WXGUARD SEGMENTED LIGHTNING DIVERTER STRIPS
REPEAT STRIKE CAPABILITY FOR WIND TURBINES

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REPEAT STRIKE CAPABILITY FOR WIND TURBINES

Shine Wire Products is proud to introduce our new line of WXGuard segmented lightning diverter strips for wind turbines. WXGuard is the new generation of segmented lightning diverters with increased survivability against rain erosion and stronger adhesion properties than traditional diverters.

WXGuard's unbeatable performance is founded on its patented aerospace-quality laminate. This laminate is the platform with the mechanical strength and toughness that allows our diverters to withstand the wind turbine environment. We pushed the envelope further with a micro-etched laminate surface. This finely prepared surface finish allows adhesive to grip the laminate without the additional sanding and prep work traditional diverter require.

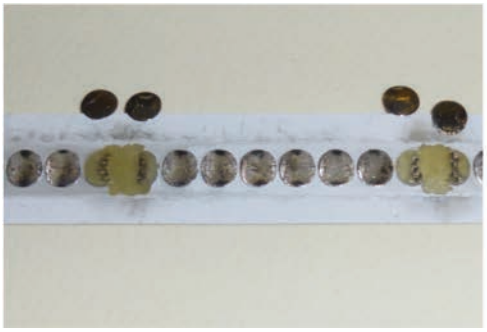
Finally, we attached our gold plated segments to our laminate with multiple thru-holes per segment, up to twice as many as our competitors.

Why go through all this effort for a lightning diverter? Safety and Reliability.

It pays to have the most durable lightning diverter available so that when the big strike occurs, the lightning diverter does its job to protect the blade. Wind turbines can suffer several strikes during a year, and lightning diverters must be able to withstand multiple lightning strikes. Lightning strike testing was performed on WXGuard and standard segmented lightning diverters to evaluate their ability to withstand multiple lightning strikes. The tests[1] found that several of the metal segments from a STANDARD DIVERTER were ejected after THREE 50kA strikes. In comparison, ALL of WXGuard's metal segments remained intact after SIXTEEN 123kA to 235kA strikes.

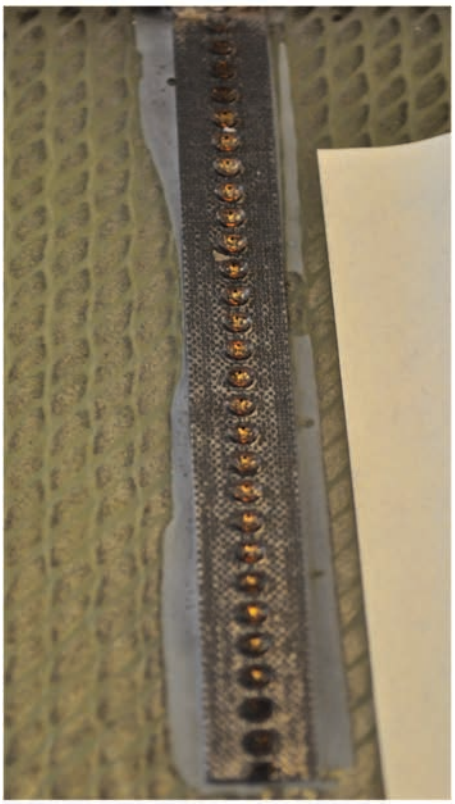
[1] Lightning testing conducted in October 2012 and January/February 2014

Standard Diverter - Fails after 3 Tests



Test Number	Peak Current	Specific Energy
Test 1	52kA	0.064 MJ/ohm
Test 2	50kA	0.061 MJ/ohm
Test 3	51kA	0.061 MJ/ohm

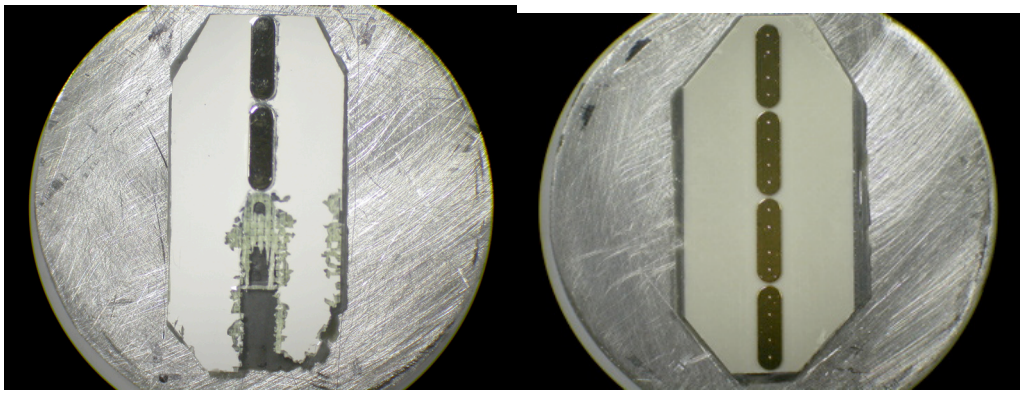
WXGuard Diverter - Still Going after 16 Strikes!



Test Number	Peak Current	Specific Energy
Test 1	130kA	2.3 MJ/ohm
Test 2	130kA	2.3 MJ/ohm
Test 3	125kA	2.0 MJ/ohm
Test 4	123kA	2.0 MJ/ohm
Test 5	180kA	4.7 MJ/ohm
Test 6	235kA	6.3 MJ/ohm
Test 7	227kA	3.9 MJ/ohm
Test 8	226kA	3.6 MJ/ohm
Test 9	218kA	3.3 MJ/ohm
Test 10	214kA	3.5 MJ/ohm
Test 11	213kA	5.8 MJ/ohm
Test 12	206kA	5.8 MJ/ohm
Test 13	212kA	5.9 MJ/ohm
Test 14	215kA	6.1 MJ/ohm
Test 15	219kA	6.2 MJ/ohm
Test 16	225kA	8.5 MJ/ohm

Since rain erosion is the most common failure mode of traditional segmented diverters, reducing failures due to erosion means better protection.

How do WXGuard lightning diverters compare to traditional diverters in rain erosion? Take a look at the rain erosion test samples below. There is no comparison. WXGuard wins hands-down.



Standard Diverter WXGuard Diverter

WXGuard diverters are a direct replacement for traditional diverters and are available in two styles: Large round and small round segments. The type for your application depends on the construction of the blade and your existing blade lightning protection system.

WXGuard is applied to the blade's surface using standard industry adhesives, such as 3M Epoxy Adhesive 2216. WXGuard is also available with 3M pressure sensitive adhesive tape.

Remember, a working diverter is a protecting diverter. If your blades are using traditional segmented diverters, check your diverter today. If you have a problem or need more information about WXGuard, contact Greg Shine at 1-800-543-5151 or email wxguard@shinewire.com.