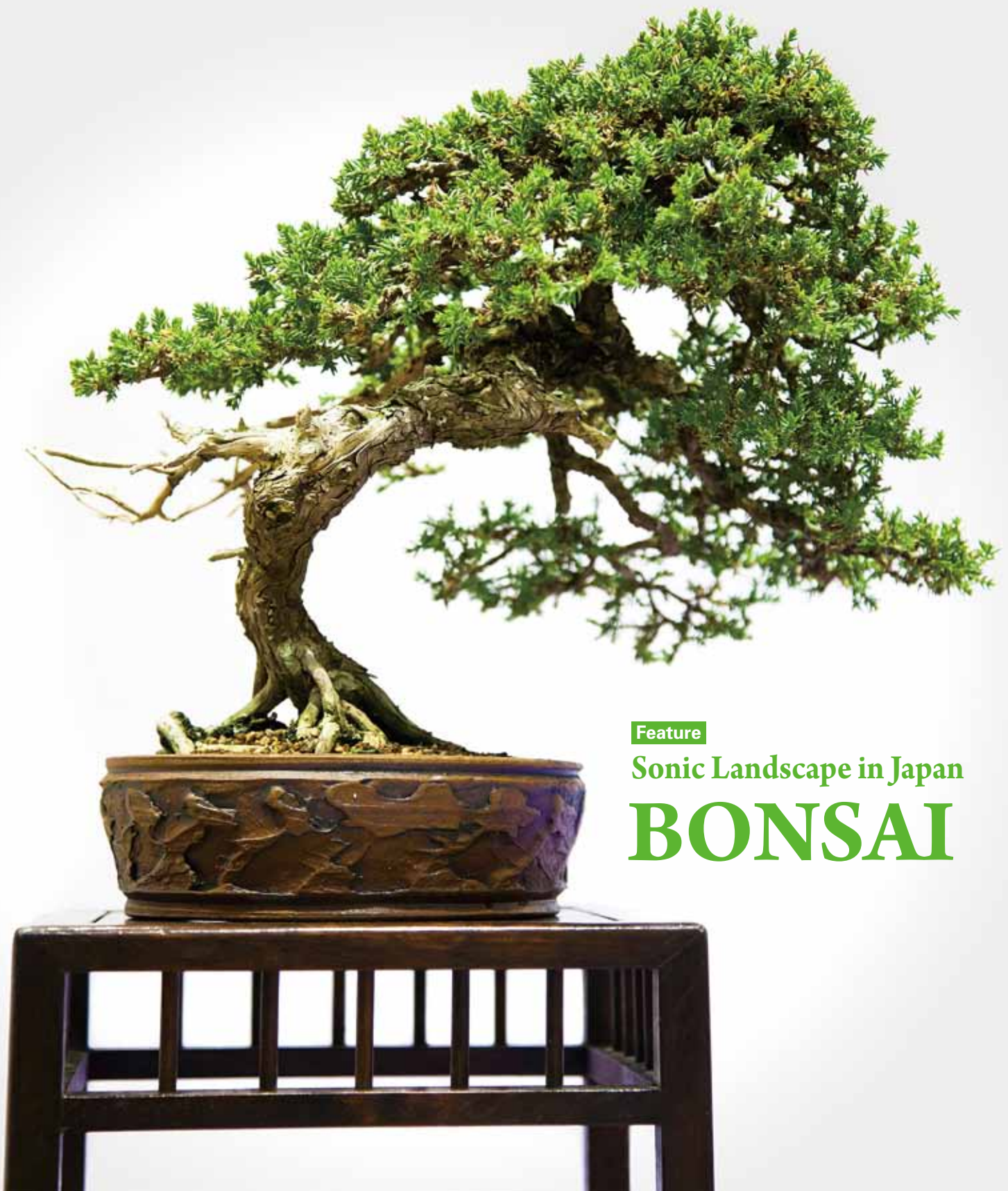


azbil
FIELD

**DIC Corporation
KASHIMA PLANT**

azbil
MIND

Joined in the U.S. by new member Azbil VorTek, LLC, the azbil Group expands its flowmeter product lineup and strengthens its global development, production, and service structures



