The Building Automation business, Advanced Automation business and Life Automation business. The azbil Group operates businesses in three different markets, centered on technologies, products and services related to automation. Having a business portfolio composed of these three core businesses with their different business cycles is a unique strength of the azbil Group, and contributes substantially to continuous operation. This section presents the market conditions, results and outlook for each of the businesses.
The azbil Group offers total solutions for building automation equipment and systems through an integrated structure including development, manufacturing, marketing, installation, engineering, maintenance and operation management. Our original environmental technologies, which underpin our product lineup, engineering solutions and services covering all aspects of building automation, help customers to create business and production spaces where people can work efficiently and in comfort, and also improve their building management capabilities, while contributing to reducing the environmental impact.

The azbil Group develops, manufactures and markets a wide range of products indispensable to plant and factory operations, including switches, sensors, controllers, valves, systems and software packages. We also provide consulting, engineering and maintenance services to support the optimum management of equipment throughout their lifecycle, and enable customers to increase enterprise value at their worksites.

At the azbil Group, we possess measurement and control technologies cultivated over many years in the building and industrial markets and also a personal commitment to customers through our services. In the Life Automation business, which mainly serves the domestic market, we are drawing on our strengths in automation technologies and human resources to provide total solutions to societal needs for safety, peace of mind and environmental conservation. These include lifetime-related, such as gas and water; and lifestyle support-related, such as nursing care and healthcare.

The azbil Group is expanding its Building Automation and Advanced Automation businesses internationally, backed by the technologies and expertise accumulated from domestic operations. The Group currently has overseas subsidiaries, affiliates, business offices and factories in 13 countries and 23 locations, principally in Asia. We deliver best-fit solutions for the differing problems and needs of customers in each region, by utilizing our comprehensive capabilities of providing sensors, valves, field instruments and systems through to maintenance and services.

Note: Segment sales include intersegment sales.
Main Products and Services

- Building management systems
- User-operated devices
- Controllers
- Sensors
- Valves and actuators
- Security systems
- Building preventative maintenance service
- Total energy management service
- Building operations support service
- CO₂ reduction solutions, etc.

### Building Management Systems

Our systems provide overall building management and enable optimal control over building environments while reducing costs. We offer and build flexible systems that are tailored to specific applications as well as size and scope.

### Direct Digital Controllers (DDC)

DDC regulates HVAC equipment and facilities, controlling temperature, humidity and operation of equipment and facilities.

### Security Systems

Our security systems offer integrated and consolidated control of security data and access data. By integrating building management systems, we make building management and security more effective.

### Intelligent Component

An Intelligent Component is a control terminal, such as a sensor, damper, valve or other device, with a built-in microprocessor. Valuable but previously unavailable control data can be collected.

### Monitoring and Control Systems

We offer open, highly reliable systems tailored to the size and circumstances of the production facility, from large-scale systems to on-site operational supervision systems.

### Digital Indicating Controllers

Our controllers consistently afford the best possible control of equipment and facilities on-site. We have developed a product lineup meeting multiple application needs.

### Smart Field Instruments

Smart field instruments are high-performance devices with built-in microprocessors. Our product lineup includes flowmeters, temperature transmitters, valve-positioners, pressure transmitters and other products.

### Sensors and Switches

Our sensors and switches provide reliable detection on the production site, with superior resistance to tough environments. A wide variety of models meet the many priorities of customers.

### City Gas and LP Gas

We offer gas meters, gas leak alarms, automatic shut-off valves and other gas safety equipment, gas regulators, etc.

### Water Meter Business

Based upon know-how gained through long experience, we provide accurate water metering products that are environment-friendly and also promote safety.

### Lifestyle Support Services

Services include emergency dispatch, health management support, preventative nursing care, lifestyle-related disease prevention, etc.

### Nursing Care Support Services

We offer nursing care services, in-home care services, the sale and rental of nursing care equipment, an elderly group home, etc.

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### Core Business Structure

Concentrating on “human-centered automation,” the azbil Group has three core businesses: Building Automation, which specializes in automation for buildings; Advanced Automation, which focuses on automation for plants and factories; and Life Automation, which applies automation technologies to life and living.

