azbil

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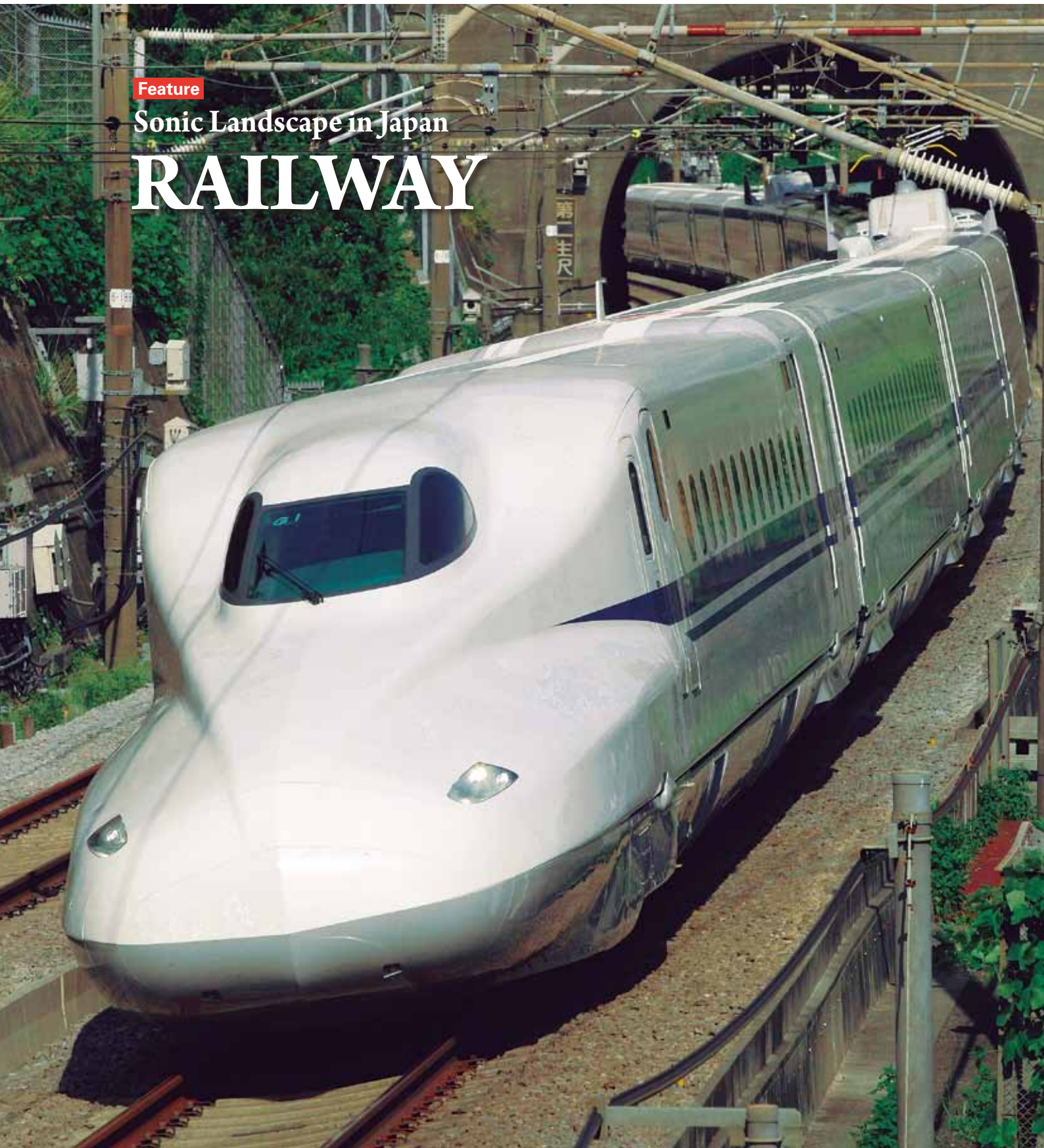
azbil FIELD **Narita International Airport, Terminal 2**

azbil MIND **Aiming to provide new value that meets customers' needs through pursuit of "human-centered automation"**



Feature

Sonic Landscape in Japan

RAILWAY

Sonic Landscape in Japan

鉄道 RAILWAY

【GatanGoton】 ～がたんごとん

"GatanGoton" is a Japanese onomatopoeic word that describes the rhythmic sound and vibration of a train running on the track. With the improvement of rail joints, the sound and vibration have gradually decreased, but this particular onomatopoeic word is used by both kids and adults to describe how trains run. For many Japanese people, trains are a common method of transportation.

