

### 2017 Vol.2 azbil Group PR magazine

azbil Japanese Red Cross FIELD Wakayama Medical Center

azbil MIND Contributing to innovation in gas and water infrastructure by adding higher value to meters and the metering business



Special Feature Aomori Nebuta : Arts Made of Paper and Light



# Aomori Nebuta: Arts Made of Paper and Light

Nebuta is a festival held at multiple locations in Tsugaru region of Aomori Prefecture. One of the most well-known among them is the Aomori Nebuta Matsuri that is held in Aomori City in the beginning of August every year. With the beauty of the huge three-dimensional creations of Japanese paper colored in the traditional color scheme, the festival attracts a large number of tourists from overseas. In this article, we will tell you what is happening on the rarely seen Aomori Nebuta workshop floor.

#### Aomori Nebuta Matsuri

It is a summer festival held from the 2nd to 7th of August every year in Aomori City, Aomori Prefecture. About 20 lantern floats featuring human and animal figures are drawn around the main streets. The festival was designated as an Important Intangible Folk Cultural Properties in 1980. The number of tourists who are attracted to the festival is estimated to be close to 3 million a year.

#### Traditional Festival That Blows You Away

The main attraction of the Aomori Nebuta Matsuri is about twenty huge lantern floats, called *nebuta*. Each nebuta is created by a professional called *nebuta-shi* (nebuta master) who oversees the entire process of production, from selecting a motif for the year and drawing the original painting to building the framework and coloring the float. One such nebuta-shi is Hiroo Takenami. Mr. Takenami explains the history of nebuta as follows:

"The Nebuta Matsuri is said to have 400 to 500 years of history as a folk cultural event. The origin was a ritual held on the 7th day of the 7th month of the lunar calendar when people made small lanterns on which they wrote their wishes such as good harvest and let them flow away on the river to flush away evil spirits, misfortunes, natural disasters and also drowsiness and fatigue that would disrupt their agricultural activities. In the Tsugaru region, the lanterns grew increasingly larger and more creative, and finally became the urban parade that we see today. The lanterns used to be covered by flat two-dimensional paintings, but over time they developed into the three-dimensional creations, first using strips of bamboo as the frame material, and later metal wires. The introduction of wires accelerated the growth in the size of the floats. The reason why the characters on the floats often carry weapons and glare at you is because they are supposed to scare away the evil spirits and bad luck."

Mr. Takenami describes the nebuta floats as "arts made of paper and light" because the three-dimensional paper objects are lit up from inside. The framework evolved from bamboo to wire, and the light from candles to incandescent lamps to LEDs.

The horizontally oblong and gigantic nebuta overwhelm the viewer with their magical power. Because they are pulled around the streets, there are designated size limits of 5m high, 9m wide and 7m deep when mounted

> Hiroo Takenami Nebuta-shi (Nebuta Master)

on wheels of about 2m high. The job of nebuta-shi is to build their distinctive and imaginative world, making the most of this designated space.

The first step of their work is to select a mo-



tif and draw the original painting. The painting becomes the design drawing for their nebuta, and there is no particular rule on how to create it. In the case of Mr. Takenami, he uses the traditional Japanese pigment painting method for the original painting, and the painting itself is a beautiful piece of art.

"The original painting is used as a design drawing, but it does not show the dimensions of the framework," says Mr. Takenami. "It simply shows how the nebuta should look from the front. In my case, I first have a three-dimensional image of my nebuta in my mind and then express it as a painting, so it would be incorrect to say I transform my two-dimensional painting into a three-dimensional object. Most important are the parts you cannot see in the picture where two characters, or a character and the background, overlap. You have to show these parts in a naturally connected three-dimensional way. How natural and convincing, yet dynamic the transitional parts are shows the artist's skills."

#### Expressing the Imaginative World Using the Trompe L'oeil

If you look at the float details, you notice that



An original painting of a nebuta that was actually used for the festival.

the scale is not consistent. For example, two faces next to each other may be widely different in size, or in some cases the left and right eyes of the same face may be of a completely different size.

"The nebuta of Aomori uses the trompe l'oeil techniques to deceive perception. Using the deformé technique and intentionally changing the scale, we achieve the sense of depth that feels much larger than the actual depth of the float. This is the secret behind the real 3D feel," Mr. Takenami explains.

The Aomori Nebuta Matsuri has set another rule about the size of the parade: The pullers, float, and dancers that follow the float can spread over no longer than 110 meters. About 20 teams form a single file to parade the streets. The spectators can sit on the side of the street and watch the floats pass one after another. When a float appears within their field of vision, a complete world of the artist's imagination appears, then after a while, disappears with the float. The spectators can enjoy an imaginative world pass by in front of their eyes one by one.

