

THE BENEFITS OF ENVIRONMENTAL TESTING

Between an idea's conception and its release to market, we know how much time and effort goes into a successful product. We also believe Thermotron can be an integral part of your process, helping optimize your resources and maximize your success.

Testing your products using Thermotron environmental test chambers and vibration test systems does so much more than just ensure your product works how you envisioned. Environmental testing has benefits that span an entire organization, from marketing to manufacturing, and everything in between. This guide details some of the many benefits associated with environmental testing.

Functional Benefits of Testing

Determine the Strength of the Product: Before taking your product to market, you need to know both its capabilities and limitations. Environmental and vibration testing show potential weak spots that you may need to shore up, but they can also prove which environments or situations the product is capable of withstanding.

Within a white paper from Thermotron engineers, tests are outlined that help determine the capabilities of lithium-ion batteries, including their performance across different temperatures, their energy efficiencies in different environments, how much vibration they can endure throughout the shipping process and everyday use, and what kind of life cycle could be expected out of the batteries.¹

Meet and Exceed Product Requirements, Specifications, and Regulations: The benefits of testing go beyond just internal use. Governing bodies across industries have set standards to establish a baseline for product performance and safety.

Thermotron's white paper on solar panel testing details five major specifications from the International Electrotechnical Commission, including design qualifications and safety certifications. These specifications also lay out what types of testing must be done to meet the guidelines and the purpose behind each test.² While these standards are the minimum requirements for industry performance, manufacturers should be testing far beyond these capabilities to ensure technician and user safety, as well as back up the brand's reputation for performance.

Improve Product Reliability and Quality: By pushing the limits in testing, you determine what your product is capable of, and perhaps just as importantly, what its limitations are. By finding weaknesses and deficiencies early on, the required changes to the design or production process can be made in a timely manner, preventing larger setbacks in the future.

The solar energy industry provides an excellent case study on the power of robust testing practices. In the late 1990s, solar panels had an average life span of about 10 years. Fast forward a couple of decades, and through technological advancements, R&D, and more rigorous and sophisticated testing practices, the expected life span, which requires at least 80% of peak efficiency, is now 25-30 years – a loss of just 0.5-0.8% efficiency each year.³

Help to Save Lives: Product testing contributes to improved safety throughout the production and consumer use processes. In the lithium-ion battery example, high temperatures can cause explosions, fires, and ruptures, and the batteries themselves are extremely dangerous if mistreated.¹ A thorough environmental testing process helps to determine the limitations and dangers of the product, protecting both those who manufacture the battery and those who ultimately put it to use. Products that are used in life-or-death applications – aircraft, automobiles, medical devices, etc – require the added confidence that only rigorous testing provides. In addition to ensuring user protection, proper safety testing will help shield companies from damaging and costly lawsuits and liability concerns.



Thermotron SE Series Environmental Test Chamber

Gain Competitive Advantages: Environmental testing on its own may be enough to give you a competitive advantage, but sometimes the way you test can give you an even bigger leg up. In the case of Sat-Com Communications Solutions in Namibia, Africa, vertically integrating and doing on-site environmental testing with a Thermotron AGREE Chamber made all the difference.

“This allows us to continually improve our products and implement new technologies, thus ensuring our competitiveness and ability to address customer needs sooner than big enterprises,” Sat-Com Manager of Mechanical Engineering, Glen Brown, said.

Having invested in all the technology needed to test their products in-house, Sat-Com is now one of the only manufacturers in Namibia, gaining a huge competitive advantage over their competitors who must rely on the limited secondary manufacturing resources across the country.⁴

Thermotron Dual Slip Table
Vibration Testing System



Financial Benefits of Testing

Avoid Costly Recalls: The year 2016 was historic for all the wrong reasons, marking the first time the automotive industry crossed 1,000 vehicle recalls in the United States. According to the National Highway Traffic Safety Administration, 2016 also was the peak for total vehicles recalled with more than 90,000, far exceeding the yearly average of 30,000 units prior to 2015.⁵

Manufacturers are now paying the price, literally, for the rise in recalls. US-based automakers and suppliers reported \$11.8 billion in recall claims in 2016 alone. And, it isn't just the OEMs that are being hit. Automotive suppliers saw their share of recall costs jump from 5-7% between 2007-2013 to 15-20% since 2013 and the frequency suppliers were mentioned by name in recall notices doubled.⁶

When testing with a Thermotron environmental test chamber, you can simulate nearly any type of stress your product may encounter. With accelerated stress testing through either HALT or HASS, you can run your product through its entire life cycle in a significantly reduced time period, enabling efficient discovery of any possible weaknesses or defects.