While all three businesses are closely connected with society and the individual, their markets have significantly different characteristics. Nevertheless, combining these businesses and promoting synergies will support the long-term growth of the Group.
Building Automation Business

Kiyofumi Saito
Executive Director
Senior Managing Executive Officer
Building Systems Company President
Yamatake Corporation

We make the best use of business opportunities related to growing needs to reduce environmental load (CO2 emissions) led by tightening regulations. We are also expanding our business domain as we further promote our “transformation into an environmental control manufacturer.”

Market Overview
Although business conditions worsened sharply from the second half of fiscal year 2008, ended March 31, 2009, the Building Automation business benefited from a large volume of orders backlog, so business performance remained robust. As a result, sales were above ¥100 billion, at ¥100.4 billion. The Building Automation business achieved an 11.2% increase in operating income to ¥13.1 billion, owing to several initiatives for profitability such as operational improvements and reforms.

Operating Environment
The deterioration in business conditions from the second half of fiscal year 2008 impacted orders for factory HVAC systems. However, the Building Automation business was steady overall, particularly for maintenance services, which have been a stable source of earnings. Stricter regulations to reduce environmental load (CO2 emissions) are scheduled, such as the revision of the Law Concerning the Rational Use of Energy. We therefore expect that the operating environment will remain steady in the market for existing buildings and maintenance services, both of which provide continuous support throughout a building’s life cycle. In addition, the operating environment for the security (room access control) business is firm against a background of demand for building safety and security and data protection.

Fiscal Year 2008 Performance
The domestic market for new buildings remained healthy thanks in part to job completions for both large-scale commercial building redevelopment projects and new large-scale production facility projects. As regards the market for existing buildings, despite the fact that there was continuing strong demand for refurbishment of buildings to reduce CO2 emissions and to conserve energy, sales fell owing to subdued investment caused by the deterioration in business confidence, and by the fact that the ESCO business saw a rush of projects in the previous fiscal year due to the change in the subsidy system. In contrast, the service business saw a steady increase in sales; with a growing number of contracts, measures were also taken to expand service menus that meet market needs, including the addition of energy conservation options. The security business did experience a fall in sales, but this reflects the fact that there was a large project for a financial institution in the first half of the previous fiscal year due to the change in the subsidy system. In fact, business performance continued to be healthy, reflecting increasing concerns for building safety and security issues, and the needs for stronger data protection and internal controls. Turning overseas, active steps were taken to expand business with the establishment of branches and subsidiaries in Dubai and Vietnam and a business tie-up in Australia.
Nevertheless, performance was affected by the strong yen and by cutbacks in investments for factory HVAC systems.

**Fiscal Year 2009 Outlook**

For fiscal year 2009, ending March 31, 2010, we are concerned about a decrease in new large-scale redevelopment projects and reduction or postponement of refurbishments due to the economic slowdown. However, there is substantial potential demand for refurbishments and also services for existing buildings because buildings completed in the 1990s are due for refurbishments and also regulations to reduce environmental load (CO₂ emissions) get stricter. Although it will be difficult to avoid the impact of worsening business conditions, we will work to secure results by unearthing demand through aggressive development of energy-conservation proposals based on our track record and accumulated data in Japan.

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**Reducing CO₂ Emissions while Making Overnight Guests Comfortable**

**Hotel Kasugai**

To accommodate the need for finely-tuned air-conditioning of guest rooms, we installed hybrid air-conditioning units that allow switching freely between cooling and heating in each room throughout the year. At the same time, we introduced the savic-net™ FX building management system to monitor, control and manage energy usage for the entire hotel. Energy consumption decreased 8.5% annually following the installations.

We achieved significant results not only in room comfort but also in costs by using subsidies. In addition, the hotel is the first in the industry to participate in Japan’s Voluntary Emissions Trading Scheme (J-VETS). By analyzing and managing CO₂ emissions with the customer, we reduced emissions more than our original target of 300 tons. I believe our relationship of trust with the customer deepened through the sense of achievement that came from taking on this major issue together.

