Carbice

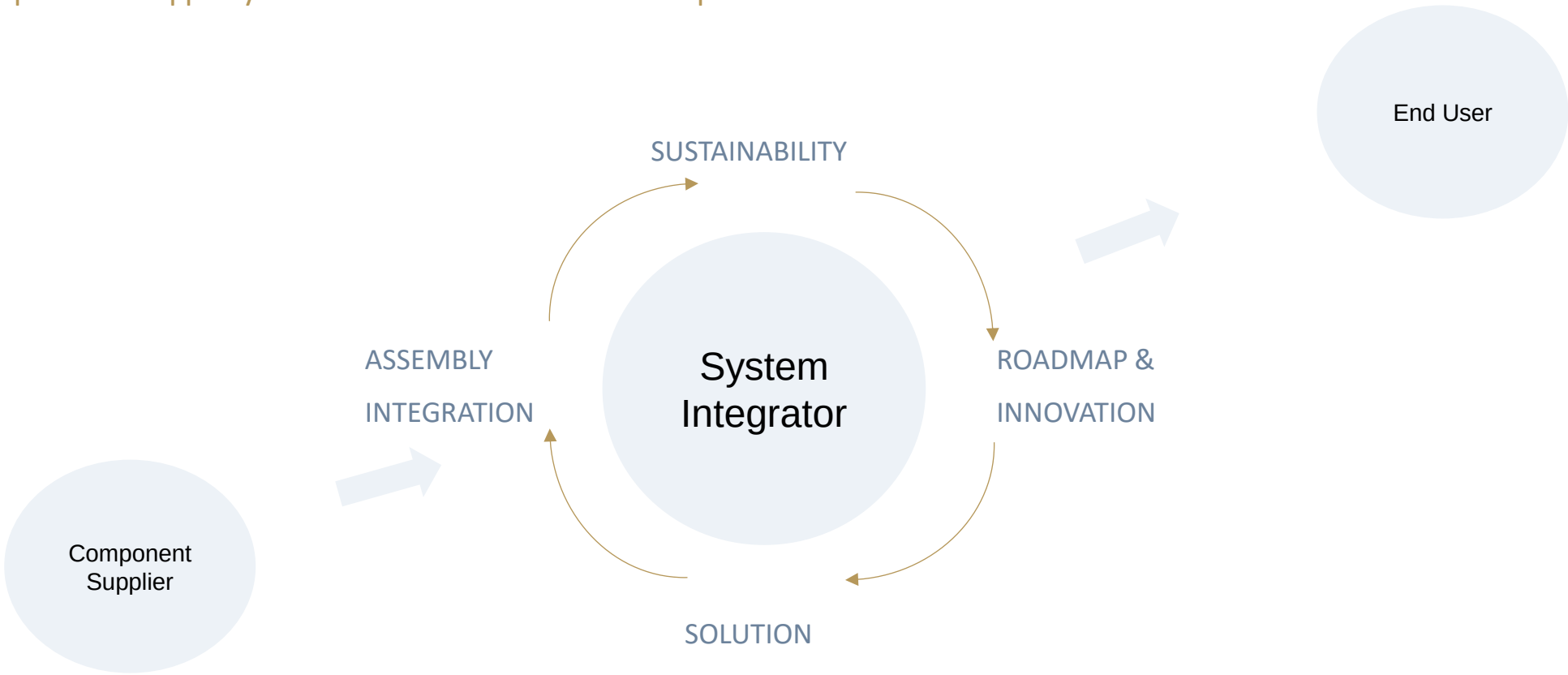
Carbice solution for Power

Deliver a business solution to support Power Customers

January 2025

Carbice delivers business solutions

A partner to support your brand and deliver on end user experience



Carbice provides solutions for OEM/System integrators to enhance company brand while supporting your business needs

Carbice provides a unique thermal solution

Carbice value: Reliable, easy to use, and affordable solution

Reliable

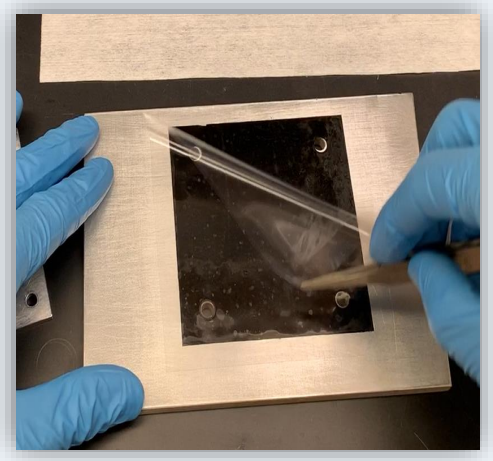
Compressive and shear stress does not break material in application (No impact from CTE mismatch)

