

## Formulations in their own hands: Fiber Dynamics invests in GX 1100 DCIM from KraussMaffei

- DCIM (Direct Compounding Injection Molding):  
develop, test and protect their own recipes
- Up to eight times faster cycle times compared to the  
previous LCTS process
- Lower energy consumption and better CO<sub>2</sub> footprint

**(Parsdorf/Germany, April 3<sup>rd</sup> 2024). Fiber Dynamics, Inc. in Wichita, Kansas, is a specialist in the field of highly sophisticated composites solutions. With the investment in a GX 1100-4300 DCIM from KraussMaffei, the company is moving into thermoplastic injection molding and direct compounding at the same time. Fiber Dynamics sees the main advantages in the company's own recipe sovereignty and thus greater flexibility, as well as faster cycle times and improved cost-effectiveness.**

With their 100 employees, Fiber Dynamics has been developing and manufacturing highly complex articles from composite materials for 40 years. Customers come from a wide range of industries, such as the aerospace, defense and automotive industries. When designing the right solution, the focus is not only on component-specific properties such as weight reduction or higher strength through integrated structures, but also increasingly on economic arguments such as the elimination of secondary assembly processes, a higher degree of automation and shorter cycle times. With this in mind, Fiber Dynamics is always open to new economical manufacturing processes.

### **DCIM much faster than previous LCTS solution**

The decision to use DCIM (Direct Compounding Injection Molding) technology was made shortly after the initial contact with KraussMaffei, after

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less than six months. At the time, Fiber Dynamics needed to expand production and faced an even greater challenge with the production of propeller blades for the advanced air mobility market.

The existing Lost Core Tooling System (LCTS) solution was taking too long, had formulation limitations and was too costly using traditional methods. Injection molding was an obvious solution, but producing the proprietary and highly customized formulations posed an additional challenge. "KraussMaffei was able to quickly understand our problem and offer us a unique solution with its DCIM technology. In addition, KraussMaffei was able to demonstrate and implement the solution quickly," says Darrin Teeter, CEO of Fiber Dynamics, praising the collaboration.

### **In-house formulation brings clear advantages**

In addition to cycle times that are up to eight times faster compared to the previous LCTS technology, Fiber Dynamics sees the main advantage of DCIM technology in its own recipe control. "The ability to test a variety of different formulations and quickly develop new ones is crucial to the success of our program. Externally compounded formulations are generally not practical for our work and jeopardize the proprietary nature of our solutions," explains Darrin Teeter. The ability to also produce technical thermoplastic molded parts and thermoplastic composites also opens up a whole new dimension of versatility and added value for the company.

### **Close cooperation with leading research institute NIAR**

An important partner in this project is the NIAR Institute ATLAS (Advanced Technologies Lab for Aerospace Systems) also located in Wichita, Kansas. With 1,400 employees and an annual research budget of more than USD 240 million, NIAR (National Institute for Aviation Research) is the leading research institute in the field of aviation in the USA. Since mid-2023, ATLAS has been operating a GX 450-1400 from KraussMaffei in its 150,000 square meter research pilot plant, which is also designed for the FiberForm and ColorForm processes. Darrin Teeter: "When we discovered the potential to produce our LCTS materials by thermoplastic injection molding, we were able to use the laboratory machine at ATLAS to carry out important

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validation processes. The results were excellent, so we quickly decided to purchase the DCIM system."

The GX 1100-4300 DCIM system with a clamping force of 11,000 KN is scheduled to start production in Wichita in May. Initially, it will produce tooling mandrels for composites articles in aircraft, such as propeller blades, wings and landing gears. Fiber Dynamics also sees great future potential for DCIM technology in the automotive and sporting goods industries.

### **DCIM from KraussMaffei - economical and sustainable**

The DCIM process combines injection molding and compounding in a single process. A single-screw extruder handles the material preparation, making the process particularly cost-effective for smaller components with a shot weight of 50 g to 2000 g. Material savings of up to 50 percent per kilogram can be achieved.

The entire process takes place in one heat, as the compounded melt enters the plasticizing process of the injection molding machine without any intermediate stops or cooling. This reduces polymer degradation, saves energy costs and reduces the CO<sub>2</sub> footprint.

### Captions

01\_PM\_IMM\_2024\_04\_Fiber Dynamics Team.jpg

Strong team for a strong project (from left to right):

Brennen Shelton (General Manager, Fiber Dynamics), Eugen Schubert (Sales & Application Manager Krauss-Maffei Corporation), Darrin Teeter (CEO Fiber Dynamics), Nolan Strall (President Krauss-Maffei Corporation), Waruna Seneviratne (Director ATLAS), Christian Seyferth (Global Expert Sales KraussMaffei) and Thomas Drogi (Process Engineer) in front of the GX 1100-4300 DCIM at the Technical Centre in Parsdorf

Photo: KraussMaffei

02\_PM\_IMM\_2024\_03\_Fiber Dynamics propeller blades.jpg

Shorter cycle times thanks to DCIM: The new in-house designed propeller blades form Fiber Dynamics

Photo: Fiber Dynamics

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03\_PM\_IMM\_2024\_04\_advanced air mobility.jpg

Advanced air mobility: Fiber Dynamics sees great potential for DCIM in the air taxi market

Photo: iStock

Enclosure: Pictures and more information can be found at

[www.kraussmaffei.com](http://www.kraussmaffei.com)

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(Number Words: 705 / Number Characters: 4,654)

## **KraussMaffei – Pioneering Plastics**

KraussMaffei is among the world's leading manufacturers of machinery and systems for the production and processing of plastics and rubber. Our brand stands for cutting-edge technologies – for more than 185 years. Our range of services covers all areas of injection molding machinery, extrusion technology and reaction process machinery. In 2022 we added additive manufacturing to our portfolio. This broad range of technologies gives KraussMaffei a unique selling point in the industry. With the high innovative power of our standardized and individual product, process, digital and service solutions, we can guarantee customers sustained additional value over the entire value-adding chain. Our range of products and services allow us to serve customers in many sectors including the automotive, packaging, medical and construction industries, as well as manufacturers of electrical and electronic products and household appliances. KraussMaffei employs around 4.700 people all over the world. With more than 30 subsidiaries and over 10 production plants, as well as about 570 commercial and service partners, we are represented internationally close to our customers. The company was founded in 1838 in Munich.

In April 2016, China National Chemical Corporation Ltd. ("ChemChina") became the majority shareholder of KraussMaffei Group. In December 2018, ChemChina listed the KraussMaffei Group as KraussMaffei Company Limited in Shanghai. The listing opened up access to the Chinese capital market and local investors. Now ChemChina is part of Sinochem Holdings Corporation Ltd., one of the world's leading chemical conglomerates with over 220,000 employees.

For more information: [www.kraussmaffei.com](http://www.kraussmaffei.com)

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