

How 3D Printers Work: Uses & Applications at Clayton (Coffee Maker Prototype)

For Clayton, innovation is always a fundamental commitment to its development, which is why it is always looking for new technologies, one of them being 3D printers that use computer-aided design (CAD) to create 3D objects from various materials, such as molten plastic, metals or powders. It builds a 3D model layer by layer, from bottom to top, printing with repeats over the same area in a method known as fused deposition modeling (FDM).

The printer, which works automatically, creates a model over several hours by converting a 3D CAD drawing onto many two-dimensional cross-sectional layers, i.e. separate 2D prints that are placed on top of each other, but without the paper in between.

Instead of using ink, which would never reach a large volume, the printer deposits **layers of plastic or molten powder** and fuses them (and the existing structure) with adhesive or ultraviolet light. These printers have extreme flexibility in terms of what can be printed. They can use plastics to print rigid materials, such as coffee makers, plant or machine rooms.

Some 3D printers even have the ability to print with carbon fiber and metal powders for rugged industrial products.

Why are 3D printers important for the future?

As explained above, 3D printers are quite flexible; Not only in the materials they use, but also in what they can print. In addition, they are highly accurate and fast, making them a tool with great potential for the future of manufacturing. Today, many 3D printers are used for what's called rapid prototyping.

Companies around the world are employing 3D printers to create their prototypes in a matter of hours, rather than wasting months of time and money on research and development. In fact, some companies claim that 3D printers make the prototyping process 10 times faster and five times cheaper than regular processes.



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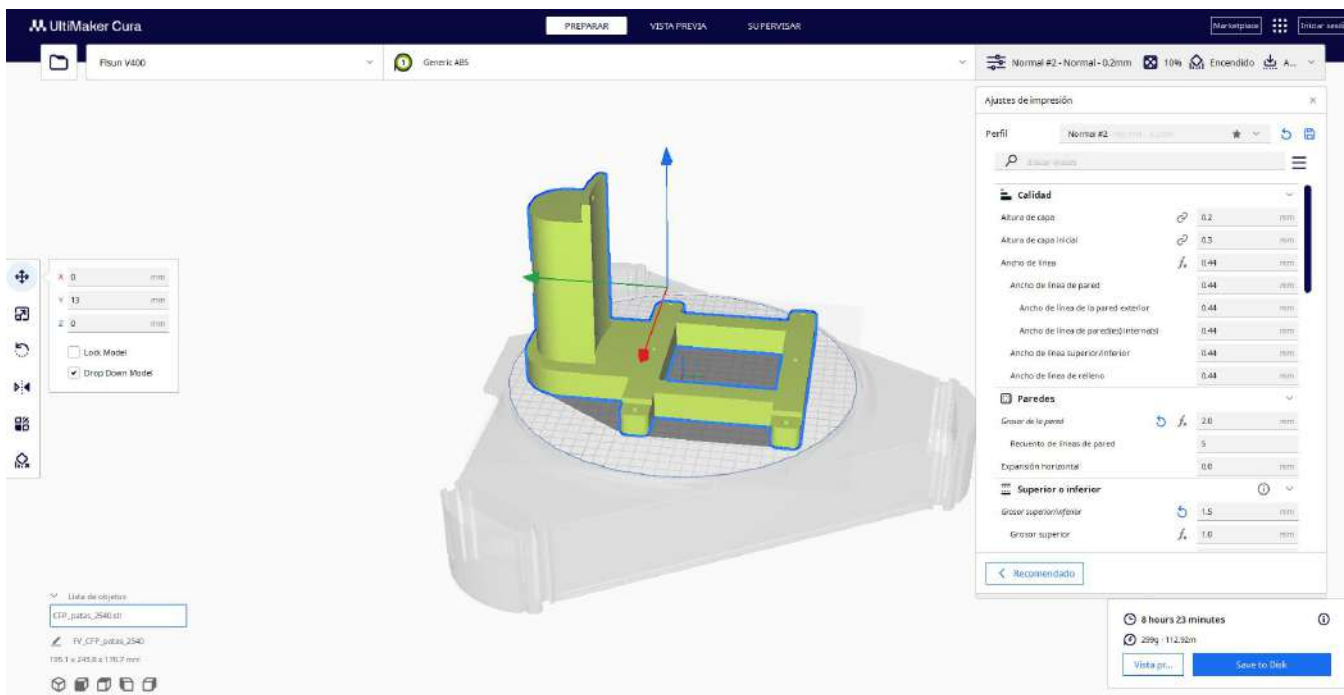
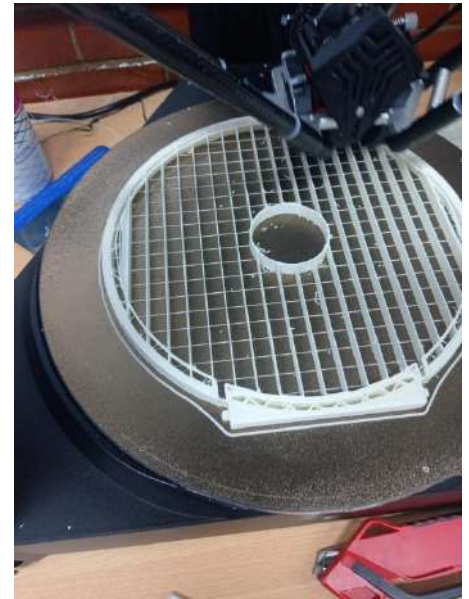
All in all, 3D printers can play a role in almost every industry. Not only are they used for prototyping, they are currently being taken care of printing finished products.

Its flexibility and adaptability make it an instant game-changer for any industry. All 3D printers manufacture parts based on the same fundamental principle: a digital model is converted into a three-dimensional physical object by adding material layer by layer. That's where the parallel term additive manufacturing comes from.

As part of this versatile way to be able to model and print in 3D, the model of a coffee maker in the form of a steam generator was developed as a means of advertising to publicize part of our products as manufacturers of Steam Generators in the international market.

As a first step, the model is developed in Creo Parametric, which is a 3D design software, for this our mechanical designers create the 3D model in the software with real measurements.

Once the model has been made in Creo Parametric, the model is saved in STL format, having this file stops at the printer software where the "G" code of the 3D printer is generated, at this point is where the fine adjustments of the print are generated, such as the height of the layer, Structurer and table temperatures, as well as the type of filament and the speeds at which the parts will be 3D printed.



Once this code is generated, the software gives you the printing time of the part and how much filament you would be consuming. At this point, this "G" code is saved on a USB stick which will be placed in the previously calibrated 3D printer.



The next step is to put the 3D printer or printers to print the model, for the development of this prototype it is made up of several parts that have to be printed independently and once all the pieces are ready they stop for a process of detailing and cleaning them



Like any Production model, it goes through several methods to give the finish and assembly according to the model that you want to assemble, at this point the pieces are painted with an airbrush with the paint and color that is desired, these pieces are assembled to give the final finish and thus be able to deliver the products of the 3D printing already with the function that is desired in this saucepan is to make a Coffee maker in form of a Clayton Steam Generator.



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