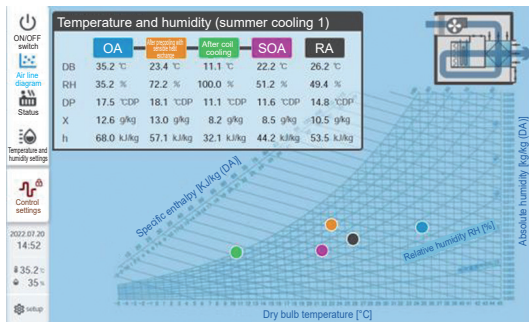


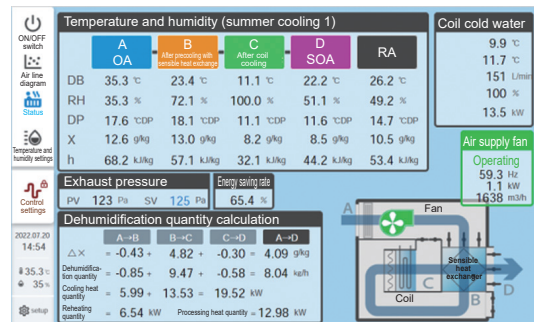
Dehumidifying air supply unit with “Zero Energy Consumption Precooling and Reheating”

Features

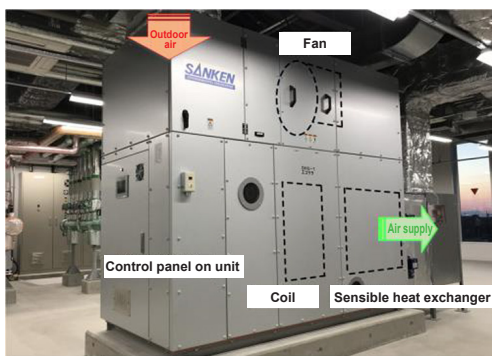
- ◆ The “ECOSALA®” dehumidifying air supply unit features a unique cooling, dehumidifying and reheating system, which uses the heat from the outdoor air with high temperature for reheating outdoor air that is cooled through the cooling and dehumidifying process, thereby offsetting the energy for precooling and reheating to make this a unit that features zero energy consumption precooling and zero energy consumption reheating.
- ◆ This is an all-in-one unit that incorporates all necessary components, including instrumentations, control panel, inverter panel and the like, with the test operation completed at the manufacturing plant, to facilitate an implementation that is completed in a short period and save labor for local installation work.
- ◆ The control system employs an open system utilizing ICT that can be introduced regardless of existing equipment manufacturers.
- ◆ The system also features a multi-function touch-screen monitor, offers visualization of air conditions and real-time display of energy reduction rates.
- ◆ The system is also equipped with a multi-site remote monitoring system that facilitates sharing of same screen displays with smart phones and computers, to facilitate easier commissioning and maintenance work after implementation of the system.



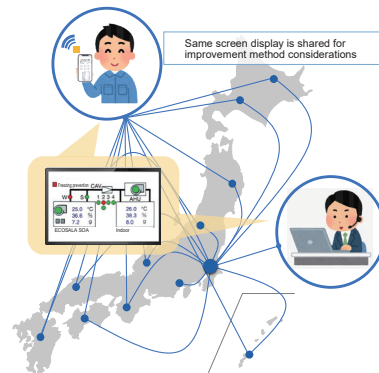
● Provides visualization of air conditions (in real time).



● Displays energy reduction rates (in real time).

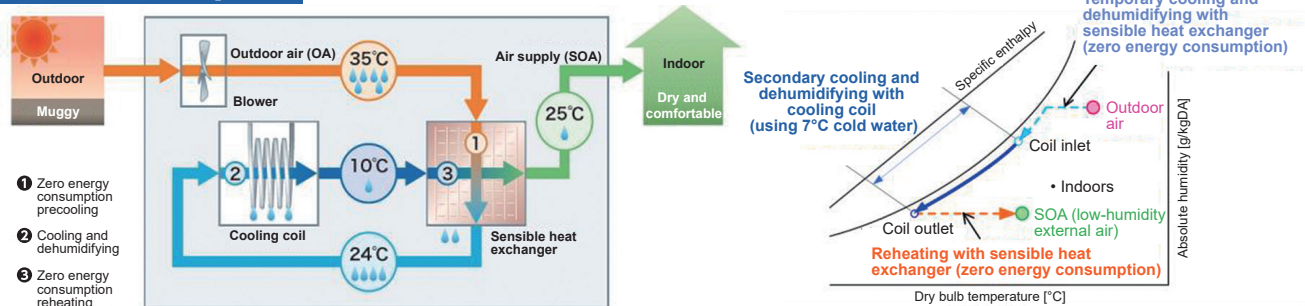


● Incorporates everything that is needed for operation, including the power board and the like. The “ECOSALA®” all-in-one unit



● Supports multi-site remote monitoring.

