



LiQ 320

ADDITIVE MANUFACTURING WITH LIQUID SILICONE MATERIAL DISCOVER NEW POSSIBILITIES

The Liquid Additive Manufacturing (LAM) process in the 3D printer from innovatiQ represents a real game changer in the market.

For the very first time, it is possible to use liquid material, such as Liquid Silicone Rubber (LSR), for additive manufacturing. The same material is already used for lots of products in a variety of companies. This brings new possibilities in terms

of shapes and geometries which are not feasible with other manufacturing methods. Bionic shapes or other complex objects can be produced in both one-off and series production – with almost identical, and sometimes even better properties compared to injection moulding. The build platform of the LiQ 320 is suitable for printing objects of all sizes as well as for small series.

LIQUID ADDITIVE MANUFACTURING (LAM)

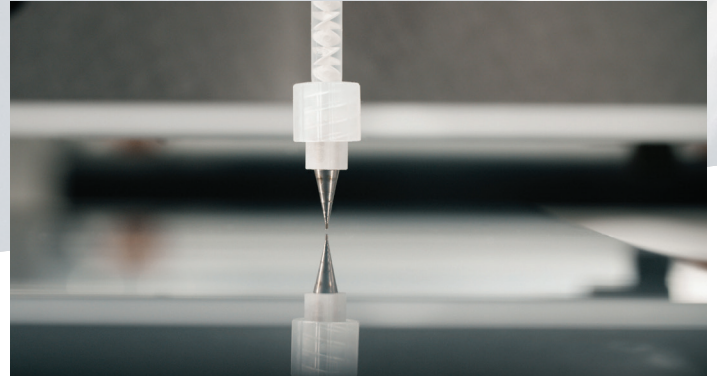
Complex geometries, completely new freedom of form

Liquid Additive Manufacturing is an additive manufacturing process in which (high-viscosity) liquids are processed additively. While conventional production processes, such as injection moulding, require all molecules to be aligned, with LAM technology the application direction and, thus, the cross-linking can be influenced at the molecular level. In some cases, this results in greater material strength compared to injection moulding.



Components made of liquid silicone

The liquid additive manufacturing method makes it possible to create geometries which are extremely difficult or even impossible to achieve using conventional manufacturing processes. This means that cross, lattice or even honeycomb structures are not a problem.



Process-controlled volumetric extrusion

Volumetric extrusion enables the free-form application of high-viscosity materials to almost any substrate. The process-controlled strand discharge facilitates high-precision dosing of the material. The structure of the object can be fully tailored to your own conceptions and to the respective application.

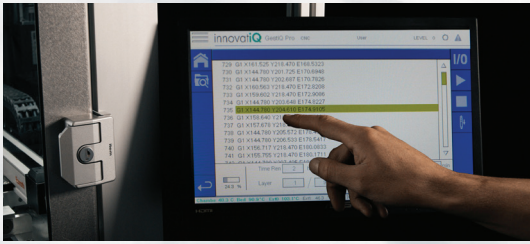
MATERIAL SELECTION



SILASTIC™ 3D from DOW is already used in many companies for a wide variety of products.

A significant advantage of the components is that they are made of real silicone. SILASTIC™ 3D has a Shore hardness of 50 A and is **thermally cross-linked** by innovatiQ in the LAM process. It does not contain any acrylic hardeners, does not become UV-cross-linked and is almost identical to injection moulding in all its properties. The variation of different infill options of the same material results in a wide range of possibilities, for example for different damping properties, for a printing result that is optimally matched to the application. Depending on the mixing ratio, flexible components or even rigid printing results can be achieved.