Railway routes that let you enjoy superb scenery

We have selected local railway lines, which many want to take at least once even if they are Japanese, for you to fully enjoy the unspoiled nature and traditional streetscape. You will surely feel the rhythmic "*GatanGoton*," while traveling on one of these railway lines.

Soya Main Line
This is the northernmost railway line in Japan. The line runs in the wilderness to its last stop.

Yamaguchi Line
The line rolls through the town of Tsuwano that has a beautiful streetscape. Some of the trains are towed by a steam locomotive.

Koumi Line
The line runs through the old-growth forest in the Yatsugatake Kogen (highland).

Gono Line
The line stretches along the Sea of Japan coast in the northwest area of Japan's main island.

The Japanese railway that amazes the world

The world's largest number of passengers transported

The annual number of passengers transported by train in Japan is 899 million (in 2009), the largest in the world. The second is India's 652 million (in 2008), but as the Japanese population is 128 million, which is about one-tenth of the Indian population, there is an overwhelming difference in the volume of passenger transportation by train between the two countries. Especially conspicuous fact is the volume of passenger transportation on the main routes in Tokyo, the capital of Japan, and Osaka, the second largest city in Japan. The number of incoming and outgoing passengers at a terminal station is simply extraordinary. Shinjuku Station is used by about 3.6 million passengers per day and listed in the Guinness Book of World Records as the world's busiest transport hub.

The Japanese railway transportation capacity is without parallel in the world. The *Yamanote Line*, a loop line that runs around the central part of Tokyo, carries 3,000-4,000 passengers at one time on a 10-car train. The volume of passenger transportation during peak hours such as commuting hours reaches about 100,000 passengers one way per hour. Previously, some of the *Yamanote Line* trains had cars, in which all of the passenger seats were foldable and storable on the wall. During peak hours, all passengers continued to stand and they got so crammed that the six doors on one side of the car sometimes could not be closed. The scene was often shown as a strange routine in Japan and viewed as bizarre.

Even in times of high congestion, passengers follow rules and order is maintained. It is usually safe inside a passenger train. There are many people who doze off without taking safety precautions even late at night. The risk of robbery is relatively low even if a passenger is in a vulnerable condition. It is also worth noting that the train cars are kept clean and without graffiti or damage.

Efforts are made toward punctual operation: Trains arriving and departing on time to the second

Another high lighted thing about Japanese railways is their punctuality. In many countries, 10 minutes delay is regarded as an on-schedule operation. In Japan, however, when a train is delayed by just 5 minutes a message of apology would be announced. The *Tokaido Shinkansen* is a high-speed passenger train that travels a distance of about 550 kilometers between Tokyo and Shin-Osaka. Although during morning and evening hours, there are 10 services every hour, that means, trains are operated in a very small time interval, the average delay per service is surprisingly as small as 36 seconds. *Shinkansen* drivers make efforts to arrive and depart on time to the second. The hidden ingenuity to realize the above punctuality is the car interior cleaning system, which efficiency enabled the train that has just arrived at the terminal to depart right away on time. You can see the highly-trained cleaning crew clean up inside the cars in a thoroughly streamlined manner from the platform of a terminal station such as Tokyo. The *Shinkansen's* operation system and cars have been exported to Taiwan, the UK, and other countries, but some say that this particular cleaning system should be as well to export together for the smooth operation of the trains.

The Japanese railway technology has been rapidly progressing. In 2027, the *Linear Chuo Shinkansen*, using superconducting magnetic levitation train (linear motorcars), is scheduled to start its service between Shinagawa and Nagoya, covering a distance of about 290 kilometers. The train will run at a speed of 500 kilometers per hour, which is twice as fast as the conventional *Shinkansen*. Thus, it will take only a minimum of about 40 minutes for the new train to travel the distance instead of the usually required time of about 100 minutes. The linear motorcar, which has been called a vehicle of the future, is becoming a reality. Someday, we may remember the old days, saying, "There was a time when trains ran '*GatanGoton*'."

