

THERE... WHERE THE SUN RISES, IS A WORLD TO LIVE AND TO DISCOVER. IT IS NOT EASY TO DESCRIBE THE BEAUTY OF THE SCENERY, THE POPULATION AND THE EMOTIONS THAT CAN BE FELT IN THE LAND OF THE RISING SUN, JAPAN, WHOSE NAME DERIVES FROM "NIHON" OR "NIPPON" (WHICH MEANS "ORIGIN OF THE SUN"). THE NAME WAS GIVEN TO THIS LAND BY THE CHINESE AS JAPAN IS EAST OF CHINA AND EVERY MORNING THE SUN RISES FROM THAT DIRECTION. FULL OF BEAUTIFUL, NATURAL SCENERY, JAPAN IS MADE UP OF A MYRIAD OF ISLANDS (IN TOTAL THERE ARE 6,852), OF WHICH FOUR MAIN ONES, AMONG THESE THE ISLAND OF HONSHŪ IS THE LARGEST, WHERE APART FROM THE CAPITAL TOKYO, THERE ARE OTHER IMPORTANT CITIES SUCH AS HIROSHIMA, KAWASAKI, KŌBE, KYOTO, NAGOYA, NARA, OSAKA, SENDAI AND YOKOHAMA. IT IS SO WIDESPREAD THAT LOCALLY IT IS CALLED "THE MAINLAND, THE ISLAND OF HONSHŪ (AROUND 100 MILLION PEOPLE LIVE ON THIS ISLAND, THAT IS 75% OF THE JAPANESE POPULATION) IS ALMOST COMPLETELY MOUNTAINOUS AND IS CROSSED BY THE HIGHLY VOLCANIC MOUNTAINOUS CHAIN HOME TO MOUNT ASAMA, THE MOST ACTIVE VOLCANO IN JAPAN. MOUNT ASAMA RISES IN THE VICINITY OF TSUMAGOI, IN THE PREFECTURE OF GUNMA, AN AREA RICH WITH WATER SPRINGS, LIKE THAT OF THE TSUMAGOI MEISUI CO. LTD BOTTLING COMPANY. TO FACE THE INTERNAL GROWING DEMAND FOR MINERAL WATER UNDER THE TSUMAGOI AND OKU-KARAIZAWA BRANDS, THIS COMPANY TURNED TO SMI FOR THE INSTALLATION OF A STRETCH BLOW-MOULDER EBS 3 K ERGON FOR THE PRODUCTION OF 0.32 L, 0.41 L AND 0.5 L BOTTLES IN PET.

TSUMAGOI

- **WATER SECTOR**
Tsumagoi Meisui Co. Ltd.
Tsumagoi-Mura, Gunma Prefecture, Japan
- Stretch-blow moulder EBS 3 K ERGON



GEO LOCATION

BEYOND NATURAL WATER

The Tsumagoi Meisui Co. Ltd production plant is situated on a plateau at 1,290m above sea level at the foot of Azumaya (2,354m), one of the 100 most famous mountains in Japan, in winter its peak is covered by several meters of snow, which, when this melts, penetrates into the subsoil reaching deep into the mountain, to become a source of water that is not only high quality, but also rich in nutrients. It is from this area,

that the Japanese company obtains the natural mineral water that it bottles, extracted by modern plants, from a 250m deep underground well. "Beyond Natural Water" is the slogan used by Tsumagoi Meisui to highlight the importance of preserving this precious, natural gift from Nature, which, thanks to the sophisticated bottling technology that respects the environment and to the strict quality control systems, reaches the consumers' table intact and uncontaminated.



