

Ceramaker by 3DCeram: Taking 3D-Ceramic Printing to Another Level

With the release of the new Ceramaker 100 printer, the French 3DCeram Group's strategy is clear. They aim to create a wide range of industrial 3D-printers that meet the needs of their clients and which can adapt to a constantly evolving market. The Ceramaker 900 arrived in 2015, and the smaller but equally capable Ceramaker 100 is launched.



Fig. 1
Richard Gaignon

Ceramaker 100 is a compact printer that has the same technological capacity as its older brother and looks set to push the boundaries of the printed object. Richard Gaignon, Co-Director of 3DCeram, said: "3DCeram's 3D-ceramic printing solutions are designed for ceramic manufacturers, user-integrators working with ceramic components, luxury goods companies, biomedical firms and almost any industrial group. By launching this new printer, we aim to facilitate and accelerate innovation. Thanks to the powerful technology on board, our clients can unlock their development potential – especially our partners in research institutes."

Keywords

3D-printing, production lines, turnkey support

Richard Gaignon (Fig. 1) is together with Christophe Chaput at the helm of this French company which already exports to Europe and the USA, and will soon be shipping to China and Japan. Like the Ceramaker 900, the newest 3D-printer from 3DCeram has "everything you'd want from a much bigger machine!" According to their needs, companies can now take advantage of the same 3D-printing quality that made the Ceramaker 900 so successful in a much smaller package.

"After 6 years used within our own company, the Ceramaker 900 was released in winter 2015 and was an immediate hit with our clients. They loved the technology, the performance and the production capacity.

The logical next step was to offer the same capabilities in a smaller and more flexible unit, offering an alternative that could meet the needs of companies which wanted the same results but were unable to house large production machines. This is how the Ceramaker 100 came into being."

This compact design uses the same basic features and offers the same advantages of its older brother, and has already found a home at the IREC (the Catalan Energy Research Centre in Spain). The Ceramaker 100 boasts the following key advantages:

- it is a tried, tested and reliable design,
- it is a high-quality machine which makes high-quality ceramics,
- it has a large, modular printing surface,
- all of the settings are completely open for modification,
- it offers free link support technology.

Tried and tested printers for the highest quality products

This range of printers is the distillation of all the 3D-ceramic skill and expertise at 3DCeram. The Ceramaker range of printers stands out from the competition thanks to its high yield and extreme precision. By integrating the latest technological breakthroughs, 3DCeram is able to offer a full range of solutions and guarantee optimum productivity, extreme precision and the highest possible quality.

With the launch of this new model, the company can now offer a real alternative to the models currently on the market.

First and foremost, the Ceramaker is a high-quality machine. It was initially developed for the office team at 3DCeram, and was designed to be stable, accurate, robust, easy to clean, easy to use and require very little maintenance.

"Towards the end of 2015, we saw that there were no industrial ceramic 3D-printing machines on the market. That's why we decided to manufacture and market the Ceramaker 900, so that our clients could produce high-quality, technical ceramics themselves.

Our goal was to offer a full product range that, at the time, simply did not exist in this sector. This was the right position to take, and it still is today. 3DCeram is not merely

3DCeram
87068 Limoges
France

E-mail: info@3Dceram.com
www.3Dceram.com

a machine supplier; we offer full support with a line of associated turnkey products and services. We ensure that every one of our clients has access to the speed and responsiveness they need to integrate their production lines and manufacture quality components", says Richard Gaignon.

While the technological features and added value remain identical, what sets the Ceramaker 100 from its older brother is its size. It is lighter and more compact, and offers a 100 × 100 working surface (compared to 300 × 300 for the Ceramaker 900), enabling it to adapt to a wider range of working environments.

And while the surface may be small, it is a good deal larger than the laboratory machines currently available on the market and does not compromise on resolution. The Ceramaker 900 works at 30 µm, and so does the 100. In comparison, the competition offers resolutions of no less than 40 µm, with some even going as high as 50 µm!

A totally open machine, enabling users to integrate their own raw materials and adapt to their own changing needs

The Ceramaker 100 shares a key feature with its original platform: it is completely open. Each of the company's clients can access all of the laser configurations and all of the machine settings – everything is open and can be programmed as needed. Thanks to this, with the Ceramaker 100 you can adjust every setting to create your own printable ceramics. And for the consumables, the client can choose from a number of different solutions:

- concentrating on component production and purchasing 3DCeram standard formulae,
- asking 3DCeram to develop, using their own ceramic minerals, their customised formula(e) using 3DCeram 3DMix offer,
- or a third option, especially for institutes and other technical centres, is to develop their own formulae. It is specifically for this part of the market that Ceramaker 100 was built, and it's here that it can really flourish.

Laser technology, the lifeblood of the Ceramaker line

One of the other features that makes the Ceramaker 100 such an exceptional machine is the use of laser technology, as op-

posed to DLP (LED). "Lasers are accurate, simple, robust and flexible", explains Richard Gaignon. "3DCeram has integrated a unique technology which enables ceramic components to be manufactured directly from a CAD file, without any break in the digital chain. This is called laser stereolithography." 3DCeram chose to go down this path for a number of reasons:

- a 30 µm resolution across the entire platform, no matter what size of object you are printing. 3DCeram competitors can achieve no better than 40 µm,
- a regular, even laser density across the entire platform, guaranteeing a regular printed object with no constraints,
- smoothed contours to reduce the layering effect inherent to 3D-printing, while with a DLP, details tend to be pixelated,
- different laser strategies according to the materials used and the precision required.

Free link support, on demand ...

The Ceramaker 100, like the larger 900, uses free link support technology. Objects are manufactured using supports, but are not connected to them. The items are in contact, but are not physically linked to the supports. Once the printing process is complete, all you need to do is gently "unstick" the printed objects from their supports. Say goodbye to cutting through the links binding the supports and the items and the visual defects and cracks that so often occur when doing so. What's more, the support used during printing can also be used during firing, helping you limit the deformations that can occur in the kiln (the natural creeping phenomenon which occurs with ceramics).

... and "turnkey" support

3DCeram is not merely a machine provider. The Ceramaker 100 is just one part of a whole range of services which include a full 3DCeram production line (printer, cleaning hood, kilns, etc.), and benefits from all the associated services developed for the Ceramaker 900 (training, hot-line, maintenance).

"We stay on hand for our clients, ensuring that they get the most out of our product line: 3DMix (development of specific formulae), process consulting, office services and skills transfer ..." lists Richard Gaignon.



Fig. 2
The first printer in the range: Ceramaker 900



Fig. 3
Ceramaker 100

This printer is the latest step forward for the company in their ambition to be the first international firm to offer a full range of printers and industrial-quality production services on demand. This will be an important asset, positioning them to help companies in all sorts of industries who want to quickly print off objects, both simple and complex. "In just a few months, the Ceramaker will unveil a third, XXL printer: the Ceramaker 9100, with a printing surface of 900 by 900", reveals Richard Gaignon ... "This is something we should all be keeping a close eye on!"