Absorbs shock loads

Thermal resistance at end of product life same as at time zero (Does not degrade)

Carbice protects electronics

Easy to use



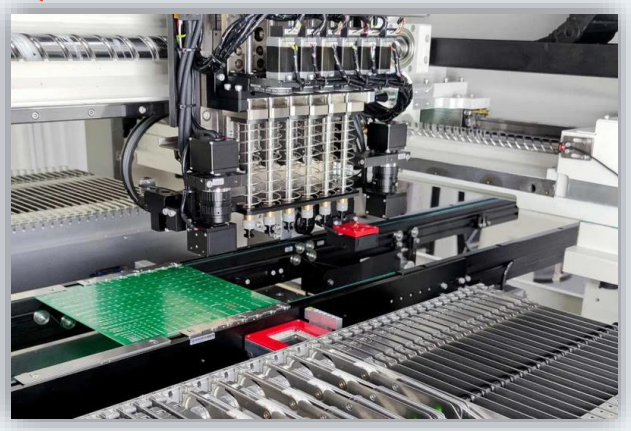
Robust pad application that won't tear

Peel-n-stick application

Simple peel off re-work

Circular manufacturing flow creates a sustainable product life and minimum environmental impact (Lowest carbon footprint for production)

Affordable



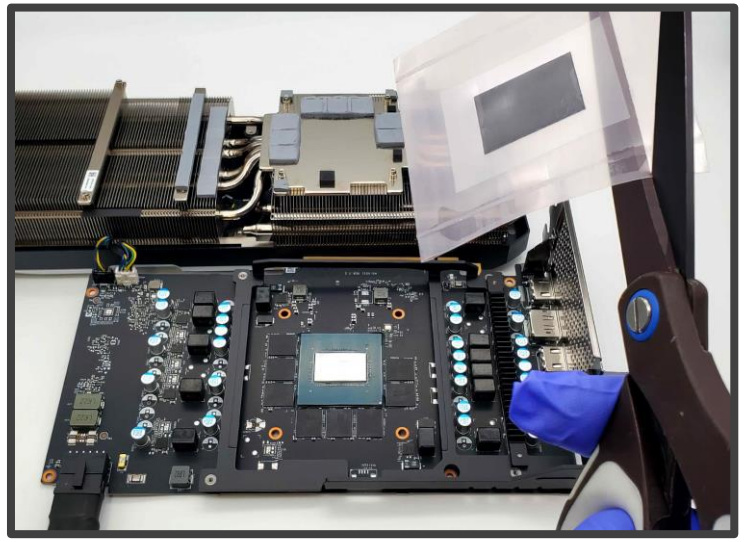
Lowers assembly costs

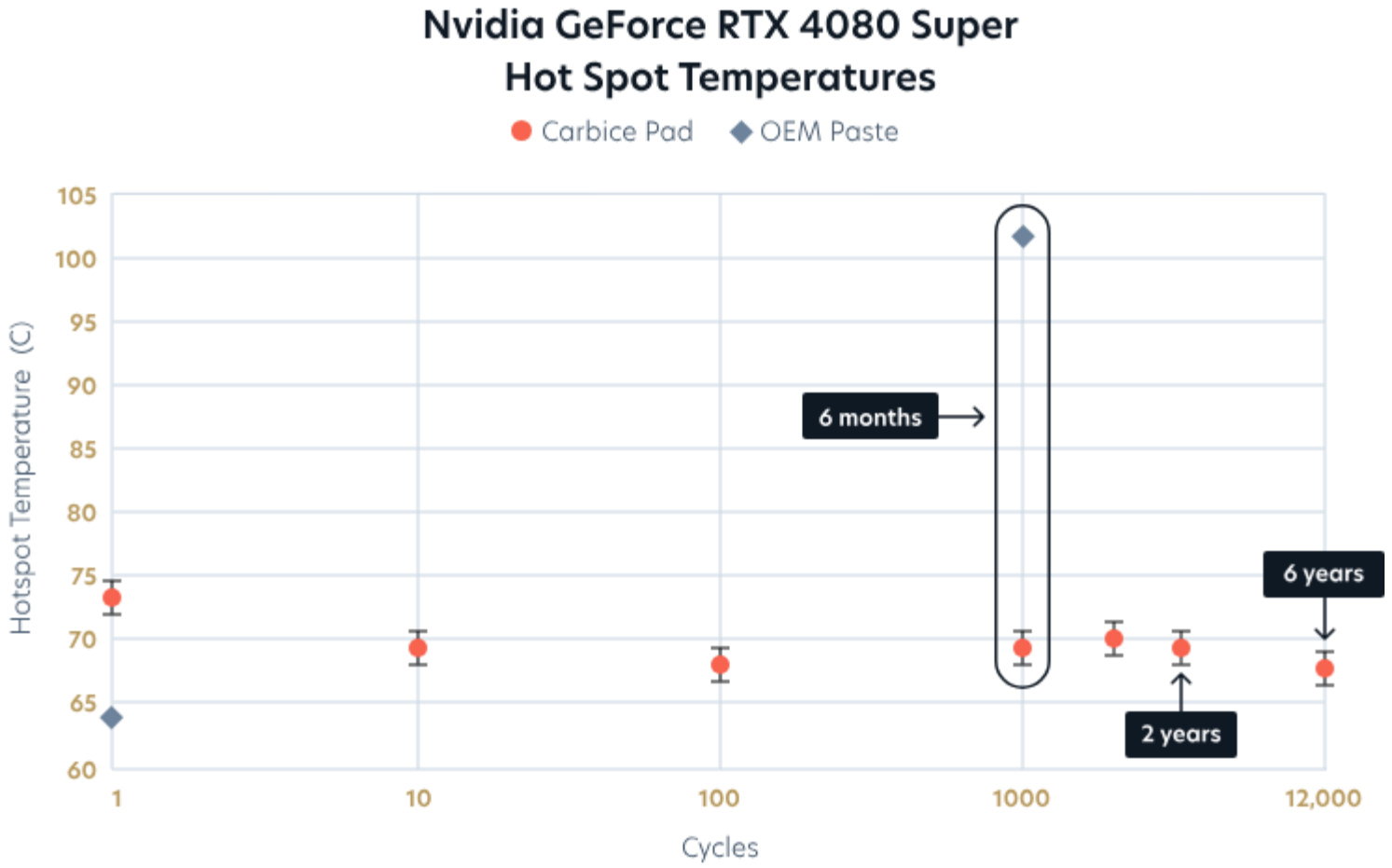
Simple raw materials leads to low cost

Easy to use pad lends itself to high volume pick and place manufacturing

Protect your high-performance GPU or CPU from overheating.

Industry-leading data reliability with Carbice.

