

DEPARTMENT OF THE NAVY
SBIR/STTR TRANSITION PROGRAM
SPOTLIGHT

Company: Advanced Cooling Technologies, Inc. (ACT)
 Website: <https://www.1-act.com/>

POC: Srujan Rokkam, Ph.D.
 Phone: (717) 295-6061

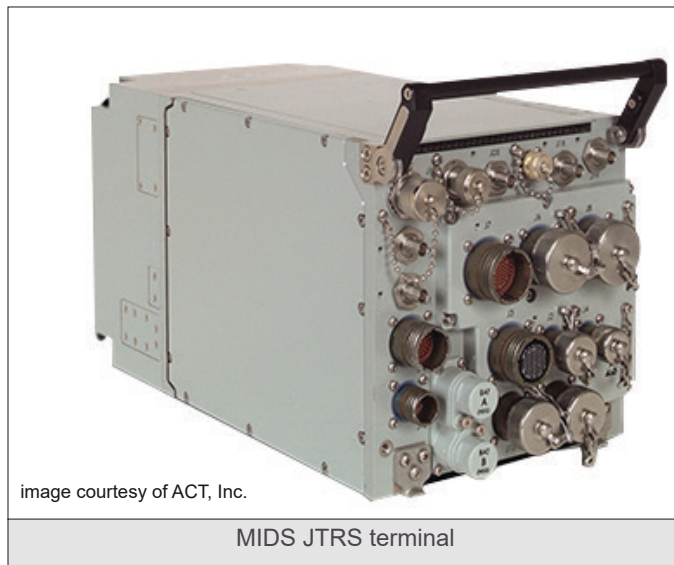
Address: 1046 New Holland Ave.,
 Lancaster, Pennsylvania 17601

ACT Transitions Cooling Technology during SBIR Phase II

By Jennifer Reisch

Advanced Cooling Technologies, Inc. (ACT) is transitioning SBIR-developed technology to the MIDS JTRS platform while still in Phase II. The HiK™ (high conductivity) cooling card developed for Navy tactical link electronics was tested and qualified by the two MIDS prime contractors: Viasat, Inc. and Data Link Solutions (DLS, a joint venture of BAE Systems and Collins Aerospace). After testing, it was selected by the primes for use in the MIDS terminal; ACT has received manufacturing orders of \$2 million for this hardware.

The next generation of MIDS radio terminals, used extensively by all branches of the DoD and many allied forces, is currently undergoing enhanced development and the Navy requires improved thermal management and cooling technologies along with the other new capabilities. ACT's thermal redesign coincides with the military tactical data link network redesign. Under SBIR topic NI72-137, "Advanced Cooling Technologies for Multifunctional Information Distribution System (MIDS) Terminals," ACT is developing an innovative thermal management system that integrates multiple technologies to significantly increase cooling performance while maintaining the size,



weight, and power (SWaP) of the system. As the U.S. Navy seeks to increase terminal reliability and provide more capabilities to the fleet, these cooling enhancements can contribute to a significant reduction in terminal total ownership cost, explained Dr. Srujan Rokkam, engineering manager for R&D at ACT. "The electronics in those devices can get too hot and the Navy is looking for technologies to cool the MIDS terminal better."

Current thermal management technology in MIDS is inadequate in meeting the needs of next-generation MIDS-JTRS terminals. HiK™ plates collect and move heat away from heat sources and are

