



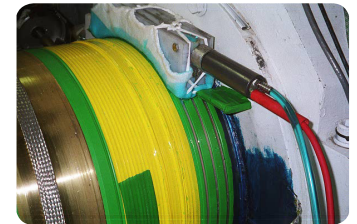
Wind Turbine Slip Ring Repair

The three slip rings on a 480 Volt, 28 Amp Westinghouse WWG-0600 Wind Turbine Generator were repaired in-situ, approximately 100 feet above ground, with the portable SIFCO Process of selective (brush) plating.

The three slip ring areas are 18" in diameter, 1/4" wide and approximately 1/4" deep. These OEM, copper based slip rings were molded together with epoxy to isolate them. The molded slip ring assembly was originally tank electroplated with 0.0015" silver. Premature failure occurred as graphite contacts eroded the silver. The contacts caused the silver to be "ground" into a dust, which when combined with the light lube coating created an abrasive paste that completely wore through the silver and into the copper substrate.

These photographs show how the slip rings on the wind turbine were repaired in place. A thickness of 0.030" of copper was brush plated to resize the worn diameters. The grooves were then dressed back with a standard file and sandpaper until plan dimensions were achieved. After dressing the plated copper deposit, 0.003" thick layer of silver was then brush plated for improved conductivity.

Brush plating provided a viable, cost effective alternative to removing and reinstalling the entire assembly after repairing it on the bench. The R&R operation was estimated to be a 10 to 14 day, \$100,000 job. The brush plating repair was completed in approximately 40 hours with less than \$1,000 in material costs.



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