Feature

Sonic Landscape in Japan

BONSAI

盆 BONSAI 栽

【Chokin】 ～ちよきん

Bonsai is a tree and plants planted and grown in a small pot to display and appreciate. It is an artistic hobby aimed at recreating, on a smaller scale in a pot, the shape of a large and/or old tree found outdoors. In order to train the tree into a shape that pleases the grower, it is necessary

to take care of it frequently and scrupulously. A bonsai enthusiast is typically seen trimming branches and leaves with a small pair of scissors specifically manufactured for bonsai. The Japanese onomatopoeic word that expresses the sound of trimming small branches and leaves with a pair of scissors is “chokin.” Bonsai enthusiasts spend a tranquil and satisfying time, caring for the miniature tree and enjoying the pleasant sound made by the scissors.

Portraying nature in miniature in a pot

The appeal of nurturing a young low-priced *bonsai* tree

Bonsai is said to have originated from *bonkei* introduced from China in the 12th century. *Bon* means a tray and *kei* means landscape in Japanese. *Bonkei* is to set sand, soil, moss, trees and plants on a tray to create natural scenery to display and appreciate. During the *Edo* Period, or from the 17th to the 19th century, in Japan, *samurai* warriors enjoyed *bonkei* as a hobby. Unique techniques for training the shape of trees and plants have been developed in Japan in order to identify the Japanese concept of nature in the shape of trees and plants, and the word, *sai*, which means to plant, was attached to *bon* and hence the word *bonsai* came to be used.

These days, *bonsai* enthusiasts can be found in various countries of the world and the word “*bonsai*” has become a universally used word. In Europe, especially in Italy, *bonsai* is attracting a lot of attention. It has become so popular that a public lecture titled *Bonsai* University is given and a *bonsai* museum has been built. The amount of exports of *bonsai* from Japan that was 640 million yen in 2001 has increased rapidly to about 13 times the above amount, or 8.1 billion yen in 2012. It is expected to increase even further.



Even Japanese people generally have an image that *bonsai* is not a hobby that is easy to start. *Bonsai* are difficult to produce, and moreover, you have to spend a lot of money on them. In fact, it is very difficult to train a tree as you wish, and a perfected product nurtured for many years with expert skills is surprisingly expensive. It is not rare for a pot of *bonsai* to cost more than 10 million yen like a jewel. A pot of *bonsai* of a young and

untrained tree, however, costs only several thousand yen. So you can readily start the hobby. Moreover, in Japan, plant fairs are frequently held in parks, etc. where you can find *bonsai* of a young tree at a reasonable price.

If you get a high-priced perfected product from the beginning, the work to maintain it might be a burden for you and you might not be able to enjoy it fully. The best part of *bonsai* is nurturing and training the tree into a

Varieties of *bonsai*



Shohaku *bonsai*

Bonsai of an evergreen needle-leaved tree. It is easy to grow and does not easily perish even in severe environments. As it is not often that a branch breaks, it is relatively easy to take care of the tree. Experience is required, however, in pruning and training the shape of the tree. Appropriate tree species include: *kuromatsu* (Japanese black pine), *akamatsu* (Japanese red pine), *goyomatsu* (Japanese white pine), and *sugi* (Japanese cedar).



Koyo-mono *bonsai*

Bonsai that feature a deciduous tree that changes colors in autumn. In spring, the shoots emerge; in summer, the tree is full of greenery; in autumn, the leaves turn bright red and/or yellow; and in winter the leaves fall. Thus, you can enjoy its appearance in each of the four seasons. Detailed work is required according to the season, but you will be rewarded with the seasonal changes of the *bonsai*. Appropriate tree species include: *momiji* (Japanese maple), *keyaki* (Japanese zelkova), *kaede* (maple), and *icho* (ginkgo).



