

3DCERAM – Process Provider when it Comes to Services

The company 3DCERAM was created in 2009 and initially operated as a service bureau, manufacturing technical ceramic parts by 3D printing for large industrial companies. The choice of technology was made for stereolithography because of its high precision, high performance qualities, and its very fine surface appearance. These performances were identical to those obtained by conventional shaping processes, which corresponded, in all respects, to the expectations of the end customers.



Fig. 1
A four-day training took place at the 3DCERAM's premises in attendance with the complete client's team



Fig. 2
A lot of maintenance and customer support activities can be carried out remotely

Stereolithography is a technology that requires expertise. Thanks to the establishment of a consumables production line, it was possible to meet the expectations of markets such as luxury, biomedical, and aerospace. In 3D printing, it is not enough to manufacture the formulations; all printing parameters must also be adjusted to obtain parts with the expected performance.

The 3DCERAM team developed this expertise over more than 10 years before the company decided to evolve its business model to become a process supplier. Since 2017, 3DCERAM has been offering a turnkey process consisting of printers, formulations,

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and know-how for all stages of production (3D design software suite, printing, and firing). This process is the subject of services that the company has been developing for several years to offer to its customers.

Customising solutions for customer needs

The variety of the company's clients' activities has motivated the development of custom offers adapted to each typology of users. From laboratories to large industrial companies, to service bureaus, needs are very diverse.

For example, laboratories and universities are looking for a simple and fast startup, open parameters to conduct their research, spare parts availability, and assistance for regular maintenance as the users of the machines come and go.

In the case of universities, personalised training is provided to share knowledge with regularly changing students.

In the case of an industrial company, mass production is sought, and therefore, a real technology transfer takes place, with long-term support. It is a real relationship that is forged, with recurring support, file analysis, and an open connection to any type of question.

"We don't just sell a printer, it's a knowledge that we have developed and experimented with for many years. It is a complete process, of which the core is obviously

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the printer, but there are also many services associated with it, including training that is designed for each type of client. For industrial customers, who are looking for mass customisation, we have tailored training to teach them not only the design rules, but also how to optimise the printing area to place as many parts as possible on the build platform and thus make the run profitable”, said Maxence Bourjol, Sales Director of 3DCERAM.

There are laboratories, research centres, industrial customers, but there are also service bureaus that are actually manufacturers of parts. Service bureaus work with various sectors of activity and generally offer metal or polymer parts, but some also offer ceramic parts.

This is the case with Creatz3D, based in Singapore, which has been producing parts since 2016. Customers who have relied on Creatz3D to do service printing using the CERAMAKER 900 FLEX were notably impressed with the surface quality of the 3D printed ceramic parts they had received.