LiQ 320 – THE GAME CHANGER IN ADDITIVE MANUFACTURING

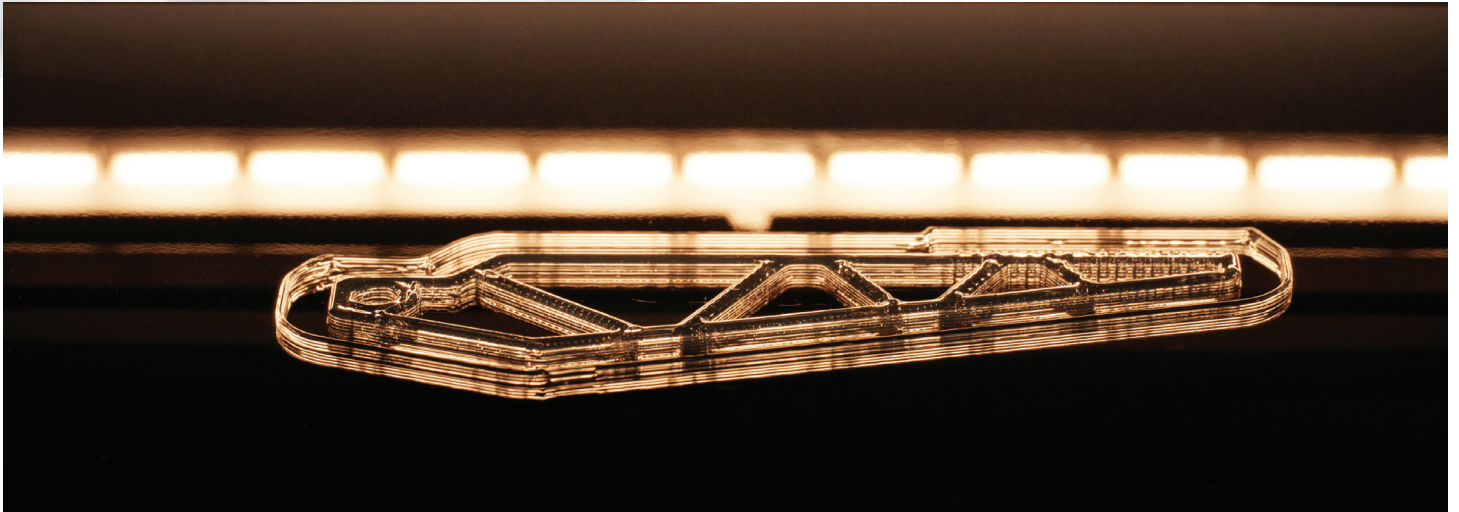


GestiQ Pro, the new HMI from innovatiQ

The LiQ 320 is equipped with the new industrial controller GestiQ Pro, which is operated via a large touch screen display.

GestiQ Pro supports the operator with built-in shortcut keys.

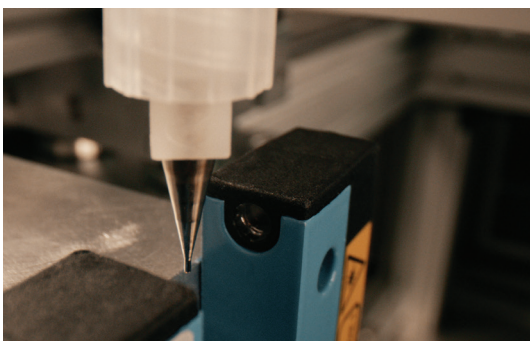
Everyday usage of the LiQ 320 becomes child's play, with the operator having sight of all relevant parameters – even remotely.



Thermal cross-linking

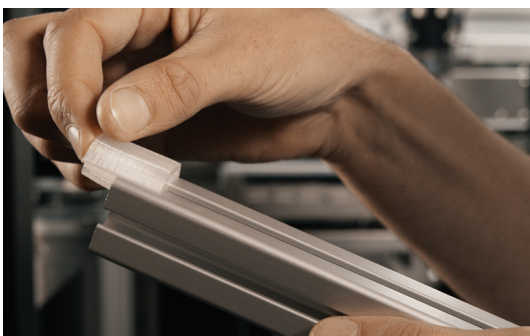
A high-temperature halogen lamp releases activation energy to accelerate complete cross-linking at the molecular level between the individual layers. This finely-tuned reaction, for objects both large and small, is ensured by the travel speed of the lamp.

This process significantly reduces the printing time. At the same time, the printing result sets new benchmarks, particularly in terms of the time savings involved. Compared to injection moulding, time savings of 50 % and more can be achieved here.



Fully automatic laser levelling

The integrated auto-bed levelling improves handling and print quality via optimal adjustment of the print bed by performing a three-point measurement with the aid of a precision laser. Two of the three points are automatically levelled, giving the bed the ideal setting in relation to the printhead level. The printhead can be readjusted manually. The nozzle is also automatically adjusted with the aid of a laser fork light barrier.



Functional components at the touch of a button

Thanks to the integrated thermal material cross-linking, the LAM printer creates components with completely resilient properties and which can be used right away – with no post-processing whatsoever. This shortens the go-to-market time of new products and also saves tooling costs.

TECHNICAL DATA FOR LiQ 320

| | | | |
|------------------------------------|---|-------------------------------------|--|
| Build volume (X/Y/Z): | 250 x 320 x 150 mm | Network connection: | Yes, stand-alone operation possible |
| HMI: | GestiQ Pro V1.05 with touch screen display, network-ready | Software: | Simplify3D |
| Print speed*: | 10 – 150 mm/s | Power consumption: | (max.) 2.3 kW, approx. 50 % in continuous operation |
| Travel speed*: | 10 – 300 mm/s | Display: | 15-inch touch screen display |
| Positioning accuracy*(X/Y): | +/- 0.2 mm | Operating voltage: | 230 VAC, 16 A |
| Layer thickness* (min.): | 0.22 – 0.9 mm | External dimensions (W/D/H): | Printer without cartridge system and display: 800 x 960 x 1957 mm |
| Nozzle options*: | 0.23 0.4 0.8 mm | Weight: | approx. 390 kg |
| Consumables*: | LSR Shore 50 A 120 – 130 PaS or similar | Technology: | LAM (Liquid Additive Manufacturing) |
| Extruder: | Lifting and lowering head, volumetric extrusion | Equipment option: | Material supply via material pails, heatable print bed |
| Thermal cross-linking: | approx. 2000 °C | | |
| Material curing: | 200 °C | | |

* Deviations depending on equipment/material/process

In addition to our advanced technologies, we also offer **services and training**. Through our worldwide network of partners, we are more than happy to offer you on-site support and provide you with our expertise.



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