Hana-mono *bonsai*

Bonsai of a flowering tree. You can enjoy beautiful flowers and their aroma during the flowering season. As the tree is nurtured for the flowers to bloom, it is often that even a beginner gets motivated and works on the tree with enthusiasm. It is best to work not only for flowers but also for nurturing the trunk and branches. Appropriate tree species include: *ume* (Japanese plum), *sakura* (cherry trees), *momo* (peach tree), and *satsuki* (azaleas).



Mi-mono *bonsai*

Bonsai of a tree that bears fruit. Watching the tree full of fruit gradually change colors as they ripen is fun. As the tree bears fruit during a desolate season when deciduous trees in other pots shed leaves, if you have a pot of *mi-mono* *bonsai*, it helps to increase the fun from autumn to winter. Appropriate tree species include: *kaki* (kaki persimmon), *karin* (*Pseudocarya sinensis*), *ume* (Japanese plum), and *himeringo* (Chinese crab apple).

desired shape. If you are interested, why don't you start with a pot of *bonsai* of a young tree?

Enjoy the majestic nature and seasonal changes with *bonsai*

The varieties of *bonsai* trees can be divided largely into evergreen needle-leaved trees and deciduous trees.

Bonsai of pine and other evergreen needle-leaved trees is called *shohaku* *bonsai*, literally pine and Japanese cypress *bonsai*, and regarded as classic *bonsai*. It features the dignity and vitality of the tree.

On the other hand, *bonsai* of a deciduous tree is called *zoki* *bonsai*, literally miscellaneous tree *bonsai*. Its appeal is that it lets you enjoy seasonal changes. *Zoki* *bonsai* includes *koyo-mono*, featuring a tree that changes colors in autumn, *hana-mono*, featuring a tree that flowers, and *mi-mono*, featuring a fruit-bearing tree. Moreover, there is *kusa-mono* that features moss or bamboo that is basically a supporting player in a pot of *bonsai*.

For your information, *shohaku* *bonsai* and *kusa-mono* *bonsai* can be enjoyed all year round, but as for *koyo-mono*, *mi-mono*, and *hana-mono*, each has its own best season.

To start *bonsai*, it is advisable to start with 2 to 3 pots, choosing from among the above varieties, so that you can easily keep an eye on each of the pots.

Not many tools are necessary for *bonsai*. First of all, you need a pair of scissors. You will find a small pair useful, as it will be good for all parts, including roots, leaves, and branches. Next, a pair of tweezers. It is useful for removing small insects and picking weeds. Moreover, you need a hand sprinkler for watering. A small hand sprinkler with a long spout will do. A mister is also a must for giving moisture to leaves. These are the bare necessities for you to start enjoying *bonsai*. You may need to use solid fertilizer, yugo-zai (healing adhesive), which is a paste that promotes the healing of the cut end of a large branch to prevent infection, and other chemicals on an as needed basis.

There are three points you need to take note of to grow *bonsai*. Firstly, the condition of roots visible on the soil surface. In nature, a large tree that has grown over the years has roots that have flared in every direction and some of them are exposed on the soil surface. Try to make *bonsai* tree roots flare dynamically, and the tree will be a portrayal of a huge tree and your *bonsai* will turn into a magnificent miniature of nature. Secondly, the thick-



Kusa-mono *bonsai*

Bonsai of moss and plants. They have conventionally played secondary supporting roles in *bonsai*, but they are the main players in *kusa-mono* *bonsai*. This kind of pot is relatively low-priced, quick to grow, and easy to recover even if it ends in a failure. *Kusa-mono* *bonsai* is popular also as a tabletop decoration. Appropriate tree species include: *koke* (moss), *take* (bamboo), *sasa* (bamboo grass), and *shida* (fern).

ness of the trunk. In nature, the upper section of a tree trunk becomes gradually thinner than the lower section. A *bonsai* tree can be trained and shaped nicely if you nurture it so that the trunk gets thinner higher up. Thirdly, the relative size of the trunk and the leaves. As *bonsai* is a miniature of nature, it will instigate a sense of incongruity if the leaves are too big compared to the thickness of the trunk. It is essential to keep the leaves small.

