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What will they do with it?

Since they were invented in the 1980s, “tool-free” manufacturing processes have evolved from experimental technologies into established methods of industrial production. A wide range of fundamentally different technologies and numerous variants are now available on the market. Modifications to these technologies open up new areas of application or improve existing ones.

The range of applications for 3D printing continues to expand as the accuracy of the processes and data sources improves. The actual production process is only one part of the process chain required for manufacturing; this chain generally does not end when a component is removed from the machine.

In the first part of our presentation, we will draw on practical experience from recent projects to illustrate the opportunities, challenges, and potential of 3D printing. These projects range from astronomy to zoology and involved the 3D Laboratory at the Institute of Mathematics at TU Berlin, now known as the Centre for 3D Technologies.

In the second part, we will discuss technical developments we are exploring based on our experience in recent years. Although the range of materials that can be processed continues to grow, both the technologies and the materials remain subject to considerable limitations: Materials of interest for additive manufacturing must be modified to make them compatible with the respective technologies, and the technologies must be adapted to the materials.

As part of an internal funding programme at TU Berlin, the Centre for 3D Technologies is developing an experimental 3D printer designed to process materials suitable for medical technology applications.