HEAT TRANSFER SIMULATION OF CPU WITH RESPECT TO HEAT GEOMETRY COMPONENTS

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ABSTRACT

This study investigates the heat transfer simulation in a central processing unit (CPU) with respect to heat geometry components. The STAR-DESIGN of the well-known computational fluid dynamics (CFD) was employed in order to simulate the dissipative heat transfer in a ventilated enclosure. A complete computer chassis model with heat sinks and fans inside the CPU was created using CATIA. The simulation approach for the full computer chassis model consists of these following objects; CPU, CPU heat sink, CPU fan, AGP graphic card, AGP heat sink and fan, chipset, mainboard, RAM, power supply, grilles, floppy and hard drives. The selected application is the CPU cooling of a standard desktop personal computer. The CPU in a desktop must be cooled to limit its temperature to the manufacturer's maximum allowed value. The CPU is cooled using an attached heat sink with the heat rejected to air supply by a fan. The parameter that taken into consideration in this thesis is focused on the heat sinks where three different heat sinks modelled into full chassis to computationally simulated and analyzed so that the thermal performance can be improved. The result from the simulation analysis showed the average temperature and velocity inside the CPU and from that the best model of CPU can be obtained.

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