➤ BETWEEN FAIRYTALES AND REALITY

At about an hour by train from Tokyo, the skyscrapers and the enormous buildings of the metropolis give way to the mountainous scenery of the Karuizawa uplands, a landscape that is characterised by dense larch woodland, that looks as though it has appeared from a fairytale. The Oku-Karuizawa plateau (1,300 m asl), near the Asama volcano and at the feet of mount Azumaya (one of the 100 most famous mountains in Japan), is one of the classiest summer holiday resorts in the country. There are numerous, small town "Onsen" (natural thermal springs), as the area is full of important water springs. Natural water is collected from one of these springs that flows at 250m underground, and is bottled by the Tsumagoi Meisui company. This water is extremely pure, with no radioactive traces or chemical agricultural substances, it is formed by the snow that melts, penetrates into the ground and undergoes a long filtering process. This water, which has properties that remain unchanged throughout the complete production process, has a constant temperature all year round of 9° C, it is very light (for this reason it is ideal for preparing tea, coffee and various dishes) it is slightly alkaline, with a PH of 7.6 like our body PH, furthermore, it is particularly suitable for infantile nutrition as it has low percentages of magnesium and calcium.

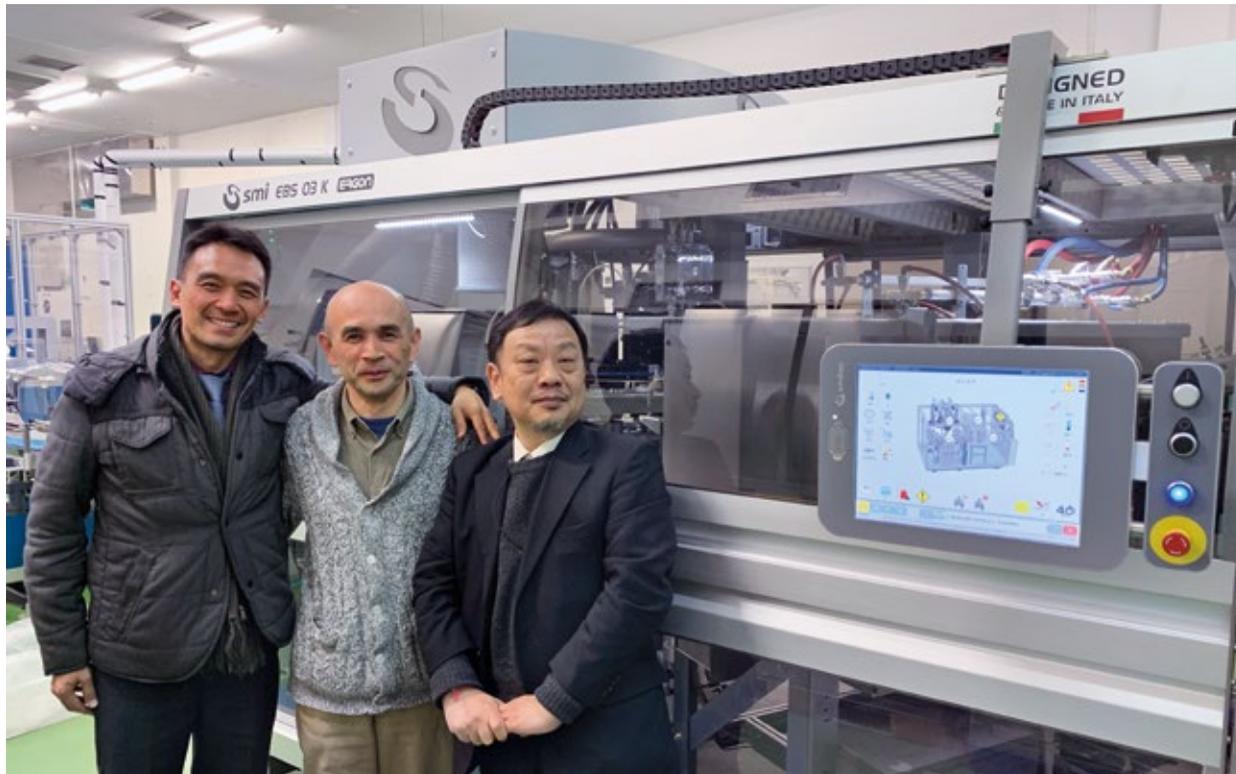


INVESTING TO BE MORE PROMPT

The strong growth of the bottled water market in Japan, has made it necessary for Tsumagoi Meisui to expand. In July 2018, to be able to face an increase in production, the need to reduce delivery time for the water in PET bottles under the brand Tsumagoi and Ok-Karauizawa, the Japanese company invested in a new EBS K ERGON stretch-blow moulder. This new installation, supplied by SMI, was installed in the existing factory in the town of Tsumagoi, District of Agatsuma (Prefecture of Gunma), it was designated for the production of water and is equipped with the most modern technology within this sector.



