March 2020 | VOL.1

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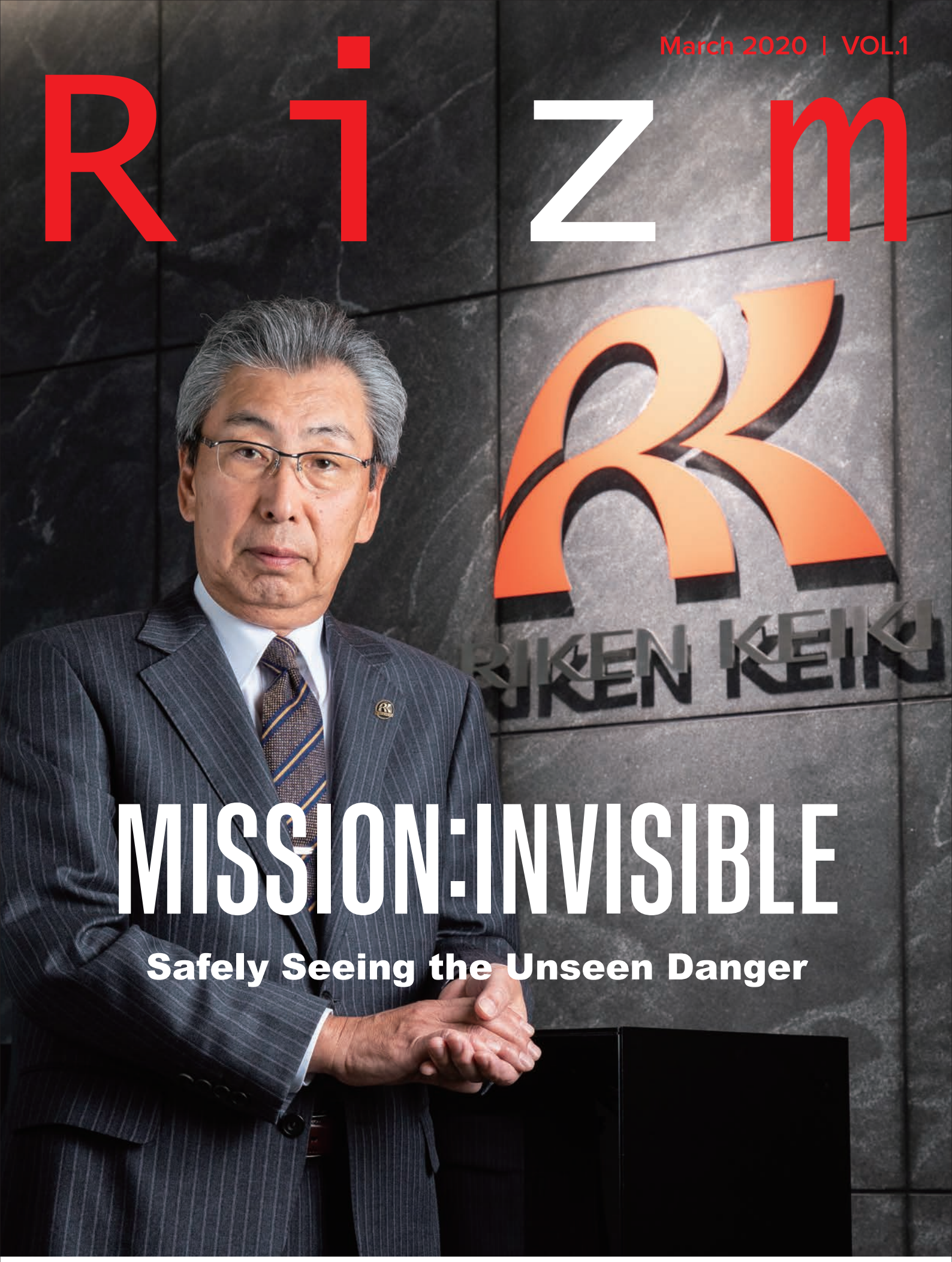


MISSION:INVISIBLE

Safely Seeing the Unseen Danger

RIKEN KEIKI Co.,Ltd.

MISSION: INVISIBLE

Safely Seeing the Unseen Danger

The safety and the sense of security of today's society is not just a given.
The various types of large-scale infrastructure, on which the comfort and convenience of urban living are based, are supported by robust systems that ensure their safety and functionality.
Similarly, it is also essential in the various industrial fields that serve as the basis of society's progress and prosperity to take adequate measures to protect people and the environment from potential dangers and risks.
In particular, the unseen dangers of an explosion of flammable gases and deadly pollution by toxic gases are constant threats in the core industries using the energy sources of petroleum, liquefied natural gas, nuclear power, and hydrogen, and the safety and the security of mind of society can only be said to be protected once these can be detected in advance to ensure visible sense of security.
As an organization established in 1939 with roots in the Japanese national science and research institute RIKEN, we strive, based on the slogan "MISSION: INVISIBLE; Safely Seeing the Unseen Danger," to create safe working environments for workers as a leader in the development of industrial gas detector equipment.
We are RIKEN KEIKI.