Reduce Warranty Costs: It isn't just recalls hitting the bottom line of manufacturers, warranty claims are adding up, too. On average between 2003-2006, warranty claims paid out by US-based companies totaled \$26.4 billion, topping out at \$29.5 billion in 2008.⁸ Across the country, industries are devoting, on average, 1.5% of their sales revenue to warranty costs, led by computer OEMs at 2.7% and automobile manufacturers between 2.1% and 2.5%.⁷

Completely eliminating warranty costs may not be realistic, but you can be confident that your product is ready to face the harshest environments and most stressful situations with the proper testing. Eliminate unnecessary expenses and keep more of your revenue by ensuring your products never face anything in the real world you haven't prepared them for.

Save Company Time, Money, and Resources: Environmental testing takes investments of time and resources to properly conduct, but in the long run, the benefits will save you valuable resources.

The Mayo Clinic was having issues with chromosome spreading – an essential part of cytogenetic testing – because it requires precise conditions within the testing laboratory. The technicians had difficulty getting dependable test data because changing weather patterns were causing unpredictable temperature and humidity conditions in the lab.

Thermotron worked with the Mayo Clinic to develop a cytogenetic testing solution, the CDS-5, which now provides the lab with a temperature- and humidity-controlled workspace for chromosome spreading. Thanks to the new testing technology, the Mayo Clinic is getting better results in a more predictable, more efficient, and more dependable manner, saving time and money in the process.⁸

Improve Profitability: Each individual benefit of testing adds up to help improve profitability. As product quality and reliability go up, recalls and warranty claims go down, leading to increased revenues and decreased expenses. Similarly, if you are able to get through the R&D and manufacturing processes more efficiently and determine product failures faster and more accurately, production costs go down. Add it all up and increased profitability follows.

Psychological Benefits of Testing

Create Peace of Mind: After completing rigorous testing procedures, you can be confident in your products' performance, reliability, and safety. Have peace of mind knowing your product can withstand the environments and conditions it could face in the real world and you can back up your performance claims with physical testing proof.

Maintain Your Brand Reputation: Ensure your products meet consumer expectations with robust environmental testing. Glen Brown of Sat-Com Communication Solutions put it bluntly: "Doing environmental testing is a must for any reputable company."⁴

Building your reputation by producing quality and reliable products pays major dividends. Just in the last year, the value of the top 100 brands – just the value of the brand itself – has grown by 9%, now up to over \$2 trillion in aggregate. The value of the top four brands worldwide all exceed \$165 million, topping out at \$323 million.⁹

There is an immense upside to increasing consumer confidence and building your brand reputation, and intense product testing is a way to ensure that reputation stays intact. Without the proper testing, flaws can slip through the cracks and reputations can crumble. As Warren Buffett said, "It takes 20 years to build a reputation and five minutes to ruin it."

If you want more information on how you can improve your product testing with a Thermotron environmental test chamber or vibration test system, contact your [local Thermotron sales representative](#) or [request a quote](#) today.

References

- ¹ [Lithium-Ion Battery Testing White Paper – Thermotron Industries](#)
- ² [Solar PV Testing White Paper – Thermotron Industries](#)
- ³ [Energy Sage: How Long Do Solar Panels Last?](#)
- ⁴ [Sat-Com Communications Solutions Case Study – Thermotron Industries](#)
- ⁵ [McKinsey & Company Global Consulting: Return to Sender – Resolving the Automotive Recall Resurgence](#)
- ⁶ [Warranty Week – Fourteenth Annual Product Warranty Report](#)
- ⁷ [Warranty Week – June 27, 2019 Newsletter](#)
- ⁸ [Mayo Clinic Case Study – Thermotron Industries](#)
- ⁹ [Interbrand 2020 Best Global Brands Report](#)

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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