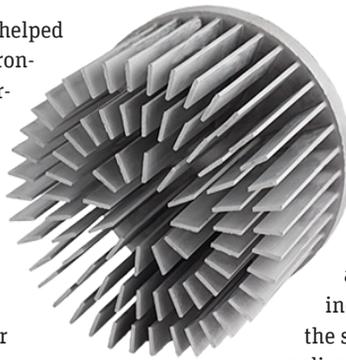


COOLING TREND

As consumer electronics manufacturers squeeze more and more functionality into smaller and smaller packages, thermal management is a critical design consideration. Here, Alan Wong discusses challenges in the cooling industry – and explains why the world’s leading electronics companies and other innovators rely on Aavid for custom thermal management solutions and, increasingly, engineering services.

By *ANSYS Advantage Staff*

Since 1964, Aavid Thermalloy has helped the world’s largest consumer electronics companies deliver superior performance under increasingly demanding conditions. Always pressured to launch truly innovative products rapidly and reliably, today these companies face the most demanding consumers in history – a new generation of “power users” who not only want significantly more functionality and power, but also demand a smaller product profile.



However, squeezing multiple electronic components into a tiny space can result in thermal buildup. Overheating compromises product performance, while also representing a health and safety risk. To understand and manage thermal issues, leading companies turn to Aavid for custom-designed solutions. While headquartered in Laconia, New Hampshire, USA, Aavid has a global team of thermal engineers who design the industry’s broadest product offering – ranging from the smallest board-level cooling solutions to industrial applications requiring several thousand kilowatts.

If our products are doing their job, you'll never even know they are there.

Since 2007, President and Chief Executive Officer Alan Wong has supported the innovation-driven strategies of Aavid's customers by fostering similar innovations within the walls of his own company. For example, in 2011 Wong led the creation of a dedicated Design Services Group within Aavid, which delivers customized engineering expertise to customers worldwide — whether or not Aavid actually manufactures the resulting product design. Recently, Wong spoke with *ANSYS Advantage* about the challenges of thriving in the incredibly demanding consumer products industry — and his own ambitious vision for the future.

Your customers are consumer products leaders and household names, yet Aavid has kept a relatively low profile. Tell us about your products.

It's true that many people have not heard of Aavid, and that's because our products are somewhat invisible. We design heat sinks, air movers and other devices that optimize conduction, convection and radiation within larger product systems. Our thermal management solutions are commonly found in personal computing products such as desktops, laptops, printers and video game consoles. They're also used in servers, network devices, instrumentation and consumer electronics. Aavid also designs larger cooling systems that are used in the transportation, health-care and power generation industries.

If our products are doing their job, you'll never even know they are there. And that's the goal of our engineering

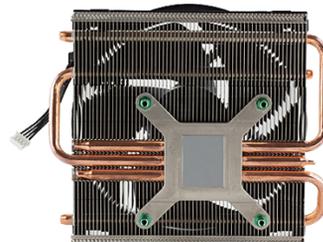
team — to understand and support our customers' overall performance goals, so that our solutions can be successfully integrated and work silently behind the scenes.

How much of Aavid's engineering efforts focus on creating customized designs versus standard products?

Nearly 100 percent of our engineering time is invested in design customization to meet unique customer needs. There are several reasons for this. First, we produce an extremely diverse array of solutions, ranging from small heat sinks embedded in printed circuit boards to large industrial cooling units mounted on rail trains or generators. Obviously, these are very different applications, so it would be hard for Aavid to develop a set of off-the-shelf products.

Second, thermal management is such a complex issue that it really needs to be analyzed and addressed on a case-by-case basis. As customers continually improve other aspects of their product designs — which is a cost of remaining competitive today — yesterday's thermal management solution quickly becomes irrelevant.

And third, our customers are amazingly innovative, always coming up with clean-sheet product designs that have the power to change their industry. As a result, probably 50 percent of our own design work represents clean-sheet thinking. The other 50 percent of our engineering efforts center on customizing a previous product design for a new application, product package or performance requirement.



To meet this high demand for product customization, how have you structured your global engineering organization?

Aavid operates nine design centers in the United States, China, India, Taiwan, Germany and Italy that employ more than 300 engineers. These nine engineering teams are located strategically near our largest customers, so we can work closely with these partners and truly understand their needs.

In addition, seven of these teams are co-located with Aavid's worldwide production facilities, allowing us to link design closely to manufacturing. Aavid not only employs the world's best thermal product development specialists, but we also maintain a staff of highly skilled process engineers at each manufacturing plant. These experts make sure that our conceptual designs transition seamlessly to actual production.

This organizational structure — coupled with our "localized" global approach — means that customers' real-world needs are accurately translated into solutions that are optimized for performance, cost and manufacturability. We've built a seamless, extremely efficient product development process by creating direct interfaces among customers, development experts and production specialists.



AAVID THERMALLOY AND ANSYS — VIDEO
ansys.com/aavid101

When managing such a multi-national, geographically dispersed engineering team, what is your biggest challenge? And how have you addressed it?

Because our local teams literally speak the language of their customers, these engineers will always take the lead in gathering and delivering on customer requirements. But, in order for Aavid to produce best-of-breed solutions on a worldwide basis, these geographically dispersed teams need to collaborate, share knowledge and apply a common set of advanced engineering practices. Making that happen — across multiple time zones, cultures and technology systems — has historically represented Aavid’s greatest challenge.