FROM LEFT TO RIGHT:
SHIFANG HONG, SALES MANAGER AT SMI; MINORU TOYOTA, PRESIDENT OF TSUMAGOI;
YOSHIKI MAEDA, SALES MANAGER AT CORRENS (SMI REP IN JAPAN).



INVESTING TO BE MORE EFFICIENT

Increasing storage capacity and reducing distribution costs are the presuppositions for increasing production efficiency within a bottling plant. The third plant belonging to the Japanese company, Tsumagoi Meisui, inaugurated in December 2018, was built with the aim to store products coming from the other production lines in the other two plants. However, various reasons, such as the strong growth of the request from the Japanese market for bottled water and the necessity to upgrade the production structure, pushed the company into also investing in a new bottling line. The production volume of the existing line was around 120,000 cases per month, and now thanks to the new SMI machinery, which was recently installed, they will be able to reach a capacity of 150,000 cases/month. The storage capacity of this third plant will not only allow Tsumagoi Meisui to store up to 20 days of production, it will also reduce logistic costs by around 6%, by eliminating storage and transport costs between the five warehouses they had previously rented.

FOCUS ON THE THIRD TSUMAGOI-MURA PLANT

- Area occupied:** 20.178 m²
- Construction began:** May 2018
- Activity began:** December 2018
- Effective storage capacity:** around 180,000 cases
- Capital invested:** around 700 million yen





SMI SOLUTIONS FOR TSUMAGOI

Before being installed at the Tsumagoi plant, the new EBS 3 K ERGON stretch-blow moulder was presented to the Japanese "food & beverage" market during the important Drink Japan 2018 exhibition, held in Tokyo in June, and where it received interest and approval from a high number of visitors. SMI were present at the exhibition in partnership with Correns Corporaton, their local representative.



↑ ABOVE: THE STAFF FROM TSUMAGOI DURING THE FACTORY ACCEPTANCE TEST (FAT) IN SMI



➤ STRETCH BLOW-MOULDER EBS 3 K ERGON

Functions: stretch-blow moulding of 0,32 L and 0,5 L bottles in PET with a square base and 0.41 L and 0.5 L cylindrical bottles with a production capacity of up to 6,000 bottles/hour.

Main advantages:

- high efficiency rotary stretch-blow moulder equipped with motorised stretch rods (usually used for high speed production), which presents outstanding advantages compared to linear blowers and guarantees the precise management of the stretch rod cycle and accurate control of their position, as well as having significant energy saving
- ultra-compact system: the preform heating section (oven) is integrated within the stretch-blow moulding section (carousel) in a single very compact module, which makes this system suitable even for bottling lines with reduced space
- reduced blower energy consumption, thanks to the preform heating module, equipped with high efficiency IR lamps and the stretch blow-moulding module equipped with air dual recovery system that allows the reduction of energy costs tied to the production of high pressure compressed air
- the structure, that surrounds the oven and the carousel is equipped with slightly rounded protection doors, which provide more space inside the machine so that cleaning and maintenance can be carried out easily and safely
- the stretch-blow moulding system uses high performance low deadvolume valves, that reduce pre-blowing and blowing times, therefore improving efficiency and the quality of the bottles produced
- the machinery is managed by the MotorNet System® for automation and control, which ensures constant maintenance of optimum processing parameters, throughout the entire production cycle and the direct modification of the machine settings, thereby simplifying format changeover operations.

ONSEN: THE ANCIENT SPA TRADITION IN JAPAN

The prefecture of Gunma, situated North-east of the Kanto plain, in central Japan, is famous for its magnificent natural scenery and for the large number of high quality "onsen" (thermal springs). The "onsen" heated, natural thermal

springs, rich in minerals from the volcanoes, are a very popular tourist attraction for the Japanese. There are over 3,000, scattered around the country, in the mountains and also on the coast where they can also be found under water.

