

#TAKECHARGE OF TOMORROW'S MOBILITY: FOCUSING ON THE CORE TO SOLVE ELECTRIFICATION CHALLENGES

Driven by pressing net-zero goals, the automotive world is increasingly focused on electrification. As more electric vehicles (EVs) continue to roll out, advancements in sensors, batteries, and electric powertrains now come into the spotlight, as they are instrumental to the overall success of electric vehicles. Spanning over two decades as an application engineer and product specialist in automotive venting at W. L. Gore & Associates and a lifelong car enthusiast, I have witnessed firsthand how ignoring the need to protect these components can pose significant challenges in the journey toward electrification.

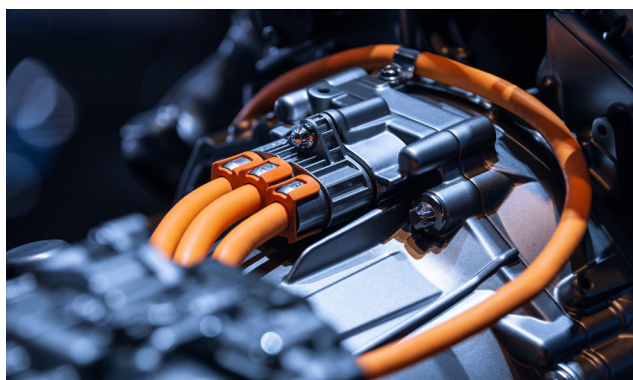
As OEMs and Tier suppliers seek to unlock new innovations, they can create value by continuing to focus on the core: vents that protect and ensure the reliability and performance of EVs.



Today's Solutions for Tomorrow's Challenges

This shift toward electrification brings forth a new set of challenges in protecting advanced electronic components, electric powertrains, advanced driver-assistance systems (ADAS), and battery packs.

Components such as axles and transmissions have always required pressure equalization and protection from contamination. Our experience working alongside OEMs and Tier suppliers shows that these requirements are significantly stricter in electric powertrains compared to internal combustion engine (ICE) vehicles. Customers have also indicated that they limit the performance of their electric motors to mitigate internal arcing risks caused by vacuum pressures, thereby extending motor longevity.



Starting as a mechanical design engineer and progressing to an application engineer has allowed me to collaborate more with our customers' market-facing teams, understand their challenges, and ensure a balance between product performance and business outcomes. At Gore, our journey centers around leveraging our core expertise in membrane engineering — honed over decades across various industries — to resolve issues with pressure equalization and contamination in EV components.

For us, it is about examining current business objectives and customer expectations to identify how to improve our vents as the right fit to address the future challenges of EV components and drive sustained success.

Leveraging our Core for Continuous Innovation

Moisture has long been a concern in automotive components, ranging from lighting to control units. However, the transition to EVs has introduced larger, high-temperature electrical components, exacerbating this issue. The interplay of material selection, temperature fluctuations, and both external and internal environments significantly influences moisture accumulation and the potential for damaging condensation.



With the increase in EV production, we are seeing a lot of inquiries on moisture management for inverters, control units, sensors, and electric motors. By leveraging our experience in condensation reduction for automotive lighting, we can identify multiple materials on the inside that are sources of moisture and propose potential venting solutions. Similarly, for thermal management, we are drawing from our portable electronics portfolio, constantly trying to

identify potential applications in the automotive sector.



By going back to basics and focusing on our expertise, we can drive innovation in our automotive venting solutions to achieve OEMs' and Tier suppliers' expectations of performance, reliability, and durability of their EV components.

Collaborating Towards a Better Future

One of the most rewarding aspects of my career is witnessing the tangible impact our solutions have on the road. None of this would be possible without the collaborative spirit that defines our approach at Gore.



Working closely with OEMs and Tier suppliers, we co-create solutions that not only address current challenges but also anticipate future needs. It is a partnership rooted in mutual trust and a shared commitment to innovation — a passion that drives us forward in shaping the future of automotive venting.

We are fortunate to be collaborating with leading EV and component manufacturers to drive innovative moisture management solutions. Our approach encompasses both active and passive systems, designed to optimize vehicle performance and efficiency. Through advanced modeling techniques, we can fine-tune pressure balancing and moisture management, addressing critical challenges in EV design. This holistic approach to environmental control within vehicles represents a significant innovation in the EV world, contributing to enhanced battery life, improved efficiency, and ultimately, extended vehicle range.

Moreover, we have recently introduced vents that undergo specialized processing to achieve cleanliness standard certification often required for high voltage power electronics. These specialty vents are certified contamination free, meeting regulatory demands and exceeding customer expectations. These innovations are a testament to our core commitment to listening to our customers and ensuring they can successfully push the boundaries of electric mobility.

Take Charge Today

As we look ahead, the evolution of automotive venting continues to align with broader market trends. The growing preference for hybrid vehicles underscores the need for adaptable solutions that cater to diverse vehicle types. Our ongoing projects focus on energy-saving initiatives and advancements in battery technology, such as selectively permeable films for prismatic cells, aimed at further enhancing the sustainability and performance of EVs.

Whether you are exploring new possibilities in automotive design or seeking solutions to elevate your EV performance, GORE® Automotive Vents stands ready to empower your journey.

Visit gore.com/automotive to learn more about how our solutions can enhance your next project or connect with us on LinkedIn for further insights and discussions.

About the author



Tony Zecca

A lifelong car enthusiast turned Product Specialist, Tony navigates the evolving landscape of automotive venting at Gore. With over two decades of experience, he is at the forefront of solving critical challenges in electric vehicles, from moisture management to energy efficiency, shaping the future of automotive technology.

Gore's Sustainability Commitment

We use our materials science expertise to create products that improve the quality of life and address sustainability challenges for generations to come. We believe that one of the greatest contributions we can make to sustainability is through innovations that have a positive impact on human health as well as the planet.

For more information, please visit gore.com/about/responsible-enterprise

About Gore

W. L. Gore & Associates is a global materials science company dedicated to transforming industries and improving lives. Since 1958, Gore has solved complex technical challenges in demanding environments — from outer space to the world's highest peaks to the inner workings of the human body. With more than 13,000 Associates and a strong, team-oriented culture, Gore generates annual revenues of \$4.8 billion.

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