Form an ideal image in your mind, and use the scissors delicately, and sometimes boldly. *Chokin*, *chokin*. And it is very likely that you will enjoy the peaceful flow of time somewhat similar to meditation.

DIC Corporation KASHIMA PLANT



DIC Corporation is the largest manufacturer of printing ink (ink for the printing industry) in the world. When the Great East Japan Earthquake led to shortages of electric power, DIC's Kashima Plant turned the adversity into an opportunity to install a system to visualize consumption of power and energy. The system allows all plant employees to see information about their energy consumption at any time. It is steadily raising employees' consciousness about energy conservation, helping to reduce costs through the visualization of per-unit energy consumption, and prompting employees to think about quality improvement.

Post-earthquake shortages seen as an opportunity, underscoring the need to save energy every day

DIC Corporation was founded in 1908 for the production and sale of printing inks. Committed to its management vision, "Color & Comfort by Chemistry," the company delivers color and pleasantness to people in their daily lives through its four core business operations. Printing Inks is DIC's mainstay business since its establishment. As a global market leader, DIC boasts an extensive product portfolio ranging from publishing inks to inks and adhesives for packaging, enabling it to respond to the needs of customers worldwide. Starting with the organic pigments and synthetic resins that are the principal raw materials for Printing Inks, the company expanded to supply the Fine Chemicals used as raw materials in digital printing equipment, and through its Polymers business offers synthetic resins and related products for a wide range of industrial fields. In addition, the company combines various fundamental technologies to create and offer application products through its Application Materials business.

The Kashima Plant is DIC's main factory. It manufactures primarily organic pigments, off-

set inks, additives, and PPS (polyphenylene sulfide) resin. This plant has been actively addressing energy conservation for many years by utilizing woody biomass*1 power generation and wind power generation, for example.

"Energy conservation is an important issue for us not only in response to society's demand to reduce the burden on the environment, but also to decrease manufacturing costs," explains General Manager Toshikazu Adachi. "Our plant consumes large amounts of energy for producing products. Faced with critical shortages of electric power in the summer of 2011 in the wake of the Great East Japan Earthquake, we came to a fresh realization of the importance of understanding our daily energy consumption and furthering our energy conservation efforts."

By means of simple and colorful screens, easy-to-understand information for everyone

With that motivation, DIC's Kashima Plant decided to install a system that would make en-

The EneSCOPE screen shows the amount of energy consumed by individual production lines in different colors. This information can be freely viewed by all employees on their PC via the plant intranet.

ergy consumption easy to see and understand. After comparing the products offered by a number of companies, DIC chose the energy visualization solution proposed by Azbil Corporation, consisting mainly of its energy management system, electricity use optimization package, and energy key indicators package (called EneSCOPE, ENEOPTpers, and ENEOPTtopview respectively in Japan).

The question, "Visualization for whom?" was the reason for selecting Azbil, according to Power Supply Group Leader Satoshi Abe. He explains, "To promote electricity and energy conservation throughout the entire plant, we needed to show energy consumption data not only to the group in charge of the power supply, but also to the employees on the production floor and to office workers at the plant. Azbil's products have simple and colorful screens that make it easy to understand the



ENEOPTpers graphically displays power consumption trends by department on a PC set up in the power supply control center.

displayed information, and they also show energy consumption trends by department in real time, regardless of how small or large the amount is." Satoshi Hirano of the plant's Power Supply Group adds, "At first we worried that Azbil products might not be able to utilize the data collected by another company's DCS*2, but of course Azbil had the technical expertise to implement the visualization."

The Kashima Plant accepted Azbil's proposal in February 2012, and in June of the same year the visualization system using EneSCOPE and ENEOPTpers began operation. Visualization of energy at the plant is unfolding according to a roadmap that specifies the following five steps: (1) establish a committee to promote energy conservation, (2) visualize electric power and steam data by installing an appropriate system, (3) visualize data for water supply, instrumentation air, waste water, etc., (4) visualize per-unit energy consumption by product*3, and (5) visualize production information. Currently, the plant is implementing Step 3, and for some production processes, pilot activities for Step 4 are underway.

