

WIND TURBINES CASE STUDY

Improving Wind Turbine Performance with Filtration



How a Global Wind Turbine Manufacturer Eliminated Pollen-Related Shutdowns and Improved Energy Output Using Prevent Filters from Permatron.

Background

The company involved in this case study is a multi-national manufacturer of wind turbines that meets the needs of alternative energy production worldwide. Despite having the turbines installed in the ideal location, seasonal conditions brought upon a unique set of issues that required technical support to resolve. Total Filtration Services partnered with Permatron to resolve their concerns with a simple but effective filtration solution.

Challenges

The customer had installed a base of turbines in areas that are often flat and sparsely inhabited. As it turns out, these optimal conditions often occur in farmlands. In those areas where corn fields are nearby, seasonal conditions can lead to corn pollen entering the turbine compartment and fouling the impeller. This fouling impacts the speed and efficiency of the turbine's rotational energy leading which in turn, triggers an alarm on that particular unit.

The previous solution to this challenge required the owner of that unit to send a technician to the location to clean the unit. This entailed traveling to the often-remote location, climbing the tower to enter the unit, cleaning the foulant and then resetting the alarm. In several cases, during the peak pollination season, this was a daily occurrence.

Results

TFS, working with one of its trusted manufacturing partners, Permatron, proposed the installation of their PreVent System screens at the inlets to their turbine's impeller enclosures. The PreVent technology incorporates an electrostatically-charged material that enables the attraction/capture of airborne particles

much smaller than the mesh size of the screen while having a negligible effect on air flow.

TFS worked with the customer to best identify those locations that might see the best use of these filters and helped to specify the correct size and model of PreVent screens.

The most obvious benefit discovered by the customer after installation of PreVent screens was the reduction of alarm events due to seasonal pollen issues. In fact, even those areas with daily alarms saw zero alarms after installation.

The customer experienced not only a reduction in the labor/time spent on addressing these daily occurrences, but increased energy conversion as the pollen no longer impacted the efficiency of the turbine's impellers.

As the PreVent screens are washable/reusable, the customer now incorporates these filters on most new installations as a standard practice. The PreVent System is UV protected for indoor or outdoor use, and available with multiple mounting options.

A simple and effective product like the PreVent System for air intake protection will help preserve equipment, and make costly cleaning downtime a thing of the past.

“Seasonal conditions & environmental elements can lead to air intake fouling of critical electronic components.”

Henry Frank

Territory Manager, Total Filtration Services



PreVent filters

are a simple solution, affixed to the outside of an air intake, for easy access and fast maintenance.