



CASE STUDY

PERSONALIZED PERFORMANCE: Creating a Unique Customer Experience



In working with ThinKom, the leader in low-profile antenna systems, to create a custom product tailored to the customer's needs, Thermotron goes beyond its stated goal of providing the best environmental test equipment available.

Thermotron is dedicated to a personal customer experience, delivering unique solutions to meet unique requirements.

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When it comes to environmental product testing, every industry has unique specifications. Every company has unique needs. Every project has unique challenges.

That's why Thermotron doesn't just create custom environmental test chambers, it creates personalized experiences for everyone it partners with.

ThinKom Solutions

began operations in 2000, breaking into the satellite communications (satcom) industry. Specializing in low-profile antenna systems, the Hawthorne, Calif., company has made its mark in the air, with in-flight satcom connectivity systems for passengers on commercial and military aircraft.

An industry leader in low-profile antenna systems, ThinKom won Via Satellite Magazine's 2019 Satellite Technology of the Year award for its phased-array antenna solutions. That same year, Get Connected, an inflight connectivity newsletter, reported 98% availability with ThinKom's system, including the full end-to-end network chain. The proven antenna reliability of over 100,000 hours is based on 20 million hours of flight data and is a product of the dedicated design team and environmental test programs.

"We have the highest reliability in the industry. Really, that's why testing is so important. We need these products to be as reliable as we can put out there," Jason Woolman, ThinKom's Director of Radio Frequency and Mechanical Engineering, said. "The airlines want the ultimate passenger experience. They want the customer to be able to go on the internet and have the same experience they have at home – we can enable that through our antenna system."

That desire for reliability led ThinKom to environmental testing with Thermotron chambers back in 2009 with the purchase of an SE-2000, in large part due to Thermotron's exclusive 8800 Controller. Now, more than a decade later, the ThinKom manufacturing floor is lined with eight SE-2000s, three SE-1000s, and a pair of RSL-36 shaker systems

"The level of sophistication and ease of use of the 8800 Controller was attractive right off the bat with how easy it is to operate. It's killer. It is just awesome and so easy to use," Woolman said. "The other thing that brought us back is the great equipment – it has been so reliable. It does exactly what we need it to do."

In order to meet the demanding standards of the airline industry, ThinKom ordered its SE-2000s with specific characteristics in mind to put its antennas and antenna control units through a variety of tests. Thermotron chambers are involved throughout the entire product development and manufacturing process, including product design testing during the prototype stage, design verification testing of components from suppliers, functional testing of the fully-built antennas and controllers, and failure analysis.



ThinKom's low-profile antennas are the industry leaders in providing in-flight Wi-Fi to commercial airline passengers. Pictured is one of ThinKom's signature Ku-Band antenna systems being installed atop a commercial aircraft.



The manufacturing floor of ThinKom's Hawthorne, Calif. facility is lined with 11 Thermotron environmental test chambers, including eight SE-2000 chambers and three SE-1000s. The chambers are used for functional testing of products before they go into the field, as well as product development during R&D, design verification testing of components from suppliers, and failure analysis.

The low-profile antennas and controllers are subjected to 100% environmental stress screening on the vibration tables, then head into the chambers for temperature cycling. The antennas are fully functional while the environment within the chambers is cycled between -55°C and 60°C , with 30 minutes of dwelling at each end.

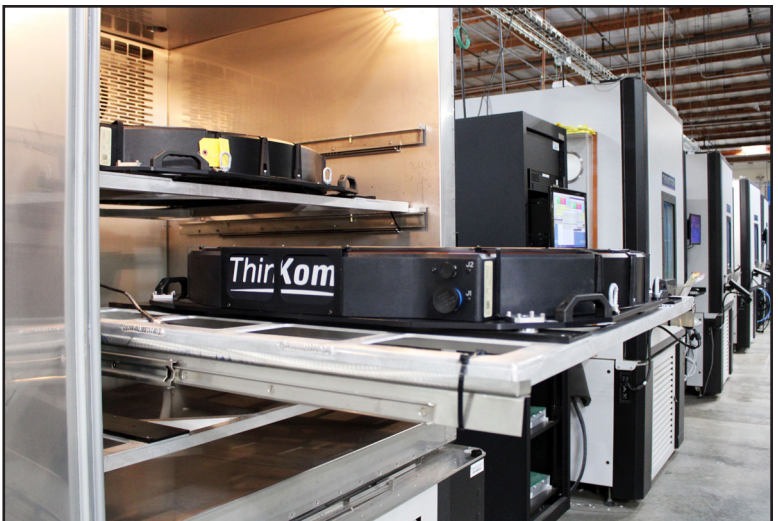
Those temperatures are more extreme than what the antennas face in the field (about -20°C according to data obtained from temperature sensors on active antennas), but this extreme testing ensures the antenna and the internal ball bearings and motors are more than capable of performing in any elements. It also helps to screen out any potential latent defects from workmanship.

