

Check for dust or oil in the Slipring

Does this solve the problem?

- 1] Yes
- 2] No
- 3] I don't know

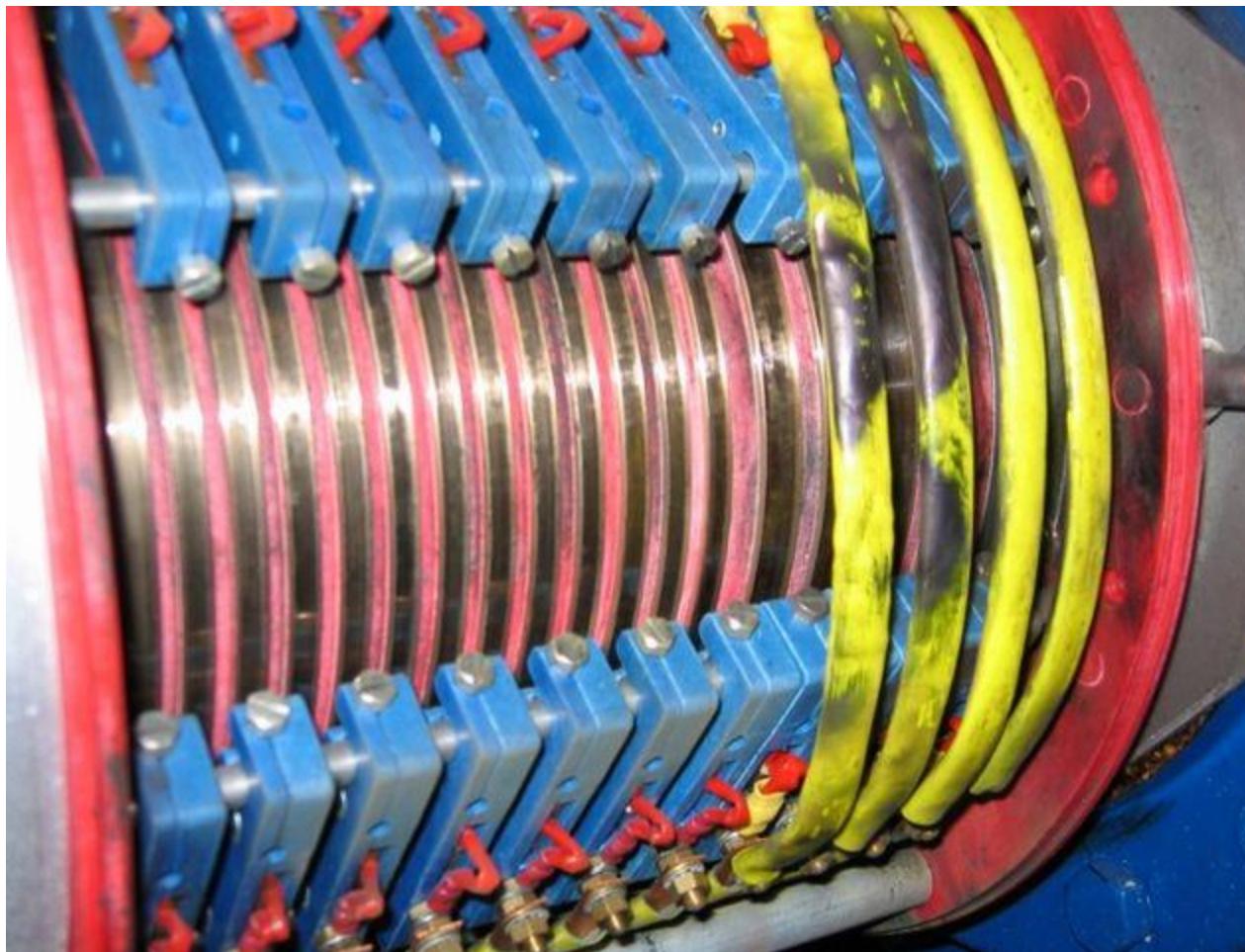
- **Explanation**

In most instances, a bad connection at the slip ring causes this alarm. Remove the -X360-3 plug at the slipring, attempt to reset the F03 breaker in the AN1 panel. If the breaker resets, plug the –X360-3 cable back into the slipring. If the breaker trips investigate the slip ring for damage, dust or oil contamination.