Founding Message

Last year, RIKEN KEIKI Co., Ltd. decided to establish a new corporate bulletin to mark the 80th anniversary of its founding. This publication you are reading today is the first issue of the new bulletin.
The title Rizm is meant to evoke the essence, or "-ism," of RIKEN KEIKI, represented by its first initial "R" and with the "s" changed to a "z" to convey a spirit of inquiry. This title symbolizes the ideas incorporated into our technologies, products, and corporate activities.
Based on the editorial concept of our corporate mission, "MISSION: INVISIBLE," this bulletin Rizm will communicate, from various approaches, our history of more than 80 years, with roots in the Japanese national science and research institution RIKEN, our current ever-changing state as a global enterprise, and our future vision for the coming century, through special features, interviews, regular features, and other content. We hope many readers will find it interesting.

March 15, 2020
Rizm Publication Committee
RIKEN KEIKI Co., Ltd.

Fulfilling our Mission to Contribute to Society by Protecting it from Unseen Dangers, with Pride and a Sense of Mission from Our Roots in a National Research Institute

RIKEN KEIKI was founded in 1939 as a part of the RIKEN Concern, a group of about 60 business enterprises established to commercialize the results of inventions and research by the Japanese national research institute RIKEN. Since then, it has devoted itself consistently to the development and manufacture of industrial gas detector equipment. Below, President Hisayoshi Kobayashi discusses enthusiastically the Company's founding vision and history, its responsibilities to industry and society as a whole, its corporate mindset, its technological development capabilities as represented by Japanese quality standards, its activities in global markets and its future prospects.

Carrying on Our Roots

The origins of RIKEN KEIKI Co., Ltd. (hereinafter "RIKEN KEIKI") are in the private foundation, the Institute of Physical and Chemical Research (hereinafter "RIKEN"), Japan's largest national science and research institute.*1 Of course, even our newest employees are aware of this fact. But they might not be aware of our founders' vision. This is why I incorporate this vision, which we should never forget, into my message on the commemoration of our founding on March 15 each year, to ensure that our respect for our roots remains strong.

At the same time, we continue to maintain close ties to RIKEN. RIKEN has an internal conference focused on thinking about the organization's future, in which it carries out continual exchange with industry representatives. We too participate in this conference each year, sharing our visions for the future.

While we marked our 80th anniversary last year, in 2017 RIKEN celebrated its own centenary. Reflecting the fact that the Imperial household played a role in RIKEN's founding, His Majesty the Emperor even attended the centennial event held at the Tokyo International Forum.

I look forward to seeing the new progress that we will continue to make in the future while valuing our shared history with RIKEN and the roots behind the founding of RIKEN KEIKI.

Our Self-Confidence as a Technology Company

As I noted above, the history of our roots in RIKEN is of vital importance. But at the same time, RIKEN KEIKI also has self-confidence built on its status as a leader in the development of industrial gas detector and alarm systems over our 80-year history, and I believe that we have developed our own distinctive corporate mindset over this time.

Put simply, this is our self-confidence as a technology company. For this reason, to enhance this corporate mindset we focus proactively on the development of equipment and environments in product development sections, as well as on human resources development and promotion. At the same time, we strive constantly to take on new challenges through means such as taking leadership over the continual development of new products to meet new market needs.

On this point, even as we have continued to produce our main products of gas detectors, the energy used has changed with the times.

For example, the main energy source when the Company was founded between the 1930s and 1940s was coal, and the market was interested mainly in preventing explosions in coal mines. Later, as energy used changed and diversified to include petrochemicals, nuclear power and liquified natural gas, the need arose for gas detection suited to each of these energy sources. The newest energy source is hydrogen, and we expect increasing needs in this area in the future, as a renewable energy source.*2

Energy is essential to industrial progress. It is only when energy is available that such progress can occur. This is why we consider our aim of protecting people's lives and safety from gases arising in industrial production to be a vital corporate mission.

Developing the World's Smallest Portable Gas Detector

A particular challenge in responding to various customer needs until now has been the need to detect specific types of gases among a wide range of substances.

The only way to deliver such detailed options among detectors was through the development of brand new levels of sensor performance. Naturally, such advanced technology cannot be developed overnight. Still, we basically insist on developing and producing sensors, the heart of detectors, in-house.