In Step 1, according to Mr. Hirano, an Energy Conservation Promotion Committee was organized with the manager of the Kashima Plant as the committee chair. Committee leaders and members were selected from the employees of each group and from the production field. This committee reports on various activities conducted in the field in a monthly committee meeting and in an information bulletin, "Kashima Energy Conservation Communication," published by committee members. Also in this step, grass-roots energy conservation activities among general employees began to blossom.

In Step 2, EneSCOPE and ENEOPTpers were installed, enabling anyone to freely view visualized energy information on PCs in the plant via intranet. As Mr. Abe describes it, "The top page, which is from ENEOPTtopview, gives a graphical bird's eye overview of the entire plant. When you select a location on this screen, the display switches to an ENEOPT-



The dashboard-style screen of ENEOPTtopview shows a bird's eye view of the entire plant as well as the amounts of electric power used by individual facilities on the premises. Selecting a location on the screen switches the display to an ENEOPTpers or EneSCOPE screen that displays more detailed information on energy usage.

pers screen, and you can see the power usage situation for the selected location. Then, if you switch to the EneSCOPE screen, you can see detailed per-unit power and steam consumption trends."

During lunch break, a large monitor installed in the cafeteria displays "Kashima Energy Conservation Communication," the publication produced by the committee members. This draws employees' attention to daily power- and energy-saving activities and motivates them to further conserve electricity and energy.

Visualization produces steady progress towards achieving energy-saving goals

At the Kashima Plant, the energy-saving activities based on the visualization of energy consumption are producing results in the form of decreased consumption of electric power and energy.

"Our initial targets were a reduction of 3% in the per-unit electric power consumption rate by the manufacturing departments and a reduction of 3% in total electric power use by assisting departments from the levels in 2010," says Mr. Abe. "The results obtained during the summer period of July to September 2012 indicated a 7.1% reduction by the manufacturing departments and an 11.0% reduction by the assisting departments. In the winter period from November to February, the manufacturing departments achieved a 6.4% reduction and the assisting departments attained a 27.2% reduction. These results exceeded our targets by far, so we are really able to see the effects of visualization."

"The most significant result," comments Mr. Adachi, "was that employees became more aware of their responsibility to conserve electric power and energy. I believe this is due to the display system, which allows all employees to view energy consumption information from a viewpoint that is relevant to their work. To further extend our energy-conservation efforts, we plan to visualize per-unit energy consumption by product in order to motivate all

employees towards further cost reduction and quality improvement. For that effort, we will be counting on Azbil for continuing support as our partner in power and energy conservation."

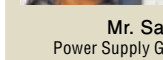
DIC Corporation KASHIMA PLANT



Location
18 Higashi-Fukushiba, Kamisu-shi, Ibaraki
Start of operations
May 1972
Business line
Manufacture of organic pigments, offset inks, functional additives, PPS (polyphenylene sulfide) resin, etc.



Mr. Toshikazu Adachi
General Manager



Mr. Satoshi Abe
Power Supply Group Leader



Mr. Satoshi Hirano
Power Supply Group

*Within this article, as of March 2014, products and services that are sold only in Japan is included.

glossary

*1▶ Woody biomass

Woody biomass is mainly tree residue. Biomass power generation uses steam and gas produced by the burning of biofuels derived from animals and plants to drive turbines that generate electricity.

*2▶ DCS (Distributed Control System)

A system that monitors and controls the manufacturing process or production facilities in plants and factories. To achieve even distribution of load, the DCS distributes the functions of each device over a network, resulting in safety and excellent maintainability.

