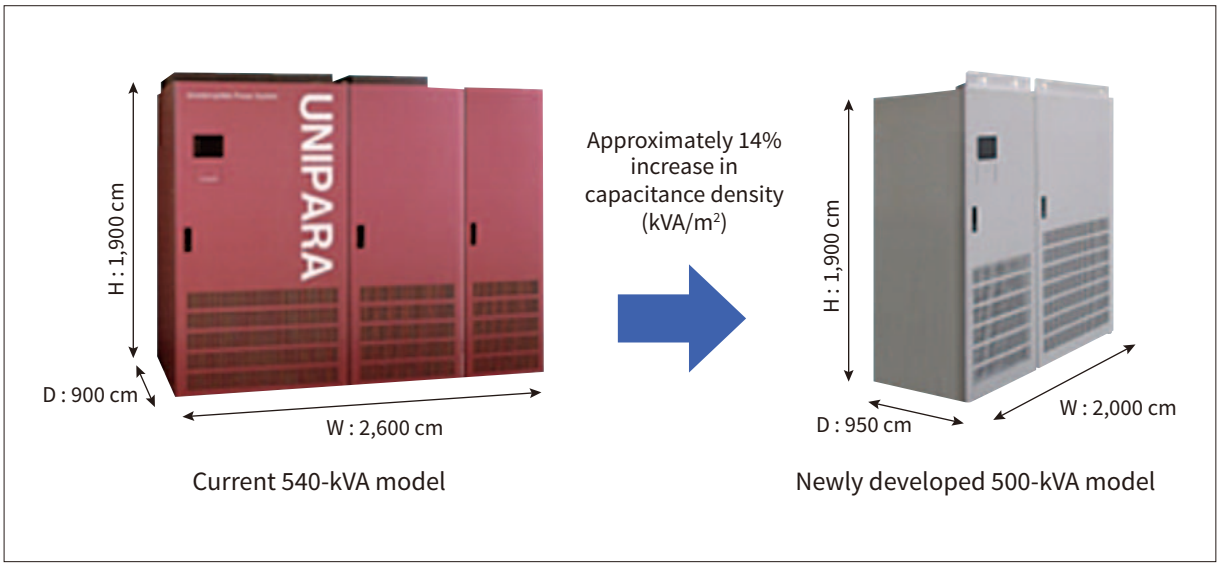
Industrial Products



1 Comparison of capacitance density between old and new UPS system series models

1 UPS System Series New 500-kVA Model

The uninterruptible power supply (UPS) system market is maturing, and almost all of the companies have achieved parity in terms of performance and features. Because 10 years have passed since the development of the product currently on the market, Hitachi developed a new 500-kVA UPS system with an emphasis on miniaturization, high density, and cost reduction.

The key features are as follows.

(1) Incorporates the peripheral equipment components inside the UPS system to achieve high density and cost reduction for the entire system.

(2) Successfully increases the capacitance density for a single UPS system by approximately 14% compared to the current 500-kVA model to achieve a compact size.

(3) Supports remote monitoring service.

(4) Minimized the copper bar through a thermo-fluid analysis of the board.

(5) Reduced the reactor that detects the direct current (DC) component included in the output voltage through control logic improvements.

(Hitachi Industrial Products, Ltd.)

2 Relocation of Zenigamecho Pumping Station Due to Tokyo Tokiwabashi Project

The Tokyo Metropolitan Government Bureau of Sewerage Zenigamecho Pumping Station was a deteriorating facility that had been in operation for about 50 years. Since the area where this pumping station is located was designated as a special urban renaissance district in 2016, the redevelopment project has been advanced as the Tokyo Tokiwabashi Project, and the project for the entire district is scheduled to be completed in FY2027. With the progress of the redevelopment project, the Zenigamecho Building (D Tower) was completed in March 2022, and the new relocation/shared use of the new pumping station started in April of the same year.

The features of this pumping station construction are as follows.

(1) In addition to being an underground station and a crowded commuter area in the northern part of Tokyo Station, it was a very difficult project due to the fact that the construction period coincided with the hosting of the Olympics. However, the construction was completed without any accidents or disasters, thanks to the meticulous daily process adjustments that were made with each of the relevant companies, such as the usage time for work cranes used to carry materials and equipment in and out.

