ThinGap motors close the gap

Venturans' product could be standard for electric motors

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Greg Graham, vice president of ThinGap Motor Technologies, holds the armature for a motor called the TG3300, that is made by the Ventura company. ThinGap technology might be the standard for motors from power tools to medical instruments.

Just as Dolby technology has become the de facto standard for audio recording, Gerald Yankie and Greg Graham believe ThinGap Motor Technologies will become the standard for electric motors.

If they're right, ThinGap motors eventually will be found in everything, including power tools, medical instruments, garage door openers, swimming pool pumps, wheelchairs and robots.

Yankie and Graham, chief executive officer and chief technology officer, respectively, of the Ventura-based company, have developed a technology for building lighter, more powerful and more efficient electric motors.

"What we've done is eliminate all the heavy stuff and still get the performance you want out of the motor," Yankie said.

A tool or machine that uses a traditional one-horsepower electric motor would have about 2.5 times more horsepower, weigh less, generate less heat and be easier to handle with a ThinGap motor, Yankie said. ThinGap's technology is applicable for both large electric motors and so-called fractional motors, those that are less than one horsepower.

ThinGap, which makes several versions of brush and brushless motors, is beginning to grab the attention of manufacturers that use electric motors in their products. Earlier this month, ThinGap expanded its manufacturing space in the Ventura Business Park to accommodate anticipated growth.

The Ventura company also is getting the attention of high-profile engineers like Noel MacDonald, the holder of the Fred Kavli Chair in MicroElectroMechanical Systems at the University of California, Santa Barbara, and a member of the National Academy of Engineering.

ThinGap's use of a thin layer of machined copper instead of the traditional iron core wrapped with layers of copper is a significant breakthrough in electric motor technology, MacDonald said.

"It's a very new approach to making electric motors. It looks like a toilet paper roll with a copper conductor," said MacDonald, who was

instrumental in the development of the Federal Initiative for Nanotechnology led by the National Science Foundation.

Appearances aside, ThinGap technology has several advantages over traditional electric motors, MacDonald said. For example, ThinGap technology would allow manufacturers to make more powerful robotic tools because of ThinGap's relatively small size and high power-to-weight ratio.

MacDonald likes the technology so much he invested in ThinGap.

ThinGap also helps motors accelerate smoothly, making them easier to control. Smooth acceleration is important for automated factory machines that must make quick and precise movements, Graham said.

Surgical tools could be another market for ThinGap. Surgeons are looking for instruments that are lightweight and easy to control.

Yankie, 62, and Graham, 52, began working on ThinGap technology a couple of years ago. They started out working on a kitchen table, then moved to the garage. Now they have 10 employees, a handful of investors and a 4,000-square-foot technical center in Ventura.

"As an engineer, I had trouble with some electric motors when I worked for another company," Graham said, "so I started building my own. I knew Gerald and me wanted to do something different, so we went into business together."

Yankie admits he didn't initially see the potential of the new technology. But when they got the motors to work and the company received a patent he realized the ThinGap technology was solid.

The market for electric motors is huge, about $45 billion a year, according to Steve Hammer, president of Hammer Capital Management.

"The potential applications for ThinGap motors are so diverse," Hammer said. "From a business standpoint, if the company is smart and diversified it could build a business model that would be impervious to overall changes in economic levels."

Hammer also has invested in ThinGap.

A number of companies that use electric motors in their products are testing ThinGap technology, but nondisclosure agreements prohibit identifying them, said Doug Crawford, ThinGap's chief marketing officer.

Yankie and Graham have high hopes the tests will be successful. The partners predict their company could have as many as 100 employees and $34 million in annual sales by 2004.

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