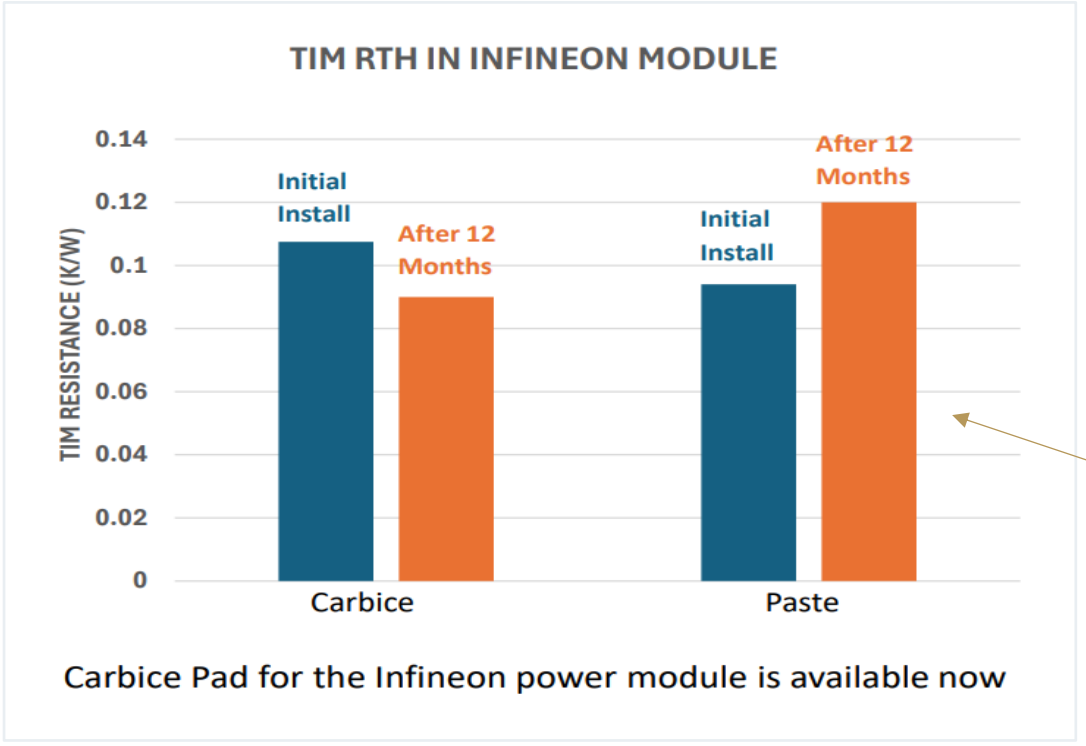




[Update: 6 Years Strong, Carbice Keeps the NVIDIA RTX 4080 Super GPU Reliably Cool | Carbice]

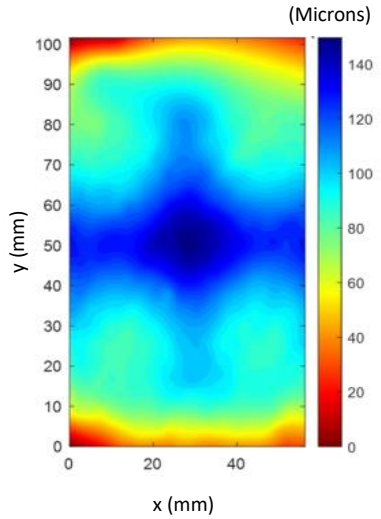
Carbice has a solution

Carbice Pad for the Infineon 62mm c-series module



Carbice Pad for the Infineon power module is available now

Device curvature

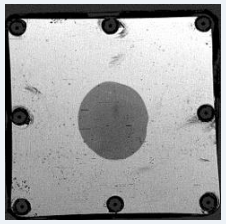
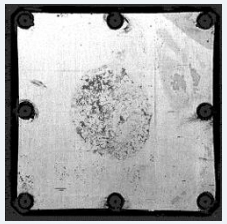
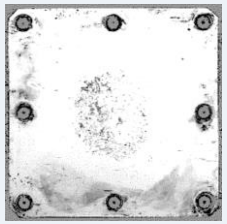
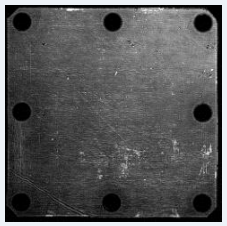
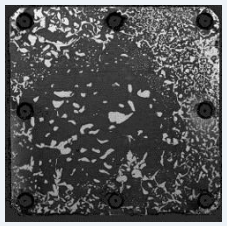
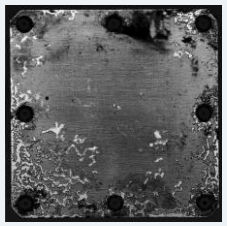
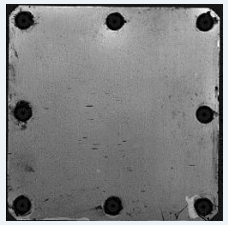
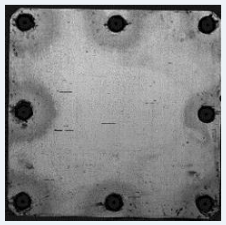
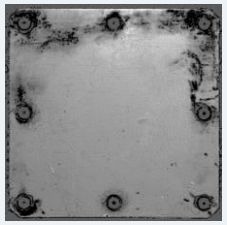
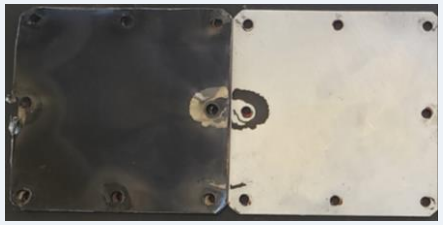


The 12 month values are based on estimates derived from in-house observations of Carbice pad resistance dropping approximately 8% after initial break in 3rd party degradation data showing grease will degrade approximately 20% after one year operation.