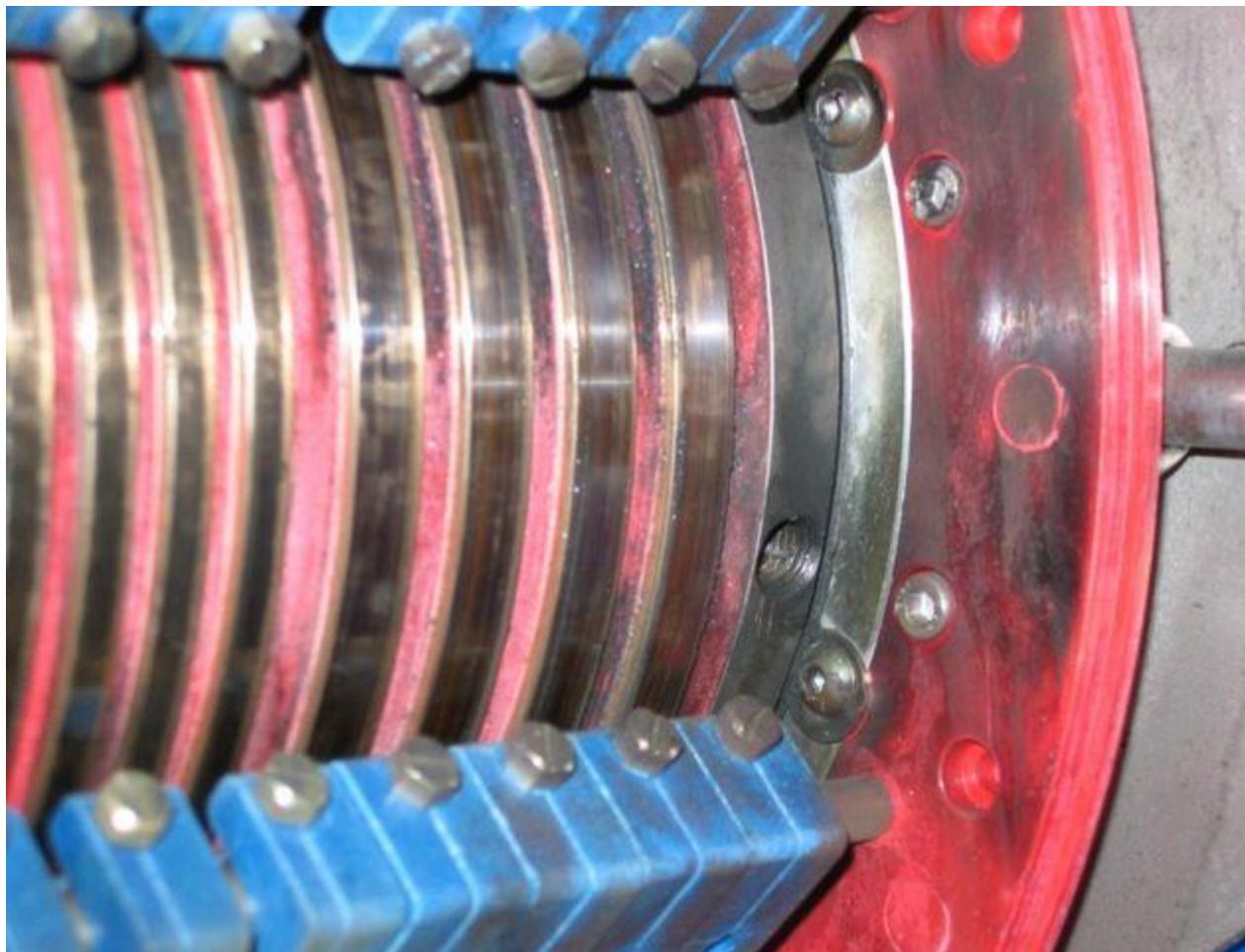
Relevant documentation	
Description	DMS No.
Cleaning Procedure for Slipring Unit	0001-4933

Use above document as a guideline.

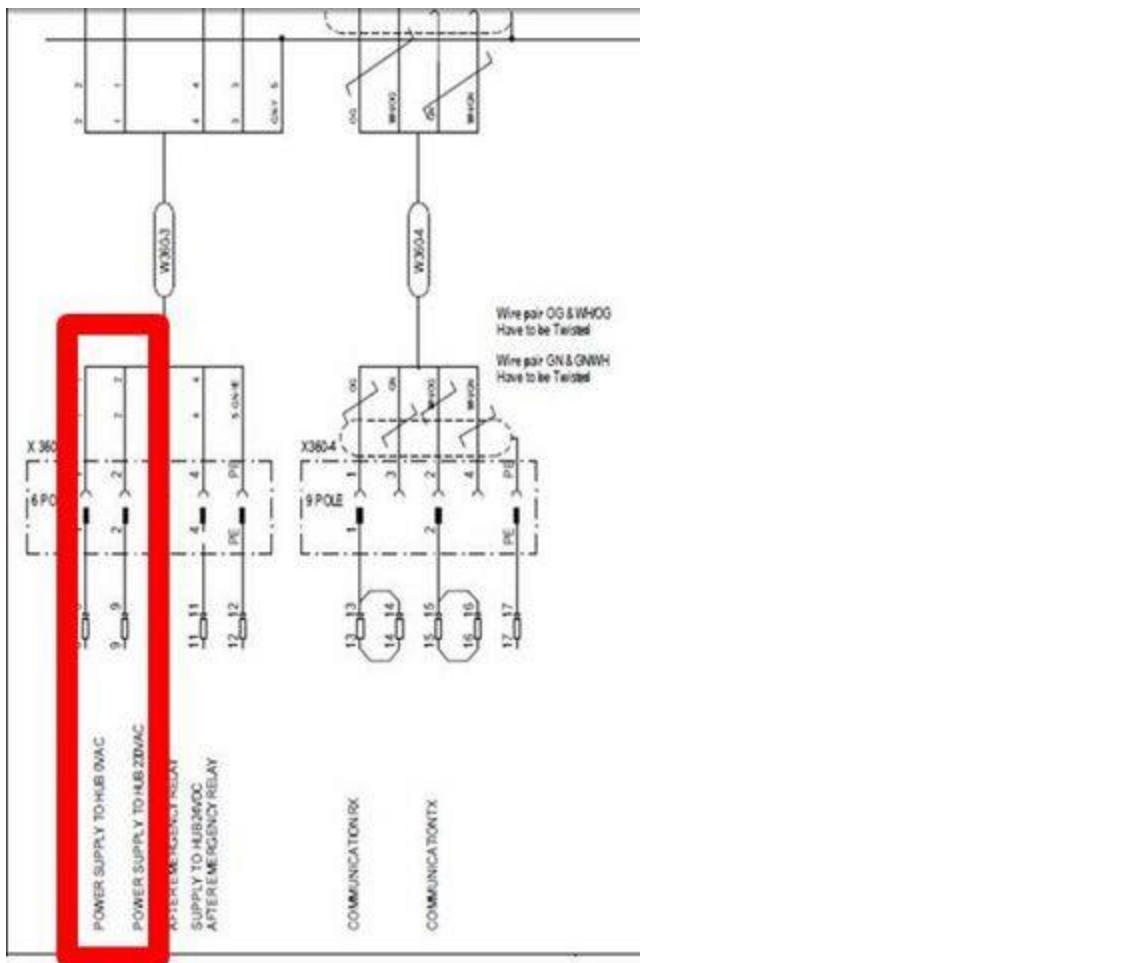
Contaminated Slipring:



Dust buildup and contamination on spring:



Pay particularly close attention to brushes on rings for 230VAC supply to hub:



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Inspect transformer and power supply

Does this solve the problem?