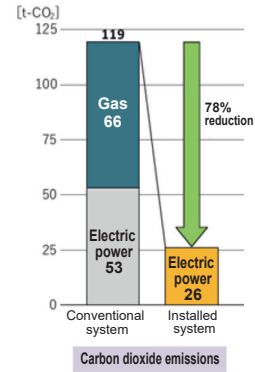
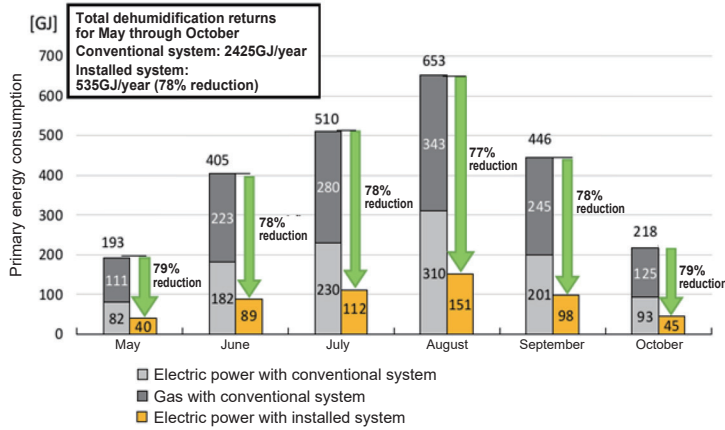
Overview or Principles



● Air flow and air line diagrams for ECOSALA

Air flow of ECOSALA is shown. The external air ① is precooled by exchanging sensible heat of the outlet air ③. The cold water coil outlet air ③, which is the inlet air ② cooled and dehumidified by the cold water coil, is reheated by sensible heat exchange with the external air ①, to supply low humidity air ④ to the interior. The energy required by ECOSALA is limited to cooling and dehumidifying with the cooling coil, since primary cooling and dehumidifying, as well as reheating that occurs along the line from cooling coil outlet and thereafter are performed by sensible heat exchanger with zero energy consumption.

Effects or Remarks



Monthly energy reduction effects from the installation of ECOSALA®

Carbon dioxide reduction effect from the installation of ECOSALA®

A sensible heat exchanger is used to perform zero energy consumption primary cooling and zero energy consumption reheating, to achieve a reduction of energy for cooling by 30% (for external air conditions of 34.3°C and 68% relative humidity) and 100% for reheating all entirely by the single unit of ECOSALA. An implementation case example at a food processing plant confirmed an annual reduction of energy by a total of 1,890GJ/year or a 78% reduction for primary energy consumption during the dehumidifying period, with the ECOSALA system reducing the prior consumption of 2,425GJ/year to 535GJ/year. The reduction is 78% for the From the perspective of environmental conservation, carbon dioxide emission, which is thought to be the cause for global warming, is reduced by 78%. This means that a significant contribution is made to achieve carbon neutrality by effectively using the high temperature of the air in the atmosphere, which is a renewable energy.

“ECOSALA®”

Received award: The 2021 Energy Conservation Grand Prize from the Energy Conservation Center, Japan. The Energy Conservation Center Chairman’s Award in Product and Business Model Division (Award winning topic: Energy conserving air conditioning solution with a dehumidifying and air supplying unit that achieves a “zero energy consumption precooling and reheating”)

Installation in Practice or Schedule

Domestic

Plant A at Meiji Co., Ltd. Dedicated for dehumidification: 8,000 m³/h Installation completed in October, 2019



Tsukuba-Mirai Technology Center, Sanken Setsubi Kogyo Co., Ltd. Dual use for dehumidification and humidification: 2,000 m³/h Installation completed in January, 2021



Saitama Technology Center, Sanken Setsubi Kogyo Co., Ltd. Dual use for dehumidification and humidification: 4,200 m³/h Installation completed in March, 2022



- Plant B at Meiji Co., Ltd. Installation completed in June, 2022; exclusive use for dehumidification: 10,500 m³/h
- New R&D Building at Eiken Chemical Co., Ltd. Installation completed in July, 2022; dual use for dehumidification and humidification: 6,750 m³/h
- Plant C at Meiji Co., Ltd. Installation completed in February, 2023; exclusive use for dehumidification: 12,000 m³/h
- Plant A at Meiji Co., Ltd. Implemented, exclusive use for dehumidification: 6,000m³/h
- A supermarket Implementation planned, dual use for dehumidification and humidification: 12,000m³/h
- Plant C at Meiji Co., Ltd. Implementation planned, exclusive use for dehumidification: 15,000m³/h

Contact: Sanken Setsubi Kogyo Co., Ltd.
 Development Group, Engineering Management Division
 Mail: kaihatsu@skk.jp
 URL: https://skk.jp/contact/