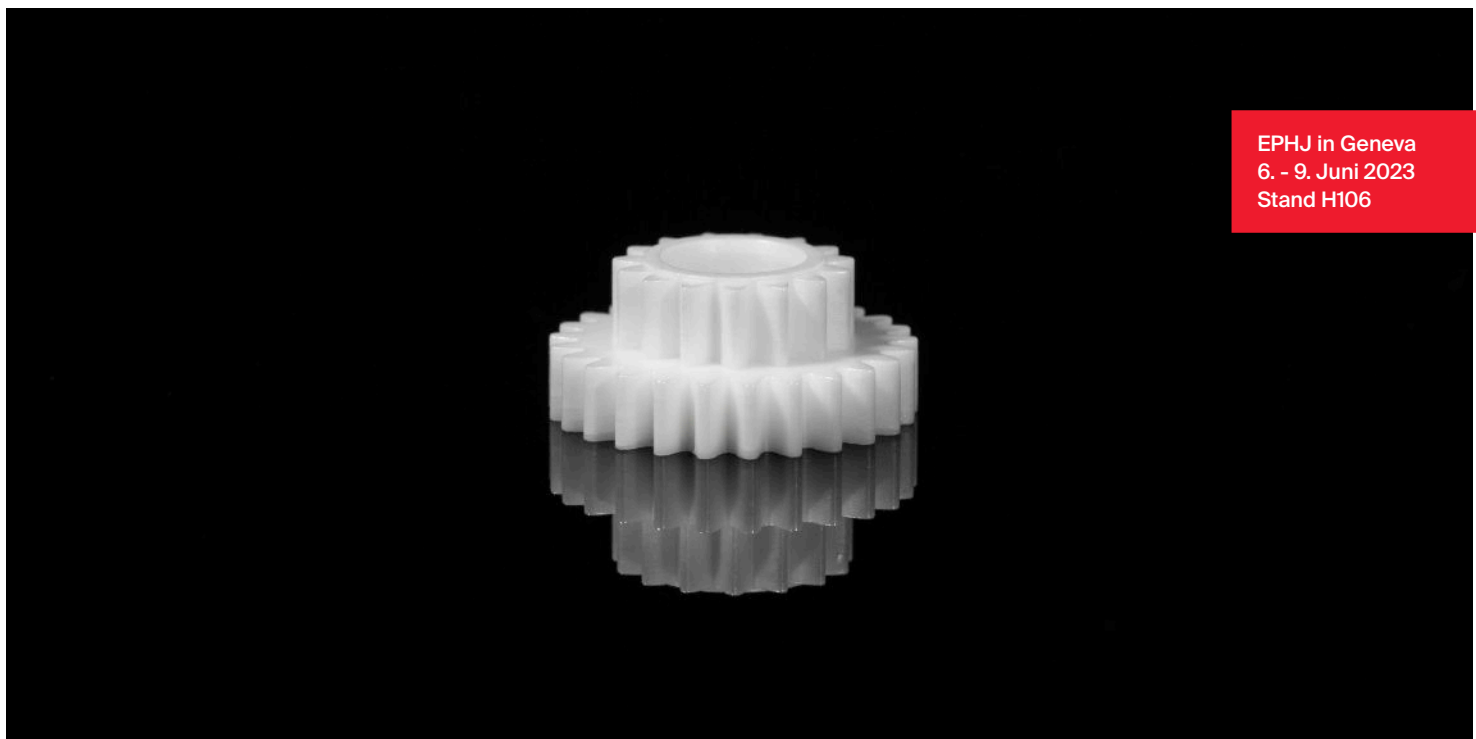
“Apart from the consistent quality of the produced parts, the CERAMAKER 900 FLEX has also been highly reliable for almost a year since the last on-site maintenance by 3DCERAM engineers. The training provided by 3DCERAM Sinto also allowed our engineers to operate the machines confidently but also trained them in optimisation to achieve high-quality ceramic parts. The training and support provided are therefore critical in helping our teams at Creatz3D meet the demands of customers”, said Sean Looi, General Manager of Creatz3D.

For service bureaus, achieving profitability quickly is essential, and this requires accurate cost estimates. However, establishing a pricing model from scratch with a new technology is not an easy task and it is crucial to get it right. That’s why 3DCERAM offers a training that allows its service bureau clients to provide accurate quotes to their customers for the parts they manufacture. The 3DCERAM teams have developed these skills over many years of part production and with this training, service bureaus can



Fig. 3
Vincent Auclair, Head of the After-Sales Service

learn how to accurately calculate the costs associated with their 3D printing processes. They will understand the variables that influence costs, such as the type of material used, the complexity of the design, and the required printing time. Thus, service bureaus will offer competitive prices for the parts they manufacture while



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Fig. 4
Wuhan 3DCERAM: At our distributor's premises in China, the entire team is trained to intervene on the machines, launch production, or carry out machines installation at clients' sites



Fig. 5
Musawar Khawaja, Project Manager 3D Printing Ceramics at Maxon Motor, working at CERAMAKER C900 FLEX

maintaining their profitability. This training also allows them to maximise the use of their equipment and resources by eliminating calculation errors and offering more precise delivery times.

Ensuring long-term success: benefits of investing in maintenance and training services

Being self-sufficient and profitable is what manufacturers seek when they acquire a 3D printer to produce ceramic parts, and this is precisely what the teams of engineers and installers at 3DCERAM do around the world. Although the pandemic somewhat slowed development, it did not interrupt printer installations, training, and even maintenance operations.

It is under the leadership of the After-Sales Service Manager, Vincent Auclair, that the follow-up and maintenance operations are carried out. "3D printing is a digital production tool, which makes maintenance operations entirely possible remotely. We are perfectly equipped for this type of intervention. Getting back to normal after COVID was more than welcome, especially to visit clients again and be as close as possible to their needs. I am called upon to visit clients who need to optimise their process, for example. Going on site allows me to conduct an audit and propose solutions to increase productivity, such as increasing production rates, optimising platform, etc. There are also often small improvements to be made in the workshops where the machines are located. The audit is very comprehensive,

and then I propose a whole range of solutions to the partner client", Vincent Auclair explained.

