



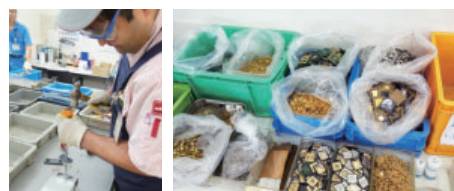
## Using resources wisely

Making the most of limited resources is one of the basic ways to help save Planet Earth. As a matter of course, The azbil Group promotes 3R practice (reduce, reuse, recycle) in order to cut waste. Starting with the reduction of unnecessary water and paper use in the office and at the factory, and eliminating as many defective products as possible, we are thoroughly implementing 3R.

### The 3R Plus Center for disassembling, sorting, and recycling resources

The 3R Plus Center was established on the premises of the Fujisawa Technology Center to reduce waste. There, employees of Azbil Yamatake Friendly Co., Ltd.,\* work to collect and disassemble computers, instruments, valves, and any other devices that are no longer needed internally. The parts are strictly separated by type (screws, cables, etc.), to be reborn as valuable resources.

\*Azbil's subsidiary for the employment of people with disabilities



An employee separating parts/Parts separated by type



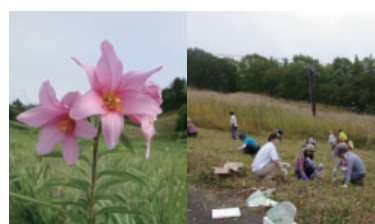
## Coexisting with nature

Human society can exist only by receiving nature's blessings, but it can and does have an effect on nature. The azbil Group's business activities are no exception. To coexist with nature as a responsible member of society, we work together with NPOs, academia, and local governments in various environmental activities, including a nature conservation program. Group employees and their families participate in these activities on Group company premises and in the areas where they are located.



**Nature conservation program**  
(Fujisawa, Kanagawa Prefecture)

Receiving guidance from an NPO called Fujisawa Green Staff, employees of the azbil Group take part in activities in areas owned by the city of Fujisawa, such as tree-thinning and using logs to maintain trails.



**Maiden lily conservation program**  
(Minamiaizu, Fukushima Prefecture)

The maiden lily, which grows in Fukushima where several azbil Group factories are situated, is listed as a near-endangered species, azbil Group employees and their families work together with the local community to sow seeds and help protect the species.



**Environmental activity on company property**  
(Azbil Kyoto Co., Ltd.)

Azbil Kyoto is located on a site surrounded by mountains. The company, together with Earthwatch Institute, an authorized NPO, and with Kyoto University, is considering how best to coexist with nature and is surveying and maintaining the trees on the slopes around the site.

# azbil

## In Pursuit of Human-Centered Automation

Preserving the environment



## Azbil Corporation

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

Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku Tokyo 100-6419  
[www.azbil.com/](http://www.azbil.com/)

PR-110-03-E (1610-300-KT)

**110th** Since 1906

Yamatake for 100 years,  
azbil for 10 years.  
Together 110 years.



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

A hundred and ten years ago, in 1906, Azbil Corporation was founded with the intention of freeing people from drudgery. Since then, the azbil Group's management has consistently pursued people-friendly technologies that are beneficial to society, and has pressed ahead with efficiency-promoting and environment-preserving initiatives.

In 2006, the year of the company's 100th anniversary, when the azbil Group established its corporate philosophy of human-centered automation, the above-mentioned intention was passed on, and the goal of helping to preserve the environment was explicitly stated. In accordance with the new corporate philosophy, the azbil Group has set human happiness as its goal. To achieve this goal, each one of its employees is to be mindful of the environmental problems and various other challenges facing society, and to continually make efforts to address them.

Our determination to preserve the environment, as mentioned in the Group philosophy, is spelled out in two objectives in the azbil Group Basic Environmental Policy.

### Two environmental objectives

To help to achieve a sustainable society:

- We will continuously reduce the environmental impact of our own business activities.
- We will proactively offer solutions for the environmental challenges faced by our customers and society based on our measurement and control technologies.

