

The Future of 3D Printing in Manufacturing

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3D printing is the process of creating a physical object from a digital model. The reason 3d is part of the name is because these devices print the digital models by putting down layers of material in succession until the 3d digital model is created. According to fas.org, 140,000 industrial and over 2 million consumer 3d printers were sold worldwide in 2018. This number may even be an underestimation for consumer 3d printers because it doesn't take into account those that were assembled using separate parts or kits. Looking at these numbers its safe to say that the primary users of 3d printing are consumers who use them for things like proof of concept, making small repairs, or printing out objects which could either be somewhat useful or just something that they wanted to have.

Before 3d printing was mainstream, they were extremely expensive with the average price of them being around \$50,000 dollars. They were primarily used for proof of concept and to bring 3d models into real life to be tested but as awareness and demand grew, the price for 3d printers steadily declined to a point where they are easily accessible with prices as low as \$150. Along with this change in accessibility came upgrades in technology meaning 3d printers became more simple to operate and were more reliable. Compared to how it used to be, 3d printers today are a lot easier to use. In order to print the only things they require are the printing material (whether it be filament or resin) power, and a computer or laptop that is able to transfer files to the printer by being plugged in, using an sd card, or even over Wi-Fi.

Some key areas of grown 3d printing over the years are definitely ease of use and accessibility. Todays 3d printers are something that nearly everyone can get into because of how readily available decent quality printers are. Its as easy as going to a large computer parts store or ordering one on amazon. Once the printer gets to you they tend to be very easy to assemble and get set up to print. Even if you do have issues there are a plethora of videos and forums online discussing how to troubleshoot issues and explain how to fix them. I can see 3d printing becoming one of if not the dominant method of product design and manufacturing within the next 10 - 20 years.

Some of the larger 3d printing manufacturers are Makerbot industries, and Prusa research. All 3 produce their own commercial 3d printers and distribute them to the public for home use. By 2026 the global 3d printing market is estimated to reach 57.11 billion compared to the 13.63 billion in 2020. There are a few industries that will benefit from the growth in 3d printing such as manufacturing and robotics. When it comes to manufacturing advancement will allow products to be built and produced at a faster rate while also being more sustainable as you can recycle the filament and it can be used to produce more products. In robotics its use would be in prototyping and fitting parts. Its more cost efficient to 3d print a part at a smaller

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scale or even at full scale then to manufacture it using more expensive materials like metal only to find out it's a little bit off. Even with these positives there will be negatives.

Many jobs including maintenance workers for industrial machines used to produce goods today. Along with the cut back in the amount of jobs in some fields, there will be an explosion of opportunity in others such as 3d modeling, coding, and for the maintenance workers whose jobs were displaced there will be a need for people to keep 3d printers running well. There are even a few organizations within 3d printing such as the 3d printing trade association and NCAM (national center of additive manufacturing). Within manufacturing today, 3d printing is used primarily for prototypes and proof of concept with objects getting bigger and more detailed as the technology improves.

Some additional uses for 3d printing within this field are creating aftermarket parts for certain items and being a good starting point when it comes to getting into manufacturing because of the ease of use when it comes to their operation. Both consumers and producers can be shown the versatility and usefulness of 3d printing in both their everyday lives and within large scale manufacturing. It could be used for small things like replacing a wheel on an office chair and making desk organizers, and for big things like creating car bodies or even entire homes. In order to reach this goal of getting people interested in this field we need to push for 3d printing becoming a part of school which will allow for young creative minds to come up with solutions that have not been tried yet and attempt to dispel common myths about 3d printing like the belief that its only use is for creating useless nicnacs or the idea that it is insanely expensive to do

These changes in how we treat and view 3d printing will definitely boost the popularity of 3d printing which will allow many people to try getting into it therefore boosting the amount sold globally and bringing in many bright minds to innovate and improve the 3d printing industry. The primary stakeholders will likely be people who are interested in tech and can see just how quickly the industry of additive manufacturing is growing.

In conclusion id like to say that 3d printing has come a very long way from its roots. It will continue to change our lives for the better, allowing us to manufacture things with a higher efficiency and less of an environmental impact than ever before. Additive manufacturing is the future of production.

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10 Biggest 3D Printer Manufacturers in the World

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