2 Zenigamecho Pumping Station pump room

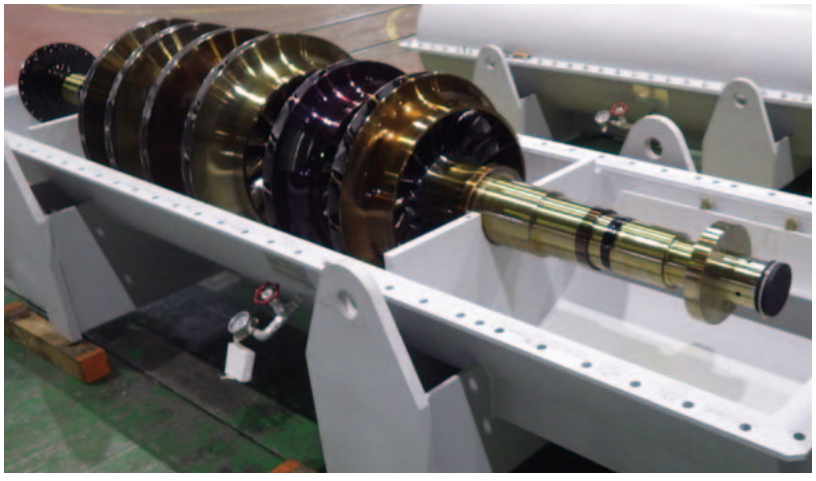
(2) To supply water over a long distance to a remote water reclamation center, a flywheel was installed as a water hammer countermeasure.
(3) Because the volume of wastewater flowing in fluctuates according to the time of day, two of the four pumps support rotational speed control with an inverter.
(Hitachi Industrial Products, Ltd.)

3 Performance Enhancement Case Study of Existing Centrifugal Compressor at an Ethylene Plant

Hitachi received and delivered an order from a major petrochemical company in Malaysia for a project to modify the spare rotor for an existing centrifugal compressor at an ethylene plant.

This project was implemented in response to a customer request to increase the flow rate of a propylene/ethylene compressor that had been in stable operation for about 30 years since Hitachi delivered it in 1992 with the goal of expanding the plant. The order for this project was received after proposing that the desired flow rate increase was feasible just by trimming the impeller flow channel of the spare rotor, which was ordered in advance without modifying or updating the existing equipment, and Hitachi was able to provide the solution to the customer with a short delivery time.

Hitachi considers the performance modification of the ethylene plant centrifugal compressor to be one solution that will directly lead to customer value creation, and will continue to promote this proposal going forward.
(Hitachi Industrial Products, Ltd.)



3 Spare rotor modified to increase flow rate by trimming impeller flow channel

4 IoT Support for Water Supply Pump Unit

Water supply pumps are used to supply and distribute water to buildings such as condominiums and factories, and cloud and communication features are increasingly being promoted in the market. Recently, Hitachi implemented Internet of Things (IoT) support for visualization of water supply pumps.

It enables monitoring of water supply pump operating conditions in real time, and the visualization of operational frequency, output current, and discharge pressure with trend graphs. In the unlikely event of an alarm or failure in the equipment, emails are automatically sent not only to the customer, but also to official distributors, vendors, and Hitachi Industrial Equipment Systems Co., Ltd. This makes it possible to contact the customer as needed and provides a reliable support system.

Moreover, the operating time, number of starts, maximum current value, and failure status can be checked as part of maintenance management. It has a feature that automatically notifies the user when the recommended maintenance period has been reached based on the operating time of each component. Displaying the current operation time with respect to the recommended time for parts replacement makes it easier to recognize when it is time for replacement and enables systematic maintenance.
(Hitachi Industrial Equipment Systems Co., Ltd.)

4 Water supply pump unit with IoT support

5 Oil-flooded Rotary Screw Air Compressor G-Series 11/15 kW

With various measures being implemented to achieve carbon neutrality on a global scale due to the growing severity of climate change, Hitachi launched a new oil-flooded rotary screw air compressor G-Series 11/15 kW model positioned as a product that can contribute to the environment and society through energy conservation.

The key features of this model are as follows.

(1) In addition to developing an airend equipped with a new tooth profile, Hitachi has achieved a compact, high-performance compressor unit and a low-torque motor, combining high performance and environmental friendliness by reducing permanent magnet usage. As a result, the discharge air volume was increased by approximately 9.3% compared to existing models.

(2) Standard support for an IoT-based cloud monitoring service for air compressors, enables shorter downtime during use and improved operational efficiency.

(3) A peak cut-off feature, which can temporarily reduce power consumption, and a heat safety mode, which can supply air in a stable manner under high ambient temperatures, were added to improve usability.

(4) The brushless direct current (DCBL) controller, DCBL motor, fan motor, fan inverter, and communications equipment all use Hitachi products. The DCBL controller was designed to share parts with higher-output class controllers.

Going forward, the company will continue to expand the product series with other models.
(Hitachi Industrial Equipment Systems Co., Ltd.)

5 New oil-flooded rotary screw air compressor 11/15 kW air cooler