From another perspective, this means that we are able to develop products in-house based on a thorough understanding of the distinctive properties of each sensor used. Our ability to develop integrated development and production lines through means such as the combination of circuitry and software reflecting consideration for the advantages and disadvantages of individual technologies is one of our greatest strengths. This is also what enables us to meet diverse customer needs, and it has led to the vital result of earning the trust of corporate customers, who know that they can consult first with RIKEN KEIKI when new needs arise.

One could say that the highly-advanced sensor technologies developed in the process of responding to customer needs for the detection of specific gases, as mentioned above, are what enable us to produce the world's smallest portable detectors today.

Delivering Japan Quality to the World

While the products we develop and manufacture are used in a wide range of industries, our market remains a niche one. Although the track record and trust we have built up in this market has enabled us to ensure a market share of roughly 70% in Japan, a look at global markets shows that our brand still does not seem as strong as it should be. For this reason, we began to enhance our approaches to global markets about three years ago, and we will aim to enhance our marketing further in the future as well.

Currently we have overseas Group facilities in the United States, Germany, China, Singapore, Taiwan, South Korea and Brazil. We are confident in the quality of our products and in the advanced proprietary technologies supporting them, and these have earned strong accolades in the market as well. Still, since our devices are intended for use in locations exposed to dangers, we face various hurdles, including not only the need to satisfy global detection standards, but also the need to enable specific types of examination in individual countries and regions. Shared standards mean that products will succeed or fail in the market based on their performance, ease of use, lifespan and price. While we do face challenges in competing on price, we are able to earn a strong reputation and trust once customers have used our products.

For these reasons, we are aiming to strengthen our brand power while further expanding our sales channels, based mainly on the dealer network under our current sales strategy. In particular, as we work to make further improvements to our maintenance and after-sales service, which are two of our strengths, we are also implementing thorough periodic training at the head office for staff from dealers around the world, so that they can acquire the after-sales service expertise that only RIKEN KEIKI can deliver, to give customers a true feel for what makes Japan quality stand apart from the rest.

Our Mission is Embodied in the Slogan "Safely Seeing the Unseen Danger"

In the future as well, we will work together throughout the Company toward our "MISSION: INVISIBLE," to ensure the safety and the sense of security of people in Japan and around the world through the development and manufacture of state-of-the-art gas detector and alarm systems to meet various needs.

(Date of interview: December 2, 2019)

*1 Known as the private foundation, the Institute of Physical and Chemical Research from its founding in 1917 to 1946. Now known simply as the Institute of Physical and Chemical Research (RIKEN).
*2 As defined by the International Energy Agency

MISSION: INVISIBLE at the Forefront

Interview with Engineers Behind the Innovation

GX-3R　　GX-3R Pro

Shuhei Ishida
Research and Development Div.2,
Research and Development Department

Kei Ono
Senior Chief Engineer,
Engineering Department

In-Depth INTERVIEW

In order to accomplish "MISSION: INVISIBLE," the first priority should be the continuous development and commercialization of leading-edge technologies. Two engineers at RIKEN KEIKI who are at the forefront of this effort—Kei Ono, Senior Chief Engineer in the Engineering Department, and Shuhei Ishida of Research and Development Div.2, Research and Development Department—related the story of their steady ten-year efforts in research and development of the GX-3R, an innovative new product released last year, which has not been unveiled until today.

A New Product that Sent Shock Waves Throughout the Industry

The GX-3R is the most-advanced gas detector released in April 2019. With a single unit, four gas components (combustible gases,*1 oxygen, carbon monoxide and hydrogen sulfide) can be detected at the same time. It is the world's lightest detector,*2 weighing only about 100 grams. It is also the world's smallest*2 portable-type, four-component measurement instrument that can be worn by a person. Compared with the company's previous model, this revolutionary new product is about 28% smaller by volume and about 23% lighter by mass, succeeding in a reduction both in size and weight. A gas detector equipped with leading-edge technologies with a size less than half that of competitors' products has had an impact on the industry.

However, this was not the only surprise. The GX-3R Pro, a higher-end model that was subsequently released, is capable of detecting five gas components*3 at the same time, while weighing only about 120 grams. In addition, its extraordinarily small body, inherited from its predecessor, is equipped with Bluetooth®, which enables communication with smartphones and tablets through a dedicated application. The measurement data on the detector can be sent immediately from the site via email.

Other newest features on the detector include a man-down alarm function that detects the movement of a person wearing the device and automatically sounds an alarm if the person does not move for a given period of time, a motion sensor function that automatically turns the display on the screen vertically according to the direction of the detector and a full dot matrix display supporting 11 languages. As a highly-functional compact gas detector that is worthy of the name "Pro," it boasts advanced specifications and performance that cannot be surpassed by other offerings.

