

Cooling Systems Division

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The major technological result of the Cooling Systems Division in 1999 was the enhancement of the product line-up in an attempt to contribute to society by developing products that are energy-saving and protect the global or community environment. New products were added to the product line of standard fans, "SAN ACE MC," Splash Proof Fan, Scirocco Fan, Filter kits, and Finger guards.

The rising speed of information processing and faster communications have increased the mounting density of equipment, so that cooling is a must for electronics and needs for cooling products are diversifying. The resulting long line-up of competitive products will hopefully meet customer needs and find even more applications.

Standard Fans

To the product line of standard fans, we have added "FINE ACE 10" (fans 40mm sq. x 10mm thick), "SAN ACE 127" (fans 127mm sq. x 38mm thick), and "SAN ACE 140" (fans 140mm sq. x 38mm thick).

"FINE ACE 10" is a product 40mm sq. x 10mm thick, which achieves high air volume and silence. It comes in two voltage levels: 5V and 12V. It comes in H speed and M speed, with a pulse sensor or a lock sensor. It is expected to find applications in cooling equipment that generate much heat and that requires a small and thin fan. Fans 40mm sq. have thus formed a line-up of four sizes: 28, 20, 15, and 10mm thick.

"SAN ACE 127" is a product 127mm sq. x 38mm thick, having an air volume and noise reduction characteristics midway between fans 120mm sq. and fans 140mm sq. It will hopefully find applications for cooling servers, communications equipment and other devices. Details were presented in the Technical Report No. 8, Nov. 1999.

"SAN ACE 140" is a product 140mm sq. x 38mm thick, with increased mass-production performance due to the use of a resin frame and having high air volume and silence. It comes in three voltage levels: 12, 24, 48V. It comes in H speed and M speed, with a pulse sensor. It is expected to find applications in servers, communications equipment and other devices that produce increased heat where fans 120mm sq. and 127mm sq. do not offer enough cooling.



"FINE ACE 10"



"SAN ACE 127"



"SAN ACE 140"

Splash Proof Fans

As Splash Proof Fans, we had already commercialized a "W" series (splash proofness: IPX5), a series of products whose stator and printed circuit board are covered completely with silicone rubber. We then developed a new splash-proof structure and added a "WS" series, a series of Splash Proof Fans with a splash-

proofness of IPX4.

The rotor boss is shaped like a labyrinth and the motor is surrounded with a splash-proof ring. The motor and bearing are thus protected from water ingress to achieve IPX4. An existing motor is used and yet a high reliability is achieved. The fans come in three models: 120mm sq. x 38mm thick, 92mm sq. x 25mm thick, and 80mm sq. x 25mm thick.

As Splash Proof Fans, the "W" series with a splash-proofness of IPX5 comes in models 80, 92, 120, and 140mm sq. The "WS" series with a water-proofness of IPX4 comes in models 80, 92, and 120mm sq.

They will hopefully find more applications in cooling those devices that are used outdoors and those that may be exposed to water splashes. Details of the "WS" series were presented in the Technical Report No. 8, Nov. 1999.



Splash Proof Fans, "WS" series

Blower

"SCIROCCO ACE 160" (160mm sq. x 40mm thick) was added to the existing product line-up of "SCIROCCO ACE" (120mm sq. x 32mm thick), "SCIROCCO ACE 127" (127mm sq. x 32mm thick) and "SCIROCCO ACE 76" (76mm dia. x 30mm thick).

These fans are large in size, but consumes low power and produces a high air volume and reduces noises. They come in three voltage levels: 12, 24, and 48V. They come in H speed and M speed, with a pulse sensor.

There are an increasing number of devices having high mounting densities. If space constraints force the installer to install a fan with its air supply direction to a perpendicular direction only, the centrifugal blower achieves a high cooling performance. The product line-up will need further development.



"SCIROCCO ACE 160"

Filter kits and Finger guards

The only filter kit available so far was for units 120mm sq. x 38mm thick. We have just commercialized a resin filter kit that is easy to install. It comes in four sizes: 60, 80, 92, and 120mm sq. This filter kit consists of a guard, medium, and cover. In addition, we have commercialized a new finger guard made of resin. Details will be presented in the feature story included in this issue of the Technical Report.

The addition of the resin finger guard series and the filter kit series to the traditional steel-wire finger guard series will hopefully find more applications.

MPU Cooling Fan "SAN ACE MC"

With the rising speed of information processing, the amount of heat generated in microprocessors (MPU) is on an upward trend. With this trend, "SAN ACE MC" is having a wider variety of models. In 1999, we commercialized "SAN ACE MC" for Pentium® III *1 slot type, "SAN ACE MC" for Pentium® III socket 370, and "SAN ACE MC" for AMD Athlon™*2

The heat sink is made of an extruded mold. The line-up also includes models consisting of high-density radiator fins that were never found in previous models.

For Pentium® III slot type, we commercialized two models: 137 × 56mm sq. × 35mm thick and 137 × 51mm sq. × 32mm thick. The MPU contains easy-to-install mounting metal fittings.

For the socket type, we commercialized three models: 68 × 67.3mm sq. × 45mm thick, 64 × 51mm sq. × 35.5mm thick, and 64 × 51mm sq. 44.5mm thick. For the model 68 × 67.3mm sq. × 45mm thick, we designed a new fan and adopted the largest vane outer diameter of all models in "SAN ACE MC" in an attempt to increase air volume and reduce noise. At the same time, a heat sink with a high-density radiator fin is used to achieve high cooling performance. The other two models incorporate fans identical with "SAN ACE MC" for traditional Celeron™ or AMD-K6®.

For AMD Athlon™, we commercialized two models: 120 × 56mm sq. × 44mm thick and 120 × 56mm sq. × 36mm thick. It contains metal fittings that can be easily mounted on MPU plates.

MPU are projected to produce even more heat in the future. We will continue our efforts to increase the cooling performance of "SAN ACE MC."

*1:Pentium and Celeron are registered trademarks of Intel Corp.

*2:Athlon is a registered trademark of Advanced Micro Devices, Inc.



"SAN ACE MC" for
AMD Athlon™



"SAN ACE MC" for
Pentium® III socket type



"SAN ACE MC" for
Pentium® III slot type

Kesatsugu Watanabe

Joined company in 1973

Cooling Systems Division, Design Dept.

Worked on development and design of fan motors