**On the basis of the Basic Environmental Policy,  
The azbil Group has formulated specific priority measures for the  
environment related to four different aspects of the problem.**

### Priority Environmental Measures

#### Reducing CO<sub>2</sub>

- Saving electricity and using energy efficiently with our energy visualization system.
- Giving back to society by sharing our know-how on energy conservation to help reduce CO<sub>2</sub> emissions.



#### Using resources wisely

- Using less paper and water and otherwise reducing production waste
- Promoting the effective use of resources by implementing 3R\*

\* Reduce—Reuse—Recycle to make society more resource-efficient.



#### Coexisting with nature

- Complying with environmental laws and regulations
- Strictly managing chemical substances
- Preserving the natural environment (such as Japan's maiden lily)



#### Supplying environmentally friendly products and services

- Promoting environment-friendly design that considers the whole product life cycle



CO<sub>2</sub>

## Reducing CO<sub>2</sub>

### What we can do and what only we can do

Using its measurement and control technologies, the azbil Group has reduced CO<sub>2</sub> emissions and is helping to preserve the environment by cutting electricity consumption and promoting energy efficiency. This has been achieved through the use of our technologies for optimal control of energy—such as air, steam, cold and hot water, electricity, and gas—that is used in production processes at factories and plants, and also through its energy management technologies, which are applied in office buildings, hotels, and hospitals.

To better provide its cutting-edge technologies and know-how, the azbil Group uses its office buildings and production facilities around the world as proof-of-concept sites. By reducing the CO<sub>2</sub> emissions from its own business operations, and making its technologies more sophisticated through various initiatives and studies, the azbil Group is making every effort to solve the environmental problems confronting work sites and society. As a result, it achieved a reduction of approximately 3,120,000 tons of CO<sub>2</sub> at customers' sites globally in FY 2015.

#### Helping to reduce the environmental impact of customers and society

Result of CO<sub>2</sub> reduction  
at customers' sites in FY 2015

**3,120,000  
tons/year**

See the following webpage for details on how this number was calculated:  
<http://www.azbil.com/csr/value/contribution-to-the-environment/index.html>



We are addressing the environmental problems of customers and society through our business operations.

**P3-4** Onsite energy-saving know-how

#### Bringing the fruits of our own energy-saving efforts to our customers and society

CO<sub>2</sub> emissions reduction at the  
Group's businesses in FY 2015

**21,000  
tons/year**

CO<sub>2</sub> reduction by Azbil Corporation, domestic consolidated subsidiaries, and major production sites overseas



We are proactively reducing our use of energy by installing the azbil Group's energy management solutions at our major business locations.

**P5** Pursuing energy conservation

Know-how





## Reducing CO<sub>2</sub> Onsite energy-saving know-how

When customers call for consultation on various issues, The azbil Group responds quickly at the site. But what kind of technology and know-how is actually used to solve the problems? Let's take a look at four typical examples.

### 01 Make overall production site energy use more efficient!



#### The Challenge

Our customer had already started on energy-efficiency initiatives at the production site when this request was made, but results had plateaued. The problem was that production energy was managed by individual production lines, and energy data was not shared between them.

#### The Solution

Azbil installed a system that completely manages the amount of energy use and dramatically changes the energy-saving operations at the customer's site. Specifically, Azbil's system for energy management and analysis, with data visualization capabilities for energy consumption, CO<sub>2</sub> emissions, and cost, was installed.

#### The Results

#### Staff motivated by visualized data

The system enables staff to check energy use in real time, identify problems, and investigate the causes of energy waste. The system's data on electricity use and the results of energy-saving measures are shared with everyone through the system, increasing environmental awareness.



Energy management and analysis system

### 02 Optimize linkage of energy use and amount of production!



#### The Challenge

Higher energy costs due to the rising price of crude oil and economic fluctuations resulted in less production and worse energy efficiency. The production site needed to be resilient in response to changes in production by better linkage of energy use with the amount of production.

#### The Solution

Azbil connected its monitoring and control system with PLCs and other controllers, and integrated those systems with optimal compressor control, optimizing the operation of 10 compressors made by various manufacturers.