"One peculiarity of the Aomori Nebuta Matsuri is that you never see multiple floats at once," says Mr. Takenami. "Spectators can see each float separately, one at a time. Because they will not see another float to compare the size with, the artists are free to use tricks like the trompe l'oeil techniques to make the float look bigger than its real size. Moreover, the front and back parts of the wheel structure move up and down like a see-saw. So we can use the movement of



Based on the original painting, the nebuta-shi constructs the timber framework and builds the detail parts, using wires and their intuition. Then they attach the Japanese paper on the frame and finally apply the colors.



KAKERA: Lampshades using pieces of a nebuta.

the float to change the angle of the spectator's view. We create the protruding parts on the top part of the float, such as the faces or arms of human or animal figures, and use the up and down movements to create the feel that the characters are alive and kicking."

Mr. Takenami's nebuta is impressive for its rich colors. He emphasizes that the colors are as important as the framework to create a powerful nebuta.

"I use black, deep red and cold colors for contractive outlines and white, yellow and other expansive colors to make the parts of the painting come forward dramatically. Each nebuta-shi uses a different palette, so you can further enjoy yourself by paying attention to those differences."

The Aomori Nebuta Matsuri has achieved nationwide fame, and recently its popularity has reached another level, he says.

"Lately, our society has accepted diverse value systems, and it has become normal. especially among young people, to pursue and enjoy what each individual loves to their heart's content. We have seen more and more young women who are crazy about history. Such young people are paying particular attention to our nebuta, based on their detail knowledge of historical warlords. Scale model figures that used to be considered otaku fetishes have been accepted as a mainstream hobby genre. In a way, nebuta is a three-dimensional art that has some similarities to scale model figures, and this might explain its resurgent popularity."

Mr. Takenami creates other forms of arts and objects deriving from nebuta. He is promoting these more accessible products to further raise the awareness of nebuta. He will continue to show to the world the nebuta as a form of art that Aomori Prefecture and Japan as a nation take pride in. Case Study

### **Japanese Red Cross Wakayama Medical Center**



The Japanese Red Cross Wakayama Medical Center contributes to regional medical care as the core hospital of Wakayama Prefecture in Japan. Using the opportunity of the new construction of the hospital's main building, a full-scale energy conservation initiative has been implemented. With a focus on improving the operations of the air-conditioning and heat source equipment, the hospital has achieved a steady and continuous reduction in energy consumption by implementing a series of energy conservation measures while balancing the needs of maintaining a comfortable environment within the hospital with conserving energy.

#### A full-scale energy conservation initiative has been launched using the opportunity of the new construction of the main building

azbil **FIEL** 

The Japanese Red Cross Wakayama Medical Center was founded as the Japanese Red Cross Wakayama affiliate hospital in April, 1905. Since this time over more than a 110-year period, the hospital has provided regional medical care based on the fundamental principles of the Red Cross of "humanity, impartiality, neutrality, independence, voluntary service, unity, and universality". As a designated disaster care hospital of Wakayama Prefecture, if a disaster such as an earthquake, tsunami, or typhoon occurs, the hospital is able to receive injured people and dispatch medical relief teams. Currently



The savic-net FX installed in the central monitoring room

there are 38 diagnosis and treatment departments and 47 outpatient departments, and care for approximately 496,000 outpatients and 234,000 inpatients a year is provided

In 2011 construction for the new main building that contains the latest equipment and capabilities was completed. Using this opportunity the energy conservation measures for the entire hospital have been strengthened. "Because the old main building was more than 50 years old and we had planned to reconstruct it, we did not make improvements such as introducing high-efficiency equipment and implementing large-scale energy conservation measures. The completion of the new main building was a great opportunity to implement a full-scale energy conservation initiative," says Mr. Nakagawa.

#### Energy conservation measures were quickly developed with the realignment of the structure of building management operations

This time, one of the reasons for implementing full-scale energy conservation measures was due to the Japanese energy conservation law<sup>\*1</sup> that requires mandatory reporting to the Japanese government.

"It is required by law that all necessary legal documents are prepared and the obligation to observe energy reduction targets is met. However, we felt that we alone would have difficulty meeting these requirements and that it was necessary to obtain the assistance of an appropriate specialist," says Mr. Kinugawa.

Azbil Corporation was chosen to be the hospital's partner in implementing the energy conservation measures.

"We decided to go with Azbil due to reasons such as that Azbil had introduced a central monitoring system to the south building that is located in the same site as the main building, that we felt secure because Azbil had a wealth of experience in facility management in buildings, and that they had proposed a wide range of energy conservation measures," says Mr. Nakagawa.