■ The secrets of N700A, the latest model of *Shinkansen*

The *Shinkansen* continues to evolve based on the best of the technologies. This section focuses on the evidence of the evolution presented by the latest *Shinkansen* model.

● The brake system plays the key role in the safe operation of the railways. The "center-mounted brake disc" has been adopted, which enables stable deceleration from a high speed. Thus, the distance required to stop has been reduced by about 10 to 20 percent.

● The N700A is equipped with a "constant speed control system" that automatically controls the operation in accordance with the speed signal. The system calculates the effect of slopes and tunnels to automatically control the train speed. If the train operation schedule is disrupted for some reason, the system helps speedily make up for the delay.

● The electricity consumption has been reduced by 19% compared to the conventional N700 series. The N700A is environmentally friendly, as fully recyclable polyester has been adopted as a material for the cushion parts of the seats, which is the first among Japanese *Shinkansen* trains.

Narita International Airport, Terminal 2


Photo courtesy of Narita International Airport Corporation.

Narita International Airport has been serving an important function as Japan's premier gateway to the world for more than 30 years, ever since its opening in 1978. The airport has achieved significant energy conservation since 2008 by utilizing various types of data collected and accumulated by its Building Energy Management System (BEMS)* and by implementing a broad range of measures based on advanced technology.

Information from the BEMS boosts energy conservation

Narita International Airport is located in Narita City, Chiba Prefecture, and can be reached from Tokyo in about 40 minutes. It is Japan's gateway to 109 cities in 38 countries and regions (as of March 2013). Situated on the airport site, which measures some 1,145 hectares, are Terminal 1, Terminal 2, and the cargo terminal buildings, among others. The airport is used by over 33 million people per year (as of fiscal 2012). Under the brand name "WORLD SKY GATE_NARITA", Narita International Airport continues to enhance its twin roles as Japan's gateway to world, and as the Key hub international airport in East Asia, by expanding its network of international and domestic flights. In 2010, with the consent of the local municipality and residents, the decision was made to increase the arrival and departure slots to 300,000 per year in the future. This change aims to further improve the convenience of airport facilities in response to the diverse needs of airport users.

Mr. Tashiro said: "One of the key issues for the airport's management has been how to achieve energy conservation while maintaining comfort for users of the airport facilities." To fulfill this need, Azbil Corporation's building management system, savic-net™ 50, which had been used for the operation and management of the air conditioning system in Terminal 2, was upgraded to a new model, savic-net FX in 2008. At the same time as this upgrade, a new BEMS (savic-net FX BMS) was installed.

Mr.Izumi said: "With the installation of the BEMS, we increased the number of energy-related data measuring points. This has enabled us to grasp more detailed information on energy consumption in more finely divided area units. We aim to develop more efficient energy-saving measures with these detailed data."

Mr. Takahashi said: "Installation of BEMS stand-alone would not achieve the desired energy conservation effect. It is important to manually estimate the collected energy-related data and take appropriate measures based on assessment results. To do so requires advanced know-how for the verification of data and for review of measures based on assessment results."

Optimizing air conditioning units operation for the large space of an airport terminal

For the planning of energy conservation measures, alliance was established by three companies: Narita International Airport Corporation (hereinafter NAA), which operates and manages Narita International Airport; Narita Airport Techno Corporation (also known as Natech), which is in charge of maintaining and managing airport facilities; and Azbil Corporation, which has been utilizing its advanced building operation improvement know-how to provide support for the operation and management of air conditioning systems for terminal buildings and related facilities since the opening of the airport in 1978. This alliance enabled the maximum use of not only NAA and Natech's facility operating experience, but also Azbil's energy conservation support services and building management expertise.


The savic-net FX building management system, installed in the central monitoring room


The BEMS function (savic-net FX BMS) of savic-net FX is used for the visualization of energy consumption in the airport terminal. The data obtained was utilized to implement a series of energy conservation measures.

Mr. Fujishiro said: "As a first step toward implementing energy conservation measures, we focused our attention on the large-space air conditioning system, which was consuming a considerable amount of energy. We analyzed the condition of the indoor environment based on the data collected by the BEMS, such as temperature, humidity and CO_2 concentration level. Then, we optimized the air-conditioning units operation by minimizing energy losses resulting from the fan operation and the outdoor air intake without adversely affecting the level of comfort inside the building."

