (jointly owned with Hokuriku Electric Power Co., Inc.) accounts for 50% of generated output.



Shin-Himekawa No. 6 Power Station construction site

See next page for further details on the construction site!



Highways

Shin-Tomei Expressway

The Shintomei Expressway runs through the center of Japan. To ensure that the construction was safe, simple, and efficient, a combination of the special fiber mortar Denka PF Mortar and the accelerator Denka Subshot were used.



High-rise Buildings

The higher the building, the more durable it needs to be to remain safe. Denka Power CSA is used to prevent cracks in concrete frames and Denka Σ2000 to strengthen pillars on lower floors.



Tunnels

Tunnels are dug through soil and rock. The spray-on accelerator Denka Natmic Z is used to rapidly harden concrete, and Denka ES is injected into the soil to prevent collapses.



Bullet Trains

Sanyo Shinkansen

The Denka Renotec Method was used to repair a viaduct on the Sanyo Shinkansen line connecting east and west Japan. Re-alkalizing the deteriorated concrete helped to improve durability.

PROJECT: INSIDE STORY

Shin-Himekawa No. 6 Power Station construction site

Illuminating the Future with Inner Passion

In 2018, Kurobegawa Electric Power, which is partly owned by Denka, began construction of a new hydroelectric power plant in Itoigawa, Niigata Prefecture. This project is a touchstone for the expansion of clean energy in Japan. There are also high expectations for the special cement additives used onsite.

Itoigawa,
Niigata Prefecture

A major project to accelerate the construction of hydroelectric power plants in Japan

Construction is underway on water tunnels for the Shin-Himekawa No. 6 Power Station. According to Mr. Sugimori, a manager at Kurobegawa Electric Power, this project will accelerate the construction of hydroelectric power plants in Japan.

Hydroelectric power generation emits almost none of the greenhouse gases responsible for global warming, so it is expected to become increasingly popular as a clean power alternative. However, there was one major obstacle for hydroelectricity in Japan: geology.

Drilling water tunnels through mountains is an essential part of building hydroelectric power plants. However, many of Japan's mountains are geologically unsuitable. In western countries, where mountains tend to be made of harder rock, the TBM method can be used to rapidly drill tunnels, but this method is less effective in Japan. The NATM method is far more suitable for Japan's geologically complex mountains, but it takes significantly longer.

To solve this problem at the Shin-Himekawa No. 6 Power Station construction site, they used a NATBM excavator, which combines the TBM and NATM methods. This new technology was jointly developed by the Kajima Corporation and Komatsu. "The technology to safely and quickly drill water tunnels is essential for expanding hydroelectricity

in Japan. Thanks to the NATBM excavator, we can now count on safe, quick construction," explains Mr. Sugimori. Construction is proceeding steadily, and the power plant is expected to go into operation in April 2022.

Denka's special cement additives solve problems onsite

Messrs. Nishioka, Kasakawa, and Shigenaga from the Kajima Corporation say that this project would be impossible without Denka's special cement additives. Denka Natmic Z, which boasts high strength even when thinly sprayed, and Denka PF Mortar, which has low dust rebound, are used as spray-on quick setting agents together with the NATBM excavator. Special cement additives, which are used at construction sites around the world, are some of Denka's most well-known products. "They were indispensable for this project, which is a touchstone for the expansion of clean energy in Japan," explains Mr. Nishioka.

The three men also agree that special cement additives have contributed to solving some common worksite problems. There are two points in particular: Reduction of unnecessary spraying is eco-friendly, and reduction of dust helps prevent pneumoconiosis in workers. Thanks to the benefits provided by these products, construction workers are able to continue taking on new challenges.

Perhaps Denka's mission is to help fulfil the demands of construction sites.



Amazing
the
World
with Innovation



The newly developed NATBM excavator. When it NATM mode, it uses a red bucket tool on the front to safely dig through soft ground.



Manabu Sugimori (second from left), Kurobegawa Electric Power, is in overall charge of the project.

Masaaki Kasakawa (left) and Akihiro Shigenaga (right), Kajima Corporation, are responsible for the Shin-Himekawa No. 6 Power Station construction site.

Kazunori Nishioka (second from right), Kajima Corporation, is a tunnel boring expert with a wealth of experience in Japan and overseas.



Members of the Cement and Special Cement Additive Research Laboratory spend their days experimenting. In the photo, a technician measures the strength and hardness of a new formula.



Masahiro Iwasaki (left), Senior Researcher at the Cement and Special Cement Additive Research Laboratory, Aomi Plant, is in charge of developing products to meet the needs of construction sites.

Kazuma Igarashi (right), Manager of the Special Cement Additives Department, is in charge of technical supervision and marketing.

Special cement additives.

A high-value-added product that leverages Denka's technologies.

We will continue supporting the future of our lifestyles and construction sites.

The unknown world of special cement additives is always by your side!

