NEC, Hitachi develop Liquid Cooling System for Desktop PC with Liquid Cooled HDD

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NEC and Hitachi have jointly developed a new liquid cooling system for desktop PCs, which reduces PC operating noise to approximately 1/3 that of current models in Japan.

The new system has been realized by adopting Hitachi's world-leading, advanced CPU liquid cooling cold plate, and the world's first hard disk drive (HDD) liquid cooling cold plate, jointly developed by NEC and Hitachi.

Realized by Hitachi's advanced liquid cooling technology and NEC's cutting edge PC development design technology, the new system succeeds in reducing noise level of liquid cooled PCs from approximately 30 decibels (db) to 25db at maximum operation, a noise level quieter than that of the average home DVD recorder.

The new system will be employed in NEC brand consumer desktop PCs for the Japanese market in the near future.

Features of the new silent liquid cooling system

1. CPU liquid cooling cold plate with world class liquid cooling capability
An increase in the heat conduction of the liquid cooling cold plate by more than double that of conventional cold plates was realized by creating multiple extremely fine grooves of approximately 0.09mm in

width in the heat exchanger fin inside the liquid cooling cold plate and by optimizing the liquid coolant flow channel design by adopting a newly developed "down-flow method" and considering the size of the die for pin-point channeling.

2. Less noise generation by adoption of world's first HDD liquid cooling cold plate
In addition to the adoption of a high performance CPU liquid cooling cold plate, NEC and Hitachi have also realized the world's first HDD liquid cooling cold plate. NEC and Hitachi were able to wrap the entire HDD in high performance noise absorbing material and vibration insulation as the HDD liquid cooling cold plate enables effective reduction of the rise in temperature of the HDD, achieving a reduction in noise of the HDD by more than 10db. In addition, use of a low speed radiator fan(less than1000rpm), a low operating noise micro-pump, and high performance noise absorbing material made it possible to lower the noise of the whole system.

In recent years, the heat value and heat density of PCs has been increasing along with enhancement of CPU performance and memory capacity; making it essential to not only cool the CPU, but also other devices such as the HDD. As a result, systems that simultaneously realize significant enhancements in cooling efficiency and low noise through the slow down of cooling fans are being highly sought after.

In addition, AV functions are being increasingly incorporated into consumer PCs, so a noise level that doesn't distract from AV operation is highly desirable. By employing a new, cutting edge, silent liquid cooling system, NEC and Hitachi have enabled development of an extremely quiet desktop PC and through it hope to contribute to the greater spread of desktop PCs with advanced AV functions.

Source: NEC