

The Cutting Edge of...3D Printing

The first type that is making a lot of waves recently in the news and is relatively new is the FDM (Fused Deposition Modeling) type printer. This printer feeds plastic filament off of a spool into the print head where it is melted. The melted material is then deposited where it fuses to the previously deposited layer. These inexpensive printers are poised to take the consumer market by storm with price points as low as the \$400 range. The major drawback to FDM printers is the average resolution.

The next type of printer that has been getting a lot of attention lately uses photopolymers to produce 3D models. SLA (Stereolithographic) and DLP (Digital Light Processing) printers both utilize light to cure photopolymer layers to build up 3D models. The difference is the SLA printers typically use some sort of laser to cure the materials while DLP printers use a modified light projector. These printers are capable of high resolution and have a high price tag ranging from \$2000 to the hundreds of thousands of dollars. The target markets for these printers include medical, dental, and jewelry-making.

The industrial 3D printers use yet another type of technology. Printing prototype parts for automobiles, airplanes, and ships, these typically employ the use of PP (Powder-based Printing) or granular printers that utilize laser or electron-beam melting of metal alloys, ceramic, or thermoplastic powders.

There are a couple of miscellaneous 3D printers that have also been making the news of late. EBF³ (Electron Beam Freeform Fabrication) has been researched by NASA for use in making parts in the International Space Station by using an electron beam to melt metal into various 3D forms. LOM (Laminated Object Manufacturing) uses lamination sheets that are melted together and laser cut, but this type of technology is still more in the development stages.

The technology of 3D printing has been making rapid inroads into consumer and industrial markets for a few years now. The ability to quickly prototype anything from car parts to dentures has the manufacturing industry poised to change dramatically. **Taiyo is keeping an eye on a number of 3D printer markets to keep on top of the rapidly evolving global manufacturing industry.** If you have any questions, please feel free to contact me at...

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