_Teppei Asano_
Environmental Sales Department, Environmental Solution Headquarters, Building Systems Company, Yamatake Corporation
Operating Environment
Trends in capital investment significantly impacted the Advanced Automation business, which provides a variety of automation solutions for factories and plants. By the second quarter of fiscal year 2008, although there were some differences by industry, the operating environment was comparatively steady overall. However, from the third quarter the decrease in production resulting from the global recession caused a drastic decline in corporate earnings. Capital investment was consequently restrained more quickly and broadly than ever seen before. Overseas markets were similarly damaged, with deterioration of all regional operating environments, particularly Europe and the U.S. The strong yen also had an impact.

Fiscal Year 2008 Performance
The Advanced Automation business operates in a wide range of industries, from the raw material industries of oil refining and chemicals to processing and assembly industries, such as automobiles and electricals, as well as life cycle businesses for end users such as maintenance services. As a result, the risk of market downturn tends to be diversified, but the current situation is extremely challenging as a result of restricted capital investment across almost all industries from the third quarter.

In Japan, capital investment rapidly declined in the electronic component, semiconductor manufacturing, machine tool and automobile industries. In addition, production decreases and postponement of investment in new plants grew among material industries such as chemicals and iron and steel. This caused a substantial decrease in sales of the products business, particularly for those products aimed at processing and assembly lines. In addition, a decrease in sales of the solutions business, which provides systems and maintenance to plants, was also unavoidable.

Overseas, we achieved higher sales in China through steady growth despite the impact of the strong yen. However, the decrease in overall sales for the rest of Asia was inevitable although amounts differed by country. The economic downturn was a direct cause of decreased sales in Europe and the U.S.

In spite of the decreased sales that resulted from the sudden deterioration of the operating environment in Japan and overseas, we worked to mitigate the effect on profits by reorganizing production systems and reforming our cost structure, and also took

Masaaki Inozuka
Executive Director
Managing Executive Officer
Advanced Automation Company President
Yamatake Corporation
initiatives including enhancing overseas bases to expand future operations.

**Fiscal Year 2009 Outlook**

We forecast that restrained capital investment will continue in fiscal year 2009, ending March 31, 2010, making it difficult to be optimistic about improvement in the operating environment. An urgent response to this situation is to execute further reform of our cost structure, starting with consolidating production frameworks and implementing the optimum allocation of human resources on a large scale, in order to respond to demand fluctuations. In addition, even in this challenging environment we will steadily take business opportunities related to safety and the environment, where we expect investment. Although decreased sales resulting from restrained capital investment in all industries in Japan and overseas will be inevitable, we will work on these initiatives to secure positive operating income.

**Traceability System Strengthens Management of Raw Materials and Prevents Work Errors**

KENKO Mayonnaise Co., Ltd.

In response to customer demand for food safety and reliability, we introduced the Super Kanrishoku manufacturing execution system(traceability system to support quality and management operations for a wide range of food products. In addition to minimizing workload increase, we achieved accurate and fast traceability and prevention of work errors in weighing and filling processes.

We held ongoing, close consultation with the customer on system design and construction due to the importance of quality, safety, and workload reduction in on-site operation. Improvement efforts with the customer have continued after delivery to support efficient operation. I believe this stance on issue resolution embodies azbil’s aim to create value on-site, and is the source of the trust we receive from our customers.

Masanori Matsuo
Sales Department, Business Headquarters, Advanced Automation Company, Yamatake Corporation
We work to continuously improve profitability, expand business areas through cooperation between the azbil Group companies and develop new services that leverage our unique strengths.

Sadachika Ogawa
Executive Officer
Yamatake Corporation

Hirozumi Sone
Managing Executive Officer
Yamatake Corporation
President, Yamatake Care-Net Co., Ltd./Safety Service Center Co., Ltd.

Masaaki Iwai
President
Kimmon Manufacturing Co., Ltd.

Market Overview
The sudden economic downturn impacted the recovery of demand for gas meters produced by Kimmon Manufacturing, which accounts for most of the sales of the Life Automation business. As a result, total Life Automation business sales for fiscal year 2008, ended March 31, 2009, slightly decreased 1.5% to ¥35.9 billion. However, operating loss improved to ¥0.2 billion despite an increase in amortization of goodwill,* as policies being implemented at each Life Automation business company to improve the structure of the business bore fruit, particularly at Kimmon Manufacturing.

*Amortization of goodwill increased as a result of making Kimmon Manufacturing a wholly owned subsidiary. Amortization of goodwill for fiscal year 2008 was approximately ¥1.3 billion per annum, an increase of ¥0.6 billion over the previous fiscal year.