- 1] Yes
- 2] No
- 3] I don't know

- **Explanation**

Disconnect the –X05 plug from the AK4 panel. Attempt to reset the F03 breaker in the AN1.

Reset the turbine to clear the alarm.

Replace the –X05 plug at the AK4 panel, if the breaker trips when the plug is connected, there is likely a short in the transformer or one of the power supplies.

Inspect breaker and replace as needed.

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

If the F03 breaker continues to trip when reset and no short circuit can be found, replace the circuit breaker and auxiliary contact.

Relevant spare parts

Description	Item No.
MCB 5SX22107 10.0A C 2P	60005160
AUX CONTACT 5SX9100	60005193

Investigate CB Tripped Circuit

Does this solve the problem?

1] Yes

2] No

3] I don't know

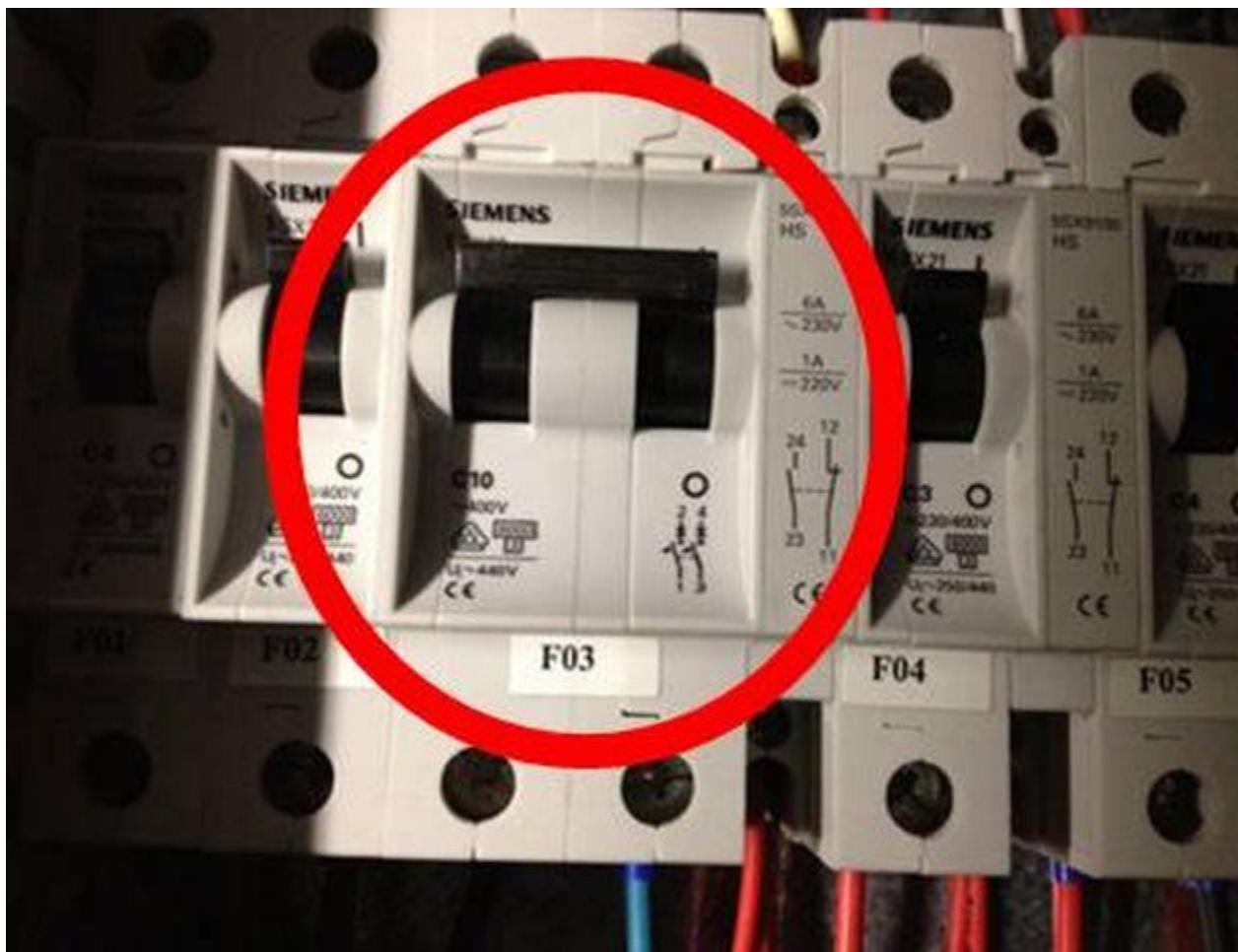
- **Explanation**

Check the input to the TOI in the nacelle from VOB or in the turbine.

