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# Privately-Held Company Developing Tech For Lower-Power Chips

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By Shara Tibken Of DOW JONES NEWSWIRES

NEW YORK (Dow Jones)—Privately held Apic Corp. is working to commercialize chip technology that helps computer processors consume up to 90% less energy and run up to 60% faster—a product that eventually could be used broadly by chip makers in devices like servers.

Los Angeles-based Apic—which received funding from Intel Corp. (INTC) early in its operations and now receives investments from the federal government—has been working for a decade to figure out how to make particles of light called photons work with silicon, the material used to make semiconductors. It is now partnering with the College of Nanoscale Science and Engineering at the State University of New York to make the technology manufacturable.

Current chips use copper wiring to transport information between processor cores via electrons, but the electrons can generate a lot of heat and become less energy efficient as the processors move to more advanced dimensions. Photons, which Apic plans to integrate with silicon, don't generate heat, making them more energy efficient.

"Electronics is starting to hit its limits in terms of what it can do," Apic Chairman and Chief Executive Raj Dutt said. "We realized that as demand for processing speeds and bandwidth increase, new technologies have to come out. ...In the future, you will have a supercomputer on your laptop, and with photons, it will use significantly lower power."

As chip manufacturers race to shrink the size of components, they get benefits such as increased performance, but they also run into problems with energy consumption and heat. Intel has worked to address limitations with new technology for transistors, the tiny switching elements that serve as the building block of nearly all electronic products. But Apic says the chips could become even more power efficient by replacing the copper wire communications link between the processor cores with optical materials.

The company expects its technology, which allows foundries to use the same equipment and doesn't require chip makers to change the manufacturing process of their cores, to appeal to companies across the industry. It believes it will license its technology to initially address a \$50 billion market—especially servers—with the opportunity for its technology to be used in chips for about 10% of that market. Apic also expects to produce its own chips for areas semiconductor giants aren't as interested in serving.

"The power-savings benefit will happen in a big way with various companies in this business," said Michael Liehr, a professor and associate vice president for business, alliances and consortia at CNSE.

Despite Apic and CNSE's confidence in the technology's prospects, photonics is still a relatively nascent field, and there's no guarantee chip companies will adopt Apic's technology. The company hasn't yet talked with any of the semiconductor makers, and it hasn't yet figured out how to manufacture its product in known, well-qualified processes acceptable to foundries, the companies that actually manufacture chips.

That's where CNSE comes in. The college, based in Albany, New York, collaborates and pools resources with companies such as International Business Machines Corp. (IBM), Samsung Electronics Co. (SSNHY, 005930.SE) and Globalfoundries to perform research and develop advanced technologies. Apic's partnership with CNSE will allow it to utilize CNSE's \$7 billion Albany NanoTech Complex and equipment, as well as its close partnership with foundries.

CNSE, which will be getting \$10 million from Apic for the 18-month deal, anticipates reaching similar agreements with other small companies to help them ready their products for manufacturing.

"What has been missing in the high-tech R&D area of small- and medium-sized companies is access to a state-of-the-art R&D foundry," said Alain Kaloyeros, vice

president and chief administrative officer of CNSE. "This whole sector of what's known now as the fables small companies that have the design of a chip but can't test it or demonstrate it anywhere is a huge market."

Apic's technology, which it says should be in production early in 2013, will first be targeted at data-center products, gaming consoles and devices for medical research and secure financial transactions. But further out, the technology could trickle down to a variety of consumer electronics.

"It's just a question of a few years before we see this fairly widespread," Liehr said.

-By Shara Tibken, Dow Jones Newswires; 212-416-2189; shara.tibken@dowjones.com

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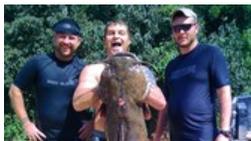
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