Tips & Tricks Blog

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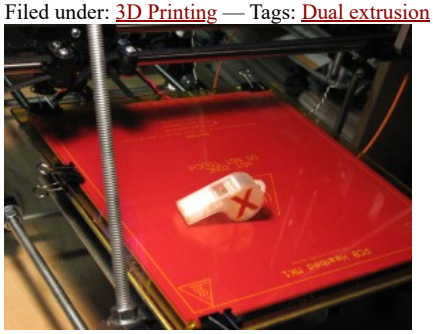
October 29, 2012

Dual extruder PLA printing

Filed under: 3D Printing — Tags: Dual extrusion



Dual color object

One of the most annoying problems with the dual extruder printing is the plastic leaking from the idle extruder. It is especially noticeable with PLA that flows easier than ABS. Lowering the temperature of the idle extruder while it is not needed and restore it when it is time to start printing with that extruder again helps to deal with leaking. It is tricky though since leaking has to be prevented during the teperature changes.

The technique being used with the current generation of the RepRap X2 printers (S/N: 020*) is to print a “parking space” besides the actual object. That “parking space” serves two purposes, one is to plug the nozzles while the temperature changes and the other is to “prime” the extruders (i.e. establish the consistent flow of plastic) before printing the actual object after the temperature change.

You can see the full size video on YouTube: http://youtu.be/ZAafPtKjZSc

The video demostrates the RepRap X2 S/N 0203 (find it on eBay) printing a dual color whistle (pictured above) using the described technique during the tune-up procedure. The STL files used for the print with the parking space object are here:
1. The whistle body (”BASE”, for printing with the extruder 0): Whistle X2 body
2. The text (”INSERT”, for printing with the extruder 1): Whistle X2 text

The special Skeinforge profiles for the X2 printer are needed to generate the G-code. They can be deployed using x2Profile app from the from the X2SW software bundle.

The …0.5C-BASE profile has to be used for slicing the body and …0.5C-INSERT for slicing the text STL of the model. The penultimate G-code generated has to be then merged using the “x2Merge” application (a part of the X2SW software bundle).

The “x2Merge” application merges together the G-code generated for the body and the text STLs. It is merged layer-by-layer. The content from the chosen alteration files for extruder switching is inserted in the places where there is a need to change the extruder. The inserted G-code positions the nozzles above the “parking space” object and changes the active extruder while lowering the temperature of the idle and restoring it for the active hotend before letting the printing continue.

The technique works the best for printing a few layers of color, for example a colored text on the top and bottom of the object. It essentially elliminates the discoloration due to the plastic leaking, but because of the time needed to adjust the temperatures it slows down the print substantially when there are a lot of layers requiring extruder switching.

Note: in order to use the technique X2SW software bundle of at least v1.1.0.4 and X2 firmware of at least v1.0.0b2 are required.

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