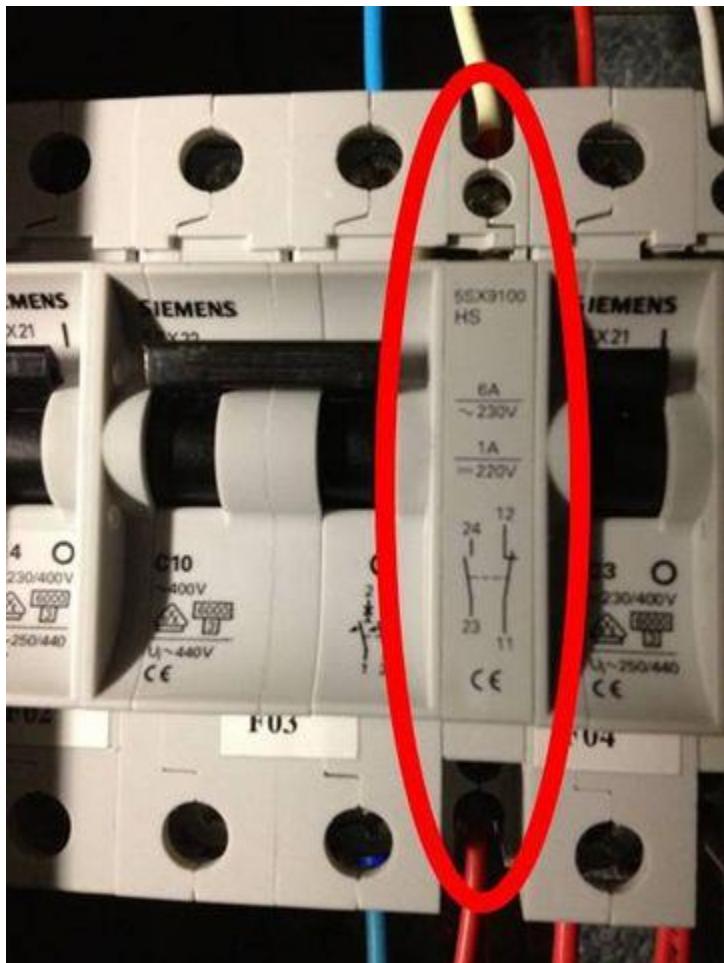
Status=> Service=> Input/Output=> INPUT CB Tripped Hub Supply=> (On or Off). If the input is ON, it was likely a signal error and the turbine can be reset. If the turbine trips again and the signal is on when checked, investigate the signal circuit in the AN1 Top Box.

In the AN1, check the aux contact at the F03 breaker. The F03 breaker interrupts the 230VAC hub supply circuit and is equipped with an auxiliary contact for signalling breaker position to the TOI.

F03 Breaker in AN1:



Auxiliary contact for CB Tripped signal to TOI:



With the breaker open, measure for 24VDC between terminals 23 & 24 on the Auxiliary contact. If there is no supply or the supply is intermittent, follow the 24VDC back to the power supply. However, if the 24VDC supply is off or intermittent at this auxiliary contact- there will be other alarms associated as 24vdc5 supplies many other signals e.g. CB TRIPPED VALVE SUPPLY, 24V SUPPLY OFF TOPBOX, FEEDER PUMP FILTER CLOGGED etc. If these alarms are not present, the 24vdc5 supply is likely stable and not the cause of the alarm.

Check that the wires in terminals 24 & 25 are tight and the crimped ends are in good condition.

Check the DEHNgard (F16)

Relevant spare parts

Description	Item No.
OVERVOLTAGE PROTECTOR 275FM	60000673



If the window is red, the device has detected an over voltage event and should be replaced when the cause is remedied.

CB Tripped hub supply on F16:



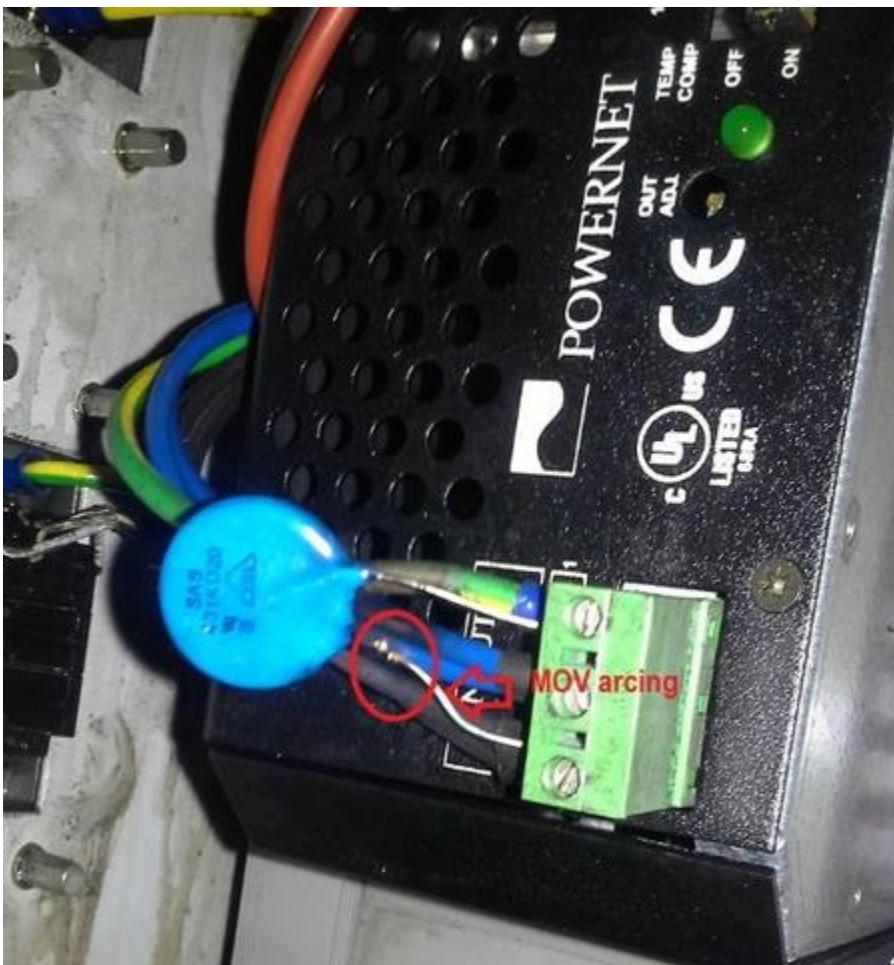
Replace the defective power net

Does this solve the problem?

- 1] Yes
- 2] No
- 3] I don't know

- **Explanation
IN THE HUB:**

Check any loose connection and damage in the varistor fixed on G401 and replace if required



Check for the surge protector upgrade in Power Net as per Doc 0013-3681 or 0033-3872.

Relevant Documentation	
Description	DMS No.
Test Proj Adnl Elec Prot V82	0013-3681
Test Proj Add Elec Prot V82	0033-3872

Check for any loose connections at the power net (Pos: G401/ G402).

Check input and output voltage 230/115VAC /24VDC

If defective replace the power net.