They can be indoors or outdoors, for men or women only, or rarely for both, municipal or in luxurious, traditional inns, made in stone or wood but in all of them you can take a step out of time and return peaceful and regenerated.



Mount Azumaya was formed by an eruption of the Azuma volcano, over 350,000 years ago, which divided the mountains between Mount Azumaya and Mount Neko. A winding road, very popular with excursionists, allows travel through the mountains to discover the natural countryside with its unique beauty.

Mount Azumaya is one of the external rings of the volcanic caldera of the Azumaya volcano, which was active from 750 thousand to 200 thousand years ago and which, through erosion, created the "Yonago Falls", one of the 100 most famous waterfalls in Japan. The external ring of the mountain extends for a diameter of 3 kilometres and covers the Nekodake (2,207m) and Urakuratake (2,090 m) mountains.



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The area near the Tsumagoi factory is abundant with water, like the "Shinshu falls" formed by streams from the mountain, and Lake Baragi situated South, which is replenished by melted snow.

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WHEN THE CONTAINER BECOMES COMPETITION

Over the last few years, the ruthless competition between companies in the mineral water sector has increasingly evolved around the price of the product, that needs to be low but high quality for consumers, therefore to be able to maintain or increase their share of the market, bottling companies need to develop innovative solutions that are able to reduce production, running and distribution costs. All this requires careful analysis of the characteristics and performance of the bottles in PET that are used, analysis that persuaded the Japanese company Tsumagoi Meisui to create new containers that optimise the combination between the volume of the bottle blown by the SMI rotary stretch-blow moulder EBS K ERGON and the number of bottles contained in the cardboard box. Among the best formats, to reduce storage and distribution costs, Tsumagoi Meisui chose 0.32 L and 0.5 L square based bottles in PET and 0.41 L and 0.5 L cylindrical bottles.



THE DESTRUCTIVE FORCE OF VOLCANOES

Gunma is a prefecture on the Japanese island of Honshū, it is landlocked and owes its fame to the thermal springs (onsen) and the skiing areas. The small town of Kusatsu has more than 100 thermal springs, the most famous of which, Yubatake, has a large swimming pool fed by smoking thermal water which flows down a wooden slide. Tsumagoi is in the Northeastern corner of the prefecture and due to its high altitude and the ash deposits from Mount Asama (2,568 m), its land is very fertile and well known for its cabbage crops. In the prefecture of Gunma you can visit the archaeological ruins of a powerful, volcanic eruption from Mount Asama that, at the end of the 18th century, hit the residents of Kanbara, a small town hidden among sloping hills and fields, throwing ash, rocks and magma on the whole area. The cataclysmic eruption, one of the most documented natural disasters in modern Japan, lasted four months and detonated a high speed avalanche of hot gas and debris which, as in Pompeii (Naples, Italy) devastated the local agricultural community.

The potential destruction of Mount Asama is well known to the residents of Kanbara, the majestic volcano that hit the village at the end of the 18th century, while the volcano threw its terrifying quantity of boulders, rocks and magma onto the village below, it sent out a disturbing, warning rumble. The population had very little time to escape from the unpassable wall of earth that, travelling at incredible speed, hit the town in just a few minutes, swallowing up the fleeing inhabitants and burying houses, shops and fields under mountains of debris, this can also be seen from the excavations carried out in 1979, which brought to light the skeletons of two women who were trying to flee.



FROM POMPEII TO Tsumagoi

Since 2012, the city of Pompeii (in the vicinity of Naples, in Italy) and the Japanese town of Tsumagoi have been bound by a pact of friendship, a commitment of exchange that is not only cultural, a sign of common fate in the shadow of two volcanoes - Vesuvius and Asama Yama - capable of making the surrounding land fertile, but capable also, of propagating death and destruction. The twinning, sanctions the great interest that Japan has for the Italian city, which can also be seen by an important archaeological exhibition on Pompeii, in Japan, that enchanted millions of visitors for a year and a half. The twinning is also a sign of a friendly collaboration to promote initiatives between two realities that are so very different geographically and culturally, but at the same time are so similar. This is not a small detail for a town with less than twenty thousand inhabitants, that in 1783 was destroyed by a disastrous eruption by Mount Asama, very similar to that of Mount Vesuvius which, in 79 B.C. Destroyed Pompeii and Herculaneum and killed thousands of people.