Together with introducing Azbil's savicnet<sup>™</sup>FX building management system to the newly-constructed main building, agreements have been made for Azbil to provide the hospital with an energy solution service that supports improvement of building operations, and a remote maintenance system that gathers operational data from the site, analyzes the data, and reports the operational status. Energy conservation measures



that center on improving facility operations have been launched.

In the first year in 2011, a list of the facility equipment and legal documents were made, and managerial standards including a checklist were formulated. From the second year. measures have been implemented in sequence to achieve energy conservation by improving the operations of the existing equipment rather than replacing them: for example, adjusting the temperature setting of the air conditioner and controlling intermittent operations of the outside-air handling units. "In particular we were able to achieve a large energy-saving effect by employing intermittent operations in accordance with the changing situation within the outpatient building for the outside-air handling units that had been running continuously until then. For these operations, Azbil measured the CO<sub>2</sub> concentration in the room and was able to achieve appropriate control with actual measurements," says Mr. Ueno.

Following the results of this round of operational improvements, Azbil has provided overall building management from 2014. At the same time as providing on-duty staff, Azbil has established a system that enables it to carry out more attentive building management operations than before.

"Rather than just performing building management, Azbil's staff leads a team with a high sense of purpose for attaining energy conservation. We believe that this has enabled us to put in place the best system that could ensure increased effects," says Mr. Nakagawa.

A new project is started after achieving greater energy-saving effects than expected

vation measures starting in 2011, energy reductions have been achieved between 2.9 % and 7.5 % year-on-year until 2015.

Furthermore, replacement of the heat source equipment in the south building of the Wakayama Medical Center began in September. 2015. On advice from Azbil, a subsidy system of the Japanese Ministry of the Environment was implemented for the replacement. "In addition to pursuing energy conservation with the use of high-efficiency equipment, we have put in place a mutual backup comprising of a hybrid energy source of gas and electricity that would prevent the interruption of airconditioning operation in case of an emergency such as a disaster," says Mr. Kinugawa, The construction was completed in February, 2016. There is a positive attitude toward attaining the energy conservation rate of 4.7 % newly set by the hospital.

"We are very grateful that Azbil holds debriefings twice a year and provides us with reports that show our daily energy conservation efforts in numerical form," says Mr. Nakagawa. "A hospital requires a large amount of energy. What's very difficult is implementing energy conservation while providing a comfortable environment in the hospital that takes into consideration the condition of its patients. While meeting this challenge, the results of the energy conservation measures that we have implemented in sequence in the last few years have far exceeded our expectations. In addition to attaining even further improvements with fa-5 9 1 8 cility operations, we are very much looking forward to the energy conservation proposals that only Azbil can provide based on their advanced knowledge, 2015 says Mr. Ueno.

Graph showing the shift in energy usage as a result of energy conservation



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Photos, from left to right water-cooled chiller (electric). absorption chiller (steam), and water-cooled heat pump chiller (electric). In consid eration of machine trouble the heat source equipment is composed of several machines and controlled ac ording to heat load

Since the implementation of energy conser-

#### Japanese Red Cross Wakayama Medical Center



4-20 Komatsubara-dori, Wakayama City, Wakayama Prefecture Fou April, 1905 Business sco General hospital services (Advanced Emergency Care Center, Regional Core Hospital for Cancer Treatment, and General Disaster Care Hospital of Wakayama Prefecture) Yutaka Nakagawa Manager Accounting Department Administration Sector Kazutaka Kinugawa Assistant Manager Accounting Department, Administration Sector

Shuii Ueno Assistant Manager Accounting Department, Administration Sector

#### glossary

#### \*1 ► Energy Conservation Law

This law requires the appointment of an energy management control officer and the submission of legal documents such as reports on the status of energy usage, mid- and long-term plans, and periodic reports for facilities that use large amounts of energy as specified by the Japanese Ministry of Economy, Trade and Industry



### Contributing to innovation in gas and water infrastructure by adding higher value to meters and the metering business

At a time when the electricity and gas markets in Japan are undergoing change due to deregulation and other factors, Azbil Kimmon Co., Ltd., a part of the azbil Group's Life Automation business, is pressing ahead with energy-saving solutions. Azbil Kimmon is making gas and water meters smarter and is providing customers with precise data on the amounts used. The company is determined to provide gas and water companies and end-users—such as private homes, factories, and buildings—with ever higher added value, and to contribute to society by meeting the need for cost reduction and energy conservation.