Relevant CIM case

CIM case	Task list	SWI
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<u>3624</u>		
<u>1390</u>		

Relevant spare parts	
Description	Item No.
PS ADC 5483R-3 10A-27,4 NM PIN	<u>188453</u>
VDR SIOV-S20K275 275V	<u>60000613</u>

Trace supply cable between AN1 and AK4

Does this solve the problem?

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- **Explanation**

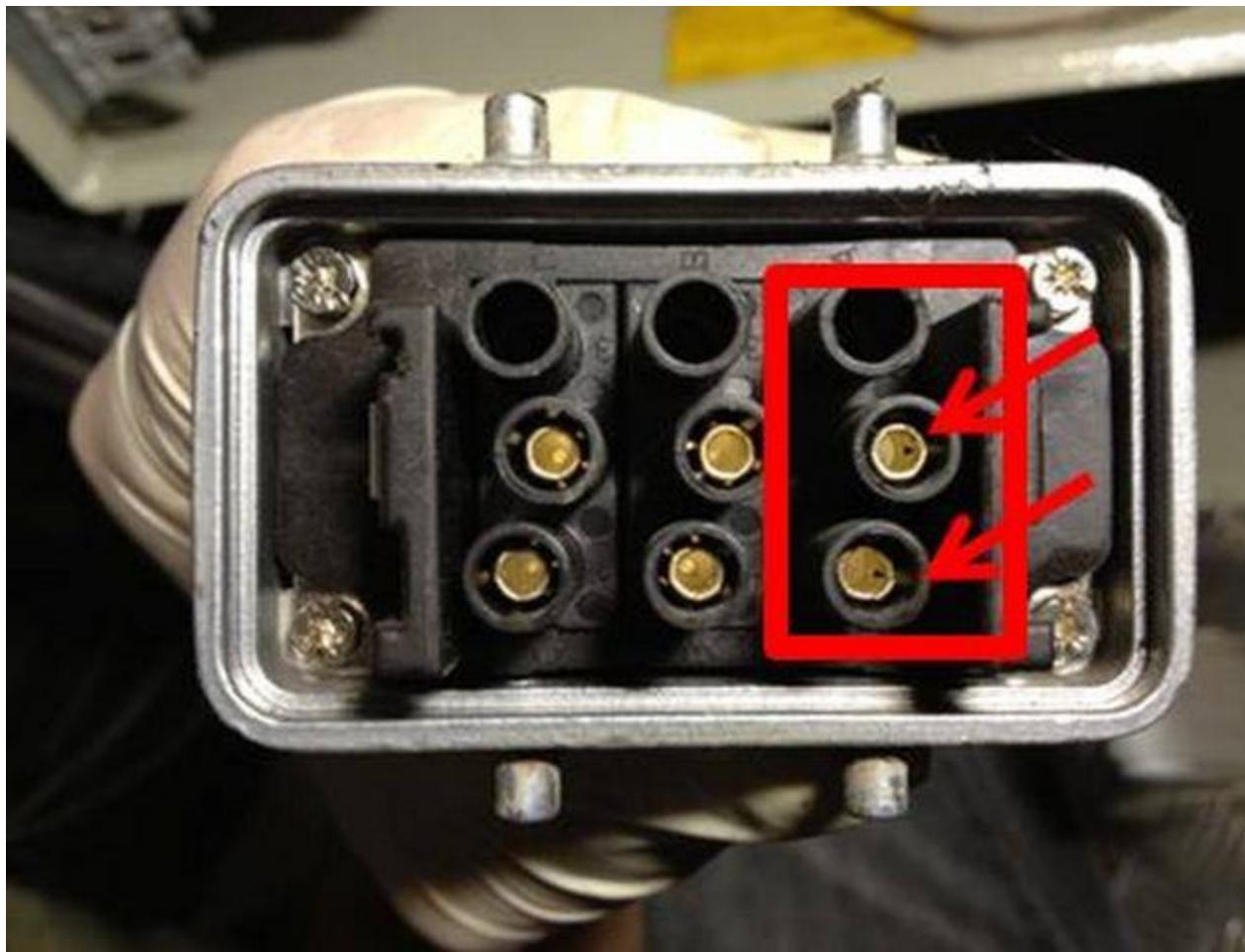
Check the condition of Amphenol plug x05 (supply) at the AK4 panel in the hub.

-X05 Amphenol plug (230VAC supply to the hub):



