BizLink

Factory Automation & Machinery **product**report

RAPID PROTOTYPING WITH THE HELP OF 3D PRINTING TECHNOLOGY

BizLink has launched a process to create physical prototypes with the help of computer-aided design (CAD) data. Using this rapid prototyping facilitates shortener development times and helps costs to be lowered as well as innovative ideas to be realized more quickly.

› What is rapid prototyping?

Rapid prototyping involves 3D-printing layer upon layer of materials or bonding them to one another to make the desired object. This makes it possible to quickly adapt the design as changes can easily be made in the CAD data and the prototype can then be reprinted. The findings acquired in this way are incorporated in product improvement before a toolmaker has even started his or her job.

BizLink uses rapid prototyping for sample parts during the development phase of extrusion-coated connector components. The principal objective of this technology involves testing and validating design concepts, functionality, and features before there is any investment in series production. By applying rapid prototyping, BizLink reduces the development costs and time to market of extrusion-coated components and innovative cable systems for factory automation. Rapid prototyping is versatile and has, for BizLink, long been a proven tool in the innovation process for bringing new products to market sooner and more effectively.

BizLink Special Cables Germany GmbH
Eschstrasse 1, 26169 Friesoythe, Germany · T +49 4491-291-5010 · Follow us on LinkedIn

› Contact us

3D printing in cable assembly

The use of rapid prototyping technology serves to minimize decision-making risks or to make use of project periods for which sample parts are required but injection molded parts are not yet absolutely necessary.

Figure 1 depicts such an example for securing a connection concept in an early project phase. The example shown here is based on a printing process that permits accuracy of 0.1 mm. Operating temperatures of 80°C are feasible and the parts are comparable with hard thermoplastics in their mechanical strength. This is especially important when the parts are, for example, fixed in place with screws or impinged by mechanical loading during operation.

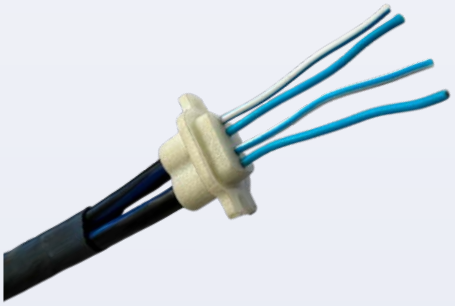

Image 1:
Functional model made of 3D-printed components

Tools, devices, and auxiliaries are another area of application for 3D printing. There are frequently questions to be answered concerning the usability of components from alternative suppliers. It is not uncommon for such alternative parts to differ by just a few tenths of a millimeter, but that would already be too much for direct substitution when, for example, precisely matching ports must be fitted to tools.

Figure 2 shows such an example. Here, the question of the usability of alternative components was answered after just a few cycles, allowing new, precisely matching ports to be ordered for tool making.

Image 2:
3D-printed port in a tool

3D printing technology can furthermore make valuable contributions to quality assurance while development is ongoing. If, for instance, parts being tested must be scrutinized to limit failure mechanisms along functional limits, it helps to be able to quickly create a matching testing device for such investigations. Furthermore, such devices also facilitate good reproducibility, meaning that dependable component qualifications can also be carried out in this way.

Figure 3 shows a device that was used for leak testing. The functional limit to be observed ran straight through an assembly, meaning that the test without such a device would not even have been possible to perform accurately.

Image 3:
3D-printed testing device

Other applications involve trialing numerous production resources and tools as well as handling aids that are, with respect to their function and ergonomics, initially tested as a 3D-printed specimen and improved repeatedly so that they can later be reproduced in a more robust version made of metal, for example. In future, additive manufacturing technology will ever more stem from pure prototype applications and will increasingly be adopted in series production applications in both plastic and metal.

Factory Automation & Machinery
factory-automation.bizlinktech.com

05.2024 / de