2022.11.16
Microwave Chemical Co., Ltd.
Mitsui Chemicals, Inc.

Mitsui Chemicals, Microwave Chemical Set to Install Demonstration Facility at Nagoya Works to Advance Innovative Microwave-Based Production Technology for Carbon Fiber

Mitsui Chemicals, Inc. (Tokyo: 4183; President & CEO: HASHIMOTO Osamu) and Microwave Chemical Co., Ltd. (Suita, Osaka; CEO: YOSHINO Iwao) today announced that they have decided to set up a new demonstration facility within Mitsui Chemicals' Nagoya Works. The facility will demonstrate basic technology relating to the manufacture of eco-friendly carbon fiber – an endeavor that Mitsui Chemicals and Microwave Chemical recently announced they would be looking at together.

Location	Mitsui Chemicals' Nagoya Works 1, Tangodori 2-chome, Minami-ku, Nagoya 457-8522
Investment	Approx. 2 billion yen
End of construction	December 2023 (tentative)
Production method	A process that makes use of heating through the Carbon-MX™ method

Microwave Chemical has created an innovative carbon fiber production technology that combines the oxidation process – the most energy-intensive part of carbon fiber production – with the carbonization process. This has made for an integrated heating process based on the power of microwaves. And now, Microwave Chemical has given this technology the name Carbon-MX™.

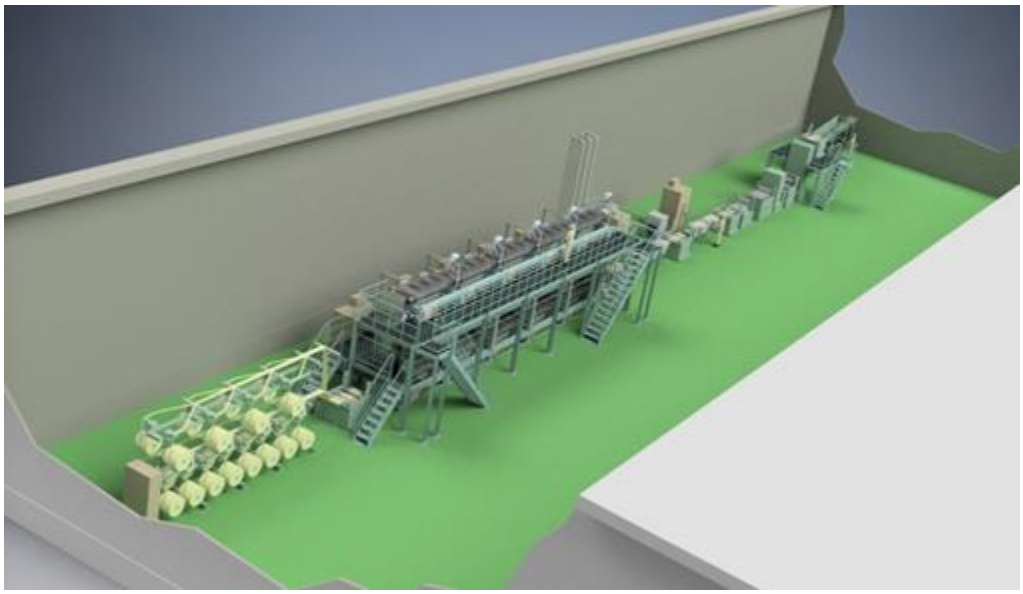
Microwave Chemical will contribute to the installation of the demonstration facility by providing Mitsui Chemicals with all of the necessary equipment for a heating line based on Carbon-MX™ technology. Meanwhile, Mitsui Chemicals will set up the entire process, including the elements of the process involving this technology. Once construction of the demonstration facility is complete, the companies intend to take a joint look at establishing technology for mass production.

By leveraging the ability of microwaves to heat a target substance from the inside, the technology here will enable an innovative process that minimizes unnecessary heat generation. When compared to existing methods, this will significantly reduce the time spent on heat treatment, resulting in a shorter heating process line and thus more compact facilities. Further, since the equipment itself does not reach high temperatures, the technology is expected to provide benefits with regard to equipment costs, energy costs and safety.

Mitsui Chemicals and Microwave Chemical have projected that this approach will cut energy consumption by some 50 percent. What is more, if the source of the power used to generate the microwaves is switched to renewable energy in future, CO2 emissions are expected to be reduced by over 90 percent.

Going forward, both Mitsui Chemicals and Microwave Chemical will employ life cycle assessments as they look to minimize the presence of carbon throughout their value chains. The companies will

endeavor here to meet the rising need for carbon neutrality in industries where carbon fiber is slated for use, including the mobility sector.



Full render of the demonstration facility's line

Reference (release from May 9, 2022):

https://jp.mitsuichemicals.com/en/release/2022/2022_0509.htm
https://mwcc.jp/en/news_press/220509/