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Help with understanding 3D Printing, highs and lows.

by Paul33

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Hi all, hopefully this will be an ongoing blog about how to achieve printing results from a 3d printer. I'll make it clear that although I have been printing for 5 years, I'm no expert. But in that time I have printed hundreds of items and almost none have been right first time. I have used countless 1Kg reels of filament and tested my patients on many occasions. Failures come in many forms ie: running out of filament during a print, nozzle blocking, print coming unstuck/not sticking from the bed and causing a massive birds nest and a gooey mess of filament around the nozzle. The best one is, the dreaded power cut after 20 hours of printing an object, yes its happened to me many times. I find 3d printing a great hobby and the things you can print is almost limitless. There are companies around the world 3d printing houses, replacement body components etc. Commercially with the right printing setup you could virtually 3d print anything. The first main thing to undertake is spend a lot of YouTube time following the guru's sites like Makers Muse, Teaching Tech, CG Geek there are many to look at, by the way look at Naomi 'SexyCyborg' Wu she's a very talented and qualified lady. Before you buy any machine, check the reviews and the forums, that a good place to get the feel about a printer. Regarding cost, get what you can afford. I have had four printers, three of which I still use and the fourth (which cost just under £800) has been dismantled and all the components are used for spares. The printer was a dual printer i.e. can print two colours. An educated guess is that I attempted to print in excess of 100 two colour objects with a 95% failure rate. In the end I just used one nozzle with reasonable success. The main problem was that the dual nozzles had to be perfectly level, and to achieve that was extremely difficult. There are many makes of printer out there, most of which are clones of the "i3 design". The big daddy of the diy 3d printer is a guy from CZ called Josef Prusa, if you want a good machine at a affordable top end price buy a Prusa, I wish I had. One thing that all 3d printers have in common is the firmware (the brains of the machine). As far as I can see, all firmware is "open source" and free to download. Most manufacturers use open source firmware that suits them and tweak it to suit their machine. For those that are not aware what open source software is, its software that is developed by very clever geeks around the world for free!! Github website is the place to go. Printers will not print without the firmware as it will not print without Slicing software. Slicing software is in my opinion the most important part of the 3d printing cycle. More of that another time. Filament can be mostly purchased in 500g or 1Kg spools @ 1.75mm thickness. Each 1Kg spool has a length of 300m, I have seen comments about the filament snapping this can be very annoying. Filament is not supposed to be very flexible and if bent it will snap, you can buy flexible filament but that is a different ball game. If like me, my garage is my workshop and in a bid to protect my tools, boat printers and other equipment during winter I have a back ground heater running, this also protects my filament from becoming brittle and snapping even easier. Always keep spools of filament in the plastic bags and cardboard boxes along with the silica gel pouch when spools are not in use. Failing to do this will reduce the shelf life of the filament. Try to refrain from buying cheap filament. I use a lower to mid range priced filament from Technology Outlet called Premium PLA Plus currently about £20 inc VAT per 1Kg spool. Since I started using PLA Plus the quality of my prints have considerably improved. Also try to resist buying filaments like ABS, PETG and the myriad of other types until you are sure you can deal with them. Anyway that's enough for now, 3d printing is a big subject. Hopefully I will do my next contribution on the very important slicing software subject. Cheers Paul33??