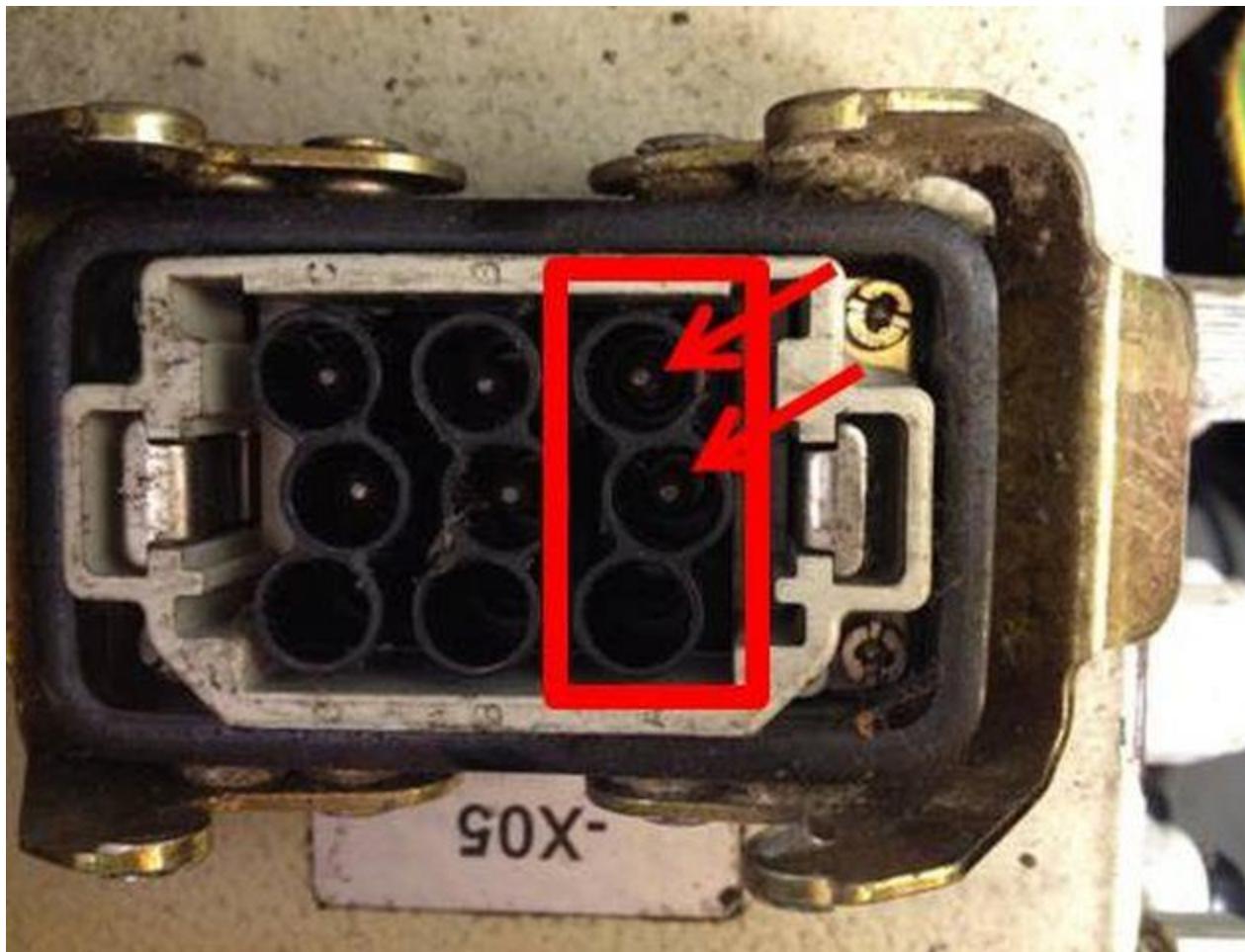
-X05 plug female pins:

Look for corrosion or broken pins on module A pins 1&2.



-X05 Male pins:

Look for corrosion or broken pins on module A pins 1&2.



230VAC supply cable from slip ring –W980:

Check the condition of the –W980 cable in the hub. Look for cracks or wear on the cable.



Perform a continuity check on the -W980 cable:

Relevant spare parts	
Description	Item No.
Cable W980 IEC Supply	<u>60021557</u>

WARNING: Ensure that proper LOTO procedures have been followed and no voltage is present on the

230VAC circuit before testing the cable.

Place a jumper between Pins 1 & 2 in module A of the Amphenol plug on the -W980 cable.



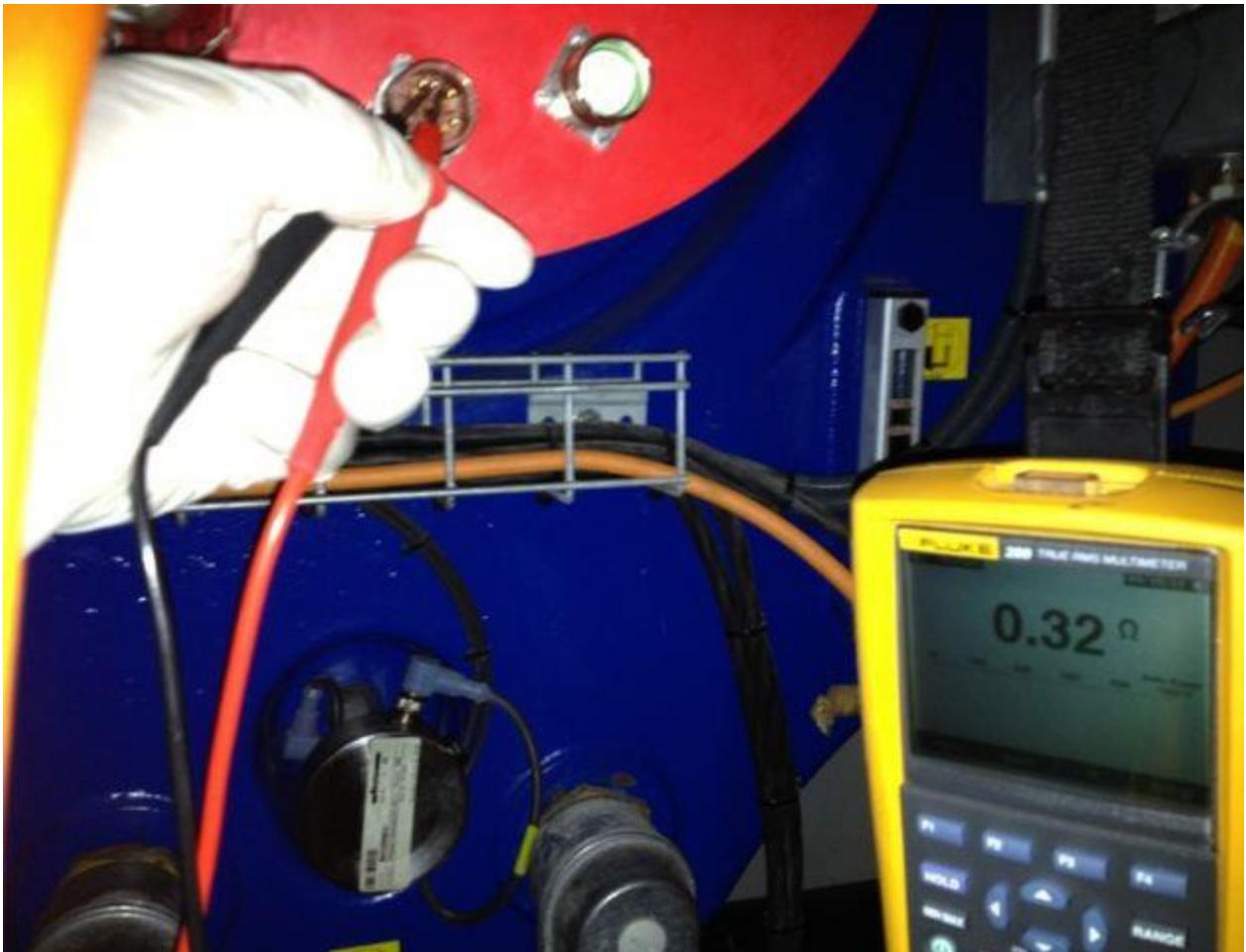
In the Nacelle, remove the -X360-3 plug from the slip ring.