Amazing
the
World
with Innovation

Creating the future of construction sites by pursuing high value-added products

"Our strength is customization according to site requirements," explains Mr. Iwasaki, Senior Researcher at the Cement and Special Cement Additive Research Laboratory. Special cement additives are used at many different types of construction sites, including tunnels and dams. In order to develop products that can solve problems at every site, the Cement and Special Cement Additive Research Laboratory is constantly conducting experiments to enhance functionality. "The important thing is getting feedback from workers. When we have a prototype, we visit a site and test it together. This allows us to make quick improvements and customize products according to site specifics." This speed is what has allowed Denka's special cement additives to claim such an overwhelming share of the market.

On the other hand, Mr. Igarashi, Manager of the

Special Cement Additives Dept., says that special cement additives still have room for improvement. Currently, work-style reforms and i-construction initiatives for solving labor shortages on construction sites are on the rise. "If fully autonomous machines are developed, special cement additives will need to be made even simpler and safer to use. Rather than being satisfied with the status-quo, we must constantly pursue new possibilities. That is the key to unlocking a new future for special cement additives and construction," explains Mr. Igarashi.

In 2018, the special cement additives business celebrated its 50th anniversary. In other words, they have been solving problems and supporting construction sites around the world for over half a century. "We will continue to take on new challenges to provide even higher value-added products in the future." The eyes of these two men are shining with inner passion, like the special cement additives playing a role in tunnels all over Japan.

NATBM Excavator

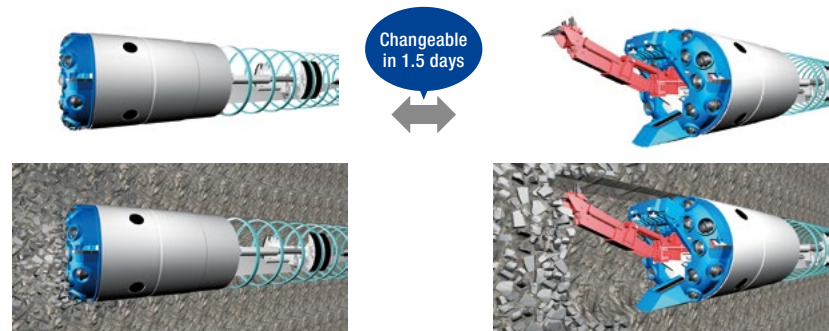
Swapping in separate TBM and NATM machines for a single job can take anywhere from several weeks to several months. However, the NATBM can be switched from TBM mode to NATM mode and vice-versa in a mere 1.5 days, greatly reducing construction time.

TBM Mode

Allows for high-speed drilling through hard ground. Forward sensors preemptively identify soft ground.

NATM Mode

NATM Mode is used for soft ground. An optimal support pattern can be selected based on the type of ground.



DENKA TOPICS

Introducing Denka Group news topics from October to December 2019

Oct. Mr. Ibukiyama receives Minister of Economy Trade and Industry Award at the Industrial Standardization Awards



Masahiro Ibukiyama, a Senior Technical Advisor at our company, received the Minister of Economy Trade and Industry Award at the Industrial Standardization Awards Ceremony. He was highly praised for his successes as a Japanese representative on the ISO/TC206 (Fine Ceramics) Committee, and as Secretariat Committee Chairman, as well as for his efforts on the setting of international standards regarding fluorescent substances for white LEDs and contributions to Japan's competitiveness.

Oct. Denka Athletics Challenge Cup 2019 held

On October 19, the Denka Athletics Challenge Cup 2019, sponsored by our company, was held at the Denka Big Swan Stadium, and approximately 9,000 people came to watch. New national records were set for both the men's and women's 4 x 800 meters relay, and top athletes from around the world engaged in fierce competition.



Nov. Volunteers from the Denka Labor Union participate in relief efforts for the area affected by the Great East Japan Earthquake

On November 30, a total of fifteen volunteers from various branches of the Denka Labor Union gathered together and participated in relief efforts for the area affected by the Great East Japan Earthquake. They helped with shipping adjustment and packing of onions harvested at Denka test fields located in a residential area of Minami-Sanriku, Motoyoshi District, Miyagi Prefecture, and carried out weeding work at houses.



Oct. Renewal of Denka Big Swan Stadium (Niigata Stadium) naming rights contract



From the left, Denka President Yamamoto, Niigata Prefecture Governor Hanazumi, Albirex Niigata Inc. Director Wakasugi

Our company renewed the naming rights contract of Denka Big Swan Stadium (Niigata Stadium), and the current name will continue to be used up until the end of 2022. Denka, with our main plant in Niigata, will support the development of Denka Big Swan Stadium as a place for regional revitalization and the promotion of sports through future naming rights.

Nov. Launched RS Virus Diagnosis Kit, QuickNavi™-RSV2

Denka Group Company, Denka Seiken Co., Ltd. released their RS Virus Diagnosis Kit, QuickNavi™-RSV2, on 12 November. The RS virus affects a huge number of infants between the ages one and two and has the potential to cause serious respiratory problems. Diagnoses can be made using secretions collected from nasal swabs, and with our new product, we have managed to cut the diagnosis time from eight minutes to just five.