The savic-net FX was configured to receive flight information. According to flight arrival and departure times, the operation of air conditioning units is controlled to provide exact cooling or heating energy for each gate lounge and concourse. The savic-net FX contributes to reducing the operating time of air conditioning units without affecting the comfort of airport users.

Using energy conservation know-how to save electricity after the 2011 earthquake

The energy conservation measures for Terminal 2 achieved the intended results, and the next step was planned for the following year, 2011: to extend those measures to other areas and enjoy of greater energy efficiency. Soon after the year began, however, the Great East Japan Earthquake was happend.

Mr. Tashiro said: "The earthquake and tsunami caused power shortages, forcing us to take severe measures to minimize the electricity peak load, such as asking customers for their cooperation and understanding of a slightly less comfortable environment. Under such circumstances, we could utilize the maximum advantage of the results and experiences of our past energy conservation achievements."

Mr. Nagase said: "As the actual actions to shere the electricity peak, there were the change of temperature setting of air conditioning, adjustment of outdoor air intake into the building, and reduction of operating hours of ventilation fans for trenches (common ducts) and so on."

After post-earthquake emergency activities, energy conservation measures were extended to all areas of Terminal 2 in preparation for the summer, when power demand could be close to the supply capacity. As a result, these efforts produced significant energy conservation.

Mr. Mizuta said: "Azbil Corporation reports energy conservation result from a serirs of measures as needed. Each report contained numerous number of graph charts and the like for easy understanding. I think very highly of those reports, because they were designed for easy and immediate understanding of energy conservation effectiveness, issues, and other information."

Mr. Suzuki said: "When problems occer, Azbil representatives come immediately after we called, regardless of the time of day or night. We have fully relied on Azbil's service."

Mr. Tashiro said: "Taking measures at first, the effects will be rather perceptible. But, as we proceeding with implementation, gradually began running out of highly effective measures, and in general the energy conservation results tend to be less noticeable. As we continue our efforts, we are counting on the powerful support of Azbil's expertise and advanced operation improvement know-how."

Narita International Airport Corporation


Photo courtesy of Narita International Airport Corporation.

Head office address

NAA-Bldg., Narita International Airport, Narita City, Chiba

Establishment

July 30, 1966 (New Tokyo International Airport Authority)
April 1, 2004 (Narita International Airport Corporation)

Business line

Operation of Narita International Airport, retail businesses including the establishment of commercial facilities, facility rental, and the railway business.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glossary

✻1▶ BEMS (Building Energy Management System)
A system designed to minimize the energy consumption for an entire building or plant by automating the monitoring and control of energy consumed by facilities and equipment, including district heating and cooling equipment.

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Aiming to provide new value that meets customers' needs through pursuit of "human-centered automation"

In May 2013, Azbil Corporation unveiled a new medium-term plan for achieving its long-term targets for 2021, the 115th anniversary of the company. With the theme of delivering value in a new dimension globally, and by defining three growth fields for future business expansion, we aim to provide value unique to the azbil Group.

Formulating long-term targets and a new medium- term plan in order to adapt to changes in the global business environment

In April 2012, Yamatake Corporation changed its name to Azbil Corporation and also changed its management team. We also began implementing three basic policies: 1) **become a long-term partner for the customer and the community** by offering solutions based on our technologies and products; 2) implement **global initiatives** aimed at expansion into new regions and a qualitative change of focus; and 3) aim to become **a corporate organization that never stops learning** so that it can continuously strengthen its corporate structure. Guided by these basic policies, we have achieved fruitful results in our Building Automation (BA), Advanced Automation (AA), and Life Automation (LA) businesses by building relationships with new business partners through equity alliances, enhancing overseas bases, and reorganizing production structures.

Also, customers' awareness of the azbil brand and their understanding of our management philosophy of "human-centered automation" have remained high.

On the other hand, the financial crisis in Europe and slowing economic growth in the enormous Chinese market suggest that the structure of the global economy has been changing rapidly. In May 2013, to adapt to our business, we set a long-term target for fiscal year 2021 the tenth anniversary of the new azbil and the 115th anniversary of our founding: To become a top-class global corporate group that enhances the safety and security of its customers, helps to improve their corporate value, and contributes to resolving global environmental issues by focusing on humans and realizing a word of automation created by human ingenuity and technology.