New Technologies to Achieve the World's Smallest Again

"The strength of RIKEN KEIKI lies in its technologies to reduce both size and weight," said Kei Ono, Senior Chief Engineer, relating the story while expressing confidence on his face.

"The smallness of the GX-2001, the first model 19 years ago, and the GX-2009, its successor and then the world's smallest model, had a huge impact on the industry. Ten years have passed since the release of the GX-2009 and our constant efforts for size reduction bore fruit exactly in the 10th year. It is the world's smallest model today, the GX-3R."

Further downsizing the world's smallest size of its predecessor model was like stepping into unknown territory. How did they accomplish it?

"The heart of a detector is the sensor. It determines the performance of the device and therefore it had been an untouchable part for a long time. In order to further reduce the product size, however, there was no other choice but to reduce the size of the sensor."

Then, the days of trial and error started for everyone. Ono led the team, Ishida, a young and talented staff member of the Research Department, made a brave try at downsizing the infrared sensor, and other engineers of a different team tackled the sophistication of the chemical sensor.

"The most difficult part was the infrared sensor to detect carbon dioxide. An infrared sensor uses the mechanism of light absorption to detect gases and therefore needs a certain optical path length, which makes the device physically larger. We drastically reviewed the internal structure and tried to significantly improve how light was reflected and how many times."

As a result, we succeeded in maintaining the optical path length in a small capacity, producing one of the world's smallest infrared sensor. This enabled the product to be equipped with a carbon dioxide sensor, which had not been included in the previous models.

"This size reduction technology can be applied not only to infrared carbon dioxide sensors, but also to electrochemical carbon monoxide and hydrogen sulfide sensors. We came to think that if sensors had the same principle, we could combine the common elements of the two to produce one device."

This inspiration led to the development of the first sensor in the country detecting two different types of gases.

It enabled successful detection of carbon monoxide and hydrogen sulfide at the same time. This was the moment when the final door was opened to the realization of the development of the world's smallest device.

Tireless Pursuit of the World's Highest Performance

While size reduction was a central challenge in product development, it seems that meticulous efforts were repeatedly made to achieve higher performance.

"Improvement of the quality of a device is not simple but has a variety of aspects. We reexamined every aspect of the device, including accuracy and speed of response in the first place, followed by product life, durability and the temperature range in which it can operate," Ono explained.

"Above all, this is a device that assumes a heavy responsibility of detecting unseen dangers and protecting human life. Robustness is especially important because it is expected to be used in a danger zone."

Prior to shipping, the strength test was repeated over and over again by dropping the device from a height of 7 meters.

"Basically, joints are easily broken. We try not to fix the joints and take every measure to absorb the drop impact."

They investigated the features of the products of competitors all over the world to obtain, maintain and further increase the accuracy, functionality, durability and reliability, surpassing competitors in every aspect. Their efforts to step up to the next stage never stop.

This is the process where the GX-3R, the world's smallest portable gas detector with the highest performance, was produced.

The Foundation for Further Improving Products

This is the fifth year since Ishida, currently working in the Research Department, joined the company. He has been engaged in the development of the GX-3R and its higher-end model with more advanced functionality, the GX-3R Pro, with Ono.

"I have been involved in the research and development of the GX-3R Pro since I joined the company. I was very fortunate that I could be a part of this important project of the world's highest level. Research is interesting. I learned the importance of having close communication and cooperative relationships with other departments in the development process."

Ono shows a facial expression that is gentle, warm and full of expectation, when he looks at Ishida who is speaking with twinkling eyes. It eloquently expresses the feeling of trust, team spirit and mutual respect beyond seniority in the company. In fact, Ishida was involved in the development of the sensor technology that was the key to the successful size reduction.

The existence of senior colleagues who teach and train young engineers, delegate responsibility to them and watch their trials and tribulations—as well as having a free and frank corporate culture—also served as the foundation for further improving the products.

Operating Time is the Challenge for the Future

"We broke the previous world record for size and performance. Still, we have a challenge to overcome." Ono added when the interview was nearing its end.

"If the product size is small, it means the mounted battery is also small and the operating time will be limited as a result."

However, the sales of the product are not yet expected to become large enough to develop batteries in-house or place a custom order. For this reason, they choose multiple reliable domestic batteries as candidates, repeat a variety of tests and select and mount the most suitable battery with the highest quality on each product.

"Since lithium-ion batteries are very dangerous, we select the best-balanced one from the viewpoint of reliability in addition to size and operating time, and incorporate them into our products. We believe that this minuteness is a part of the design that realizes the world's highest performance."