Accelerated lifetime testing with thermal cycling validates unmatched reliability of Carbice Pad

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

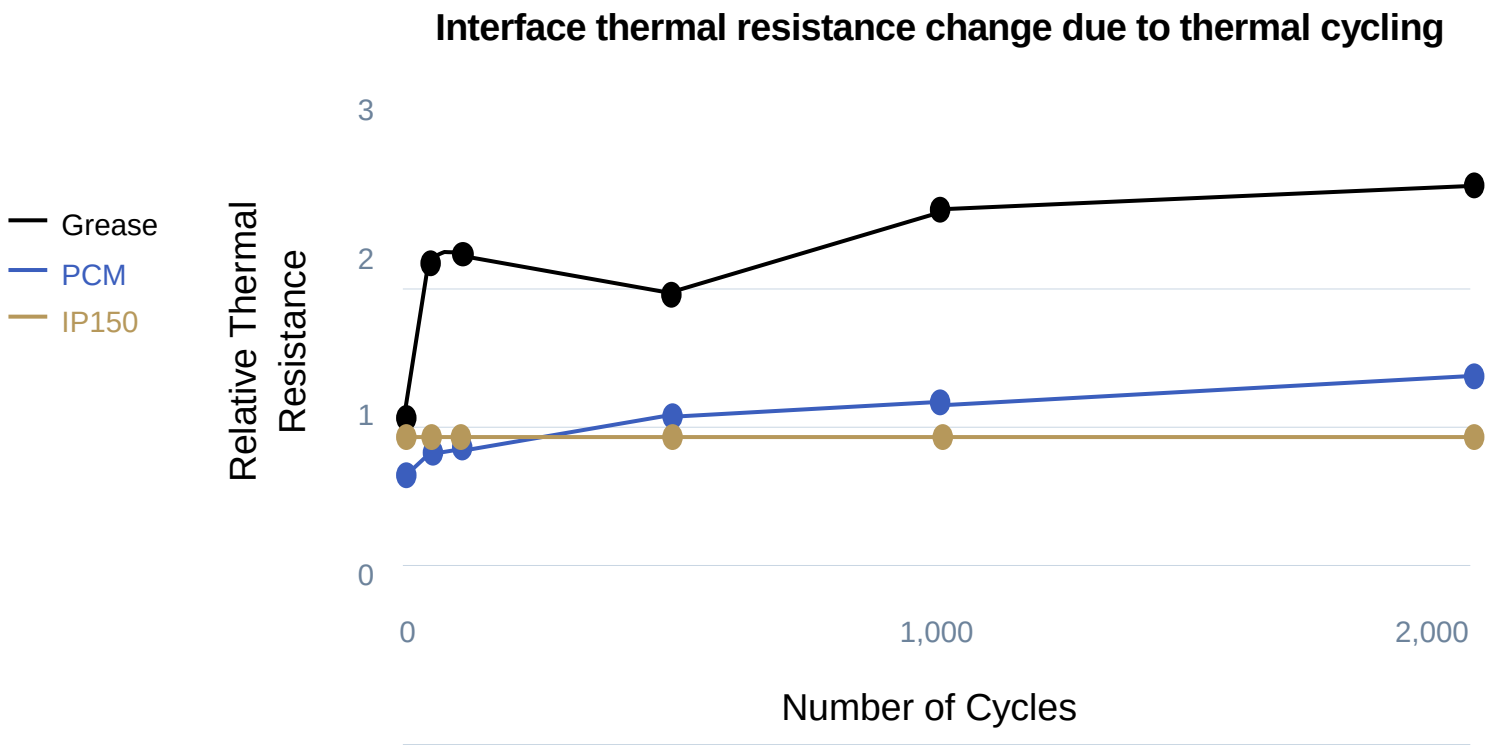
Carbice Ice Pad vs. Grease vs. PCM for accelerated lifetime testing via thermal cycling from -55 ºC to 110 ºC

	Initial Install	50 Cycles	2000 Cycles	Inspection after disassembly	
Shin-Etsu Grease X23-7783D					After only ~50 cycles Grease is completely dried out.
Honeywell PCM PTM7900					Air voids migrate around interface with PCM.
Carbice Ice Pad IP150					Ice Pad maintains consistent contact and performance.

Non-destructive imaging (CSAM) of assembled interfaces

Accelerated lifetime testing with thermal cycling validates unmatched reliability of Carbice Pad

Carbice Ice Pad vs. Grease vs. PCM for accelerated lifetime testing via thermal cycling from -55 ºC to 110 ºC

