



# GORE® Protective Vents

Case History

## Improve Antenna Alignment Monitoring by Preventing Condensation



### 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.

### 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 provide 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."

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Before vent installation

After vent installation



## 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



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Germany	49.89.4612.2211	South America	55.11.5502.7800
India	91.22.6768.7000	Spain	34.93.480.6900
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## The Gore Advantage

Gore is a technology-driven company focused on discovery and product innovation. Well-known for waterproof, breathable GORE-TEX® fabric, the company's portfolio includes everything from high-performance fabrics and implantable medical devices to industrial manufacturing components and aerospace electronics. Founded in 1958 and headquartered in Newark, Delaware, Gore employs approximately 10,000 associates in 30 countries worldwide.

For more than ten years, Gore has delivered protective venting solutions for outdoor equipment installed throughout the world. When working with Gore, our customers are paired with a technical sales associate and an applications engineer to assess the intended application, the product design, and the environment in which it will be used. Gore's team tests various vents to determine the best material, size and placement of the GORE® Protective Vents. This collaborative process has ensured that hardware of some of the largest OEMs and equipment manufacturers maintain durable, reliable performance in extremely challenging environments.

\*IP ratings depend on the product housing's design. Please contact a Gore representative for more information.

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