



Wakefield-Vette Vice President David Stone and Engineering Manager Mark Pelillo, holding a prototype cooler, by their CNC Control board.

Breakthrough Heat Exchanger Changes Cooling Landscape

“Licensing Sandia Cooler technology allows us to solve customer issues we couldn’t solve before. This new technology will expand the repertoire of tools we have to help overcome problems we’re presented with every day.”

— David Stone

*Vice President Sales,
Marketing, and Engineering
Wakefield-Vette, Inc.*

CHALLENGE

Heat generated by electronics requires thermal management solutions. In some applications, the traditional fan and heat sink are just too large, too energy hungry, or too noisy. For other applications, air cooling does not provide enough heat transfer, and liquid or refrigerated cooling solutions need to be employed. But those add expense and risk. Nobody wants to chance having liquid leak from a cooling system into computers or high-powered electronics.

COLLABORATION

Wakefield-Vette has over 50 years’ experience in thermal management. As a design, engineering, and manufacturing company, they create custom products for customers, helping them solve their cooling challenges. When the company learned that Sandia National Laboratories had invented a new type of air-cooled heat exchanger, they realized this technology could help them overcome some of today’s pressing thermal management issues and gain a competitive edge.

The company appreciates the development work Sandia has done up front, shortening the time to market for what will be several new products based on Sandia Cooler technology. Sandia will share knowledge to further accelerate the technology transfer through future collaborations. Wakefield-Vette has the manufacturing facilities and applications engineers needed to produce the products and customize them for various customer needs.

SOLUTION

The Sandia Cooler is a breakthrough air-cooled heat exchanger with a novel design offering many advantages over existing products. It’s on its way to dramatically altering the air-cooling landscape in computing and microelectronics, and has many other potential applications.

This technology solves the key heat transfer bottleneck—the boundary layer of dead air that clings to cooling fins in conventional coolers’ heat sinks. The Sandia Cooler provides a dramatic increase in cooling performance by combining the fan and heat sink into a single rotating component. It is smaller than the current state-of-the-art alternatives, exceptionally quiet, and energy efficient.

IMPACT

New products based on Sandia Cooler technology have multiple applications in industrial and commercial markets. For example, medical equipment used in hospitals and medical labs require cooling methods that are not just efficient, but also quiet.

The Cooler technology saves cost and infrastructure by expanding the upper temperature limits of air-cooled solutions for systems that produce a lot of heat and now require liquid cooling. For every application, it saves energy.

Because air cooling is used in everything from computers and refrigerators to HVAC systems and lasers, and because the Sandia Cooler uses less energy, Sandia researchers say the technology has the long-term potential to decrease overall electrical power consumption in the U.S. by 1 or 2%.

PARTNERSHIP TYPE: License and Strategic Partnership Projects (SPP) Agreement

GOAL: Commercializing a new type of energy-efficient, air-cooled heat exchanger that has multiple applications