Hitachi developed Liquid Cooling solution for Desktop PC and servers

Tokyo February 17, 2003 --- Hitachi, Ltd. (TSE:6501) today announced that it has come up with a Liquid Cooling System for desktop PC and servers. Compared with conventional fan cooling system, this new liquid cooling system achieves reliable delivery of both the ultra-quiet operation desired for desktop and laptop PCs, which are used at close quarters, and the high-level cooling efficiency required for servers, which demand higher degrees of performance and reliability.
We will exhibit our prototype desktop personal computers, 2U blade servers and rack-mounted 1U servers, featuring the Liquid Cooling System, at the IDF Spring 2003 (Intel Developer Forum, February 18 to 21, 2003), to be held in San Jose, USA.

With the increased pressure on system performances due to a highly advanced level of application software, there are a continuous demand for higher performance in PCs and servers. As a result product design must take great account of how the heat generated from computer components, including the CPU, should be dissipated.

Hitachi announced a Silent Liquid Cooling System for laptop PC in February, 2002, and have been selling the "FLORA 270W Silent Model", which features that system, since September last year. In fact, some modifications were made to the Silent Liquid Cooling System for laptop PC so that it could be adapted to a desktop PC, and to a rack-mounted server.

The Liquid Cooling System for a desktop PC transfers and discharges the heat produced by the CPU via a cooling liquid to a heat sink in the back of the cabinet. Whereas a number of air-cooling fans are usually required to cool the CPU, power supply unit, etc., in this new system a single system fan can cool the whole system, thus accomplishing ultra-quiet performance of less than 30 dB.

The Liquid Cooling System for a blade server has made it possible to adopt a high-performance CPU in a limited space by having a heat exchange unit fitted in the main unit of a server, transferring and discharging the heat through a cooling liquid circulation pipe connected with a blade unit, and thus achieving far better cooling performance than is possible with the conventional air-cooling method.

The Liquid Cooling System for a rack-mounted server achieves efficient heat exchange through the mounting of a refrigeration cycle in the rack, and connecting a cooling pipe from the server units to a cooling liquid circulation pipe mounted in the rack.

Both the blade server and the rack-mounted server with a refrigeration cycle have redundant pumps to drive the cooling liquid, so that even if a failure should occur, it is possible to replace a pump without shutting down the system. Moreover, a special coupling mechanism is employed to connect the cooling liquid between the blades and the main unit, and between the rack-mounted server and the rack, thereby making a single-action on-and-off operation (live-wire insertion and removal*) possible, without the need to consider complicated operations peculiar to the connection of liquid flow paths, such as opening and closing of valves.
*Live-wire insertion and removal ---- Even if a blade should be inserted or removed while the power is "on" in the main unit, the system can recognize this operational state.
The Liquid Cooling System can be also applied to electronic equipment other than PCs and servers, and can cope with a wide range of issues, including overheating and fan noise.

Hitachi are exhibiting our prototype desktop PC, blade server, rack-mounted servers at the IDF Spring 2003 for the purpose of signposting the new direction of liquid cooling technology. In addition, when we are technically confident of the potential for commercializing this system, we plan to open up the liquid cooling system technology to other manufacturers by way of licensing, as we did for our laptop PC. We are totally committed to commercialization of the Liquid Cooling System.

Features of the Liquid Cooling System
1. Quietness
2. Flexibility of layout design.

3. It is easy to cool multi heat generators.
4. Combined use with cooling fan, it is possible to increase cooling efficiency remain keeping its quietness.
5. Maintenance-free.

Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