*3▶ Per-unit energy consumption by product

= (Total amount of energy consumption for manufacturing products) ÷ (Quantity of products)

Joined in the U.S. by new member Azbil VorTek, LLC, the azbil Group expands its flowmeter product lineup and strengthens its global development, production, and service structures

The azbil Group is pleased to be joined in the United States by Azbil VorTek, LLC, (formerly VorTek Instruments, LLC). With this new Group company, which has developed a business centered around the world's first multivariable mass flow vortex flowmeter, the azbil Group has strengthened its flowmeter product lineup. Leveraging this expanded product range, the azbil Group will be better able to respond to diverse customer needs in Japan and worldwide, providing solutions with high added value.

Product superiority and market competitiveness prompt the decision in favor of capital participation and collaboration with VorTek

Azbil Corporation has entered into partnership with VorTek Instruments, LLC, a globally recognized U.S. company that develops, manufactures and sells vortex flowmeters, with the aim of strengthening and expanding its flowmeter business. Azbil



Jim Storer
President
Azbil VorTek, LLC

North America, Inc., an Azbil subsidiary, acquired a 70% stake in VorTek Instruments on December 31, 2012. Consequently, VorTek Instruments changed its name to Azbil VorTek, LLC and became an azbil Group company.

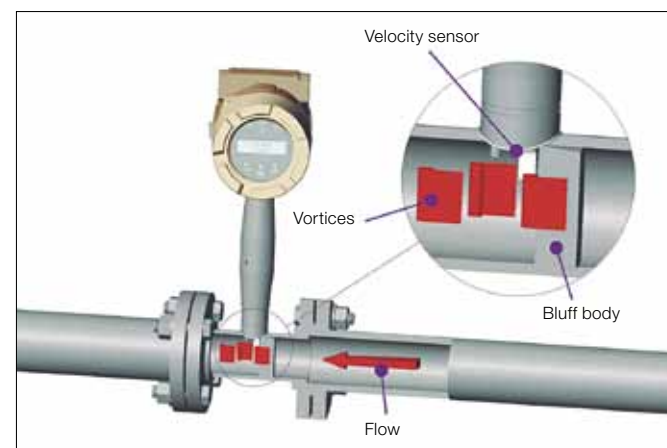
From its origins, Azbil has provided a wide range of instruments for the measurement of liquid, gas, and steam, such as electromagnetic flowmeters and differential pressure flowmeters. By adding Azbil VorTek's vortex flowmeters to its lineup and offering a wider array of products, Azbil has enhanced its ability to meet a more extensive range of customer needs.

A vortex flowmeter is an instrument that measures pressure changes caused by vortices generated by the flow hitting an obstruction (called a shedder bar or bluff body) placed in the path of the flow, and converts the measurement to an electrical signal. VorTek Instruments has been in the vortex flowmeter business since its foundation in 1995. The company is also known for providing the world's first multivariable mass

flow vortex flowmeter. This product can accurately measure the mass of a liquid, gas, or steam flow, the volume of which may vary due to factors such as temperature and pressure, by simultaneously compensating for temperature and pressure. It uses an embedded flow computer function to measure the velocity of various fluids, without using any additional arithmetic unit for the compensation function. Recognizing the superiority of VorTek products and their market competitiveness, Azbil decided in favor of equity participation.

For VorTek Instruments, joining the azbil Group provides a considerable advantage in terms of market expansion. VorTek Instruments had been looking

Measurement principle of vortex flowmeters



Azbil North America President Gary W. Johnson (left) and Azbil VorTek President Jim Storer (right)

for the large potential for market expansion in Japan and elsewhere in Asia, making Azbil's network in those areas very attractive. Azbil also considers VorTek Instruments an attractive business partner for the purpose of providing a range of solutions involving flowmeters in global markets, since VorTek Instruments has been a global company with a solid business foundation in Europe and the U.S.

Providing new value by strengthening collaboration in development, production, and service

Guided by its "human-centered automation" philosophy, the azbil Group has secured its growth

model by drawing on the synergies of its three core businesses—the Building Automation business, the Advanced Automation business and the Life Automation business in Japan—and plans to deploy this model globally.

Azbil will utilize Azbil VorTek's high-quality vortex flowmeters in applications such as managing the supply volume of steam, gas, and fluid in commercial building HVAC systems, factory utility equipment, and town gas manufacturing facilities in North America and Europe, and also in China and Asia from its base in Japan.

