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Vortex Generating Sand and Snow Fence

Researchers at the University of South Florida have developed a new technology that addresses problems with currently used sand and snow fence designs. In particular, this fence addresses problems with sand and snow scouring created when the wind direction does not align at the optimum angle with fence made with rectangular slats.

Current designs of sand and snow fencing are installed to work at an optimum angle with the prevailing wind direction, which is not always consistent when windy storm conditions move through an area. Lack of consistent vortex generation is a common problem with current designs because the maximum efficiency of rectangular slats occurs only when the wind direction aligns in an optimum angle relative to the fence slats.

USF inventors have created a novel fence design that employs triangular slats versus rectangular slats. By arranging these triangular slats correctly, one can eliminate parallel surfaces through which air moves. Moving air through nonparallel surfaces causes vortices that allow airborne particles (sand or snow) to be trapped in the vortex and fall out of transport. The variable nature of wind direction and speed as air moves through the fence panels alter and create new vortices. As each vortex traps airborne particles, when that vortex breaks down or alters, trapped particles drop out of transport and deposit on the downwind-side of the fence slats regardless of the wind direction. Thus, the new design is equally efficient in all wind directions.

ADVANTAGES:

- **Air flow is not compressed or accelerated**
- **Triangular slats disrupt air flow and generates vortices**
- **Equally efficient in all wind directions**

Robust Structure Sufficient to Survive Extreme Weather

The Above Image is a Photograph of the Mockup of the Snow / Sand Fence Created by our Researchers

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