

Stereolithography

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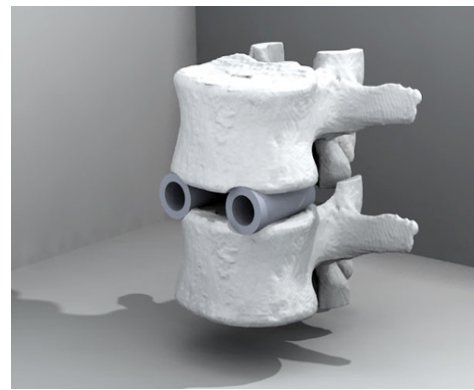
Stereolithography is a type of technology that is used to rapidly create prototypes for a vast variety of tasks. It is the most widely used procedure for rapidly creating prototypes. The procedure itself can be lengthy depending on how large or how intricate a product you are trying to create. The prototypes can be easily used for a molding of a metal product. Testing can also be done on the prototype before it goes on to the final manufacturing to make sure that it will withstand all of the pressure and tests that it will receive in the real world.

The process is actually started off after the user creates a 3D computer-assisted design, or a CAD image. The image is then sent to a stereolithography apparatus. The apparatus takes photo-sensitive resin and spreads it over the machine's surface. Then an Ultra Violet laser cures the resin in the pattern specified by the CAD image. This procedure is done over and over again until all the layers of the device that they are trying to build is completed. The 3D device is then taken out of the machine and finished up, if cutting or sanding is necessary. After the device is finished it is washed with a special solvent, then it is placed into a special oven to finally cure the manufactured part



The benefits of using stereolithography are that the procedure is quicker and more accurate than

having a person building the prototype by hand. The product that is created is also very detailed and polished; looking similar to what the final product may look like. Also, a stereolithography apparatus can usually create anything that a user can design on a computer. You can also test the device that is created by stereolithography just like it is the final finished product. You can also place the devices into a cadaver to see if it fits correctly and what changes would need to be corrected in order to have it fit properly



The main problem with the apparatus is that it can cost anywhere in the \$250,000 range and it's fairly large in size. The resin that is used in the process is also expensive, at a price of about \$800 a gallon. Since the machine is expensive and large, usually only larger businesses carry them, this limits the amount of people and business that will have access to this type of technology. The companies that carry these machines usually allow a company or an individual to buy a specific block of time. The price for a block of time is usually in the range of \$30 to \$55 per hour. Companies will usually prefer to pay the money for the block of time because it is more cost efficient and the device that is produced is of a higher quality

References

- <http://computer.howstuffworks.com/stereolith.htm>
- <http://www.stereolithography.com/>
- <http://en.wikipedia.org/wiki/Stereolithography>