Operating Environment
The Life Automation business covers businesses related to lifeline and lifestyle facilities, and nursing care and health support. It comprises several companies in different business environments, which are all focused on developing an automation business that supports people’s active lives.

Kimmon Manufacturing, the company that accounts for the bulk of Life Automation business sales, operates under a cycle of demand for replacement meters that is based on regulations. Currently, replacement demand for LP gas meters is on an upswing, and demand for city gas meters is also expected to recover from fiscal year 2009, ending March 31, 2010. However, due to the economic downturn and restrained capital investment, demand for new meters and new products for manufacturing equipment has weakened.

Yamatake Care-Net and Safety Service Center operate in the nursing care and lifestyle support fields. While challenging conditions will continue due to factors including budget constraints in local government social welfare services and revisions to the Nursing Care Insurance Law, we expect demand will be brisk due to the aging of society and reforms to the medical care system.

Yamatake operates in the residential air-conditioning and environmental recycling field. Despite the economic downturn and a negative impact on new housing starts caused by revision of the Building Standards Act, overall demand is steady due to increasing awareness for health and comfort in residences, environmental conservation and executing the Act Concerning the Promotion of Utilization of Recyclable Food Waste.

Fiscal Year 2008 Performance
Kimmon Manufacturing saw a weakening in the recovery of demand for gas meters as a result of the economic downturn. At the same time, because of the fall in capital investment throughout the manufacturing industry, sales of industrial-use city gas equipment, such as regulators, also decreased. This meant a fall in sales, but profits were improved as a result of implementing the “Kimmon-Yamatake Jump-Up Plan.” This plan is designed to reinforce Kimmon Manufacturing’s business infrastructure, centered on eliminating and consolidating its factories and improving the profit structure.

The operating environment for Yamatake Care-Net and Safety Service Center is challenging. However, we
promoted and offered products and services such as rentals of assistive products and sales of lifestyle disease prevention plans, which respond to changing demand amid market expansion stemming from an aging society. We also addressed the upgrade of the service center infrastructure and increased the number of users of emergency dispatch services, for which Yamatake has the largest number of users in Japan. As a result, we secured profit.

Profitability improved for Yamatake’s residential central air-conditioning and environmental recycling businesses as they expanded.

Fiscal Year 2009 Outlook

For fiscal year 2009, we forecast overall sales of the Life Automation business to decrease slightly, mainly due to the impact of the weak economy on demand for the meters of Kimmon Manufacturing, although we will take initiatives including expanding business domains through synergies between Group companies and offering new products that respond to market needs. We aim for the Life Automation business to produce positive operating income by continuing and further strengthening the initiatives to improve profitability that showed steady progress in fiscal year 2008.

Installation of Central Air-Conditioning System in Home Renovation

Renovation of Tadao Shimamoto’s Home

We created a comfortable environment throughout the home by installing the “Kikubari” residential central air-conditioning system during renovation. A high-performance electronic air cleaner in the system resolved pollen, mite and house dust problems. While achieving a comfortable living environment, the effect on energy and cost conservation was greater than expected.

Installing central air-conditioning system during renovation involves numerous difficulties, such as airtightness and insulation efficiency of existing house and installation space for each equipment. So very few house builders can achieve that. However, as a company that puts customer satisfaction first, azbil is actively challenging the installation of central air-conditioning system in renovation, and has already completed a number of renovation projects. We as a provider of air-conditioning systems can communicate directly with customers, and our client was very pleased with the results. This was a very fulfilling project for me since I’m always focused on customer satisfaction.

Tomofusa Kumazawa
Home Comfort Department, Yamatake Corporation
**International Business**

Although we faced the headwinds of a strong yen and the global recession, the azbil Group steadily progressed in reinforcing the operating bases needed to expand the International business. We changed the name of each overseas subsidiary to include “azbil” and, with the new spirit that imbued, we aimed at expanding business operations by delivering the same unique solutions overseas that the azbil Group offers in Japan.

*Toshitsune Okubo*
Managing Executive Officer
Yamatake Corporation

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**Market Overview**

We recorded total annual sales growth in China and the Asian region of 10% or more on a local currency basis, but due to the sudden economic downturn globally and the impact of the strong yen, yen-denominated sales of overseas subsidiaries decreased, and overall overseas sales were ¥18.0 billion, a decrease of 6.9% from the previous fiscal year.