Ono and Ishida are always eager to obtain information that helps improve the performance of the devices for protecting human life and are at the forefront of product development. Their efforts to accomplish MISSION: INVISIBLE will continue.

(Interview date: December 17, 2019)

*1: "Combustible gases" here are 26 types of combustible gases including methane, hydrogen and acetylene.
*2: "World's smallest and lightest" portable-type four-component gas monitor and a five-component gas monitor (according to our research).
*3: "Five gas components" are combustible gases, oxygen, carbon monoxide, hydrogen sulfide and sulfur dioxide in many cases. The fifth component is interchangeable.

RK TECHNOLOGY TREND

The world's smallest and lightest* portable gas detectors

GX-3R / GX-3R Pro

*Portable 4-component/5-component gas detector (according to our own research).

The product in the photograph is the GX-3R (actual size).

Attachment of a Gas Detector to the "Breathing Zone" Ensures the Safety of Workers in Dangerous Worksites

In the United States, the attachment of a gas detector in the "breathing zone," which is the area close to the mouth and nose including the collar and chest, is recommended for workers working in dangerous worksites with inflammable or toxic gases, such as explosion-proof areas of plants and underground construction sites, in order to ensure worker safety. In Japan as well, similar needs are expected to increase in the future. An important point in addressing these needs is the downsizing and weight reduction of the detector.

In 2001, RIKEN KEIKI released the "GX-2001" gas detector, which can solely detect gas types each consisting of up to four components. The revolutionary size of the product, which boasted the world's smallest size and lightest weight at the time, broke the conventional wisdom on portable gas detectors that they were big and heavy and were conventionally attached at the waist or another part of the body. In the product's successor, the "GX-2009" released in 2008, the company pursued downsizing and weight reduction.

Development of New "R Sensor" Achieved Further Downsizing

The latest portable gas detector, the "GX-3R" released in April 2019, has achieved further downsizing thanks to the new "R sensor" that merges RIKEN KEIKI's substrate technologies and state-of-the-art technologies. One of the keys to this achievement is the success of the development of a dual sensor that solely detects carbon monoxide and hydrogen sulfide at the same time. This made it possible to reduce the number of installed sensors, thus achieving downsizing and weight reduction of approximately 30% compared to conventional products.

Furthermore, a product design with a water and dust resistant structure and the robustness to withstand a drop test from a height of 7 m has been achieved. With a capability to select the target combustible gas from 26 types in accordance with the worksite conditions and directly measure/read gas components, convenience has also been enhanced. Through these measures, work efficiency at worksites has been improved.

"GX-3R Pro" High-End Model with Bluetooth® Communication and Advanced Specifications, Capable of Detecting Gases Consisting of Five Components

The "GX-3R Pro" high-end model that was released along with the "GX-3R" is capable of detecting 4-component gases including combustible gases, oxygen, carbon monoxide and hydrogen sulfide, as well as five-component gases including carbon dioxide and sulfur dioxide.

Furthermore, it is the first gas detector incorporating Bluetooth®, a short-range wireless communication standard, available in the Japanese market. Once linked with a smartphone or tablet with the dedicated application installed, when an alarm is issued, the product can immediately transmit e-mail to up to 100 pre-registered addresses to make notification of the emergency situation. The alarm functions with e-mail transmission capability include a gas alarm function, as well as a man-down alarm function that sounds an alarm when the product detects that a worker has not moved at all for a certain period. Thus, the product has made it possible to promptly and proactively share information on emergency situations.

Planned to Acquire "EN standard certification," a European Standard set by Major European Companies as a Condition for the Adoption of a Product

After their release, the "GX-3R" and "GX-3R Pro" have received accolades from home and abroad, and we have received orders at a pace exceeding our expectations. We are also planning to acquire "European Standards," which is a European standard set by major European companies as a condition for the adoption of a product.

Through the development and commercialization of new technologies, RIKEN KEIKI will continue to contribute to the "creation of safe working environments for workers."

SUSTAINABLE DEVELOPMENT GOALS

Sustainable Development Goals (SDGs) refer to the global goals aiming to achieve a better and more sustainable world by 2030, consisting of 17 goals and 169 targets, as stated in "The 2030 Agenda for Sustainable Development," adopted at the United Nations Summit in September 2015.

Our company endeavors to create safe working environments for workers, by developing and manufacturing state-of-the-art gas detector and alarm systems. In this way, our businesses contribute to Goal 8, "Promote rewarding and humane work," under the SDGs.

Our company downsizes its products by downsizing sensors, reducing the number of parts, and making other efforts in product development. These measures lead to waste reduction, thereby contributing to Goal 12, "Ensure sustainable consumption and production patterns," under the SDGs.