WHERE EVERYTHING REVOLVES AROUND NATURE

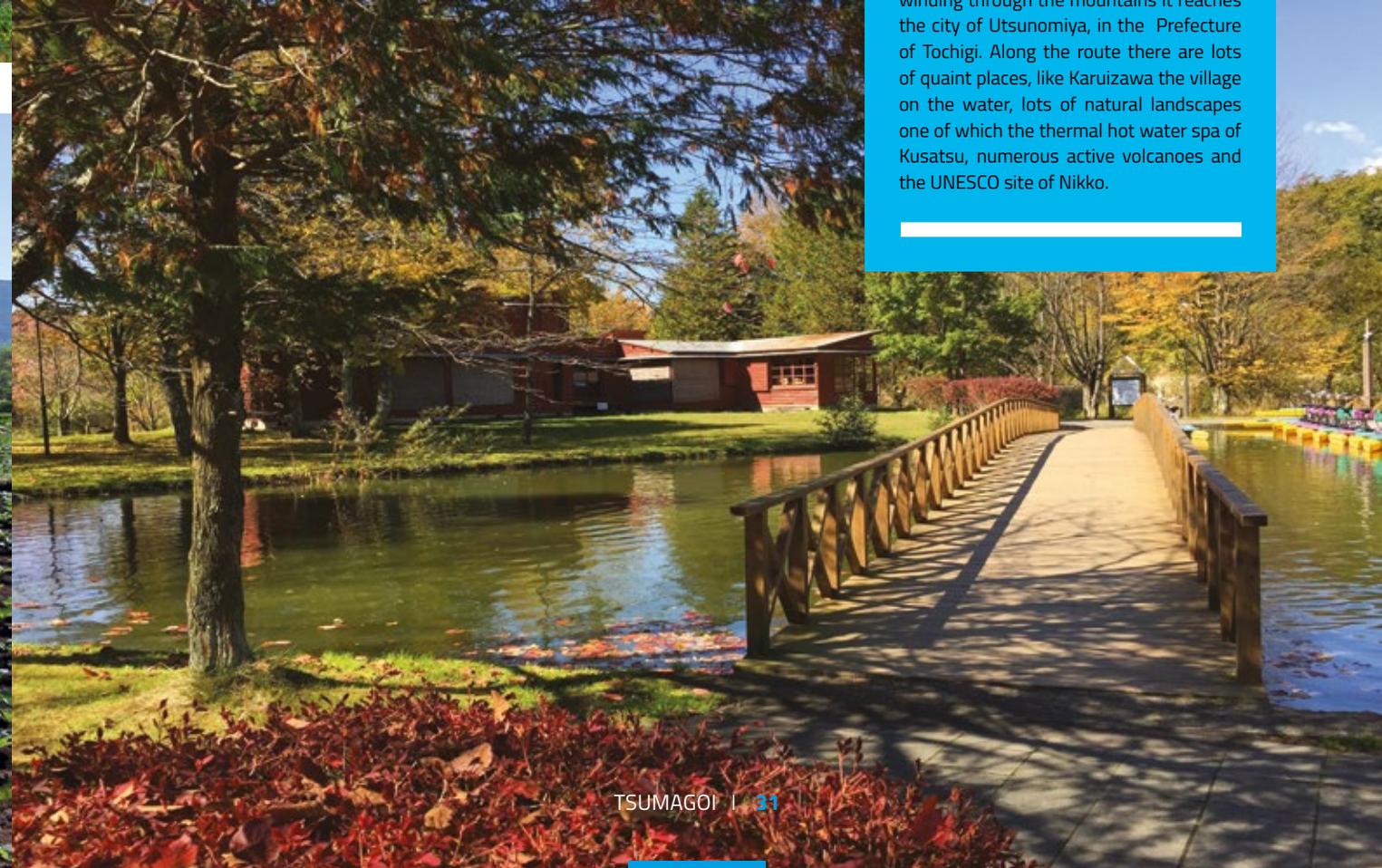
The economy in Tsumagoi-Mura revolves around nature, especially in the form of water sources and agriculture, the most famous local crop is cabbage, which is so widespread that cabbage green dominates the countryside that surrounds the city, so much so, that it attracts the eyes of tourists that never fail to stop to take a snap of the cabbage fields. Tsumagoi-mura is the number one producer of this vegetable in Japan, its growth is