In addition to supplying vortex flowmeters to customers, Azbil VorTek is positioned as the azbil Group's development, production, and service base in North America, and so it will collaborate even more closely with Azbil in the future. Azbil VorTek has a plant in Longmont, Colorado, which has established an RMA (Return Merchandise Authorization) system for repair and calibration of VorTek products sent from customers. The company plans to build up this system so that the plant can also provide calibration and maintenance services for Azbil-manufactured electromagnetic flowmeters sold in North America.

Previously, Azbil flowmeters sent from

customers in the U.S. for repair were shipped to Japan. Offering U.S.-based repair services will help to accelerate service delivery to customers in North America.

Promoting the development of new flowmeters based on advanced know-how

Azbil VorTek is involved in the development of various types of flowmeters in addition to the vortex type. For example, the company is presently developing an ultrasonic flowmeter that can measure the velocity of fluids, such as chilled or heated water, flowing in a pipe from outside the pipe, without any contact with the fluid. This product incorporates the latest ultrasonic flowmeter technology, which can accurately measure the mass flow rate of chilled or heated water by compensating for temperature. The flowmeter, which fully utilizes the advanced know-how accumulated by the company through the research and development of vortex flowmeters, is scheduled for release in 2014.

By strengthening its flowmeter product lineup, Azbil intends to offer solutions with higher added value to customers, not only in Japan and North America, but also in other countries worldwide.



AX series vortex flowmeter

■ Native BACnet solution with Inflex BC and Inflex VC from Azbil.

In HVAC control industry, open communication protocol is frequently required from our customers. As a communication protocol, BACnet is always in the first position to be complied with. Azbil Corporation had released the native BACnet solution by the combination of Inflex BC multipurpose controller and Inflex VC variable air volume controller with actuator.

Inflex™ BC BTL-certified Multipurpose Controller

Inflex™ BC is a multipurpose controller designed to control building equipment, such as AHU. This controller consists of the control unit, the I/O control unit, and I/O modules. Inflex BC enables control of temperature and humidity, as well as building equipment operations.

The Inflex BC control unit is also a BTL-certified BACnet Building Controller (B-BC) and manages the Inflex BC I/O control unit.

The number and types of the I/O modules can be changed corresponding to the control or management to fit various applications. Additionally, since installed soft-

ware can be freely edited, an optimum application for building equipment can be configured in terms of both the software and hardware.

Inflex BC communicates with our savicnet™ FX BMS (Building Management System) through BACnet/IP network. By sending the operation status to the BMS center unit or by controlling the operations based on



the commands sent from the BMS center unit, integrated control of the entire building can be performed.

Inflex™ VC for BACnet MS/TP Communication

Inflex VC Model WY5706C is our new VAV controller with an actuator that communicates via BACnet MS/TP. Inflex VC is a BTL-certified BACnet Application Specific Controller (B-ASC), Inflex VC provides high-performance DDC of a VAV unit in a building air-conditioning system. Thus, Inflex VC, networked even within a complicated HVAC con-

trols the VAV unit.

Besides, Inflex VC offers building owners and operators the flexible and enhanced controls of temperature and VAV for various VAV units.

Inflex VC sends unique energy-saving information to Inflex BC, enhancing overall controllability of a building management system.



*BACnet is a trademark of ASHRAE.
*Inflex is a trademark of Azbil Corporation.

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<http://www.azbil.com/>

Yamatate 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 Research & Development, Inc.
- Azbil North America, Inc. • Azbil VorTek, LLC • Azbil BioVigilant, Inc.
- Azbil Brazil Limited • Azbil Europe NV • Azbil Telstar, S.L.

〈Company/Branch office〉

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Issued by Mikako Takahashi, Public Relations Section, Corporate Planning Department, Azbil Corporation
19F Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo 100-6419 Japan TEL: 81-3-6810-1006 FAX: 81-3-5220-7274 URL: <http://www.azbil.com/>



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