#### The Results

#### Optimal control of operations to best meet the demand at the production site

Depending on the production situation in each operation time slot, the system comprehensively calculates the needed amount of air, taking into consideration the characteristics of each compressor, and automatically selects the best combination of equipment for the necessary operations. This high-level optimization control has cut the energy used to supply air to production lines by 10 % in terms of per-unit production cost.



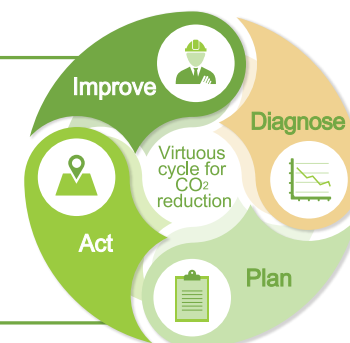
Compressor optimization control



Monitoring and control system

## The azbil Group approach to CO<sub>2</sub> reduction

Through a continuous energy-saving cycle of diagnosis, planning, action, and improvement, CO<sub>2</sub> reduction can be maximized. The azbil Group, applying its unique technologies and know-how, continues to raise value by reducing the environmental impact of society.



### 03 Cut energy use without making an initial investment!



#### The Challenge

In a highly public complex with retail shops, banks, and public facilities, against a background of increasing public interest in energy conservation, our customer wanted to make the complex more energy-efficient while holding down renovation costs, especially in common areas.

#### The Solution

An ESCO plan allowed our customer to offset renovation costs with savings in utility costs. Azbil improved facility operations by preheating and precooling automatically according to the outside temperature and humidity instead of when the air conditioning was started. This has reduced energy consumption.

#### The Results

#### Continued support for energy efficiency improvement

Since Azbil could implement an ESCO plan and continue to help reduce energy consumption, CO<sub>2</sub> reduction of over 30 % was achieved in the three years after changes were introduced. Azbil also provides consultation services, including submission of reports and plans to the local government and formulation of energy-saving measures, and is now planning further reductions in energy use.



Building management system for large facilities

### 04 We need 24-hour air conditioning with energy efficiency!



#### The Challenge

Museums housing valuable cultural assets must run air conditioning 24 hours a day, 365 days a year, and it is essential to strictly maintain the proper humidity and temperature levels. However, museums are not exempt from CO<sub>2</sub> regulations. This was a very difficult case, because Azbil had to simultaneously satisfy two different contradictory requirements.

#### The Solution

Azbil first replaced aging heat source equipment, and then installed its chiller controllers, which achieved a large amount of energy savings through optimal control of the equipment. Next, an Azbil building management system was installed. Through efficient operation based on the air-conditioning load, and introduction of external air based on the CO<sub>2</sub> concentration, the museum's needs were met.

#### The Results

#### Precise control satisfied all requirements

Not only were CO<sub>2</sub> emissions reduced beyond the requirements of environmental regulations, but Azbil's system strictly maintains the temperature and humidity at 22 °C ± 0.2 °C and 55 % ± 2 % respectively. The museum enjoys the optimal environment for protection of its cultural properties.



Chiller controller



Cloud service for building with energy-saving analytic functions





## Reducing CO<sub>2</sub> Pursuing energy conservation

In the wake of the Great East Japan Earthquake, people had to reduce their use of electricity. Since then, The azbil Group has proactively used the Fujisawa Technology Center, its key R&D site, which it is making into a cutting-edge energy-efficiency showcase, to verify the effectiveness of energy-savings measures in order to reduce the environmental impact of customers' sites.



### 01 Visualization

All staff can check the current energy consumption whenever they want through the Internet. This has increased their motivation to participate in energy conservation.

### 02 Demand-side management of electricity use

A system installed at the center predicts the demand for electricity by reading the current amount of consumption, and then automatically controls the air conditioning and lighting. This has cut down on electricity use during the peak demand periods.

### 03 Power load shifting

In addition to using air pre-cooled by chillers or in ice thermal storage, energy waste is reduced by basing control on weather forecast data. As a result, a large amount of electricity consumption has been suppressed at peak demand periods.