CSR REPORT

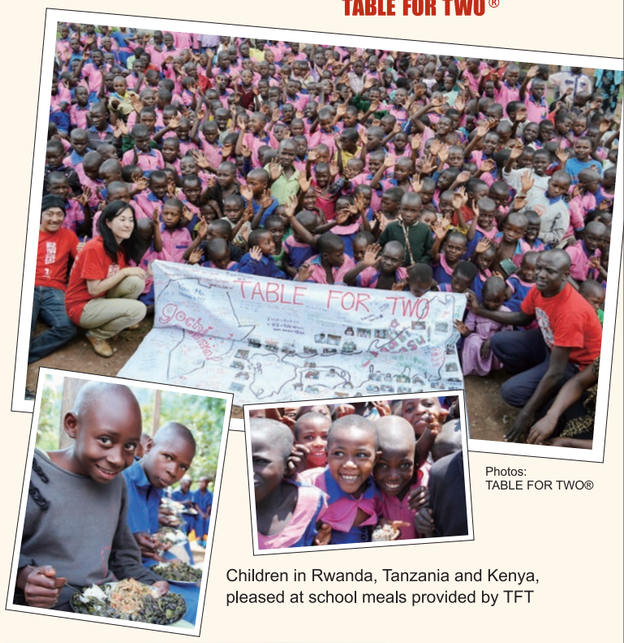
We Aim to Deliver approximately 90,000 School Meals to Children in Africa and Asia Every Year.

TABLE FOR TWO®

TABLE FOR TWO® is program in which a partner company offers healthy meals at its cafeteria, and donates an amount equivalent to one school meal in developing countries (20 yen) for the price of each meal purchased in the cafeteria.

As an endorsement to this program, RIKEN KEIKI started the initiative at its cafeteria in the head office and the development center in September 2019. The program also offers an initiative to donate a part of the sales from vending machines. We have also installed vending machines supporting TABLE FOR TWO® in the head office, the development center, and other business offices as part of program activities.

Over the first three months of program participation from September to November 2019, our company donated more than 400,000 yen from meals served in the cafeterias and the beverages sold from the vending machines. Through the TABLE FOR TWO® program, we aim to deliver approximately 90,000 school meals to children in developing countries in Africa and Asia every year.



Photos: TABLE FOR TWO®

Children in Rwanda, Tanzania and Kenya, pleased at school meals provided by TFT

Interview with our person in charge of TABLE FOR TWO®

Takao Uchida

Manager, Administration Section, Development Center

Participation in ESG, SDGs, etc., is natural as a manufacturer of disaster prevention devices that aims to establish an environment where people can work with peace of mind. In the consideration stage of this program, we thought that it would be necessary to encourage voluntary participation and daily activities by many employees, in addition to donations by the company.

When we actually introduced the program, we started a system that donates 10 yen for each beverage purchased from the 18 vending machines installed in the head office, the development center, the Hakodate Plant, etc., in addition to the donations from sales at cafeterias.

Among the approximately seven billion global population, approximately one billion people are suffering from starvation, while two billion suffer from obesity and other lifestyle-related diseases caused by food. TABLE FOR TWO® was conceptualized in Japan and has been globally spreading for the purpose of correcting such "food imbalances." We hope to continue supporting this program with the help of all our employees.

The initiative of TABLE FOR TWO® contributes to the seven goals below under the SDGs.

Examples of healthy meals served in the program

Vending machine that donates 10 yen for each beverage purchased

VOICES Comments by employees

I like the variety of healthy dishes, including meat and fried food.

TABLE FOR TWO® gave me an occasion to start checking information related social contribution that I haven't been concerned about before.

I hope that this initiative provides an opportunity to start considering participation in volunteering.

Employee cafeteria in the Development Center

–Vol.1–
UNITED STATES OF AMERICA

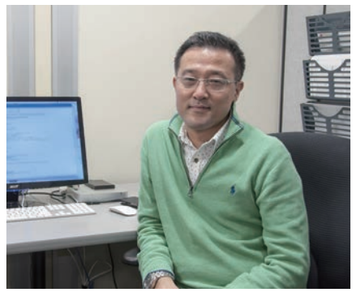
Overseas Representative Report

RK GLOBAL FRONTLINE

RKI INSTRUMENTS, INC.

Based in "Union City," where high-tech enterprises gather along the West Coast, 80 cream-of-the-crop employees from diverse backgrounds powerfully support our sales network covering approximately 230 companies in North America as the most important market.

