Issue

In coastal environments, Hybrid XT turbine control sensors may develop corrosion to the head and heater assembly when the heater wiring is improperly configured. This condition can develop within 2 – 4 weeks of installation and exists only where ungrounded DC power is used and the Hybrid XT sensors are installed in a saline environment.

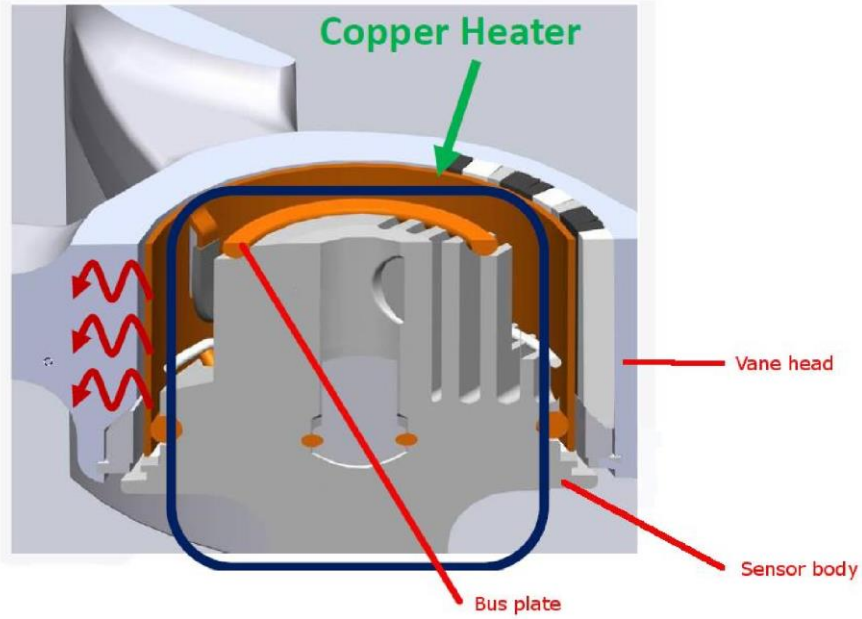
Concentration of salinity in the air (greater than 1.5 parts per thousand), wind speed, and frequency of rain will all affect how quickly corrosion develops. However, salinity is the most important factor.

Scope

This bulletin applies to Hybrid XT vanes and anemometers installed on wind turbines in coastal/saline environments where the sensor's heater circuit is powered by DC. This bulletin does not apply to older Hybrid or IceFree3 sensors.

Description of Issue

The Hybrid XT's heating element is a small, cylindrical, copper assembly located underneath the head of the sensor. In order to create heat, current flows through a set of resistors between an interior bus plate and an exterior, cylindrical "can."



When DC voltage is used to power the heater, the exterior can of the heater must be grounded. However, if the heater is not properly grounded, there will be a voltage difference between the heater and the grounded sensor body. Applying DC power under these conditions in a saline environment can cause excessive corrosion. This is due to an electrolytic reaction between metals in the sensor head, body, and heater. This reaction does not occur when heaters are powered by AC voltage.

Symptoms

When left improperly grounded, excessive corrosion will rapidly occur and may cause the sensor to fail and/or blow a fuse in the heater circuit. Corroded heaters and normal heaters are shown below.

Normal heater

Normal head

Minor corrosion, working heater

Minor corrosion

Minor corrosion, working heater

Minor corrosion

Excessive corrosion, failed heater

Excessive corrosion

Resolution

Immediately verify and correct the wiring of the heater circuit on all Hybrid XT sensors using DC voltage to power the heaters. Hybrid XT wiring instructions appear below.

Description	Wire Color, Gauge
Heater -	Orange/White, 20 AWG
Heater +	Orange/Black, 20 AWG

****When powering the sensor heater with DC power, Orange/White needs to be connected to DC Ground (-) and Orange/Black to 24V DC (+). When using AC power, the wiring order does not matter.**

Although this corrosion has only been seen on Hybrid XT vanes, we recommend that both vanes and anemometers be rewired to remove any chance of sensor head corrosion in the future.

NRG will replace any Hybrid XT vanes purchased and installed before January 16, 2017 that exhibit this issue. Please contact NRG Technical Services to arrange for warranty replacements.

Technical Support is available 8:30 a.m. to 5:00 p.m. EST, Monday through Friday.
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