This is how clients from the Philippines came to attend training at 3DCERAM's premises in Limoges, France, to master the process in a shorter time to complete all the projects they are working on. Because it is indeed a process, and the follow-up is done throughout the manufacturing of the part. The technology transfer takes place from the creation of the file to the firing of the ceramic part.

A technological transfer was requested for Maxon Motor, when they decided to enter 3D printing, and to manufacture parts for their customers as explained by Musawar Khawaja, Project Manager 3D Printing Ceramics: "I have been working with 3DCERAM for over two years and can look back on a positive collaboration. I must say, their level of support and expertise is truly exceptional. Their team consists of experts in various areas including software, machine questions, and optimization of printing parameters. One thing that really impressed me was their reliable and speedy support.

However, there are also topics on which 3DCERAM is working and which are very important for the users and we hope that these will soon be available to us. This concerns, on the one hand, the software used to prepare the 3D data for the printer. Overall, I recommend 3DCERAM for anyone in need of 3D printing support and solutions."

Services all over the world

"While some of our trainings or maintenance operations can be carried out remotely, the machine installations must of course be done on site, which is why we have a network of partners who meet this need. These are what we call DMQs (Distributor Maintenance Qualified)", explained Vincent Auclair.

It is the 3DCERAM engineering teams that have trained the teams of their distributors to proceed with the installation of the machines and their start-up at customers' sites. Trained and experienced to start up the machines, they are in contact with the customers and that is why special attention is paid to their training and regular upgrading. To obtain this DMQ status, the partner must have acquired a machine, and this brings them a certain added value.

This is the story of Wuhan 3DCERAM, which in 2016 made its first printer entry into China by selling the CERAMAKER, a cutting-edge 3D printing machine designed for ceramic materials. At that time, the company was working as a reseller and primarily focused on machine sales.

"However, the French engineers had to be on-site for printer installation and commissioning, which meant that the company could only provide a minimum level of technical service after sales. Most of the time, they needed the full support of their counterparts in France for technical issues. As a result, the efficiency of the local service couldn't satisfy the needs of clients", explained Tao Ma, General Manager of Wuhan 3DCERAM.

Then, the COVID-19 pandemic struck, and it became impossible to have French colleagues on-site. As a result, the company had to become more independent and handle tasks such as printer installation, customer training, and after-sales service with remote technical support from France. With more and more clients in China, Wuhan 3DCERAM recognised that it would be necessary to have its own printer to provide better service.

In 2022, the company acquired its first C101 EASY printer, and it has since gained a wealth of experience by printing parts in-house. It has also made it much easier to run test prints for potential customers, which has been a significant advantage when selling machines. The acquisition of their own printer has allowed Wuhan 3DCERAM to provide a higher level of service to its customers. They can now offer more efficient technical support and provide better training and advice on how to use the machine. The company has come a long way since its early days as a selling

bureau, and its commitment to building a strong local technical team has been key to its success in China.

3DCERAM also has DMQs in USA, through its subsidiary Sinto, which allows them to carry out preventive maintenance operations. When it comes to after-sales service or more complex interventions, it is the French teams that take over within less than 24 h. The fact that 3D printing is a digital technology contributes greatly to this very short intervention time.

Indeed, digital technology is a crucial aspect of 3D printing, and it is highly likely that this is also how 3D printing will achieve its status as a full-fledged industrial tool. This is what Maxence Bourjol asserted: "Our CPS (CERAMAKER Printing Software) and more generally, all the digitalization that is embedded in our machines herald a certain increase in profitability and therefore in the profitability of productions on our 3D printers. And this is the direction in which we are developing at 3DCERAM. For example, our 'Build-It' solution, which prepares the supports and plat-

forms for printing, is proof of this; no special qualification is required to use it."

3D printing has already found its place and continues to develop in the industry of the future. But this is not its only advantage, as Richard Gaignon, CEO of 3DCERAM, explained: "Digitalization is an asset in many respects. 3D printing is a young technology and naturally attracts new generations of professionals who are 'digital natives'. This greatly facilitates recruitment for us. But the fact of being digital also allows us to secure all our knowledge and competencies that could be lost with employees who wish to embark on a new professional adventure. Everything can be preserved and used in the form of data, which is very valuable for a company because the security and preservation of its know-how and knowledge is highly strategic." To conclude, 3D printing is inherently digital and attracts talent, captures developments, and retains knowledge. This is how the industry of the future is conceived, and although it is still in its infancy, it promises a bright future.



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