Note: Figures for the International business are calculated as the total of each individual segment. This includes direct exports and sales of overseas subsidiaries, but not indirect exports.

**Operating Environment**

In Europe and the U.S., the economy weakened rapidly as the serious impact of the financial crisis that originated in the U.S. spread to the real economy. This slowed the economies of China and the rest of Asia, causing what appears to be a simultaneous global recession. The operating environment of the azbil Group was negatively affected. Even in the Chinese and Southeast Asian markets—which were relatively healthy in the first half of fiscal year 2008—performance was affected by the sudden freeze and cutbacks on capital investment from the third quarter onwards, mainly by Japanese companies.

**Fiscal Year 2008 Performance**

In China, steady business growth offset the impact of the strong yen, and we were able to achieve sales increases. Although conditions in the rest of Asia differed by country, an overall decrease in sales was unavoidable, partly due to the impact of the strong yen. Sales in Europe and the U.S. decreased due to weakening of the regional economies and the impact of the strong yen. As a result, International business sales totaled ¥18.0 billion, a decrease of 6.9% from the previous fiscal year.

A one-time pause in the growth of the International business was unavoidable due to the worsening business conditions. However, our view of this business as a future growth domain has not changed, and we have been working to reinforce and strengthen operating bases.

In North America and China, we integrated subsidiaries in the same areas to expand contacts with customers, strengthen proposal capabilities and enhance operational efficiency through sharing resources. In addition, we actively promoted business development in new areas, establishing branches and subsidiaries in Vietnam, India and the Middle East. We worked to expand operations through tie-ups, signing a distribution agreement with Environmental Automation Pty Ltd. in Australia and investing in South Korea’s leading equipment and electrical system design company, Hanil Mechanical & Electrical Consultants Ltd. We also established a new valve maintenance center in Taiwan and strengthened functions of existing centers in China and Thailand in order to bolster our capability to respond to customers in capacities including local maintenance.
The AT9000 Advanced Transmitter Model GTX is a new differential pressure/high pressure transmitter that the azbil Group has positioned as a global strategic model. Since the Group’s Yamatake Corporation launched the world’s first smart* differential pressure/high pressure transmitter in 1983, the Group has achieved sales of over 1 million units worldwide. Now, with the launch of AT9000 Advanced Transmitter Model GTX, the azbil Group aims to further expand transmitter sales volume.

*Smart devices are equipped with internal microprocessors.

### Overseas Sales/Ratio to Net Sales

![Overseas Sales/Ratio to Net Sales](chart.png)

<table>
<thead>
<tr>
<th>Year (FY)</th>
<th>Overseas Sales (Billions of yen)</th>
<th>Ratio to Net Sales (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>6.9</td>
<td>12.4</td>
</tr>
<tr>
<td>2005</td>
<td>8.4</td>
<td>15.6</td>
</tr>
<tr>
<td>2006</td>
<td>16.6</td>
<td>19.3</td>
</tr>
<tr>
<td>2007</td>
<td>19.4</td>
<td>19.4</td>
</tr>
<tr>
<td>2008</td>
<td>18.8</td>
<td>18.9</td>
</tr>
</tbody>
</table>

### Overseas Sales by Region

![Overseas Sales by Region](pie_chart.png)

- **Asia**: 81.8%
- **China**: 35.5%
- **Europe**: 8.4%
- **North America**: 6.2%
- **Other**: 3.6%

### Sales Begin for New AT9000 Advanced Transmitter Model GTX

**Differential Pressure/High Pressure Transmitter**

Plant Safety Instrumentation with the World’s Most Advanced Functions

The AT9000 Advanced Transmitter Model GTX is a new differential pressure/high pressure transmitter that the azbil Group has positioned as a global strategic model. Since the Group’s Yamatake Corporation launched the world’s first smart* differential pressure/high pressure transmitter in 1983, the Group has achieved sales of over 1 million units worldwide. Now, with the launch of AT9000 Advanced Transmitter Model GTX, the azbil Group aims to further expand transmitter sales volume.

*Smart devices are equipped with internal microprocessors.

