PS5 will use downloadable updates to control game-by-game fan speed

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- The PlayStation 5 comes with everything seen here. Some assembly required. Batteries not included. From Sony!
- Air vents!
- The entire rear of the system is pretty much one big air vent.
- The stand at the base of the (vertical) system is attached with a single large screw.
- The stand and the screw sit alone.
- In horizontal orientation, the stand snaps into place without tools.
- The white panels on the sides of the system can be slid off without tools.
- The cooling fan draws air from both sides of the system.
- The massive cooling fan itself.
- One of two “dust catcher” holes that should be easy to vacuum out after extended use.
- This panel for PCIe storage expansion can be opened with a screwdriver.

Earlier this month, Sony gave us the first peek inside the PlayStation 5 in the form of a teardown video that examined

the upcoming console piece by piece. Now, Japanese specialty site 4Gamer has posted an interview with the Sony hardware design engineer featured in that video, Yasuhiro Otori.

That interview (Google Translate, ResetEra user translation) goes into a lot of nitty-gritty detail on the design decisions behind Sony's uniquely shaped console and focuses heavily on the unit's heat dissipation technology. One of the most interesting tidbits on that score is an apparent plan to "optimize" the speed of the cooling fan on a per-game basis via downloadable system updates.

"Various games will appear in the future, and APU [accelerated processing unit] behavior data for each game will be collected," Otori said. "Based on this, there is a plan to proceed with the optimization of fan control."

That performance analysis will be based on data sent from a temperature sensor on the APU and three others mounted on the PS5's motherboard, according to the interview (the highest measured temperature will be used to determine the fan speed). 4Gamer surmises this aggregate data may be particularly useful "when a game with a high load continues for a long time, [making it] possible to increase the rotation amount of the fan and enhance the cooling performance even at the expense of quietness."

In the interview, 4Gamer notes that the system's 120mm diameter, 45mm thick fan, which directs air to both sides of the dual-sided motherboard, "is quite large and thick for an electric fan mounted on a game machine." That allows for slower turning compared to a larger fan, leading to a "high degree of quietness… under normal usage conditions."

In the teardown video, Otori said the PS5's increased size led to "a dramatic improvement in terms of processing power and quietness" over the PS4. Initial hands-on reports from Japanese press confirmed that general impression, which should

be good news for PlayStation owners used to loud system fans that spin like jet engines under heavy load.

Cooling at cost

Otori also addressed the PS5's unorthodox use of liquid metal conductor as a TIM (thermal interface material) below the CPU. That gallium alloy can be highly corrosive to the aluminum often used in heat sinks, though, so the PS5 has a silver-plated block to prevent corrosion where its heat sink meets the APU, Otori said.

Even with this unorthodox design, and even with the increased cost of the liquid metal TIM itself, the decision to use it helped lower the overall cost of the PS5, Otori said. That's because the liquid gallium TIM allowed Sony to get the same cooling performance from a cheaper heat sink.

- The PS5's Ultra HD Blu-ray drive and an insulating layer that Sony says reduces noise and vibration from spinning discs.
- One side of the motherboard, featuring the CPU…
- And the other, featuring a ring of RAM chips near the center.
- Sony says it tested the PS5's liquid metal heating conductor for two years before putting it in the system.
- Sony says this heat sink uses a pipe with a "shape and airflow [that] make it possible to achieve the same performance as a vapor chamber."
- The PS5's 350W power supply is a big boy.

Otori said cost reductions also came into play when deciding on the PS5's physical dimensions. At one point, Otori said, the company was considering a design that would "reduce the height and widen the width accordingly." That sounds like it would have made the system's shape more akin to the shorter, squatter Xbox Series X (when both systems are standing

vertically).

Besides aesthetic considerations, Otori said changing the PS5 dimensions in such a way would have made it difficult to fit the PS5's components on a single motherboard. That would have, in turn, complicated the arrangement of the system's components quite a bit.

"With two boards, the manufacturing cost and the difficulty of heat dissipation design increase," Otori said. "It means that the design requirement to make it look thinner when placed horizontally and the design requirement to reduce the cost with a single board are intertwined."

Other tidbits from Otori's interview:

- Otori says "there is no difference in cooling performance between vertical and horizontal installation," in case you were worried.
- The PS5's 350W power supply is built with slits in the front and rear, to allow direct air flow from the system's cooling fan.
- The optical drive, on the other hand, is completely sealed in a layer of double insulation that "functions as a suspension and absorbs vibration from the optical drive module."

Listing image by Sony / Youtube

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