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# PART COLOR TAG FOR AUTOMATIC CLASSIFICATION OF PARTS ON A PRINTING PRODUCTION PROCESS

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## Part color Tag for Automatic Classification of Parts in a Printing Production Process

Some 3D printing technologies target not only to prototyping but also for final part production. Automatic post-processing of parts is one of the biggest challenges that need to be solved to achieve productivity and feasibility. It is necessary to provide a valuable solution on how parts are sandblasted and classified because a manual process is not sustainable in a production environment. An automatic classification could solve this issue.

If any 3D printing technology wants to be used in a production environment, this automatic classification of printed parts in the post-processing chain should be implemented.

When a company plans to print several parts from different customers or parts that need a different postprocessing in the same build, the classification process becomes a challenge. If done manually, the time to part is largely increased and the process becomes unsustainable.

Production processes apply several automatic solutions to deal with massive manufacturing products. However, 3D printed parts need a different approach that can take advantage of previous solutions. In some cases, traditional methods cannot be applied. Then 3D printing capabilities may enable more efficient classification methods.

The method proposed herein takes advantage of an automatic sandblasting chain with an automatic part classification using computer vision.

Printed parts need to be sandblasted automatically in order to remove the excess of powder attached on them. For example, if the printed parts are put together in an advancing automatic belt and they are sandblasted the time and manipulation consumption is decreased.
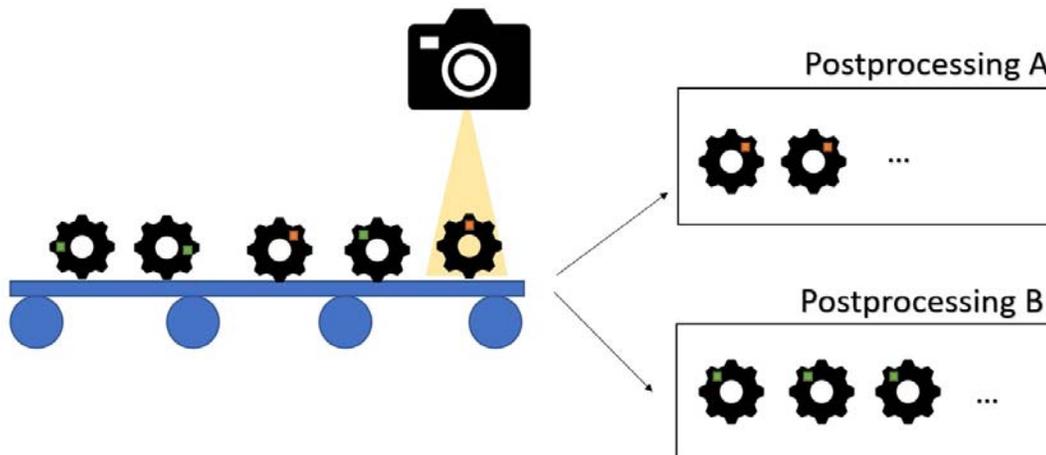


Figure 1. Automatic belt and different parts are on the belt, being sandblasted

These parts need to be classified. Taking advantage of the new 3D printing technology, using  colors, printed parts can be tagged with different colors, and using a computer vision system they can be  identified by their color, and mechanically selected and separated in different containers.
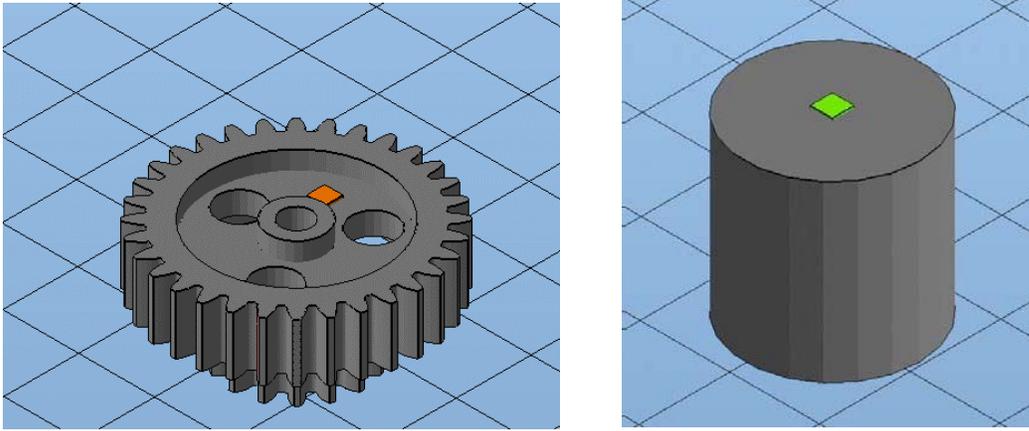


Figure 2. Example of one Part with a color tag on it (or two different geometry parts with different tags)

The main idea is that this tag must be big enough to be detectable by the computer vision system, but thin enough to be  easily removed. While the parts are on the belt, the surrounding powder is extracted with the sandblasting   process. At some point, the tag will be visible by the computer vision system, classified, and through the sandblasting process,  the colored tag will be removed after the part is classified.

This is an automatic classification method using color tags for parts that may enable an improved production throughput and  efficiency by reducing the time spent in manipulating and classifying parts.

*Disclosed by Pol Fornos, Manuel Freire and Ismael Fernandez, HP Inc.*