### Energy-Conserving Facilities Initiative in Singapore

**Fusionopolis, Singapore**

The azbil Group handled energy conservation measures for Phase I of Fusionopolis, a cutting-edge research and development hub, based on its own proposals. A 120,000m² complex, Fusionopolis Phase I is the first integrated work-live-play-learn development in Singapore, equipped with state-of-the-art infrastructure and facilities. Upon consideration of azbil’s proven track record in cooling plants in Singapore, as well as its advanced instrumentation and energy conservation technologies, the savic-net™ FX building management system was selected for use in Fusionopolis. The key issue in designing the system was ensuring that the difference in water temperature between its supply from the local cooling plant to each building’s air conditioners and the return of chilled water from the air conditioners was not less than 7°C. The azbil Group, with its one-stop-solution framework encompassing sales, development and maintenance, stayed in close contact with the site after system installation and made proposals for further energy conservation, such as by collecting and analyzing data on amounts of energy used.
The azbil Group believes intellectual property is an important business resource, and as such it ranks its intellectual property strategy as one of its key business strategies. The Group is carrying out its business strategy, R&D strategy and intellectual property strategy in concert, with a focus on establishing an intellectual property portfolio in major product lines and technological fields, and managing risks from any infringements of intellectual properties of other companies.

Devising and Enacting the Intellectual Property Strategy
In fiscal year 2008, ended March 31, 2009, Yamatake continued to take the following measures to further strengthen its intellectual property strategy:

1. Established an intellectual property portfolio in major product lines and technological fields.
2. Minimized risks from patent infringements in azbil business areas.

Establishing an Intellectual Property Portfolio in Major Product Lines and Technological Fields

Patent Applications in Japan
Having made significant headway in bolstering our intellectual property strategy, we were able to file 351 patent applications in fiscal year 2008, an increase of 21 from fiscal year 2007.

In applying for patents, Yamatake conducts a patent appraisal, with the results presented in a visual format. Appropriate feedback for the business and R&D departments, and the resulting analysis, is crucial for developing new business and R&D strategies. We apply this methodology for intellectual property portfolio management and focus on achieving tangible results through the process.

Number of Registered Patents
Yamatake holds 1,027 registered patents in Japan and 420 registered patents overseas, both of which figures have increased from the previous fiscal year.

Regulations for Employee Inventions
Yamatake continues to pay various kinds of compensation to inventors based on revised regulations for employee inventions that aim to strengthen Company intellectual property rights and provide greater encouragement to inventors.

Minimizing Risks from Patent Infringements in azbil Business Areas
To avoid disputes related to other companies’ patents involving our products, we use a work flow system to check more than 1,000 official open patent applications of other companies each month without omissions. This reduces business risks and greatly increases our freedom to promote R&D.

Trademark and Design Management
We are actively applying to register the “azbil” Group symbol as a trademark throughout the world in order to strengthen our brand. Further, we are bolstering our design applications in China with imitation countermeasures in mind.
Research and Development

To achieve lasting growth, enterprises have to accurately gauge the customer needs that result from market changes and quickly develop the necessary technologies. We are bolstering our development and application of R&D for timely delivery of appealing products and services that concentrate azbil Group technologies to resolve customers’ challenges, thereby continuing to contribute to society through our core businesses.

R&D Functions and Organization

Yamatake’s R&D consists of two key functions: the business department development function, which conducts R&D to support the Company’s core businesses; and the corporate R&D function, which in addition to supporting the development of measurement and control technologies and those technologies that are being developed in collaboration throughout the azbil Group, also takes on the challenge of developing new, proprietary technologies. These functions are organized in the same layer and kept in balance in order to facilitate smooth communication and to commercialize new technologies as quickly as possible. This horizontal structure encourages the prompt sharing of technical information and customers’ needs across the Group. Specifically, we are working on a Groupwide basis to visualize the various problems in development processes and the results of investments in order to optimize the allocation of research resources and solve problems rapidly. Through this close information exchange and collaboration, we will continue to provide appealing products by flexibly responding to market changes.

