



TOKYO SKYTREE and TOKYO SKYTREE TOWN

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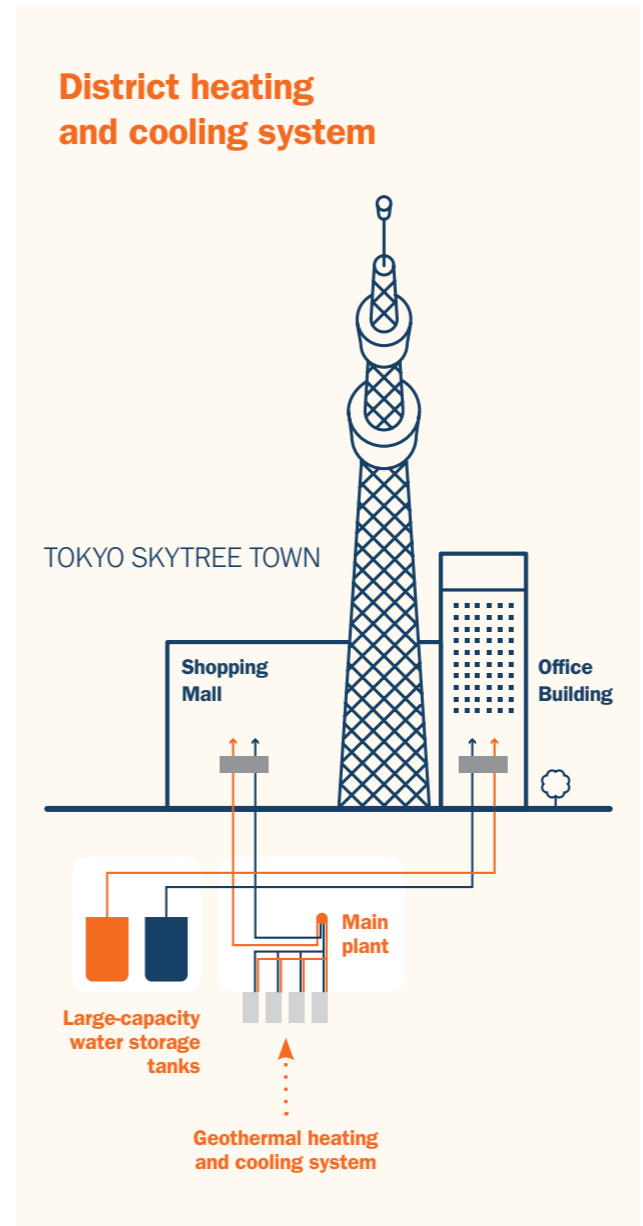
Where the Environment and Tourism Are One

By Tomoaki Babasaki

Soaring to a height of 634 meters, TOKYO SKYTREE is the tallest structure in Japan. This leading landmark of Tokyo was recognized by Guinness World Records in 2011 as the world's tallest tower. From the observation deck, 450 meters high, visitors can take in the entire city spread out before their eyes as well as the magnificent mountains around Tokyo, notably Mount Fuji, 100 kilometers away.

Between 2012, when it opened to visitors, and 2015, over 20 million people visited TOKYO SKYTREE. The number of visitors from outside the country is also growing.

TOKYO SKYTREE cuts an impressive figure, especially at night, when it is lit up with 2,075 LED bulbs. It deserves a place among the 100 Views of New Tokyo. The all-LED lighting designed in two main patterns—*iki* (chic), a pale blue inspired by the Sumida River, and *miyabi* (elegance), inspired by a traditional shade of purple that has been popular since the Edo Period



(1603-1867)—uses up to 43 percent less electricity than conventional lighting. LED bulbs also have a life of 40,000 hours—three to six times longer than fluorescent bulbs and twenty to forty times longer than incandescent bulbs.

TOKYO SKYTREE is at the heart of TOKYO SKYTREE TOWN, which is now a major sightseeing spot in the old downtown section of the city. But in contrast to the quaint surroundings are two major facilities underground that help reduce its impact on the environment: large-capacity water thermal storage tanks and a rainwater collection tank.

The water stored in thermal storage tanks is used in the district heating and cooling (DHC) system. The DHC system produces and supplies thermal energy for air conditioning and hot water in a number of buildings in the area, enabling energy to be used efficiently. The DHC system in TOKYO SKYTREE TOWN uses a geothermal water source heat pump.

Because soil temperatures remain fairly constant throughout the year, in summer, it is cooler underground than above ground, and in winter it is warmer. A water source heat pump effectively exploits these differentials between air temperature and underground temperature to heat or cool water. This water is then stored in the thermal storage tanks for use as energy for heating and cooling. This system not only makes air conditioning more efficient but also reduces heat expelled by outdoor units into the atmosphere, thereby helping to mitigate the heat island effect. The introduction of this DHC system can cut annual energy consumption in this district by 48 percent.

The 7,000 tonnes of water stored in the large thermal storage tanks can also be used for firefighting or domestic water in the event of a large-scale disaster. This is equivalent to 35,000 drums of water, enough to supply the domestic needs of about 230,000 people.

The rain water collection tank can hold up to 2,635 tonnes of rainwater. Of this capacity, 1,835 tonnes are intended for temporary collection of rainwater during torrential rainfall and the remaining 800 tonnes are to water greenery on building rooftops in TOKYO SKYTREE TOWN. Trials are also underway to use the water to cool solar panels to prevent any reduction in power generation efficiency.

Since it opened, TOKYO SKYTREE has been in the spotlight as a major tourist destination. But it is hoped that its name will go down in history as a model of harmony between tourism resources and energy conservation.

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Tomoaki Babasaki runs his own company, where he has overseen the publication of some 500 books.