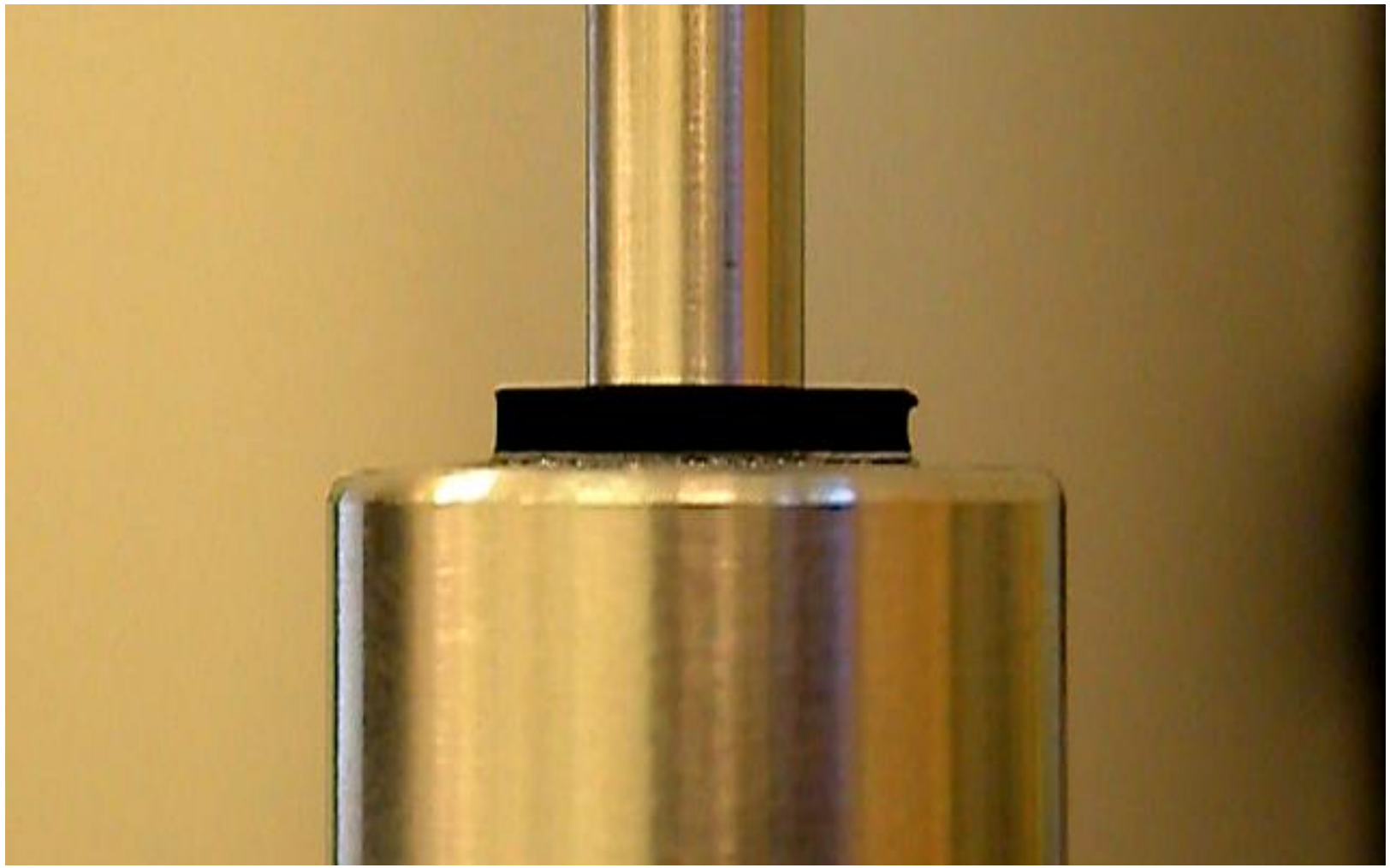


After 2000 cycles Carbice Ice Pad outperforms Grease by **2.6x** and PCM by **1.4x**.

Unlike conventional TIMs, Carbice Ice Pad maintains performance over time & cycling.