"RKI INSTRUMENTS, INC. was established in 1994, jointly funded with RIKEN KEIKI Co., Ltd. It is located in Union City, right in the middle of San Francisco and San Jose, two large cities along the West Coast of the United States. The city is extremely comfortable to live in, with milder temperature swings than in Japan, although the air is dry in summer and there is a lot of rainfall in winter," said Tadaaki Hirano, who is entering his seventh year as an expatriate from the Overseas Business Department.
The report from the West Coast, USA, is the first article of our new series starting in this issue, "RK GLOBAL FRONTLINE."



[Local reporter]
Tadaaki Hirano
International Sales Liaison Manager,
RKI INSTRUMENTS,INC.

The Diverse Human Resources Gathering in the City of High-Tech Enterprises is Our Strength.

Union City is home to GAFA and other high-tech enterprises, and human resources gather from a wide variety of countries. The approximately 80 employees who comprise RKI also have a diverse background. This is a natural style in this city, demonstrating the American generosity that accepts diversity. Heated arguments occur from time to time due to conflicting opinions, but we have things to learn from each other while making our own assertions.

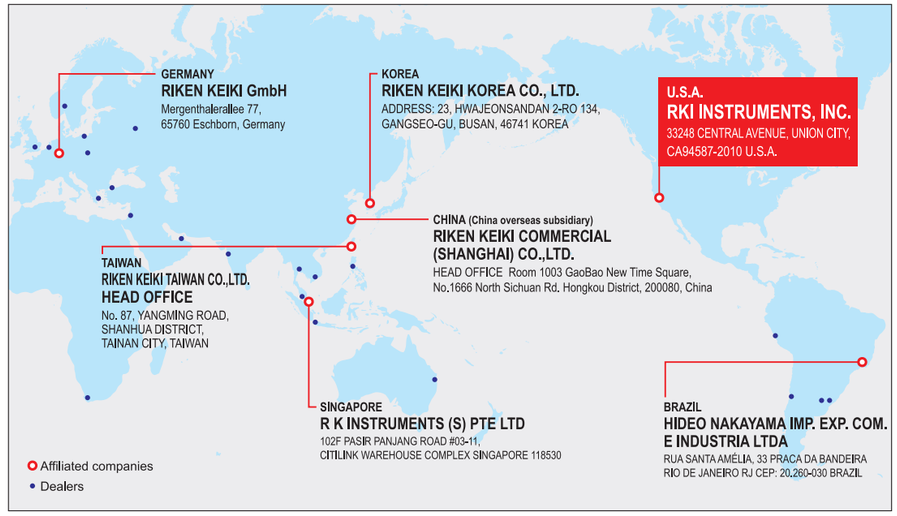
With a Three-Hour Time Difference from the East Coast, We Differentiate Through Customer Services.

RKI has its only office here in Union City, which exhaustively supports sales reps and approximately 230 contract dealers located across the U.S. from the West Coast. Due to the three-hour time difference with the East Coast, some of our employees come to the office for customer service at 6:00 a.m. At an early stage after its establishment, RKI mainly marketed maintenance parts for products from RIKEN KEIKI. However, we considered that it was necessary to develop products that would satisfy the needs of the North American market, and jointly developed exclusive products for North America, utilizing sensors as the strength of RIKEN KEIKI. These products were added as a new pillar of our marketing. In the meantime, our familiarity is lower than that of competitors that are based in North America. Therefore, we have differentiated ourselves by establishing robust and rapid customer services that securely support users to provide high-quality maintenance.

We Continue Taking on Challenges under the Customer-First Principle, supported by the Three Pillars in the Most Important Market.

In this way, 1) RIKEN KEIKI Products, 2) Jointly Developed Products and 3) Enhanced Customer Services were established as the Three Pillars of RKI, and have supported its continuous development over the 25 years from its establishment. For RIKEN KEIKI, which pursues globalization, North America is the most important market. As the base in this market, RKI must sufficiently fulfill its expected role. To this end, it has a number of challenges to overcome, including the continued development of new products and penetration into the market shares of competitors. I have begun my seventh year in the United States, and I am recognizing my heavy responsibility as a part of this role. Under these circumstances, I am busy undertaking my tasks, and I return to our Customer-First Principle when I have any questions.

■RK GLOBAL NETWORK



RKI INSTRUMENTS, INC.
3 PILLARS

- RIKEN KEIKI Products
- Jointly Developed Products
- Enhanced Customer Services

Clothes and Parties

Nobody wears ties and jackets during everyday work hours. We usually wear casual pants and long-sleeved shirts. On Fridays, we dress more freely for "Casual Friday." We mainly wear ties and jackets for parties. Especially for the Xmas party held in our winery, we dress up. I also wore a bow tie for the special occasion.

