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DYNAMIC SYSTEM TO RAISE THE BUILD UNIT PLATFORM DURING UNCAKING

HP INC

Dynamic system to raise the build unit platform during uncaking

Abstract

Disclosure to explain a new system that automatically raise the build unit platform during the uncake operation in a powder Processing Station.

The current system requires the operator to push an up or down button to move the platform during the uncake when the recycled powder is being vacuum. When the operator pushes the up button, the platform is being raised to the top position in order to continue the process.

With the system proposed here, during an unpack operation, a laser sensor reads the distance, so it can calculate when the powder has been removed and the platform could be raised up automatically, reducing the operation time and increasing the system quality as there has been a few issues with the button design.

Problems Solved

The proposed solution solves the following problems:

- Reduce Operation time.
- Increase product quality.
- Include an automatic system for a manual operation.
- Reduce AIR. Current buttons module is replaced often.

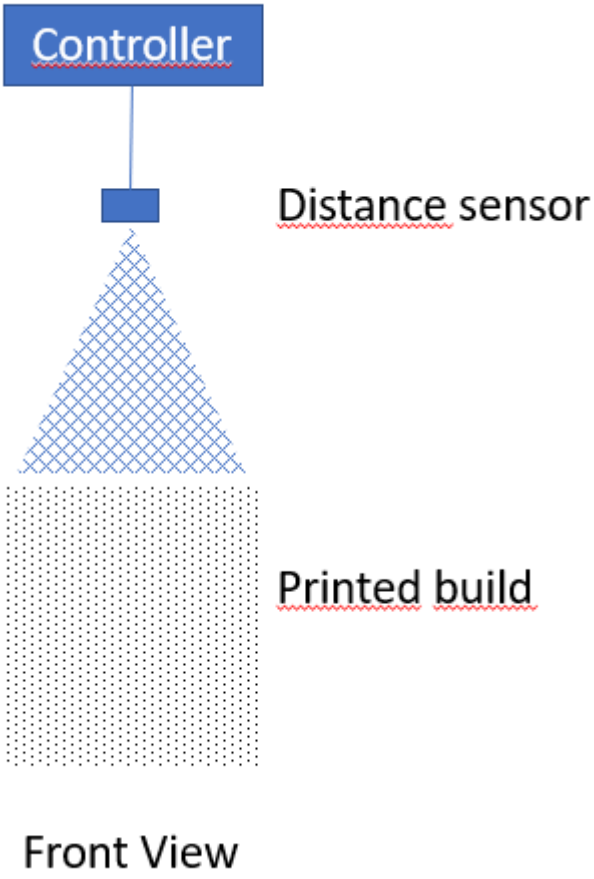
Prior solutions

Current solution is push manualy a button to raise up the platform.

Description

Disclosure to explain a dynamic system to raise the platform during an unpack operation instead of pushing the buttons manualy by the operator.

The proposed solution will work this way:

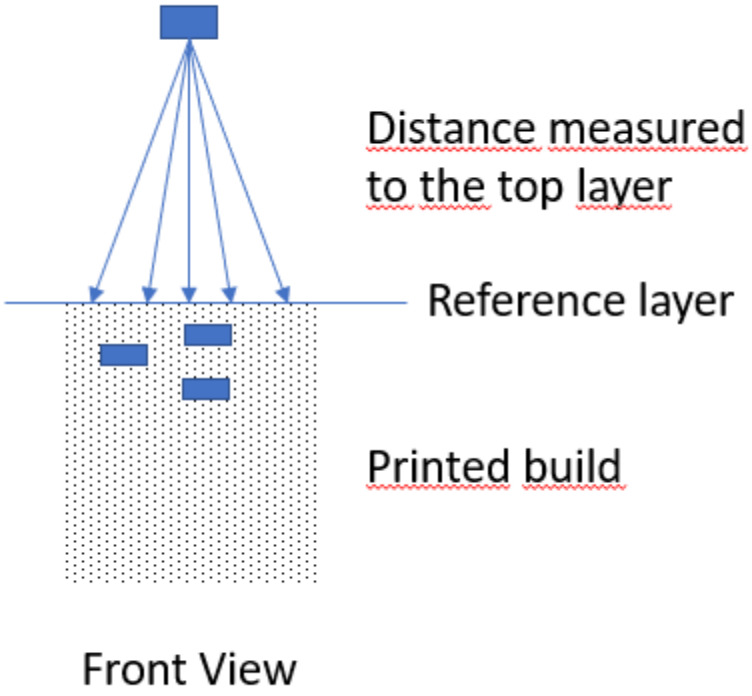


There will be a distance sensor above the build unit area attached to the processing station ceiling.

This sensor could be a distance sensor, or an image recognition camera that will calculate the distance between the sensor and the build unit top surface before starting the unpack operation when the build unit is inserted.

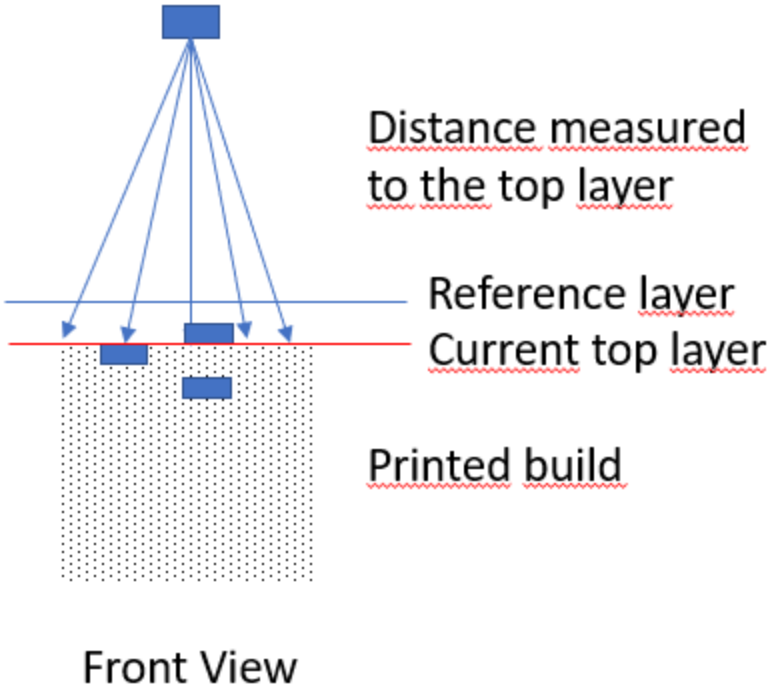
The distance sensor will read directly a distance that is converted to an electrical signal send to a PCA or controller to manage the signal.

In other hand, if an image recognition is used, a 3D mapping could be done so we could have a real powder map with all the potential peaks and mountains it could have.



Once the user takes the unpack hose and start the unpack operation cleaning all the powder around the build unit area, the sensor will start measuring the distance difference between the actual reading and the previous reading before start comparing the measurement with the reference layer as this is a fixed measurement. If this difference is higher than a determinate value, 20 mm for example, all around the build unit area, the controller will raise the platform automatically the same distance. So, the user will always have an ergonomic position during the unpack.

The image below shows this example, the measurement read from the sensor to the red current top layer has increased the threshold above the reference layer, so the platform will start moving up until the measurement reach again the reference layer.



As soon as the user will place the unpack hose into the parking position, the system will stop reading automatically so any malfunction is avoided.

Advantages

- Reduce task time.
- Increase ergonomics.
- Reduce number of repairs because current solution.

Projects

This solution could be applied to the 3D processing stations systems that uses a buttons to raise a platform.

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