Further promotion of the three basic policies set forth at the start of the new azbil

Under the new medium-term plan for achieving our long-term target for 2021, we will deliver value in new dimension globally and develop measures in line with the three basic policies set forth at the start of the new azbil.

We designated three growth fields for future business expansion: next-generation solutions for production and working/living spaces, in which our customers create value; energy management solutions that meet needs now and future; and safety solutions. By putting the azbil Group's unique products, technologies, and services to use, we aim to provide value to the customer and to **become a long-term partner for the customer and the community.**

As for **global expansion**, while continuing to expand into new regions and qualitatively changing our focus, we will configure the provision and details of our products and services according to the regional characteristics and growth stage of East Asia, Southeast Asia, India, the Middle East, South America, Europe, and the U.S. We will develop our global operations by building an optimal development, production and sales structure in each region we serve and by enhancing proposal capabilities, product customization, production structures, engineering, and services.

Changing our focus involves transforming businesses such as field instruments and control valves into a solutions business unique to the azbil Group to provide from product development to production, engineering, and services tailored to local customer needs.

Hirozumi Sone
President and Chief Executive Officer
Azbil Corporation

We will create a framework that allows the Group to put its abundant experience and skilled human resources to use on a global scale, as well as to create new value in such areas such as energy management and operations, while restructuring our engineering and the service business to facilitate growth in existing businesses and expansion into new markets.

Furthermore, we will upgrade our human resources system, cultivate global human resources, and enhance the ability of our employees to provide solutions, all as part of our aim to become **a corporate organization that never stops learning**. Azbil Academy, which was established in November 2012, is an institution that supports these changes.

azbil Group Management Plan

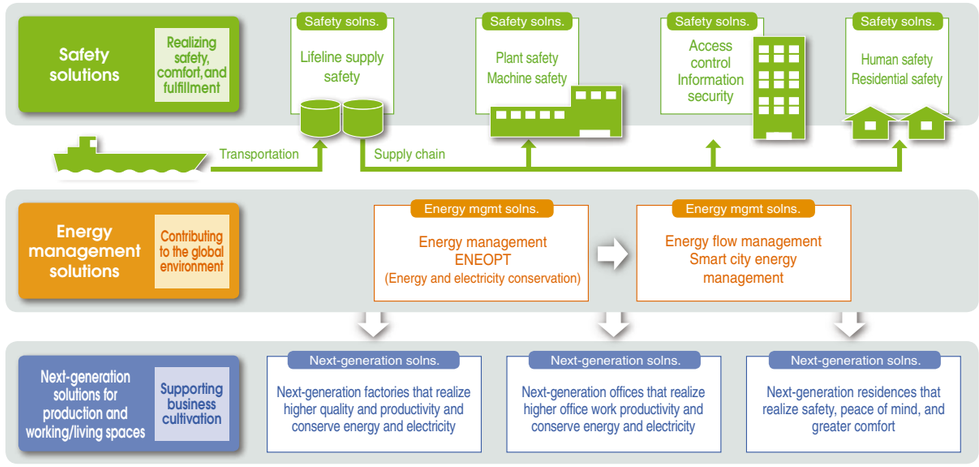
Group Philosophy
The azbil Group strives to realize safety, comfort, and fulfillment in people's lives and contribute to global environmental preservation through "human-centered automation."

Long-Term Targets (Fiscal Year 2021)
By focusing on humans and realizing a world of automation created by human ingenuity and technology, we will become a topclass global corporate group that enhances the safety and security of its customers, helps to improve their corporate value, and contributes to resolving global environmental issues.
Net sales: ¥300.0 billion Operating income: ¥30.0 billion ROE: Over 10% ＊ROE : return on equity

Three Basic Policies
1. Aiming to become a long-term partner for both the customer and the community through offering solutions based on azbil technologies and products
2. Taking global operations to the next level
Global initiative: Expansion into new regions and a qualitative change of focus
3. Aiming to become a corporate organization that never stops learning so that it can continuously strengthen its corporate structure

Overview of Our Three Growth Fields
- Next-generation solutions for production and working/living spaces
- Energy management solutions
- Safety solutions

Three Business Fields for Future Growth



＊solns.: solutions

Delivering value in new dimensions in the three growth fields

In selecting these growth fields, we considered how we could provide new value for customers' offices, production facilities such as factories and research labs, and individual residences. Next-generation solutions for production and working/living spaces will support the growth of our customers' core businesses.