Industry focus: Shock / Vibration in addition to thermal cycling

Always elastic, predictable, resistant to tears and failures



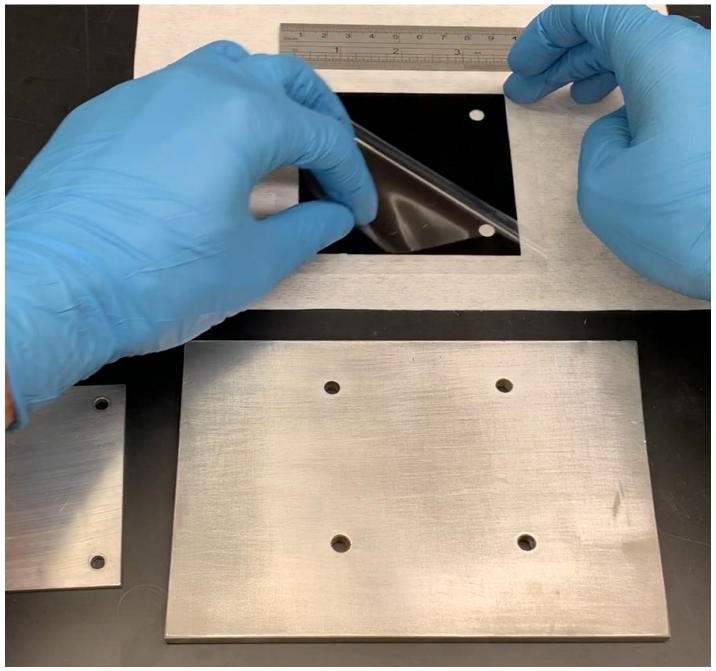
Carbice Pads allow easy serviceability

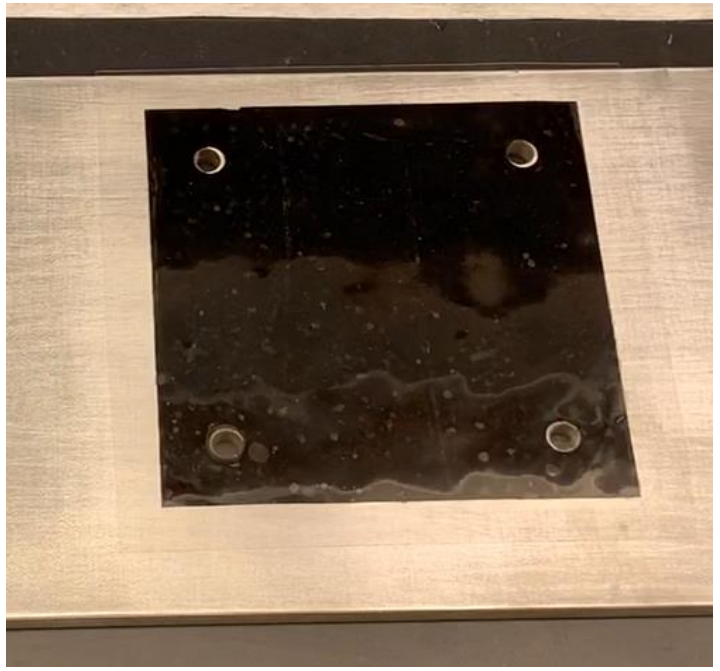
Stick-on, peel-off: saves time, resource and labor

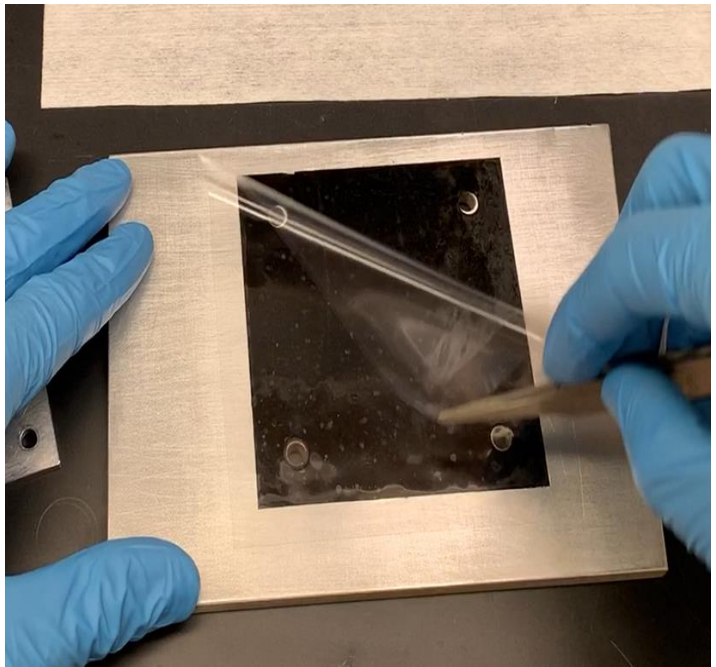
Performance study:

