

## PREVENTING WIND TURBINE SLIP-RING DEBRIS BUILD-UP

### INDUSTRY:

Power & Utility

### APPLICATION:

Wind Turbine

### COMPONENT:

Slip-Ring

### LOCATION:

Germany



## BACKGROUND

A European manufacturer of industrial materials and electrical components contacted Nye about a grease they were using that was forming a black debris around the lubricated slip-rings used in their wind turbines. The slip-rings, made from gold rings and gold fingers, help to facilitate signal and power connections between the rotating blade shaft and stationary generator of the wind turbine. The slip-rings ride along as the assembly rotates. A lubricant is needed to protect the metal surfaces and prevent wear.

## CHALLENGE

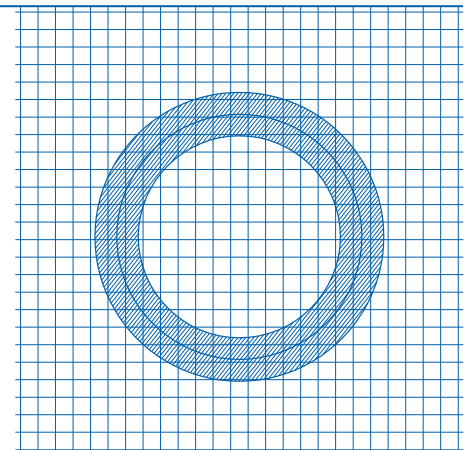
- Can the lubricant eliminate the formation of debris over time?

## SOLUTION

### UNIFLOR™ 8950

A light viscosity, completely fluorinated oil.

- PFPE lubricant that is resistant to aggressive chemicals
- Very wide temperature capability
- Excellent oxidation resistance and compatibility with plastics/elastomers



## RESULTS

Through testing, Nye was able to conclude that the previous hydrocarbon lubricant used by the manufacturer was being applied with aerosol spray cans, thus contaminating the slip rings during assembly. Nye suggested that they use a PFPE lubricant instead and adjust their application methods. This involved changing the cleaning solvent used to prepare the slip ring surfaces for the PFPE oil. At our suggestion, they changed from a fluorohexane to a hydro-fluoroether that could remove hydrocarbon contamination as well as PFPE contamination. The company decided to replace the previous lubricant with Unifor™ 8950 after it successfully resisted the generation of black debris in testing.

Base Oil Properties	Conditions	Uniflor™ 8950	Test Method
Chemistry		PFPE / PTFE	
Temperature Range		-90 to 225°C	
Kinematic Viscosity	40°C	17.7 cSt	ASTM D-445
	100°C	5.6 cSt	
Viscosity Index		300	ASTM D-2270
<b>Grease Properties</b>			
Flash Point		None, Non-Flammable	ASTM D-92
Pour Point		-90°C	ASTM D-97
Evaporation	22 hrs, 150°C	6%	ASTM D-972
Density	20°C	1.824 g/cm <sup>3</sup>	ASTM D-1480

Since 1844: Our performance is reflected in the value we bring to our customers.

Nye Lubricants is a leader in the innovation, formulation and provision of synthetic lubricants, enabling and improving breakthrough products and critical new technologies. We bring proven experience, deep technical knowledge and customer focus to solve our customers' toughest challenges, adding tangible value to products in a wide range of industries and applications.

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