Environmental protection is in demand. We therefore decided that the energy management solution field is essential because it contributes to society and has growth potential.

Also, nowadays, business continuity and peaceful communities and lifestyles have become increasingly important. In Japan after the Great East Japan Earthquake and tsunami, the level the demand for business continuity planning has reached entirely new levels. Against this background, we chose safety solutions as a third growth field.

All three of these fields feature both strong growth potential and pronounced social significance, and therefore are aligned with the azbil Group's long-term target and CSR policy.

Today, the business environment of our customers is changing considerably. However, the greater the change is, the higher the value of automation becomes.

Azbil opened the Yamatake Memorial in January 2013 to present the company's history and past products, and to introduce Azbil's achievements in the field of automation in supporting of Japanese industries and buildings and contributing to people's daily lives.

Although the company name has changed from Yamatake to Azbil, the know-how and spirit accumulated over the past 100 years will be handed on to the Azbil of the future, ensuring further growth. Through the talent of our human resources, we will deliver value in a new dimension through automation and contribute to our customers' future.

MagneW3000 PLUS+ FOUNDATION Fieldbus Converter New Diagnostic Algorithm for Scale Optimizes Maintenance

The MagneW3000 PLUS+ electromagnetic flowmeter provides longer operation periods in applications where scale accumulates due to its extremely smooth PFA liner. This robust meter has been proven in the field throughout the world.

Now, the new scale diagnostic capability on the MagneW3000 PLUS+ FOUNDATION* Fieldbus converter, utilizing the latest ITK 6.1 technology, provides additional benefits by optimizing maintenance timing in applications where scale accumulates. The unit fully complies with FOUNDATION technical specifications, and its built-in analog input (AI) function block provides process variables for regulatory control.

It is well known that flow measurement errors appear when there is scale on electrodes. The new enhanced signal-processing algorithm provides an optional diagnostic capability to deal with this issue. The diagnostic results follow NAMUR NE107 guidelines, enabling the user to easily determine what is happening and understand what to do for maintenance. This solution allows earlier predictive maintenance and minimizes downtime of the production system.

Severe scale on the liner of the flowtube

*FOUNDATION is a registered trademark of Fieldbus Foundation.

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http://www.azbil.com/

Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.

Japan

• Azbil Corporation • Azbil Trading Co., Ltd.
• Azbil Yamatake Friendly Co., Ltd.
• Azbil Care & Support Co., Ltd. • Azbil SecurityFriday Co., Ltd.
• Azbil Kimmon Co., Ltd.
• Azbil Kyoto Co., Ltd. • Azbil TA Co., Ltd.
• Azbil Taishin Co., Ltd. • Tem-Tech Lab.

Overseas

• Azbil Korea Co., Ltd. • Azbil Taiwan Co., Ltd.
• Azbil Kimmon Technology Corporation
• Azbil Vietnam Co., Ltd. • Azbil India Pvt. Ltd.
• Azbil (Thailand) Co., Ltd. • Azbil Production (Thailand) Co., Ltd.
• Azbil Philippines Corporation • Azbil Malaysia Sdn. Bhd.
• Azbil Singapore Pte. Ltd. • PT. Azbil Berca Indonesia
• Azbil Saudi Arabia Limited
• Azbil Control Instruments (Dalian) Co., Ltd.
• Azbil Information Technology Center (Dalian) Co., Ltd.
• Yamatake Environmental Control Technology (Beijing) Co., Ltd.
• Beijing YTYH Intelli-Technology Co., Ltd.
• Azbil Control Solutions (Shanghai) Co., Ltd.
• Shanghai Azbil Automation Co., Ltd. • Azbil Hong Kong Limited
• Yamatake Automation Products (Shanghai) Co., Ltd.
• CECEP Building Energy Management Co., Ltd.
• Azbil North America, Inc. • Azbil VorTek, LLC • Azbil BioVigilant, Inc.
• Azbil Brazil Limited • Azbil Europe NV • Azbil Telstar, S.L.

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