With a multimeter set to read Ω , measure between pins 1 & 2.

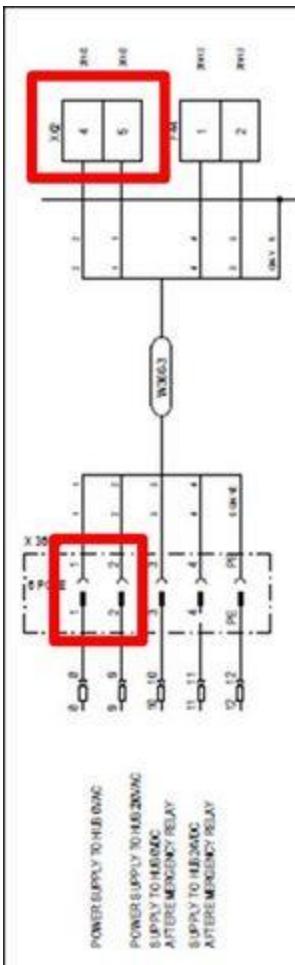


With the jumper in the hub, there should be a very low resistance value read by the meter.



Perform a continuity check on the -W360-3 cable between the slip ring and AN1 cabinet. Place a jumper between pins 1 & 2 on the -W360-3 Amphenol plug on the slirring. With the multi-meter set to read Ohms, measure between terminals 3 & 4 on the X02 terminal block in the AN1 cabinet.

-W360-3:



Only a very low resistance should be detected. Replace the cable if it is found to be defective.

Relevant spare parts	
Description	Item No.
CONTROL CABLE -W360-3 IEC/UL W: PLUG	60096029

Inspect and replace plugs/defective HUB Computer

Does this solve the problem?

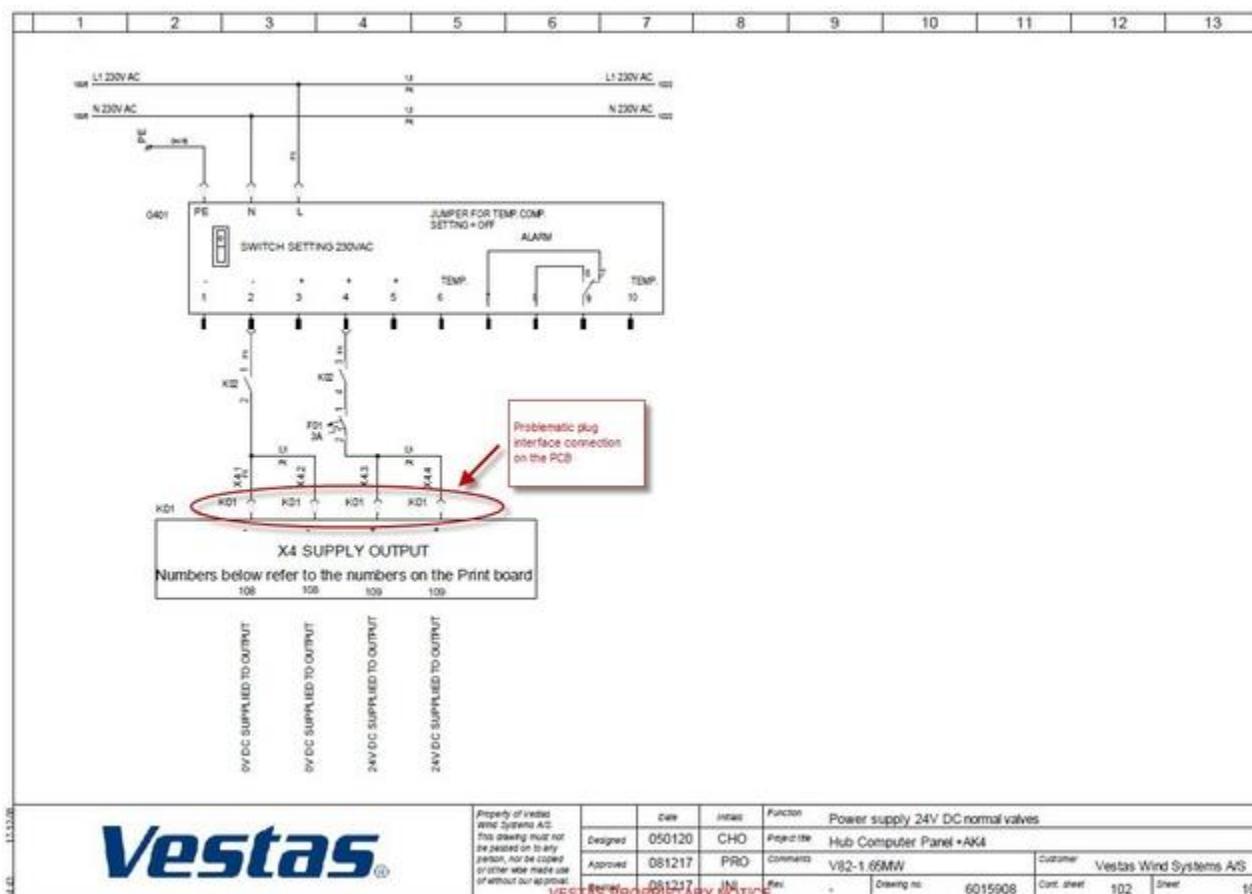
- 1] Yes
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- 3] I don't know

