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3D PRINTER AUTO-CLEANING OF POWDER IN PRINT ZONE BETWEEN JOBS

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3D Printer auto-cleaning of powder in print zone between jobs

During the printing of a job in a MJF 3D printer, a thin layer of dust is deposited inside the print zone. This dust must be removed before starting a new job to get 3D parts of good quality and to avoid breakdowns. As the print zone is a hot area, when the job is finished the operator must disconnect the printer, wait until the temperature lowers to a safe level, manually clean the print zone, power up the printer and wait the warming up to the working temperature.

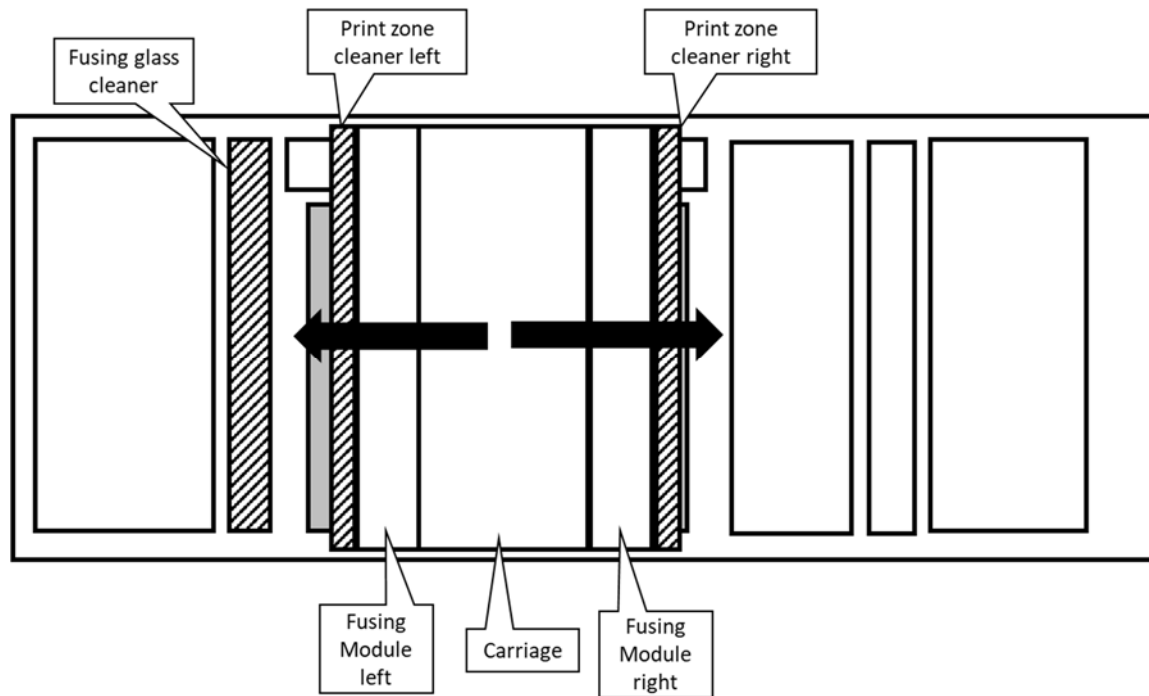
In order to reduce the waiting time and to save energy, an automatic cleaning system has been designed that allows the printer to clean itself at hot temperature.

The 3D printer auto-cleaning is focused on removing powder of horizontal surfaces (where most of the powder is laying) and to clean the glasses that protects the fusing lamps (where small quantity of powder can affect the performance of the printer)

To clean the horizontal surfaces, two print zone cleaners (left and right) have been attached to the carriage. The movement of the carriage allows the cleaners to reach the entire horizontal surface of the print zone. The print zone cleaners can have brushes and suction nozzles to remove the powder in an effective mode.

To clean the fusing glasses, that are attached to the carriage, a fusing glass cleaning station has been added to the print zone. To clean the fusing glass left, the carriage receives the order to bring the fusing module to the fusing glass cleaning station. The cleaning station uses a brush and suction nozzles to clean the glass. When left glass is clean, the operation is repeated for right module.

The printer is now hot and clean and can start the new job is just minutes, instead of the several hours needed if the manual cleaning is performed.



Disclosed by Heribert Farreny, HP Inc.