R&D Investment

In fiscal year 2008, ended March 31, 2009, the azbil Group’s total expenditures on R&D amounted to ¥9.6 billion, equivalent to 4.1% of net sales. From a strategic standpoint, our investment is concentrated in growth areas. R&D spending is geared toward two goals: technological development for the Building Automation and Advanced Automation businesses, and technological development aimed at business development for the Life Automation business, a new domain.

Directions of R&D Strategy in Business Framework

The azbil Group’s R&D is aiming for “human-centered automation.” In the Building Automation business, we are making strides in R&D designed for realizing comfort, functionality and energy conservation attuned to individual buildings, and furnishing comfortable and pleasant spaces that can raise intellectual productivity. We are developing highly advanced building automation technologies using our cutting-edge technological prowess and reducing lifecycle costs and CO2 emissions. In the Advanced Automation business, R&D is focused on resolving issues connected with energy conservation, safety, quality improvement and environmental responsiveness at factories and plants, as well as creating safe and comfortable working environments. In particular, we develop technologies for enhancing productivity and optimizing operations at the customer’s site, as well as for products and systems that maximize human abilities. In the Life Automation business, we continue focusing our efforts squarely on developing technologies compatible with the Group’s existing technologies in services and precision measurement technologies, based on the expertise we have amassed over many years in measurement and control. In corporate R&D, technological developments have a direct impact in contributing to businesses. Naturally, we are working to meet challenges to create high-performance and highly advanced proprietary technologies, and to promote basic research for developing new products and businesses in next-generation automation fields. Our core technologies are:
Microsystem Technologies
Yamatake has consistently been the industry leader in microdevice technologies, including Micro Flow™ sensors and vacuum gauges that use sapphire microelectromechanical systems (MEMS) technology. We are developing technologies for improved corrosion-resistance, high temperature usage, high-repeatability and others that are indispensable in the industrial field. Looking ahead, we will continue to proactively conduct research in new areas in order to respond to the growing trend towards miniaturization and precision in industries.

Measurement and Control Technologies
Among the many types of control technologies, and particularly for the research and development of pressure sensors, which are important in fluidics, we are strengthening our existing design and analysis technologies and developing new technologies for manufacturing processes to keep pace with the market’s demand for safety and stability, and also beefing up our R&D efforts in semiconductor sensors combining various performance features such as differential pressure measurement, static-pressure measurement and temperature measurement.

Measurement Data Processing Technologies (Prediction and Visualization Technologies)
Yamatake is strengthening its proprietary technology, which backs up and expands individual abilities through data analysis and intelligent information processing technologies. We are taking on the challenge of developing new control technologies, such as control systems for indoor environments that take into account changes in the outdoor environment to balance comfort and energy conservation. In addition to developing technologies from a new perspective, such as for analyzing air currents by simultaneously measuring air flow and pressure distribution, we will focus on creating comfortable, human-centered spaces by promoting technologies that leverage our accumulated know-how and wealth of data.

Framework of Indoor Environmental Controls

![Example of Air Current Analysis](image)

Next-generation Automation System Technologies
In addition to high-reliability, wireless and other technologies in its possession, Yamatake is researching next-generation automation systems, based on the latest network technologies and open-platform technologies. We are working to develop new solution technologies that revolve around humans and systems working in unison, from the perspective of “human-centered automation.”

Micromachining Technologies
Yamatake is developing micromachining technologies for materials used in various high-performance sensors, such as sapphires and stainless steel that are hard to cut, and brittle materials including silicon and glass, and also developing precision joining technologies. We will continue to focus on the micromachining technological developments we have accumulated so far, including etching processing that improves sensors’ pressure resistance without decreasing sensitivity (output), and sensor miniaturization.

Communication Services Technologies
In future social systems, various exchanges of information, including between people as well as between people and systems/equipment will become critical. In preparation for these exchanges, we are applying such processes as ergonomics and cognitive engineering in order to analyze information value and develop analysis technologies. Specifically, we are researching and developing technologies that visualize correlations between technologies that model human cognitive traits and their corresponding elements for application to areas such as the interface of system products with human experience and also human error in operation.

Composite and Fusion Technologies in Measuring and Metering Field
To ensure a stable supply of lifelines, we are working to combine our own measurement and control technologies with the proprietary technologies for household gas meters and water meters honed over the years by Kimmon Manufacturing. This should help us to provide products that can be used safely and reliably in realizing people’s active lives.