

**GORE® Protective Vents**

Case History



# IMPROVE ANTENNA ALIGNMENT MONITORING BY REDUCING CONDENSATION

*Together, improving life*



## Situation

Sunsight Instruments of Orlando, Florida, provides antenna alignment and monitoring systems to the telecommunications industry. The AntennAware Attitude Sensor (AAS) is a permanently mounted, fully integrated monitoring sensor that ensures correct alignment of antennae on a continual basis. The AAS uses time of day, latitude and longitude information to determine the position of the sun, with highly sensitive accelerometers measuring the down-tilt and antenna plumb. The system evaluates the antenna's alignment and alerts telecom operators of misalignment conditions, saving thousands of dollars and enhancing the safety of their operations. In addition, operators have accurate alignment information for ensuring efficient market coverage. To calculate the antenna's position, the AAS relies upon two constant sources of orientation — the force of gravity and the orbit of the earth around the sun. Therefore, it must be able to track the sun's movement across the sky without any obstruction.



## Challenge

Because of constantly changing weather conditions, the Sunsight engineering team knew the AAS system needed a housing that met Ingress Protection 68 standard. At the same time, the housing needed a clear dome that did not block or distort the sun's rays.

The AAS is exposed to continuous sunlight during the day and cool temperatures at night, so the team knew that the system needed to be able to breathe. Rapid temperature changes outside the housing can cause significant pressure differentials inside the housing, which can result in a vacuum forming. Over time, the vacuum puts stress on the housing seals, which can eventually fail and draw in moisture vapor. Because the moisture vapor has no path out of the housing, it eventually can condense inside the dome, which in turn obstructs sunlight and compromises the AAS measurements. Moisture within the dome can also corrode the sensitive electronic instrumentation that is being protected.

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**"GORE® Protective Vents provide the assurance that our products maintain their IP68 rating during rapid thermal/pressure changes from shipping to installation to operation."**

**– Tony Wattwood,  
CEO of Sunsight Instruments**

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## Solution

Based on the recommendation of another antenna manufacturer, Sunsight contacted Gore about installing a GORE® Protective Vent in the AAS system. Gore's application engineers collaborated with the Sunsight engineering team and conducted several field trials. After five months of exposure to sun, rain and snow, the AAS with the GORE® Protective Vent showed no evidence of condensation, whereas the AAS without a vent showed substantial condensation. During these trials, Gore also evaluated several vent designs and recommended a polyvent for maximum airflow and protection. This vent equalizes pressure in the dome by allowing air and moisture vapor to pass in and out of the enclosure freely, reducing the potential for condensation. At the same time, the vent serves as a barrier to prevent liquid, dirt, dust, salt and other contaminants from entering.

According to Sunsight CEO Tony Wattwood, "Our products are exposed to all weather conditions 24 hours a day, seven days a week — from Anchorage, Alaska to Miami, Florida. With these widely varying environments, the GORE® Protective Vents provided the assurance that our products maintain their IP68 rating during rapid thermal/pressure changes from shipping to installation to operation. Gore's engineering team understood our situation and worked very closely with us to ensure that our product works reliably regardless of its location."

## 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 inside welded to a variety of enclosure materials

GORE® Protective Vents  
PolyVent M12 x 1.5  
PMF100321



## 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](https://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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