

Cooling Systems Division

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In recent years, heat dissipation from nearly all varieties of electronic devices has increased due to trends moving toward compactness, increased power, and higher data flow-through rates. Cooling fans used in these devices must therefore provide higher airflow with less noise and power consumption, while protecting the environment.

With the above trends in mind, this article seeks to outline the major technical developments achieved by the Cooling Systems Division in 2004. Through the

sustained development of innovative products, our company continues to pursue even greater performance and yield concrete results in environmental conservation, resulting in the finest solutions available on the market.

- 1) WF Series Oil-proof Fans
- 2) B Series Blowers
- 3) "SAN ACE MC" Series MPU Coolers
- 4) "SAN ACE MC Liquid" Cooling System

An overview of each of these products is given below.



■ WF Series Oil-proof Fans

"San Ace 40WF" 40mm sq. × 20mm thickness Fan

"San Ace 60WF" 60mm sq. × 25mm thickness Fan

"San Ace 120WF" 120mm sq. × 38mm thickness Fan

San Ace WF Series Oil-proof Fans are designed for use in oil-mist environments, such as when cutting oil or other types of oil is dispersed in fine particles. Highly oil-resistant materials are used to protect the coils and electronic components, enabling dependable operation in the severe environment of an oil-mist. These fans make a solid contribution to reducing facility

maintenance costs.

San Ace WF Series products are available in three sizes: 40mm sq. × 20mm thickness, 60mm sq. × 25mm thickness, and 120mm sq. × 38mm thickness. Each fan size is available with 24V H speed.

Additional details on these products are given in the Special Feature article in this Technical Report.



■ B Series Blowers

"San Ace B76" 76mm sq. × 20mm thickness blower

"San Ace B97" 97mm sq. × 33mm thickness blower

"San Ace B150" 150mm sq. × 40mm thickness blower

A new series of blowers has been developed that offers even greater static pressure and air flow, with less noise. These blowers are available in several types: 76mm sq. × 20mm thickness, with S, H and F speeds; 97mm sq. × 33mm thickness with G, S, H and F speeds; and 150mm sq. × 40mm thickness, with H and F speeds. Each model is also available in 12V and 24V configurations.

As an example of improved performance, our 97mm sq. × 33mm thickness fans offer 1.8 times the maximum airflow and 2.7 times the maximum static pressure of conventional products, while the noise level has been reduced by 3dB (A).

Additional details of the performance characteristics of the 97mm sq. × 33mm thickness fans are given in the Special Feature article in this Technical Report.



■ "SAN ACE MC" Series MPU Coolers

"SAN ACE MC" for Pentium® 4* Processor/ 775-land LGA Package

"SAN ACE MC" for Pentium® 4* Processor/ Socket 478

Overall heat dissipation from personal computers and other information technology devices continues to rise, as their data rates and performance improves to groundbreaking levels. The heat dissipation density inside equipment has also risen sharply, in line with the trend toward increasingly compact and high-density designs for these devices. The actual number of transistors accumulated on a micro processing unit (MPU) has reached 125 million, and the operational clock frequency now exceeds 3GHz, causing heat dissipation from MPUs to rise above 100W.

Furthermore, the die size for MPUs continues to decrease, causing heat dissipation density to rise even higher. A

direct result of these two trends is the need for cooling devices with even greater cooling capacities for MPUs.

In response to this need, two types of high-performance "SAN ACE MC" Series products have been developed for Pentium® 4 processors.

Sanyo Denki's Cooling Systems Division is determined to continue its improvements in cooling technologies, in order to satisfy the cooling needs of the most demanding MPUs.

* Pentium® 4 is a registered trademark of Intel Corporation.



■ Liquid Cooling System

"SAN ACE MC Liquid"

An innovative high-performance liquid cooling system developed for MPUs with high clock frequencies and extreme heat dissipation, the major components of the "SAN ACE MC Liquid" consist of radiator, reserve tank, pump and fan.

Compared to the highest quality "fan + heat sink" system that constitutes a typical,

mainstream MPU cooler today, the cooling capacity of the "SAN ACE MC Liquid" is 40% greater, in a system that is more compact and creates less noise than its rival.

Additional details of this system can be found in Technical Report No.18 (November 2004).



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Joined Sanyo Denki in 1989

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