#### A century of support for businesses providing essential gas and water services

ife Automation(LA) is the third business pillar of the azbil Group, the other two being Building Automation and Advanced Automation. Azbil Kimmon plays an important role in the LA business, whose aim is to contribute to people's active lives. Since its founding in 1904, Azbil Kimmon has consistently devel-



Masahiro Uenishi President and CEO Azbil Kimmon Co., Ltd.

oped its business as a manufacturer specializing in gas and water meters in Japan. It joined the azbil Group in December 2005 and has been working hand in hand with Azbil Corporation.

Azbil Kimmon, whose business is largely based on the two areas of gas/ water meters and solutions, has been making efforts to further improve the services it offers to customers. In the area of meters, the company provides its customers not only with products, but also with repair, maintenance, and inspection services. In the area of solutions, Azbil Kimmon has made it easier to obtain readings from meters by improving their output function, and it also provides regulator stations that reduce gas pressure to a safe level before it is provided to homes and factories. The regulator also plays an important role of preventing gas leaks by automatically shutting off the gas flow in the event of an earthquake of a certain size. In connection with automatic governor shutoff, Azbil Kimmon worked with gas suppliers to develop a system in which each governor can be individually controlled from a remote monitoring center, and can be reopened when safety is confirmed. This system is already in operation in Japan.

In these ways Azbil Kimmon is steadily advancing in pursuit of high added value in its product and service businesses.

### Using the automatic meter reading system as a base, meter data services have been expanded

n recent years, the Japanese electricity and gas markets have come to a significant turning point, beginning with the deregulation of the retail electricity market in April 2016, and competition in the retail gas market is scheduled for April 2017. These changes mean that consumers will have a choice of which provider they use. Without a doubt, Japanese gas providers will need to provide their customers with services that are more convenient.

In the electricity market, providers have been quick to introduce smart meters with communication capabilities. Previously meters were read only once a month for billing, but with smart meters that can read and store data more frequently, providers can obtain more detailed data on the amount of power used. Consumers who receive this detailed data from suppliers can plan ways to save electricity. Since the same kind of trends may appear in the gas market, there is a prospect of a wider range of possibilities for service development than ever before.

Azbil Kimmon has already been providing customers with a load survey system.<sup>\*1</sup> This system communicates with the meters installed at consumers' facilities to collect data on the amount of gas used every hour. This data is transmitted and stored on computers at the gas company through cell phone networks. This enables gas providers to calculate bills and create monthly re-

ports that are sent to each consumer. Based on the know-how accumulated by providing meter maintenance and inspection services as well as the load survey system, Azbil Kimmon has begun to provide new services in the area of industrial-size gas meters for plants and large buildings.

What Azbil Kimmon has begun to provide is a whole service package including all the meter-related work, including installation, maintenance, and inspection of meters, collection of metering data, and provision of the collected data to gas providers. With this package, gas companies do not need to purchase meters or related equipment, and are freed from concern about the expiration dates of certification\*2 for each meters, or dates for maintenance or inspection, and can simply be informed of the amount of gas used. In addition, gas companies do not need to own either the meters installed at consumers' facilities or the extra meters needed as spares during inspection, so they can significantly lower their costs. Azbil Kimmon collects the meters whose certification has expired, repairs them to a "likenew" condition, and uses them as spares to replace old meters whose certification has expired. This proce-

#### Meter Data Services



dure, which is based on the idea of shared services,<sup>\*3</sup> is attracting much attention from gas companies since it is more efficient, enabling the gas industry as a whole to reduce the number of meters it owns. This new service enables Azbil Kimmon to collaborate closely with its client gas companies, and opportunities to make customers' operations more stable and further developed can be expected.

#### Global deployment of high value-added products and services in anticipation of an overseas meter market

n the field of gas metering, Azbil Kimmon will begin providing rotary gas meters (rotator flow meter) with a built-in temperature and pressure compensator in China. These rotary meters, despite their small size, are capable of compensating for temperature and pressure. In China, there is a large difference in elevation between coastal and inland areas, and also a large difference in temperature. So the temperature, air pressure, and gauge pressure must be calibrated according to where meters are installed, and temperature and pressure must be compensated separately for each device. Previously in China, a rotary meter needed a separate temperature and pressure compensator, so space for two devices was necessary, but the new rotary meter with built-in compensation is smaller, allowing customers to use space efficiently. Since the outer case of the rotary meter was designed for global use and not for China alone, sale of the product can be expanded to other nations including Japan. Anticipating the overseas meter market, Azbil Kimmon is determined to expand its systematic introduction of smart meters and development of systems that not only have sophisticated functions, but also incorporate a mechanism for remote meter reading.

