

Changing the Nature of Business: 3D Printing



Industry Trend

Three-dimensional (3D) Printing has become a phenomenon in many ways. The 3D printing industry is expected to grow from \$3 billion in revenue in 2013 to \$12.8 billion by 2018*(Wohlers Report 2015*). This printing process is also known as “Additive Manufacturing,” a manufacturing process in which three-dimensional objects are created from digital files. Layers of material are laid down and bound during the 3D production process to create the final objects. Typically, 3D printable models are created with a computer-aid design (CAD) software or 3D scanner. A 3D printer is, then, used to create the final product and is considered a type of industrial robot. The process of creating a 3D object involved a variety of choices of additive materials.

The end result requires a fusion process of selected material to form a solid object. Additive material chosen determines the different technology used in the binding process. 3D printing is fast, flexible, and offers advanced views of objects – which have influenced a variety of industries to improve their operations and performance. The Medical industry has utilized this technology to create better prosthetics, offer better treatment plans, and perform surgery with a higher level of precision in ways it has never experienced using older technologies.



System Design Features

A high performance industrial computer or an embedded system is used to control the operation of a 3D printer. Among many desirable attributes, the system should be a high performance, fanless embedded system with high graphics resolution and performance; has multiple I/Os and a variety of options of graphical interface, i.e., HDMI, VGA; offers high compatibility with existing operating systems and other key operational elements; can be customized; and more. Axiomtek's eBOX630-100 was selected by one of the world's leading providers of 3D printing solutions was looking to replace one of their old 3D controllers. The eBOX630-100 offered all of the desirable attributes they needed. The design team helped customize the product based on the customer's request to include a built-in 24 VDC-DC converter and IEEE1394 interface for high-speed communications and real-time data transfer. The final product was custom-branded, with customized silkscreen printing for the I/Os. Since the deployment, Axiomtek has many new eBOX products with many key features that can suit a variety of needs. They can also be customized to meet any demanding requirements.

For this particular project, the Axiomtek's eBOX embedded system is now integrated into the company's proprietary, multi-platform 3D printer technology. The 3D printer product delivers high precision, surface quality and functionality as well as the ability to use a wide range of materials at the production speed that are believed to be superior to those offered by its competitors.

This highly advanced 3D printing solution is being used in many diverse industries such as jewelry design and production; hearing aids; medical; dental; consumer products; auto and airplane manufacturing; and defense. This influential technology has given birth to a variety of new businesses, including 3D printing service bureaus and many new products that are being offered in conjunction with the use of 3D printers. End users now are able to create their own products instead of buying them from corporations. 3D printing is undoubtedly transforming all major industries by changing the competitive landscape; providing greater convenience and better products and services; and, ultimately, offering consumers and end-users higher quality lives. This technology will continue to shape the world and change the nature of how we do business.