We also have a tailgate party, a special American event, around the end of summer every year. A tailgate party is a barbecue party held in the parking before the start of a baseball game, etc. It is amazing that they roast huge cuts of meat in the parking lot! The employees of RKI go to A's (Oakland Athletics) games, but some only enjoy this party and go home without watching the game.

Tracing Back the History by the Products

RIKEN KEIKI's history #1 as told by its products

1927

The Memorable First Product is the Very Starting Point of the Interferometer Method Gas Detector. Commonly Known as an

"Explosion Meter"

RIKEN KEIKI Co., Ltd. was established in 1939. Prior to that, a device that would later be called the "Type 1" (the first product) was born in 1927. It was an interferometer method gas detector, or a so-called "explosion meter." Here we introduce it in this first article of the "Tracing the History of RIKEN KEIKI with its Products" series.

The person who was engaged in the development of this product was Jiro Tsuji, the chief researcher at the Institute of Physical and Chemical Research at that time. Tsuji, who was engaged in the analysis of gases contained in the tanks of oil tankers to prevent oil tanker explosion accidents, which frequently occurred at that time, came up with the idea of applying the refractometer that had already been developed at the Institute of Physical and Chemical Research (a refractometer uses the interference of light waves for measurement). He continued to conduct research, and finally succeeded in the development of the interferometer method gas detector. It was a groundbreaking invention, literally the starting point of the interferometer method that has been inherited up to now as the principle of the gas detectors of RIKEN KEIKI.

From "Explosion Meter" to "RIKEN Gas Detector"

"Explosion meters," although originally developed for tankers, later saw demand from an unexpected party. It was a request from a mine specialist to improve the meter to be robust enough to withstand use in a coal mine. To meet the specialist's request that the device be usable in an environment subject to temperature differences of several dozen degrees between the ground level and underground, Tsuji repeated trial and error to improve the robustness of the device and finally modified it by housing it in a strong cast-aluminum case to make it portable. As a result of this improvement, in 1935, 40 of the devices were introduced to Shinhoronai Coal Mine in Hokkaido. At this point, however, the name "Explosion Meter" was changed to "RIKEN Gas Detector," because the mine workers eschewed the word "explosion" used in the device name.

Exhibition at Paris Exposition

After this, in response to pressing requests from the mining industry, the RIKEN gas detectors were made smaller and lighter and improved to withstand higher pressure and greater temperature changes, and in 1937, the "Type 4" RIKEN gas detector was born. In the same year, Jiro Tsuji, entrusted with the exhibition of Japanese scientific inventions at the Paris Exposition, flew to France carrying the "Type 4" with him.

In this year, the "Type 4" quickly spread to coal mines throughout the nation due to the synergy effect of the formulation of the government's coal production demand increase five-year plan in the same year and the increased publicity surrounding the product following its exhibition in Paris. As a result, the product came to be known by the common name of "RIKEN," and overseas the product came to be known as [ráiken].

Influx of Orders, Establishment of RIKEN KEIKI Co., Ltd.

After the development of the "Type 4," Tsuji completed the development of the world's smallest interference refractometer, the "Type 5," which was half the size and weight of the "Type 4." Against a backdrop of the coal mine accidents that frequently occurred at the time, there was an influx of orders for the "Type 5." Following the generation of such massive demand that could not be handled solely by the Institute of Physical and Chemical Research, RIKEN KEIKI Co., Ltd. was established on March 15, 1939 after the purchase of Fukoku Machinery Co., Ltd., which was located in Azusawa-cho, Itabashi-ku at that time.

Jiro Tsuji, who developed the "Type 1" to "Type 5" explosion meters, participated in the establishment of RIKEN KEIKI as a board director along with Kenichiro Hayashibe, who became the company's first president. Tsuji became the company's second president in 1944. (Continued in article #2)

1927

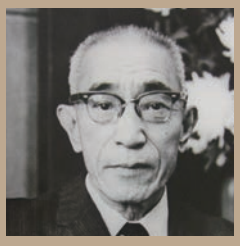
Commonly known as an "explosion meter," the device was originally developed for tankers at the Institute of Physical and Chemical Research

1937

The "Type 4" exhibited at the Paris Exposition

The "Type 5," the world's smallest interference refractometer at the time, for which there was an influx of orders

Kenichiro Hayashibe, first president



Jiro Tsuji developed the RIKEN gas detector. He later became the company's second president.

Front gate of RIKEN KEIKI Co., Ltd. (around the late 1960s to early 1970s)

RIKEN KEIKI Co., Ltd.

RIKEN KEIKI

We are a pioneer in creating safe working environments for workers.

The magazine "Rizm" First issue
Published March 15, 2020

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