Building on a foundation of smart meter solutions, Azbil Kimmon will intensify its efforts to provide innovative products and services with high added value in the field of gas and water infrastructure.

#### \*1 Load survey system

A system by which gas or electricity companies remotely monitor meters installed at consumers' facilities via a wired or wireless network.

#### \*2 Expiration dates of certification

The time period defined by Japan's Measurement Act during which the results of inspection are valid. For gas meters, this is 7 or 10 years, and for water meters, it is 8 years. After the expiration date, gas and water companies must collect expired meters and do the proper repair and maintenance before reinspection.

#### \*3 Shared services

A management method in which work common to multiple departments is done by one department to achieve greater efficiency. In many cases, these services are implemented to reduce the cost of indirect departments.



### Keyword Malware

A collective name for malicious software that sneaks into users' computers through, for example, e-mail attachments, and exhibits malicious behavior such as stealing private/confidential information, destroying and manipulating data, etc.

### Malicious behavior by malware threatening computer users

Today we live in a world that will not work without information technology and computer networks. While at the same time, the threat by malware continues to increase. Malware is a coined word made up of *mal* as in malicious and *ware* as in software. Malware sneaks into devices, such as PCs and smartphones, to take malicious actions, such as stealing private/confidential data, destroying and manipulating such data, etc.

Generally, malicious software program spreads from computer to computer via a network such as the Internet by infecting many and unspecified users' computers through infected e-mail attachments and infected files supplied by external devices. That is why it is also called *computer virus*. In around the 2000s, for instance, a devastating computer virus called LOVELETTER spread across the globe. This virus was sent via e-mail messages with the subject line "I Love You," and when the e-mail recipient opens the attachment, that attachment or file is activated to send a copy of itself to all addresses in the mailing software installed on that recipient's computer. This virus, however, was more like a crime of pleasure, considering less threatening than that of today's malware in terms of criminal intent.

In recent years, however, there have appeared new types of malicious software programmed to



attack a specific organization to wreak havoc, which is threatening to many companies, countries, and autonomous bodies. This is a kind with a clear criminal intent acting in various unexpected ways like stealing and manipulating and/or leaking confidential information. These viruses are collectively called malware.

Malware is a threat not only for organizations but also for many individual computer users. A virus attack known as *ransomware* is one of the malware families whose threat has rapidly risen in recent years. Like other malware families, ransomware reaches a victim's computer in form of an e-mail attachment and installs covertly on the computer and encrypts certain file types on the infected system so the victim cannot access them. Then the attacker sends an email to the victim and asks for a ransom in exchange of decrypting the victim's locked files.

## Countermeasures against the threat by malware that is lurking in today's convenience

Generally, organizations like companies implement a multi-layered defense system, installing anti-virus software on their computers and servers, and at the same time they also install defense programs such as Firewall and Firewall devices to establish barriers between the company's intranet and outside networks. They also implement strong measures in their operations by making rules that stipulate strange e-mails

and files should never be opened and have their employees follow these rules.

In spite of these efforts, there is no end to the attacks by viruses targeting a specific organization. If a virus invading a specific organization is specially programmed for that organization, there cannot be a match between existing virus definitions and this invading virus, and thus anti-virus program cannot detect it. In addition, malware is sent dexterously outwitting the company's rules, pretending the e-mail is from the recipient's boss, peer, or acquaintance so that the recipient lets his guard down and opens it.

Accordingly, there is no perfect way to prevent malware invasion. Therefore, in addition to the existing active scanning (detection before infection) method, some people emphasizes the importance of passive scanning (detection after infection) to capture the behavior of malware after it gets into the system.

So, what can we as individuals do to protect our computers from malware? Like many organizations, we need to install anti-virus software in our PCs and smartphones and update these applications constantly. We also need to be careful not to open suspicious attachments. When accessing some website for the first time, we should think about their security, whether we can trust them or not, because visiting websites is one of the major causes.

IT and computer networks have made our world an extremely convenient place. But this convenience and the threat by malware are two sides of the same coin. We always have to be aware of the threat and should make constant efforts to gather information about malware, save confidential data on external hard drives instead of on our computer's hard drives, and mix various ways of communication, such as telephones and fax machines, instead of relying on the e-mail exchange alone. Computer users need to take actions infallibly to create a safe environment to use their computers.

VISUACT<sup>™</sup>3 by Azbil SecurityFriday Co., Ltd. is an epoch-making network sensor that is

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capable of visualizing Windows network data and therefore allows companies to monitor it, which is important for their system security but was impossible previously.

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