

GORE® Protective Vents

Case History



ELIMINATE INTERNAL VACUUM TO PREVENT WATER DAMAGE AND CORROSION

Together, improving life



Situation

A global manufacturer of wireless routers specializes in ruggedized products that withstand water intrusion caused by extreme environmental conditions. During the initial year of installation, one of the products began having issues with water leaking into the enclosure, causing corrosion and performance issues with the electronic components.

Challenge

The engineering team began a thorough root-cause analysis of the issue and determined that the leakage was due to failure of the enclosure's seals. Rapid temperature changes in the outside environment created pressure differentials that resulted in a vacuum forming inside the router's housing. The vacuum caused stress on the housing's seals, which led to water vapor being drawn into the device. As the vapor condensed inside the device, the water had no path to escape, so it collected inside the sealed housing and eventually damaged the electronics. The engineers considered using more rugged seals to eliminate the water intrusion problem, but they realized that this would not solve the problem. They needed to provide a way to maintain equalized pressure inside the enclosure without creating a path for water and other contaminants to enter.

Solution

The engineering team settled on a microporous expanded polytetrafluoroethylene vent and evaluated samples of three venting products: GORE® Protective Vents, vents from a Taiwanese manufacturer and vents from a Chinese manufacturer. For each product the team assessed the construction, membrane appearance and test results. They determined that the Taiwanese and Chinese products could not match the reliability and durability of Gore's technology. They determined that Gore's vents last ten years or more, as proven by their third-party qualification reports, while the other vents needed to be replaced every four to five years. Therefore, the manufacturer selected GORE® Protective Vents because of their higher quality.

Gore's application engineers collaborated with the manufacturer's design team throughout the specification process to ensure that the right vent was selected for the manufacturer's specific application. After testing various solutions, Gore recommended the Polyvent M12 x 1.5 HA — a high-airflow, screw-in vent for maximum pressure equalization and durability.

According to the wireless manufacturer's lead engineer, Gore's ongoing support enabled them to select a screw-in plastic vent that was easy to install during initial manufacturing and during retrofit repairs in the field. "Gore's team understood the pressure differential issues we were experiencing, and the testing they performed in their own labs identified the appropriate amount of airflow we needed in our housing to maintain equalized pressure in all types of environments," the engineer explained. "They even identified the appropriate torque and mounting specifications for installation so our production lines can easily integrate the GORE® Protective Vent. We converted to Gore's solution in March 2011, and we have not had any performance issues since then."



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Gore's screw-in Polyvent M12 x 1.5 HA maintains high airflow for maximum pressure equalization and durability.



GORE® Protective Vents help prevent water damage and corrosion for wireless routers installed in all types of outdoor environments, increasing reliability for the life of the product.

Diverse Product Line Engineered for Simple Integration

GORE® Protective Vents are manufactured in many different sizes and shapes, making it easy to choose the right vent for any application. With a diverse product portfolio, these vents are easy to integrate into new or existing designs to meet the needs of a broad range of applications and markets. The versatility of GORE® Protective Vents is apparent in both their range of protection and their ease of installation. For example, these vents:

- Tolerate temperatures ranging from -40°C to 125°C
- Perform to protection standards up to IP69K*
- Provide maximum protection for applications in harsh environments through molded plastic or metal vents
- Install easily by being adhered, threaded, snapped, bolted or heat/ultrasonic-welded to a variety of enclosure materials
- Adhere to the device with adhesive backing for applications with insufficient free space to install a vent insides

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 11,000 Associates and a strong, team-oriented culture, Gore generates annual revenues of \$3.8 billion.

Gore develops products and technologies that address complex product and process challenges in a variety of markets and industries, including aerospace, automotive, pharmaceutical, mobile electronics and more. Through close collaboration with industry leaders across the globe, Gore enables customers to design their products and processes to be safer, cleaner, more productive, reliable, durable and efficient across a wide range of demanding environments.

Learn more at gore.com/protectivevents.



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GORE® Protective Vent(s) are manufactured under the generic industrial ISO 9001 quality system. No other certifications can be provided by Gore for this GORE® Protective Vent. All technical information given is based on Gore's previous experiences and/or test results. Gore gives this information to the best of its knowledge, but assumes no legal responsibility. Customers are asked to check the suitability and usability in the specific application, since the performance of the product can only be judged when all necessary operating data are available. The above information is subject to change and is not to be used for specification purposes. Gore's terms and conditions of sale apply to the sale of the products by Gore..

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