

# Cooling Systems Division

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The heating value is increasing because of the large capacity and high speed of miniaturized devices, and measures, such as high air volume, low noise, low power consumption, long life, and environmental compatibility, are highly required in fans that cool these devices.

We intend to keep offering the best products through the development of high performance and environmentally compatible products.

This report will introduce the main technical results of the cooling system division in 2003.

- (1) "San Ace 40" counter rotating fan
  - (2) "San Ace 60" G type  
60mm sq. x 38mm thickness fan
  - (3) "San Ace 80" G type  
80mm sq. x 38mm thickness fan
  - (4) "San Ace 92" G type  
92mm sq. x 38mm thickness fan
  - (5) High static pressure "San Ace 200" fan
  - (6) "SAN ACE MC" series
- The following is the outline.



## "San Ace 40" Counter Rotating Fan

We have developed a 40mm sq. x 56mm thickness "San Ace 40" counter rotating fan, which is mountable on a 1U server. High air volume and high static pressure were successfully achieved, as well as low noise, which was assumed to be difficult to realize in counter rotating fans. Moreover, low power consumption was also achieved by improving the driving circuit.

The "San Ace 40" counter rotating fan does not have the static pressure drop that is a unique characteristic of an axial flow fan, and it has improved 20% in air volume, 40% in static pressure, and 5dB(A) in sound

pressure level to the series use of 2 present 40mm sq. x 28mm thickness "San Ace 40" fans with maximum air volume (compared with the impedance of the highest efficiency point). In addition, power consumption has been reduced by 20%.

The line up is S and H speed with voltage 12V.

This fan is recognized as an ECO-PRODUCTS (environmentally compatible product).

The details were introduced in the Technical Report No.16 Nov.2003.



## "San Ace 60" G Type 60mm sq. x 38 Thickness Fan

We have added a new series "San Ace 60" G type 38mm thickness fan to the 60mm sq. fan.

The lineup was enriched as 38mm thickness was added to the existing 15mm thickness, 20mm thickness and 25mm thickness of the "San Ace 60", which makes four series in total.

We designed a new motor, blade, and frame for the "San Ace 60" G type 60mm sq. x 38mm thickness fan, which realized a 70% improvement of maximum air volume to the existing 25mm thickness fan with the highest air volume and also a 7%

reduction in power consumption to the same air volume product. Voltage line up is 12V and 48V. This fan is recognized as an ECO-PRODUCTS (environmentally compatible product).

The details were introduced in the Technical Report No.16 Nov.2003.



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## “San Ace 80” G Type 80mm sq. x 38mm Thickness Fan

We have added a new series “San Ace 80” G type 38mm thickness fan to the 80mm sq. fan.

The lineup was enriched as 38mm thickness was added to the existing 15mm thickness, 20mm thickness, 25mm thickness, and 32mm thickness of the “San Ace 80,” which makes five series in total.

We designed a new blade and frame for the “San Ace 80” G type 80mm sq. x 38mm thickness fan, which realized a 70% improvement of maximum air volume to the

existing 32mm thickness fan with the highest air volume and also a 40% reduction in power consumption to the same air volume product as well as a 7dB(A) noise reduction.

Voltage line up is 12V, 24V and 48V.

This fan is recognized as an eco-product (environmentally compatible product).

Details are introduced in this Technical Report.



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## “San Ace 92” G Type 92mm sq. x 38mm Thickness Fan

We have added a new series “San Ace 92” G type 38mm thickness fan to the 92mm sq. fan.

The lineup was enriched as 38mm thickness was added to the existing 25mm thickness and 32mm thickness of the “San Ace 92”, which makes three series in total.

We designed a new blade and frame for the “San Ace 92” G type 92mm sq. x 38mm thickness fan, which realized a 25% improvement of maximum air volume to the

32mm thickness fan with the highest air volume and also a 13% reduction in power consumption to the same air volume product.

Voltage line up is 12V and 48V.

This fan is recognized as an eco-product (environmentally compatible product).



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## High Static Pressure “San Ace 200” Fan

We have developed a new series “San Ace 200” as a high-pressure type of 200mm round 70mm thickness fan. Now there are 2 series by this development added to the existing low noise type. We designed a new blade and frame, and also improved the motor, which realized

the improvement of static pressure in the practical use area and contributed to cooling high-density devices.

Voltage line up is 24V and 48V.



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## “SAN ACE MC” Series

### “SAN ACE MC” for Pentium®4\*

The heating value of the number of microprocessors (MPU) is reaching approximately 100W as transistors accumulated in MPU in computers have reached as many as 125,000,000 and the operation clock frequency has been as fast as 3GHz.

In addition, the heating density has been rising further as the die size of MPU becomes smaller and a highly developed cooling technology is required for MPU.

We have developed the high cool-

ing performance “SAN ACE MC” for Pentium®4 as a part of the “SAN ACE MC” series.

I will continue to support cooling the latest MPU and improving the cooling technology further.

\* Pentium® is the trademark of Intel Corporation.



“SAN ACE M” for Pentium®4\*



#### **Kesatsugu Watanabe**

Joined company in 1973.  
Cooling Systems Division, Design Dept.  
Worked on the development and design of  
the fan motor.