"It's just what we've iterated to develop our ESS program that's appropriate for our products, specifically the antennas, because they are unique," Woolman said. "We've seen that it's a good screening mechanism to make sure that they are going to operate very well in the field – the bearings are going to turn smoothly during these temperature swings and the electronics are going to control the internal layers appropriately.

"We've also developed our own product test stations to test the antenna controller units ... and we have the test software, which continually monitors all functions. We've put a lot of effort into making sure we're really wringing these things out before they leave the door here."

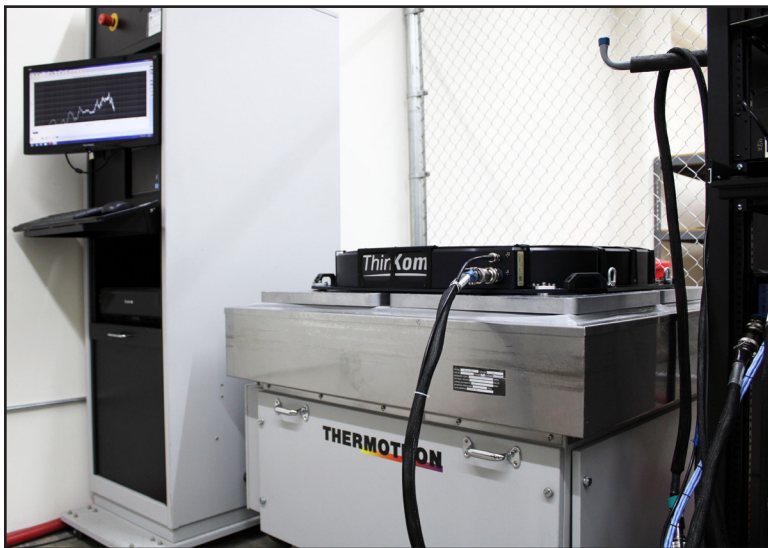
Over the years, ThinKom evolved and grew, and so did its needs. That's where the custom nature of ThinKom's testing met the customizable features of Thermotron's equipment.

To create specific environments and increase chamber performance, Thermotron included the LN2 option to boost cooling rates and added extra heating capabilities. Also, installing a dry air purge helps eliminate any moisture leaking into the chamber and freezing while ThinKom simulates the cold, dry air the antennas encounter when they reach higher altitudes.



A pair of ThinKom antennas set for testing in a Thermotron environmental test chamber featuring custom-built sliding shelves designed to make the loading process more convenient and less strenuous.

Of all the new additions to the chambers, however, one was personalized specifically to make everything easier for those at ThinkKom. Rather than standard shelving units within the chambers, Thermotron installed a set of pull-out shelves to accommodate the high-performance, somewhat awkward-to-move antennas that are tested.



Prior to distribution, ThinkKom's antennas undergo vibration testing on one of two Thermotron RSL-36 shaker systems.

"Ultimately, it was just working through it with the guys on the floor, the assemblers and the test technicians. The Ku-Band antenna is about 36 inches across, so we were just trying to make things more convenient for the test technicians. That led to the pull-out shelves," Woolman said.

"So, instead of having to reach into the chamber, they just have to lift, scooch it over a little bit, and then drop it down. That feature was really driven by helping out the technicians on the floor – just making it easier for them, less strenuous."

The customized equipment may be the most tangible example of the personalized experience, but it has been Thermotron's people and service that have truly brought everything together for ThinkKom.

"Overall, the support Thermotron provides, from our local sales rep, to the service technicians who come when we need help with the equipment, to the team in Michigan issuing quotes and taking purchase orders, has been outstanding. You guys have always been very responsive and supportive," Woolman said.

"All of the local service technicians are fantastic, and our local sales rep has been amazing. He has tremendous experience and was so great in helping us select what we needed, and he provided advice and guidance when we were figuring out what to do for our ESS program."

Over the past decade, ThinkKom and Thermotron have worked together to create an environment that breeds reliable relationships and products. With a unique product, unique industry, and unique customer needs, ThinkKom has required a uniquely personal experience, something Thermotron is always happy to offer.

For more than 55 years, Thermotron has provided quality environmental test equipment. We've worked to establish a trusted reputation among our peers, and when people hear the name *Thermotron*, they have confidence in the testing of their own product. We've been building our name since 1962; now it's your turn.

**QUALITY. TRUST.
CONFIDENCE.**
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