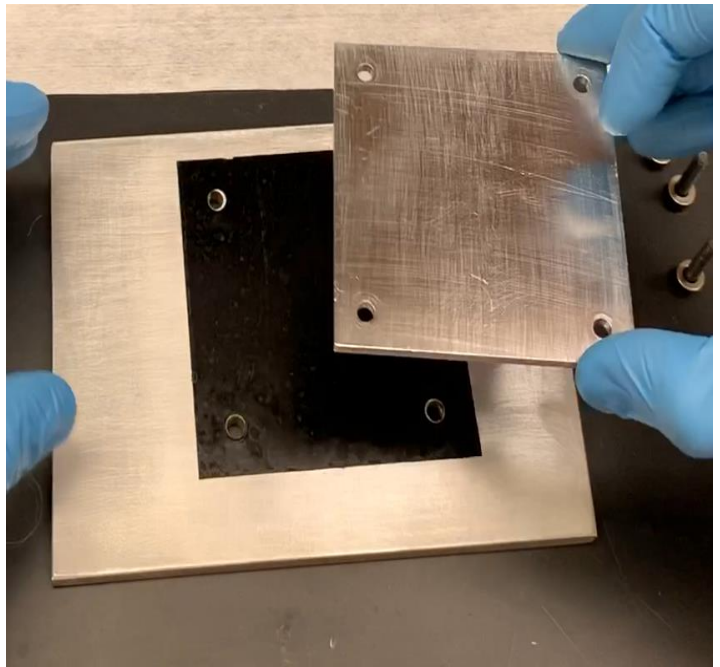
Carbice is easy to handle & install

No complicated screening process and equipment as with liquid materials.









“We love the “drop-in” aspects of Carbice the most!”

CUSTOMER PROGRAM MANAGER

“The ability of Carbice to maintain its performance over the life of our product is critical.”

CUSTOMER INNOVATION LEADER

Breakthrough manufacturing science delivering first – and only – aligned CNT product at scale.

From the world's largest aligned CNT manufacturing facility

Carbice has built and developed:

- A 23,000 sq ft facility and machinery in place in the largest aligned carbon nanotube facility on earth
  - Current capacity = 10 Million in^2 of Carbice Pad per year
  - Ramping to 100 Million in^2 of Carbice Pad per year
  - Dow partnership will create scale to > 1Billion in^2 per year
- The protection of a deep IP moat
- Customer engagements: Carbice Pads are shipping to customers in Aerospace & Defense, Industrial Power & Data sectors NOW.
- A positive impact on carbon footprint: Carbice is sustainable technology
- VMI programs available to minimize supply chain risk

Carbice customers, local dignitaries, and U.S. / Georgia government officials at the Grand Opening of the world's largest aligned carbon nanotube manufacturing facility; August 2022

Proven execution.

Our team nailed nanotube technology with Tier-1 customers at low CAPEX.

Baratunde Cola, PhD
CEO and Founder

20 years of deep tech and material company advisement. Nation's top scientist award winner.

Craig Green, PhD
Chief Technology Officer

Leading thermal engineering expert in the field. Expertise from transistor to system level.

Hal Lasky
Chief Operating Officer

40 years of experience and expertise in the global semiconductor industry. Former VP at IBM.

Harold Covert
Chief Financial Officer

>30 years of experience as CFO in the global semiconductor and electronics industry

Rafael Spears
GM of Aerospace & Defense

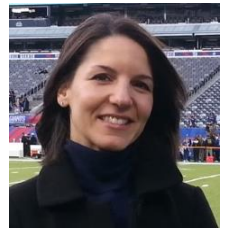
25 years of Aerospace and Defense experience. Former Director at the Aerospace Corporation.

Matthew Smith, PhD
Director, AI, Compute and Power

Fellow in Oak Ridge National Labs' Innovation Crossroads Program. Technical advisor at DOE, DoD & NSF.

Marcus Walker, MBA
Vice President of Business Operations and Finance

Expert in strategy and finance. Former Accenture Technology consultant.



Theresa Pantazopoulos
Vice President of Marketing and Communications

25 years of brand and communications experience. Former VP at Edelman.

Board of Directors

Baratunde Cola, PhD
CEO & Founder,
Carbice

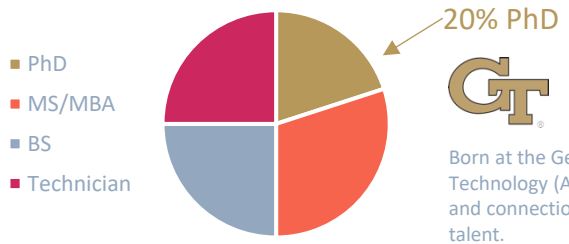
Gregg Bartlett
CTO,
Global Foundries

William Midgette
Former CEO & President,
Porex Corporation

Irfan Ashfak
Investment Manager,
Foresight Group

Marc Sullivan
CFO,
Infinity Engineered Products

Team Education level



Born at the Georgia Institute of Technology (ATDC) with easy access and connection to top technical talent.

Solution to the hard contact problem also built with sustainability in mind from the start.

Pioneering nanotube interfaces together.

Sustainability and low carbon footprint