



For Immediate Release

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Toshiba Carrier's New VRF Series SMMS-u Won the Highest Honor at 2020 Energy Conservation Grand Prize Award of Japan

Kawasaki-shi, Japan, December 21, 2020 - Toshiba Carrier Corporation announced that the SMMS-u, its newly launched VRF series, won the Minister of Economy, Trade and Industry Prize, the highest honor in the product and business model segment of 2020 Energy Conservation Grand Prize Award of Japan.

The Energy Conservation Grand Prize Award of Japan is an annual event sponsored by Japan's Energy Conservation Center (JEC) and supported by the Ministry of Economy, Trade and Industry (METI). The government-led program is designed to commend energy saving efforts that are executed by private companies, autonomous communities and educational institutes, excel others and exemplify as role model as well as products and/or business models with outstanding energy efficiency, aiming to raise energy-saving consciousness in the country's entire population and build an energy-conscious society through the promotion of energy efficiency products.

This marks Toshiba Carrier's 30th honor of the Energy Conservation Grand Prize, including prizes won under the "21st Century-oriented Energy Efficiency and Conservation Equipment and Systems Award (Energy Conservation Vanguard 21)", the previous format of the Grand Prize.

The award ceremony is to be held on January 27, 2021, at Tokyo Big Sight.

The prize-winning SMMS-u, powered by Toshiba Carrier's advanced technologies such as the world's largest triplet rotary compressor ^(*) and the world's first dual state inverter ^(*) ^(**) leading to superior partial load property, has accomplished the industry's highest annual performance factor (APF: 5.5 and 5.6 for 18 and 20HP models, respectively) ^(*) ^(*) but yet with one of the smallest chassis in the industry. The product allows building owners and contractors to plan their equipment replacement in a flexible manner according to their budgets and schedules and to address challenges in comfort, reliability and energy efficiency when operating in defrost mode or being used with fresh air ventilation equipment. These innovative features that provide robust solutions and boost the use of high-efficiency equipment are highly recognized and have led to the highest honor.

Key Product Features

Today, building owners are facing situations where they need to replace AC systems in their building not only because they are old or out of order but also they need to comply with energy regulations or guidelines that are getting more stringent overtime. When the energy efficiency of AC equipment rises, the size of the AC outdoor units tends to grow. This gives the building owners challenges to secure enough space for installing outdoor units on the rooftop or balcony, where in many cases small and medium-sized buildings find only limited space available to accommodate such large units. Other typical dilemmas for building owners include budget constraint for replacement, difficulty in managing the timeline of replacement to avoid peak AC seasons (i.e. summer and winter), and long downtime of AC units during the replacement, to name a few. The SMMS-u, Toshiba Carrier's new VRF series, are designed to address these challenges of many building owners under the concept of a new solution, which is "compact in size but robust in energy efficiency" and accomplishes "reduced lifecycle costs of AC systems for buildings".

1. World's First and Best Technologies ^{(*)5} for High Energy Efficiency and Compact Chassis

The SMMS-u embraces Toshiba Carrier's cutting edge technologies to cover a wide operating range while attaining high efficiency. A large-capacity triplet rotary compressor using a high-number-of-turns open winding motor (***) and compression loss minimizing multivalves and a dual-state inverter (***) that allows the switch between 2-inverter open winding motor drive and 1-inverter star connection motor drive are key innovations adopted for the new series. In addition, novel design heat exchangers and propeller fans for increased capacity, sophisticated oil and refrigerant management for simplified refrigeration cycle are also instrumental in attaining high efficiency and compact size.

2. Industry-first "New-Old Unit Mixing Control" ^{(*)6} for Flexible Planning in Replacement Budget and Schedule

The new control for the SMMS-u ensures the compatibility in communications and refrigeration cycles with older VRF series of Toshiba Carrier, allowing old and new series units to co-exist and operate under the same control. This unique retrofitting feature provides building owners with flexibility to explore different replacement plans; some may want to replace the units installed in rooms currently unused, while others may prefer keeping some of the existing units that are operational while prioritizing the replacement of the rest that are already down after coming toward the end of the product's useful life. The new-old unit mixing control allows building owners such flexible and sustainable replacement planning according to budget, schedule, and the length of service of each equipment, ensuring a smooth transition toward high-efficiency AC equipment and assisting them to go greener.

3. "Kobetsu Defrost Technology" to Address Challenges in Defrost and Fresh Air Ventilating Operations

Toshiba Carrier developed "Kobetsu defrost technology", which leverages the variable compression ratio properties of rotary compressors for 2-stage compression cycle and its unique medium-pressure control. The Kobetsu defrost technology allows optimized distribution of the heat absorbed by the outdoor unit(s) in heating mode of a VRF system to the outdoor unit(s) in defrosting mode as well as to the indoor units in heating mode so that both powerful defrosting operation and minimized indoor temperature drop during the defrosting operation are attained for the entire operating range. When used with fresh air ventilation equipment, the technology enables to ensure the discharge temperature from the equipment higher than the ambient temperature during defrosting operation for continued ventilation during defrosting operation or minimized downtime for ventilating operation. Building owners thus do not need to opt for a larger capacity model as safeguard against the downtime and are able to save both the initial investment and running costs with minimized annual energy consumption for fresh air ventilation.

*1 Source: Toshiba Carrier Corporation (as of December 21, 2020)

*2 Source: Toshiba Carrier Corporation (only for AC applications)

*3 Source: Toshiba Carrier Corporation (only among models available in the market; as of December 21, 2020)

*4 The APF values are calculated in accordance of the guidance of “Package Air Conditioner”, JIS B 8616, 2015

*5 Source: Toshiba Carrier Corporation.

The dual-state inverter is the world's first and the triplet rotary compressor is the world's largest (as of December 21, 2020).

*6 Source: Toshiba Carrier Corporation

** Available only for Japanese models

Rendering of the Prize-Winning Unit: MMY-MUP5001H, MMY-MUP5601H1



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