- **Explanation**

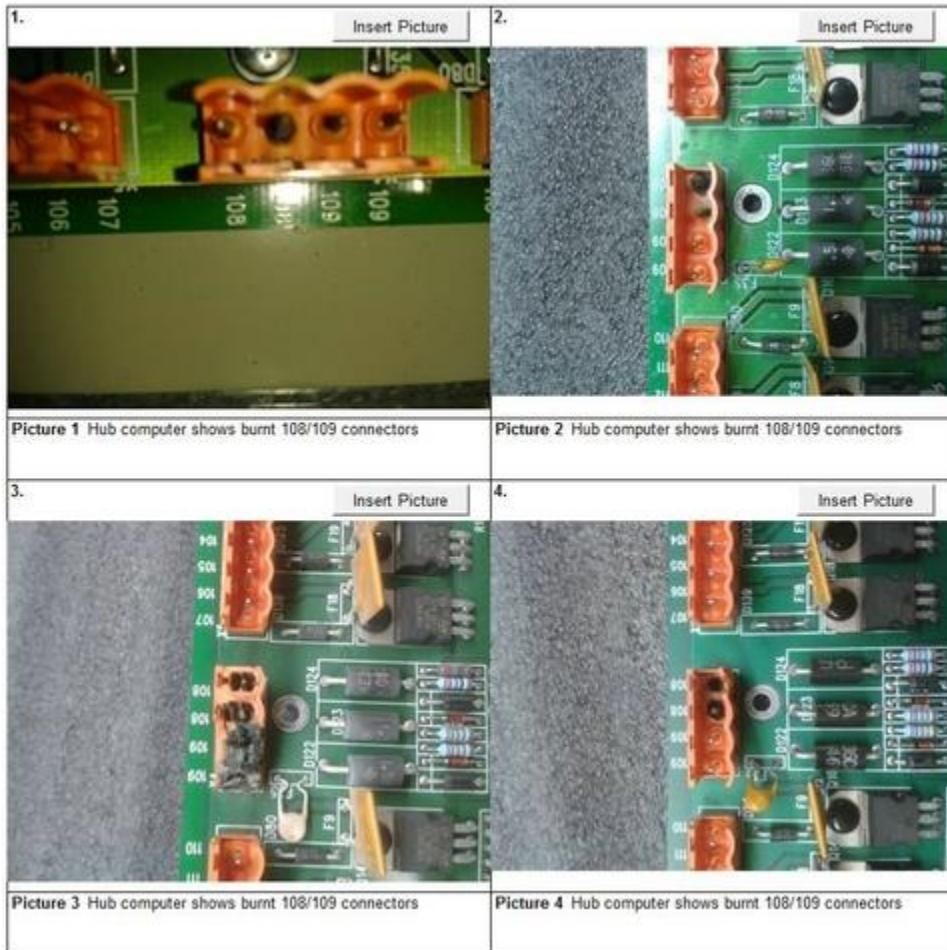
CIM 3410

Check 24V DC Power supply plug

The problem is relating to the X4 plug connection where the 24VDC is supplied to the HUB Controller.

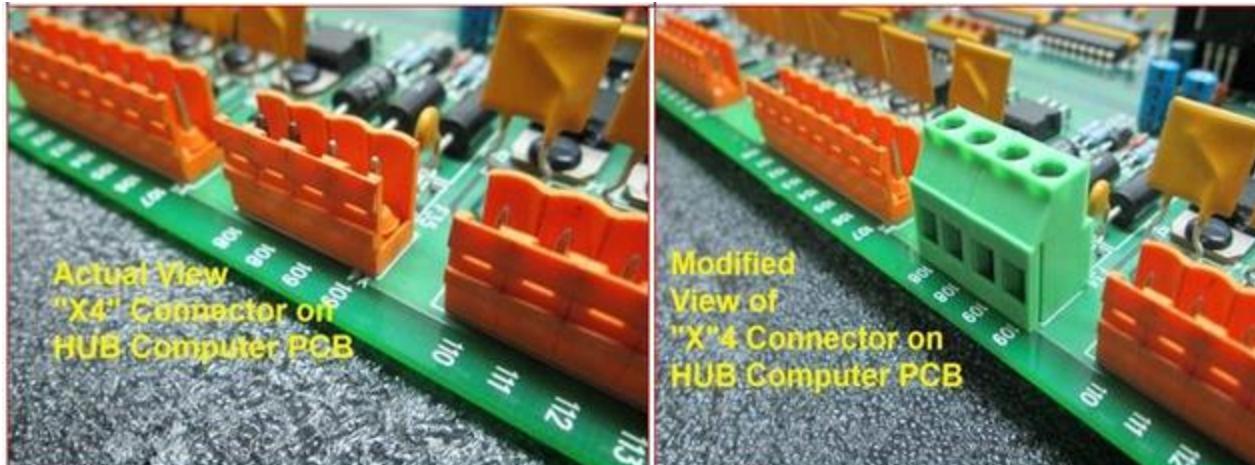


It has in many cases been seen that the plug connection have been overheated and burned as indicated on the below pictures.



The Minor Component Repair Team, has been requested to implement an improved interface on the PCB, so that the overheated connections could avoided.

Case creator have proposes a simple fix to mitigate the problem. Namely to install a screw terminal versus the existing pin plug connector.



Picture 5 Existing Plugin type connector

Picture 6 Proposed screw type connector

The proposed solution by case creator have been forwarded to the Minor Component repair Program, awaiting approval from technology responsible.

Description of action until a solution is in place.

If a HUB Computer fails in the field please replaced it with a new part and return the defective part for repair:

Relevant spare parts	
Description	Item No.
SIF HUB COMPUTER CABINET EVOII	51701801DEF

The CIM case [1594](#) is raised to address the issues with the Hub Computer, and any replacement cost should therefore go to that case.

This case is only to have the proposed repair solution implemented.