facilitated by the cold weather conditions of this area. The Japanese name for cabbage is "Tamana", which means "ball of vegetable", just like the shape of this fresh, slightly sweet vegetable. It is one of the main ingredients of Japanese cuisine, it can be eaten all year round, it is a cheap product that is versatile and used to give nutrition and taste to a wide range of dishes. Often it is cut into narrow strips to be served with korokke, tonkatsu (breaded cutlet of fried pork) or with other fried food.



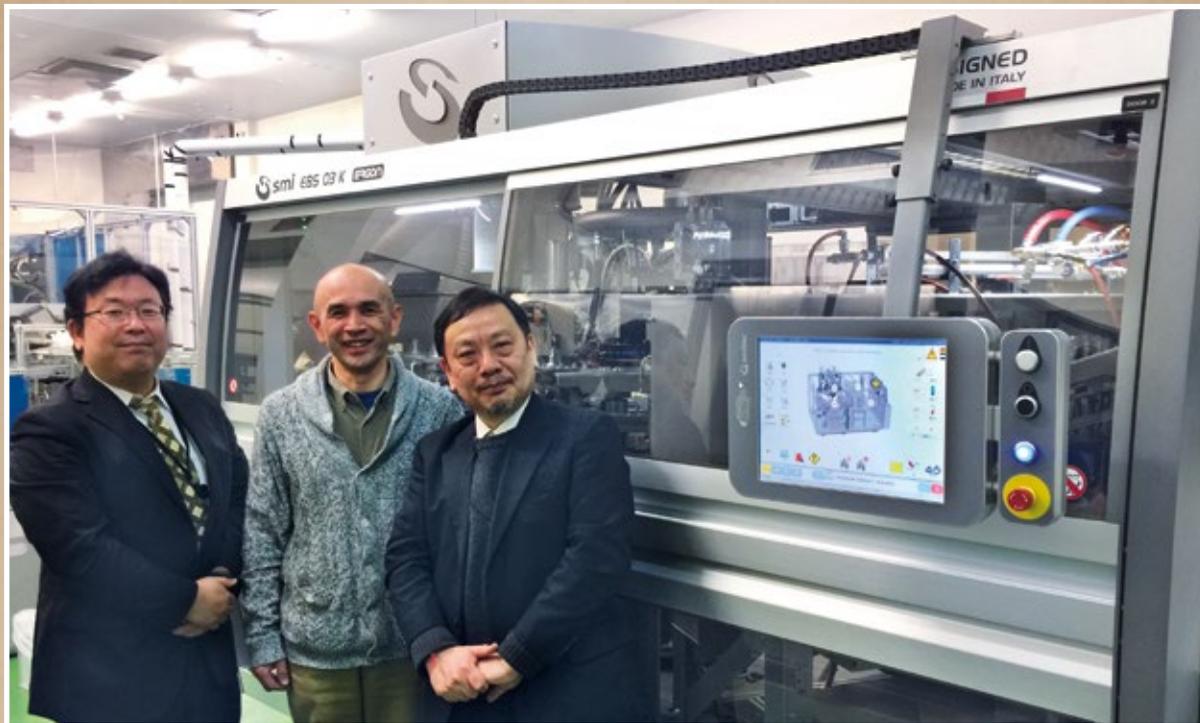
➔ 350 KM OF ROMANTIC VIEWS

The most romantic and scenic road in Japan can be found in the Prefecture of Gunma. It is the Japanese version of the German "Romantische Straße", it runs for more than 350 kilometres, starting in the city of Ueda, in the Prefecture of Nagano, where you can visit the ruins of a castle and the oldest spa centre of the area, and then winding through the mountains it reaches the city of Utsunomiya, in the Prefecture of Tochigi. Along the route there are lots of quaint places, like Karuizawa the village on the water, lots of natural landscapes one of which the thermal hot water spa of Kusatsu, numerous active volcanoes and the UNESCO site of Nikko.



