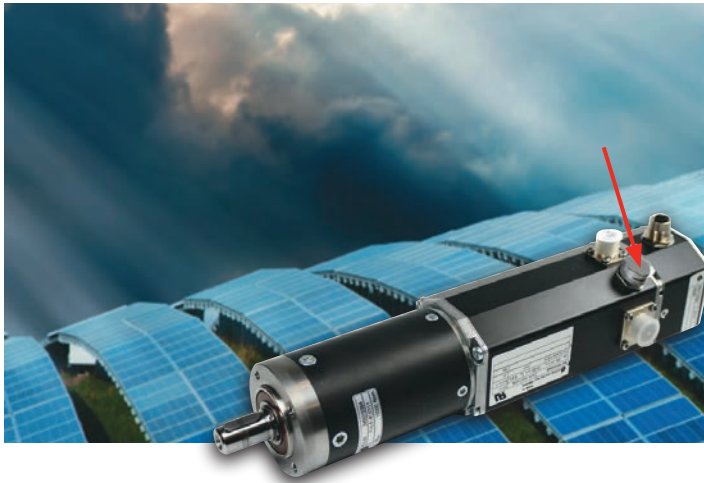




# GORE® Protective Vents

Solar Energy

## Increase Service Life of Solar Tracking Systems by Equalizing Pressure



### Situation

Dunkermotoren, a global manufacturer with operations in Germany, the United States and China, provides solar tracking solutions that are installed worldwide. This equipment combines a DC or brushless DC (BLDC) motor, integrated electronics and gearbox to track the sun's location for photovoltaic, concentrated photovoltaic and concentrated solar power systems. These systems are installed in locations that experience extreme weather conditions such as long hours of direct sunlight, wide temperature ranges, high winds, dust, hail and driving rain. Therefore, the electronics and motors must be protected against these environmental conditions to ensure reliable performance for the systems' expected service life.

Dunkermotoren engineered a sealed housing with O-rings and connector seals to protect its motor components from liquid and contaminant ingress; however, the motors were experiencing corrosion issues once installed in the field. These issues increased customer returns and warranty claims. When developing their new STM™ system, they focused on improving the motor's durability to meet the intended service life and increase customer satisfaction.

### Challenge

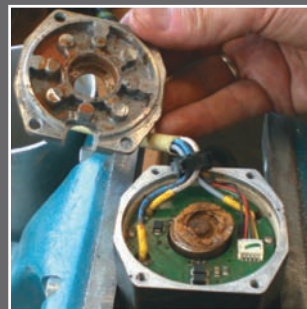
The exposure to the direct sun during the day and cool temperatures at night causes significant temperature changes outside the housing. In addition, a sudden rainstorm on a hot sunny day can result in the temperature dropping rapidly. In an enclosure designed to be completely sealed, these changes can cause significant pressure differentials inside the housing,

which can create in a vacuum that puts stress on the housing seals. Over time, this fatigue can lead to failures — creating leak paths for liquid and particulate contaminants. However, providing an opening to allow the housing to release pressure (in other words, breathe) creates a known leak path. Therefore, this opening would need some level of protection. For the new design, Dunkermotoren's engineering team decided to test various venting options to eliminate potential seal failure due to pressure differentials.

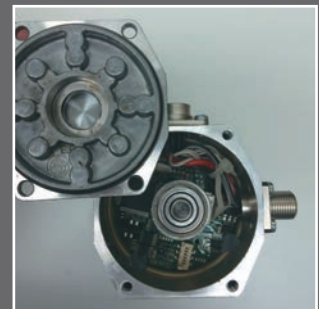
### Solution

Based on feedback from their customers, the engineering team decided to evaluate GORE® Protective Vents. Gore's application engineers collaborated with the Dunkermotoren engineers to evaluate several GORE® Protective Vents in both environmental

*"GORE® Protective Vents extend the life of our motors by achieving the durability of IP67 protection against exposure to harsh environments. Gore's engineers understood our requirements and worked like part of our team to ensure that our products deliver the performance our customers expect."*



Before Vent



After Vent

chamber tests and field tests. Based on the results of these tests and the need to integrate the vent into an existing product design, Gore recommended a GORE® Metal Vent. This vent equalizes pressure within the motor by maintaining sufficient airflow to allow air and moisture vapor to pass in and out of the enclosure freely. At the same time, the vent serves as a barrier to provide a high level of ingress protection (IP\*) against liquid, dirt, dust, salt and other contaminants. The rugged screw-in construction of GORE® Metal Vents extends the system's service life and is easy to integrate into new or existing product designs.



# GORE® Protective Vents

Solar Energy | CASE HISTORY

According to Will Vinson, President of Dunkermotoren USA, Inc., a division of AMETEK Precision Motion Control, their goal was to develop a more durable product to exceed service-life expectations. “With our new STM™ product, we wanted to deliver a tracking system that would last for the expected life of the solar energy system — more than 20 years. GORE® Protective Vents extended the life of our motors by achieving the durability of IP67 protection against exposure to harsh environments. Gore’s engineers understood our requirements and worked like part of our team to ensure that our products deliver the performance our customers expect.”

## Diverse Product Line Engineered for Simple Integration

GORE® Protective Vents are manufactured in many different sizes and shapes, making it easy to choose the optimal vent to meet the design and performance requirements of a specific application. 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 150°C
- can meet protection standards up to IP69K
- install easily by being adhered, threaded, snapped or heat/ultrasonic-welded to a variety of enclosure materials



## The Gore Advantage

Gore is a technology-driven company focused on product innovation. Well-known for waterproof, breathable GORE-TEX® fabric, the company’s products have remained on the forefront of creative solutions because they are engineered specifically for applications that require durable performance and long service life.

For almost thirty years, Gore has delivered venting solutions for outdoor equipment installed throughout the world. Engineered with high-performance materials and technology, Gore’s vents are backed by years of research and testing to help extend product life and enhance reliable performance — all to ensure that they meet the application demands of today’s technology.

Headquartered in the United States, Gore employs approximately 10,000 associates in 30 countries worldwide. Learn more at [gore.com/protectivevents](http://gore.com/protectivevents).



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France	33.1.5695.6565	South Africa	27.11.894.2248
Germany	49.89.4612.2211	South America	55.11.5502.7800
India	91.22.6768.7000	Spain	34.93.480.6900
Italy	39.045.6209.240	Taiwan	886.2.2173.7799
Japan	81.3.6746.2572	United Kingdom	44.1506.460123
Korea	82.2.393.3411	USA	1.410.392.4440

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