How have we addressed this challenge? By identifying the best technology solutions and making them readily available to our employees. In today’s fast-paced product development environment, technology is a key enabler of speed and collaboration.

As an example, we have approximately 60 simulation experts around the globe who rely on ANSYS software to verify the thermal performance of their designs. Often, they need to share simulation data, build upon previous simulation studies, or work together on a specific customer project. To facilitate this, Aavid has partnered with ANSYS and its cloud-hosting partner Nimbix to implement a cloud-based approach that enables these 60 users to access the software, data and high-performance computing power they need in a flexible, cost-effective manner, at any time of the day or night — from wherever they are in the world.

We’ve been very impressed by the results of this initiative. Our users are happier because they can readily access the software and the

bandwidth they need to run computationally large simulations, as well as post-process the results interactively on the Nimbix cloud infrastructure. Our customers are more satisfied because their designs are delivered much faster. And on a worldwide basis, we’ve increased the output of our simulation team by 200 to 300 percent.

What we’ve accomplished is elegant and simple: We’ve eliminated physical simulation constraints. Previously, if an engineer was running a large simulation, he or she might have to wait for available server capacity. Today that capacity increases flexibly as it is needed.

This is just one example of our mindset at Aavid. We are focused on providing our global employees with reliable access to the best-in-class tools they need to do their jobs most effectively.

One of your biggest accomplishments has been creating an independent Design Services Group that’s not directly linked to Aavid’s production facilities. What drove this decision?

About five years ago, our executive team recognized that we had assembled some of the world’s deepest expertise in engineering thermal management solutions. Our 300 engineers have incredible knowledge in so many areas of product development, including simulation. It occurred to us that many customers could benefit from Aavid’s intelligence and experience in thermal engineering — whether or not they also contract with us for component manufacturing.

In 2011, we established Aavid’s Design Services Group to offer state-of-

the-art engineering and design services to customers who value collaboration in solving difficult and complex thermal management problems. Aavid Design partners closely with our customers early in the design phase of product development to assist with modeling and simulation, as well as develop innovative solutions.

This initiative makes it even more critical for Aavid to identify and employ advanced technological design solutions such as ANSYS software. By assembling the best possible toolkit, Aavid Design is able to develop, test and verify our own designs to meet customer needs. ANSYS and other technology providers have been key in partnering with Aavid to drive the success of this group, by scaling up resources as the Design Services Group has grown in revenue, number of users, and the number of customer projects it supports.

Aavid recently celebrated its 50th anniversary. What’s your vision for the future?

Today, Aavid is embarking on a journey to become a values-based company. Our mission is to provide the best thermal management solutions that enable meaningful technological advancements in the industries we serve. We want to be more than a successful company — we want to make a real difference in the world.

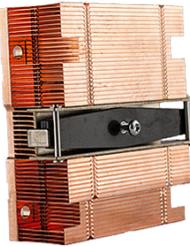
Our Design Services Group is a great example of how we have begun to support true innovation in new ways. For over four decades, Aavid focused on its own internal development efforts, and those designs were always handed off to our internal production staff. That model was very successful. But we decided to change that, to redefine the way we support our customers’ product development efforts. The Aavid Design Services Group has grown from 50 employees in



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2011 to 100 team members today — and I expect that number to double again in three years. This group has helped us contribute to our customers' success, while also serving as an important source of revenue.



I believe Aavid's future success lies in continuing to make bold choices that support our customers' innovation. When a company has such a long history of success, it's difficult to change what is viewed as a winning business model. But today's world is so radically different from the business environment that existed in 1964 or even 1994. Just as our global engineering team is focused on delivering radical innovation every day, Aavid must embrace innovation in its corporate strategy as well. That will set the stage for our next 50 years of success. ▲



Alan Wong

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ANSYS: Ahead in the Cloud

Engineering teams have become more global in nature, while the pace of technology innovation continues to accelerate. In this challenging environment, many companies are finding it cost-prohibitive to provide every engineer, around the world, with consistent access to advanced engineering tools — not only simulation software, but also the processing power needed to run large simulations.

Cloud computing is an obvious solution, because it removes the limitations of physical technology resources, reduces financial investments, and delivers a truly high-performance, end-to-end simulation experience via the latest technology architectures.

Recognizing that every organization has different needs, ANSYS has developed three approaches that enable our customers to capitalize on the power, speed and cost-effectiveness of cloud computing:

- ANSYS alliances with cloud-hosting partners — including Nimble, mentioned in this article — offer customers flexible access to a high-performance computing (HPC) infrastructure, as well as expert information technology services. Customers can outsource their implementation of ANSYS software when their internal capacity is taxed, or rely on the cloud as a permanent extension of their in-house computing capacity.
- The ANSYS Enterprise Cloud is a turnkey, enterprise-level simulation platform, hosted by ANSYS within a dedicated corporate account on the public cloud. Powered by the ANSYS Cloud Gateway portal, the Enterprise Cloud solution is an extensible solution offering HPC auto-scaling, HPC resources, storage and remote visualization on a global scale.
- ANSYS deployments in private cloud environments enable customers to securely run ANSYS solutions in environments architected using component technologies — such as operating systems and job schedulers — that are certified by ANSYS. The ANSYS Engineering Knowledge Manager solution supports an integrated job and data management portal that can dramatically improve engineering productivity.

— **Wim Slagter**, Lead Product Manager, ANSYS

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