A WORD WITH THE CUSTOMER

INTERVIEWING MINORU TOYOTA President of Tsumagoi Meisui Co. Ltd.



FROM LEFT TO RIGHT: HIROMASA SUZUKI, SALES DEPT. AT CORRENS; MINORU TOYOTA, PRESIDENT OF TSUMAGOI; YOSHIKI MAEDA, SALES MANAGER AT CORRENS

Q: What is the key to success for your company?

A: Without a doubt one of the main factors of our recent success was the opportunity offered by new sales channels, or more precisely, we changed from a traditional type of "business", that of selling our products through distribution points, shops and supermarkets, to one of "e-commerce", managed directly by head office.

Q: What are the current market trends for your reference sector?

A: In the world of mineral water the main criteria of consumer choice, is represented by the price of the product. In fact everyone, final consumers or the bottlers (in the case of working with third party), ask us for cheap products. For this reason Tsumagoi Meisui Co. Ltd, the same as every other company which bottles water, needs to compete on the market by keeping the production costs and sales prices low, and with this aim, developing innovative solutions that are able to offer products that are increasingly competitive.

Q: What are the main factors that led Tsumagoi to invest in a new stretch-blow moulder supplied by SMI?

A: The main factor that led us to choose an SMI system, rather than another brand, was the compactness of the machine from the EBS K range. The new range of SMI blowers stands out from others, with its unique, compact module that integrates the preform heating section (oven) with the stretch-blow moulding (carousel), this technical configuration fits perfectly within the available space inside our production factory.

ON THE RIGHT: MATTEO PESENTI, SERVICE AREA MANAGER AT SMI (ON THE LEFT) WITH THE STAFF OF TSUMAGOI DURING THE FACTORY ACCEPTANCE TEST

BELOW: THE TSUMAGOI BLOWER ON SHOW AT THE "DRINK JAPAN 2018" EXHIBITION

Q: According to you what are the main challenges for future expansion?

A: The biggest challenge that we need to face for future growth, is certainly the development of solutions that guarantee the best combination between "bottle capacity and volume" and "the number of bottles in a cardboard box", with the aim of optimising storage and distribution operations and reducing their costs.

Q: What were the biggest challenges that in the "business" of mineral water Tsumagoi has overcome?

A: Working with head office, we faced and overcame a demanding program to reduce the physical costs of distribution, the success of which depended on the creation of new bottles in PET with particular characteristics, which reduced the cost of packaging materials, such as bottles without labels.

Drink JAPAN 2018
3rd Int'l Beverage & Liquid Food Development / Manufacturing Expo



VOLCANOES IN JAPAN

Japan is known as the homeland of volcanoes, with 108 active volcanoes out of a global 1,500, it has 10% of the most dangerous volcanoes in the world. In Japan, these giants of nature are classed into categories that range from A to C according to their danger and volcanic activity. Class A is the most dangerous and the most active with volcanoes that erupt more than 400 times per year, that is, more than once a day. The seismic activity tied to volcanoes is often the cause of numerous and powerful earthquakes that periodically shake Japan. Thanks to cutting edge anti-seismic building technology these events fortunately, have limited effect on the safety of the population within that area. Mount Asama is the most active volcano, on average it erupts every ten years, that is around 50 eruptions in the last five centuries. The most devastating happened in 1783 and caused the death of over 1,100 people and serious consequences for the following four years, the ash and the gases that it expelled into the stratosphere caused a fall in agricultural production and famine which led to more than 20,000 people losing their lives. The most spectacular eruption happened in 2004, when the smoke reached Tokyo, 90 miles away, damaging lots of crops and starting fires in the woods. At the moment the volcano is under constant control because it is thought that another eruption is imminent, therefore, as a precaution, it is forbidden to go within a 4 kilometre range of the volcano's slopes.