### 04 Power-saving power for the people

A system has been installed that allows people in the buildings to turn on/off overhead lights using their computers, and the system automatically controls the air conditioning to lower the temperature when the lights are off. FTC building users are now voluntarily helping to reduce power use.

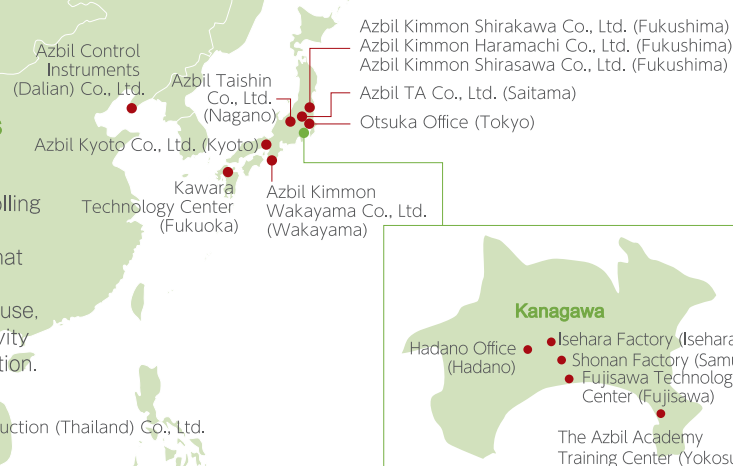
### 05 Data collection on building users' comfort

Surveys on comfort in buildings were carried out with various combinations of temperature and lighting. Analyzing data collected over a long period, we have obtained important information for saving electricity effectively while maintaining productivity and comfort.

The azbil Group's products, such as its visualization system, which is already in use at customer facilities, and its cell-based air-conditioning system, which provides both user-controlled feeling-based comfort and energy-savings, are only possible because of empirical test results. Leveraging the knowledge and know-how obtained through its technology-improvement initiatives, We help to reduce the environmental impact of its customers and society.

### Installing the system for visualizing energy use as a base for energy-saving initiatives

As a foundation for energy conservation, The azbil Group is rolling out its own system for visualizing energy cross-organizationally so that the entire Group shares the same advantages with regard to energy use, and to encourage Group-wide activity to further reduce energy consumption.



## Supplying environmentally friendly products and services

Since establishing our "Guidelines for Development of Products with Reduced Environmental Impact" in 1997, we have promoted Design for the Environment, which covers the entire life cycle of products and services, from the initial stages of development planning and design to materials procurement, production, logistics, sale, use, and disposal. We conduct life-cycle assessments and environmental assessments of all new products, and products that meet our internal criteria can be granted the azbil Group Environmental Label as an environmentally friendly product or service.

### Eight criteria used in our environmental assessment

- 1 Energy conservation
- 2 Resource conservation
- 3 Environmental friendliness
- 4 Extended service life
- 5 Reusability/recyclability
- 6 Ease of disposal
- 7 Packaging materials
- 8 Information provision

### Examples of environmentally friendly products and services



Capacitance pressure sensor  
(Sapphire capacitance diaphragm gauge)



Burner controller for batch operation

### Combining functions yields resource and energy savings

#### Motorized control valve with flow measurement and control functions

Motorized control valves are used to control the flow rate of cold and hot water flowing through the air conditioning equipment in office buildings, hospitals, and factories. With measurement and control functions built in, these motorized valves can work without using an additional flowmeter, eliminating unnecessary use of resources. Since the valves can read the flow rate in the air conditioning equipment, they can prevent excessive flow, which also reduces waste. As a result, they contribute to a 44 % reduction in power consumption and 22 % reduction in resources by weight, reducing the number of required components to almost half.



### Making an ecologically friendly business model Gas meter recycling

The azbil Group's Azbil Kimmon Co., Ltd., provides gas companies with a repair service that recycles gas meters. In this membership-based program, Azbil Kimmon collects gas meters from member companies and repairs them for delivery to other member companies that need them. About 570 gas companies across Japan have joined this program, since they can make good use of resources and contribute to environmental conservation through the program while reducing their own costs.

#### Gas Meter Recycling

