Accelerator aims to grow cluster of power semiconductor companies in Capital Region

Michael Fancher is the director of the New York State Center for Advanced Technology in Nanomaterials and Nanoelectronics — CATN2.
CATN2

By Justin Dawes - Reporter

November 30, 2021, 05:31pm EST

A number of companies and startups in the power semiconductor industry have popped up in the Capital Region since Wolfspeed, formerly Cree, started operating here in 2019.

That was the plan, said Michael Fancher, director of the New York State Center for Advanced Technology in Nanomaterials and Nanoelectronics, or CATN2, a state-funded organization involved in efforts to attract the company here.

Landing Wolfspeed — and its $1 billion factory near Utica — was part of the first phase of growing the power electronics industry in New York state. The industry historically has been focused on developing chips used in medium-level voltage applications, like electric cars, Fancher said.

Now, CATN2 is focused on the next phase — supporting companies that are developing chips for high-voltage applications.

"We've got a cluster in New York. We succeeded on what our goals were," Fancher said. "Now we're going to move into high voltage to focus on smart grid and smart buildings."

And that means the door is open for more companies to join the CATN2 accelerator and collaborate with each other and other industry partners.

One of the startups involved with CATN2 is NoMIS Power Group. CEO Adam Morgan said earlier this year that it's only a couple of years away from sending a next-generation power semiconductor to market.

Power semiconductors can withstand higher voltages needed for applications like electric vehicles, EV fast-chargers, subways, airplanes and large industrial motors. The NoMIS product uses a newer silicon carbide material, which allows for increased efficiencies and reliability that translates to a final product that's lighter and less expensive to build and run.

NoMis is an example of a startup whose presence in the Albany NanoTech Complex has given it access to technology and capabilities that it otherwise wouldn't be able to afford, part of the reason the startup is accelerating so quickly.

Besides NoMis, there are several startups using space at Albany NanoTech in collaboration with CATN2. Lux Semiconductors is building a next-generation circuit board. Menlo Micro, which spun off from GE, is developing a smaller, more efficient version of an electronic switch that controls the flow of electricity from a power source to an application. CATN2 also hosts space for startups in other industries such as Bess-Tech, Magnolia Solar and Glauconix.

Each of the startups is able to collaborate with industry partners. They can also engage faculty, scientists and students at SUNY Poly to help with research and development of products. And students are often hired by the startups.

"We're going to focus on leveraging not only the technology and know-how that we have here, but also our relations with industry, who are oftentimes looking for the emerging application for this nanoscale process," Fancher said.

With the shift toward using sustainable energy in a number of applications, CATN2's investment in power electronics during the last decade is beginning to pay off, he said.

"It's accelerating much, much faster than I think people thought. We actually saw it, which is why we invested the time and effort and resources into power electronics six years ago."

Wolfspeed is the only company in the world that makes 8-inch silicon carbide wafers, an important component in these next-generation power semiconductors.

"That's why having [Wolfspeed] coming to New York is so profound as a company to build a cluster around," Fancher said. "We will continue to build that cluster. We will continue to grow that cluster into adjacent areas like high voltage and high power electronics, and we will continue to focus on other emerging areas like quantum, artificial intelligence and integrated photonics."