

Up to 60 Times the Service Life: igus Produces the World's First Tribo-material for DLP 3D Printing

iglide i3000 allows 3D DLP printing of exceptionally durable wear parts in the millimeter range

EAST PROVIDENCE, RHODE ISLAND, UNITED STATES, June 24, 2022 /EINPresswire.com/ -- igus®, the Germany-based manufacturer of motion plastics, has introduced its iglide® i3000 – the world's first 3D printing resin specifically for DLP 3D printing of wearing parts.

[The iglide i3000](#) material enables the additive manufacturing of small, precise components with a service life that is 30 to 60 times longer than with conventional 3D printing resins. In addition, igus is expanding its 3D printing service with DLP printers that achieve a resolution of 0.035 millimeters.

For components in the millimeter range, 3D printers that use Digital Light Processing (DLP) are particularly suitable. The process achieves very fine resolutions under the various 3D printing technologies. Resolutions of just 0.035 millimeters are possible, around half the thickness of a human hair.

To enable this level of precision, a projector casts layer after layer of the 3D model onto the surface of a special liquid resin. The corresponding regions network under the influence of light.



The new igus 3D printing resin allows additive manufacture of very small wear parts with a 60-fold increase in service life. (Source: igus GmbH)

After curing, the construction platform is lowered by one layer so that the next exposure can take place. This creates tiny components layer by layer, including gears with tips of just 0.2 millimeters thick. The gear tips have highly smooth surfaces that require no post-treatment. With the new iglide i3000-PR 3D printing resin, users can benefit from igus tribo-technology from igus with this 3D printing technology, significantly increasing the service life of their moving applications.

Service life can be extended by a factor of 60

As precise as DLP 3D printing works, it has a downside.

"A common problem with tiny components made of commercially available 3D printing resins, such as gears for model-making, is that they are not particularly robust and fail quickly," says Tom Krause, Head of Additive Manufacturing at igus.

igus has therefore developed iglide i3000 for DLP 3D printing. It is tribologically optimized and therefore is much more wear-resistant.

"We were able to prove in laboratory tests that the service life of iglide i3000 is at least 30 times longer than 10 tested commercially 3D printing resins," Krause said. "In some applications, we even expect an increase in service life by a factor of 60."

Another advantage: The maintenance required for lubricating work is zero. Microscopic solid lubricants are integrated into the material. They are released independently during movement.

Tiny special components produced quickly

In addition to the 3D printing resin, customers can order components made from it directly from igus. igus is also expanding its 3D printing service. While customers could previously choose between the 3D printing processes of selective laser sintering (SLS) and fused deposition modeling (FDM), they will soon be able to have components manufactured with DLP 3D printers. The finest details and even internal channels can easily be achieved.

"We are now entering the beta test phase with the first customers. At the same time, we are working on ensuring that DLP 3D printing is also available in the online tool, which customers can use to upload STEP files for their components or configure gears in just a few clicks," said Krause. "Thanks to the combination of 3D printing and online configuration, weeks of waiting for wear-free special components are a thing of the past. In 2021, igus produced more than 200,000 abrasion-resistant components using 3D printing in Cologne, with no minimum order quantity and up to 10,000 units. Especially in times of bottlenecks and disrupted supply chains, 3D printing is a viable alternative."

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ABOUT IGUS:

igus GmbH develops and produces motion plastics. These self-lubricating, high-performance polymers improve technology and reduce costs wherever things move. In energy supplies, highly flexible cables, plain and linear bearings as well as lead screw technology made of tribo-polymers, igus is the worldwide market leader. The family-run company based in Cologne, Germany, is represented in 35 countries and employs 4,900 people across the globe. In 2021, igus generated a turnover of €961 million. Research in the industry's largest test laboratories constantly yields innovations and more security for users. 234,000 articles are available from stock and the service life can be calculated online. In recent years, the company has expanded by creating internal startups, for example ball bearings, robot drives, 3D printing, the RBTX platform for Lean Robotics and intelligent "smart plastics" for Industry 4.0. Among the most important environmental investments are the "chainge" program – recycling of used e-chains and the participation in an enterprise that produces oil from plastic waste.

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