

Z420 Liquid Cooling Kit

The increased thermal efficiency of liquid cooling delivers lower CPU-induced acoustic noise at high frequency, high power CPU operating states. In fact, in a laboratory comparison of results between the liquid cooled and non-liquid cooled systems, the reduction in acoustic noise was measured at 2 dBA (perceived as about 15 percent quieter) while running mainstream CPUs at a heavy CPU load level. And with the most extreme CPUs, liquid cooling allows the workstation to maintain the same acoustic noise level as when using a mainstream CPU. In an air-cooled system at heavy workloads, the CPU fan(s) ramp quickly to keep the CPU cool. Under cyclic loading, the fan(s) ramp up and down with the workload. Because the Liquid Cooling System (LCS) has higher thermal inertia, the associated fans do not ramp up and down as quickly.

Typical Liquid Cooling Systems (LCS) are a complex assembly consisting of a fluid, one or more pump(s), tubing, a reservoir, one or more cold plate(s) (to cool a specified component or location), a radiator, and one or more fans. The LCS used on this HP Z420 workstation combines all of these components into a self-contained assembly that mounts directly to the CPU socket, reducing the complexity over previous LCS solutions. Self-contained LCS units provide the convenience of a traditional CPU heatsink with the efficient thermal performance of liquid cooling.

HP Z420 liquid cooling systems feature recyclable components and they are constructed with Low Halogen materials. Additionally, non-hazardous propylene glycol and water are used as the working fluid.

SDH Note: There are reliable reports that the Z420 liquid cooling kit fits also in the Z620 single-processor builds, works well there too, and is reported to fit under the Z620 memory cooling accessory “saddle”.