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Here's the roster of big companies in New York's new \$500 million power electronics manufacturing consortium



Keshia Clukey Reporter- Albany Business Review Email | Twitter

General Electric isn't the only major player signing on to the \$500 million New York Power Electronics Manufacturing Consortium that was announced this week.

A list of public and private partners the Albany nanocollege released to the Albany Business Review includes **General Motors**, Toshiba America and **Texas Instruments**.

Partners range from trade associations to material suppliers, equipment and component manufacturers to device designers. (For a list of the partners see the table below.) The **College of Nanoscale Science and Engineering** in Albany, New York, where the consortium will be housed, declined to say how much each partner will contribution.

"We'll all now innovate together because the technology is so complicated and challenging because of the cost," said <u>Alain Kaloyeros</u>, CEO of the nanocollege.

The goal in Albany is to develop silicon carbide computer chips as an alternative to the current industry standard, silicon chips. Officials behind the initiative say silicon carbide chips will be more efficient, lighter and require less cooling than silicon chips.

The new technology would be used in industries such as healthcare, transportation and energy, in everything from cars and airplanes to dishwashers to wind turbines.

GE is leading the consortium and is expected to invest more than \$100 million. The companies will be housed at nanocollege's NanoFab South building in Albany, Kaloyeros said. **Lockheed Martin** also was announced to be part of the consortium, however a company spokesman said they were not involved. Kaloyeros said it was the west coast offices involved for national defense purposes so they might be hesitant to confirm.

The state will back the partnership with \$135 million in funding under the START-UP NY tax free initiate, as was announced this week by Gov. <u>Andrew Cuomo</u> during events in Niskayuna and Rochester, New York.

Read more about the Niskayuna announcement at the <u>GE Global Research Center here</u>.

The partners are working to establish the first silicon carbide manufacturing line in the world, Kaloyeros said. "I expect that the facility is going to be ready by the end of the year and the line ready by next summer," he said.

Part of the research, which will be located in Rochester.

The state funding will be split equally between Rochester and Albany. The private sector is expected to contributed in funding, personnel, equipment, facilities and materials amounting to \$365 million for a total 5-year investment of \$500 million.

The consortium is expected to create 1,000 jobs statewide, starting with 500 in Rochester and Albany.

The deal came together after the government announced that semiconductors were critical in the energy industry, one of the fastest growing markets in the world, Kaloyeros said. Planning for the consortium began a year ago.

Industry analyst <u>Risto Puhakka</u> said the consortium comes at a good time as there have been hurdles in this field of research.

"It kind of tells us that there is still work to be done on this technology if there's a pooling of resources through consortium," said Puhakka, president of **VLSI Research** Inc., headquartered in San Jose, California. "It's the perfect place to look at those problems."

The silicon carbide is similar to silicon, but its light weight and has the ability to withstand higher temperatures, Kaloyeros said, adding that silicon carbide has the potential to replace silicon chips in electronics.

"You'll see significant savings in weight, in temperature, operation and efficiency so literally the next wave of material for computer chips and power-related electronics."

The material will not replace silicon entirely as its an about \$50 billion undertaking, he said.

It would first be used in applications such as aircraft systems or in fuel cells, which run at higher temperatures. Silicon carbide can run at 50 to 75 degrees higher than silicon.

Silicon carbide has been on the radar for a while now, but it hasn't gotten widespread adoption yet, said analyst Puhakka. It will likely take between two and five years before products are produced using the material, he said.

Some companies, such as GE already produce products with silicon carbide, but the consortium will work to make the manufacturing more reliable, Kaloyeros said.

Consortium Partners

Partners List
Analog Devices
ACI Technologies
Advanced Energy
Applied Materials
Applied Pulse Power
Arista Power
Army Research Lab
Auriga Microwave
Aya Instruments
Binghamton University
Brookhaven National Lab
Catalyst Connection
Caterpillar
CECET
Ceres Technologies
Clarkson University
CNSE Smart Systems Technology Commercialization center
Columbia University
Combined Energies
Cornell University
CryoPure
Crystal IS
Custom Electronics
Delphi

Partners List

Dow Corning E&M Power EDA � Energy Development Association **Edwards Vacuum Element Six Element Six Technologies** Empire State Development s Division of Science, Technology and Innovation (NYSTAR) Endicott Interconnect Eonic EOS Energy Storage ETA Devices Exelis EYP / AE Fala Technologies Ferric Semiconductor **FINsix** First Solar Fraunhofer Institute GaN Systems **GE Global Research** General Dynamic Land Systems General Motors Global ETA GlobalFoundries Green Charge Networks IBM Infineon **Interplex Industries** Intertek IQE JATCO Machine and Tool Co. Jennison Corp.

k-Space Associates

Partners List

LayTec LightSpin Technologies M+W US., Inc. Manufacturers Association of Central New York MarkTech Massachusetts Institute of Technology Michigan Economic Development Corporation MIT � Lincoln Labs Monolith Semiconductors **NanoMetrics** New York Battery and Energy Storage Technology Consortium, Inc. Next Energy Nfrastructure Northrup Grumman NREL NYS SmartGrid Consortium Oakridge National Lab Optical Society of America Plasma-Therm Power Electronics Industry Collaborative PowerEx **Raymond Corporation** Raytheon Rensselaer Polytechnic Institute **Ridgetop Group** Sandia National Lab Schlumberger Sedona International SEMATECH Sendyne Solar Bridge Technologies Sono-Tek SpinTrak

Partners List

SUNY College of Nanoscale Science and Engineering Texas Instruments TM3 Systems Toshiba America Transform TriQuint U.S. PhotoVoltaic Manufacturing Consortium UltraTech University of Buffalo Veeco Westmoreland Plastics Windstream Windtronix

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