Dec. Director Shimizu gave lecture at Highly-functional Ceramics Expo

At the Highly-functional Ceramics Expo, which was held from December 4 to 6 at the Makuhari Messe Event Hall, Mr. Shimizu, Director & Chief Scientific Officer gave a special lecture under the theme of "Denka's Approach to High-performance Materials and Future Business Strategies." With around 500 audiences, he introduced Denka's foundation technologies for highly-functional ceramics, as well as new materials that are under development for further specializing in the future.



关爱共同家园

Treasuring the family that you live with



China

Liu Ting
Administration Department
Denka Inorganic Materials (Tianjin) Co., Ltd.

I love cooking and yoga!

Joined the company in 2013. As an administrative manager, she is responsible for areas of work such as general affairs, HR, and IT, and also supports financial work. Recently, she has been promoting the creation of QMS.

As one part of Denka's Corporate Philosophy is to "Give due consideration to environmental concerns," I put my all into initiatives that reduce the burden on the environment such as the construction of hydroelectric power plants. In China, which while seeing rapid economic development is also facing a number of environmental issues, the way Denka tackles things becomes an example for other companies. I am really proud to be able to work at a company that has such a high sense of social responsibility.



How are things in China, Liu?



USA

Michiyo Suzuki
Denka Seiken USA, Inc.
Denka Corporation USA,
California office

ものづくりへの姿勢

Approach to manufacturing

I love cats! I love music!

Joined in 2015. She is involved in the logistics of Denka Seiken products, preparation for various exhibitions and also contributes to departments such as the general affairs in the DCUCA office.

It has been a fast four years since I started working here. In that time, I have had exchanges with various different kinds of people. The thing I have felt most strongly every day since coming here is that I am completely surrounded by colleagues who work sincerely, and seriously engage in manufacturing. I'm always impressed by them—they're so cool! I can't offer much, but I would like to help wherever I can.

How are things in the USA, Michiyo?



Strong Connection at Work!



UAE

Julie Ann Nario
DENKA MIDDLE EAST AND AFRICA FZCO

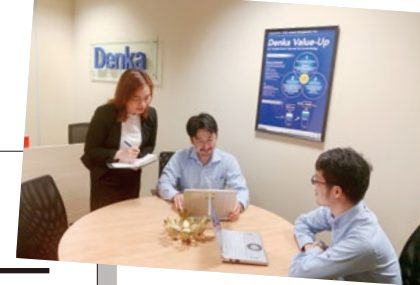
Positive, flexible, and considerate

Joined the company in 2016. She carries out various kinds of administrative tasks and office work to ensure that all employees can do their jobs without any problems.

I am very proud of our 100 years of history and the fact that we are a corporate group that embodies admirable principles and values. In my current workplace, there is an atmosphere of respecting and understanding each other's diverse cultures, and I think our consideration for our customers and determination to continually grow are wonderful. Working at Denka always makes me feel like I want to make even more active contributions!

How are things in the UAE, Julie?

How are things in Korea, No?



Korea

No Hyeon-Seung
Product Development Unit
Product Development Department
Denka Korea Co., Ltd.

제품력과 팀워크

Products and teamwork

I am quite diligent.

Joined in 2015. He is responsible for sales of Special Conductive Materials and Special Cement Additives.

Denka's products contribute to people's daily lives in all areas of society. In my field of sales, the products use technology that other companies do not possess to meet the demanding needs of customers, and so I always feel proud. Our field of business is also quite wide, so we share a lot of information with our colleagues, and I think being able to approach our customers from a variety of angles is another strong point. Denka is a place where you can really enjoy your tasks while getting involved in teamwork.

How are things in Singapore, Faizal?



Singapore

Faizal Jefferi
Denka Chemicals Holdings
Asia Pacific Pte Ltd (DCHA)
Group Engineering

Denka has unique technologies!

I like Manchester United and Japanese comedy

Joined in 2019. As Project Engineer, he supports the development of new projects including the improvement of existing plants.

Denka is a company that contributes to a better future through unique technologies. I am involved in the production of a plant for one of those technologies—Spherical Alumina. Its high level of sphericity and thermal conductivity set it apart from other products, and by efficiently cooling lithium-ion batteries with this material, we can extend the range of electric vehicles, additionally helping to reduce global warming. When I think about those things, I get really excited for my work every day.



LINK GLOBALLY, LINK FUTURE

Group members around the world, working toward the future of Denka

The Denka Group has 6,000 employees around the world. We posed the following question to members from different countries.

Theme What about Denka makes you proud?

ONE TEAM

I've started worrying about how much hair I'm losing!

Joined in 2010. As part of the sales team, I am primarily responsible for the domestic side of the convenience store chain, 7-Eleven, aiming for the acquisition of new commercial rights for food containers.

I am proud of the way people from parent companies and subsidiaries gather together, aiming for the same goal through all the stages from the raw materials to the final, processed product. Currently in the food container industry, environmentally friendly materials and containers are being requested more than ever before. In the future, I would like to develop more and more new materials that meet customers' demands such as PLAPS and CLEALEAD, and as One Team, continue to deliver specialty products.



Japan

Taichi Shibata
Group 2, Sales Department 2,
Sales Division
Denka Polymer Co., Ltd.

How are things in Japan, Taichi?