SPOTLIGHT

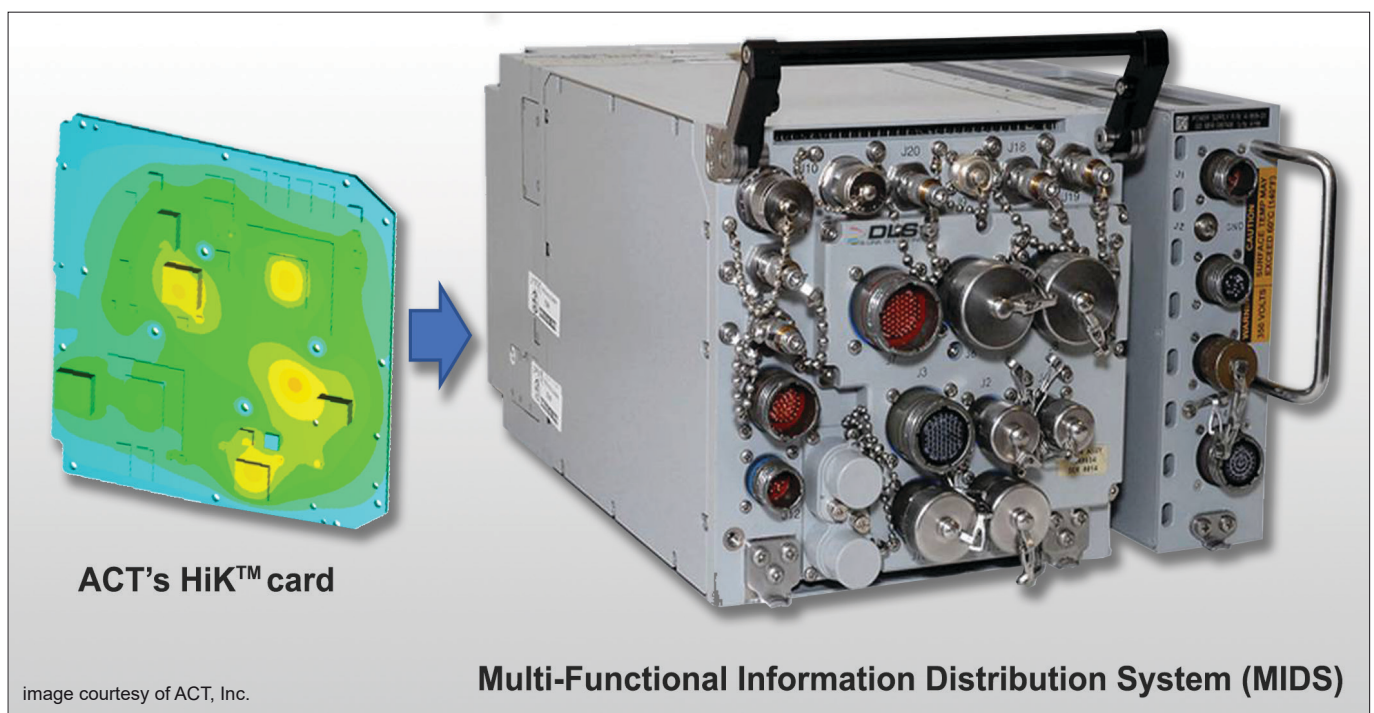
ACT Transitions Cooling Technology during SBIR Phase II...Continued

particularly useful for cooling multiple high-power components. ACT's HiK™ technology greatly enhances the heat transfer in the terminals and provides significant cooling capacity that helps maintain the temperatures of critical components within acceptable limits, he said. These HiK™ card frames will serve as drop-in replacements for the current technology without impact to SWaP. These enhancements will likely increase the mean time between failure (MTBF) of the MIDS electronics by thousands of hours. This in turn will result in cost savings to the DoD end-users of the MIDS terminals, as well as allow use of higher-powered electronics for increased capabilities.

“Inside the MIDS terminal, electronics are mounted on cards or plates. It is a very densely packed electronics box. Those

cards generate a lot of heat and we need to remove the heat in order to operate within the prescribed limits, to prevent overheating and also to get maximum life out of the electronics in the terminal. In the past, some of the electronics have experienced overheating challenges. Electronics develop at a fast pace and there is potential for new technology to be incorporated into the system, so the older generation of cooling solutions may not be suitable for the next generation of communication devices. With that in mind the Navy created an SBIR topic for cooling solutions for this communications box,” Rokkam explained.

In the Phase I project, ACT worked closely with the MIDS manufacturers, DLS and Viasat, to evaluate thermal bottlenecks of MIDS-JTRS terminals. “ACT evaluated the



heat generated by the cards to develop appropriate cooling solutions,” he said. Throughout development of the SBIR technology, ACT had monthly meetings with multiple partners from the Navy, DLS and Viasat. “We would meet with the Navy every month and in most of those meetings the primes also participated. Viasat and DLS were very interested in what cooling solutions would come from this SBIR because it helped with the redesign of their Navy Tactical Link card. Some of this was pretty intense but I’m glad we went through it and came out with a successful product.”

With this SBIR, ACT knew exactly what impact their technology could have once they got it right. “Some of the other SBIR technologies we have worked on in the past have been early stage. This one with MIDS was more immediate. The Navy was looking for a solution they could shift to now. There was a lot of support to get the technology developed and tested,” Rokkam said. “We fabricated prototypes and gave them to DLS and Viasat. They tested them on their side to qualify these cards and basically after that testing, they picked HiK™ as the solution for the MIDS Navy Tactical Link card.” The cards are manufactured onsite by ACT in Lancaster, Pennsylvania.

While participating in the Navy SBIR/STTR Transition Program (Navy STP), Rokkam found the Navy Forum for SBIR/STTR

Transition (Navy FST) events to be very helpful. “I liked having a booth; attendees from the Navy and primes visited our booth and presentation. We made a lot of connections. Actually, one of those Navy FST events was where the program manager of the MIDS program first saw us. After visiting ACT’s booth, he suggested we respond to the SBIR that was coming out. We put in a good proposal and they selected us. It’s always good to exchange business cards.”

Advanced Cooling Technologies, Inc. is a thermal management solutions company, focusing on custom applications of both single and two-phase heat transfer technologies. The company’s thermal management products are deployed in numerous commercial satellites, military vehicles, medical devices and imaging equipment, primary calibration equipment, and HVAC systems. ACT serves customers from two locations: Lancaster and York, both in Pennsylvania. The company has total sales from SBIR technologies over \$111 million. For more information, visit the company website at <https://www.1-act.com/>.



ADVANCED COOLING TECHNOLOGIES
The Thermal Management Experts | www.1-act.com