Reset breaker

Does this solve the problem?

1] Yes

2] No

3] I don't know

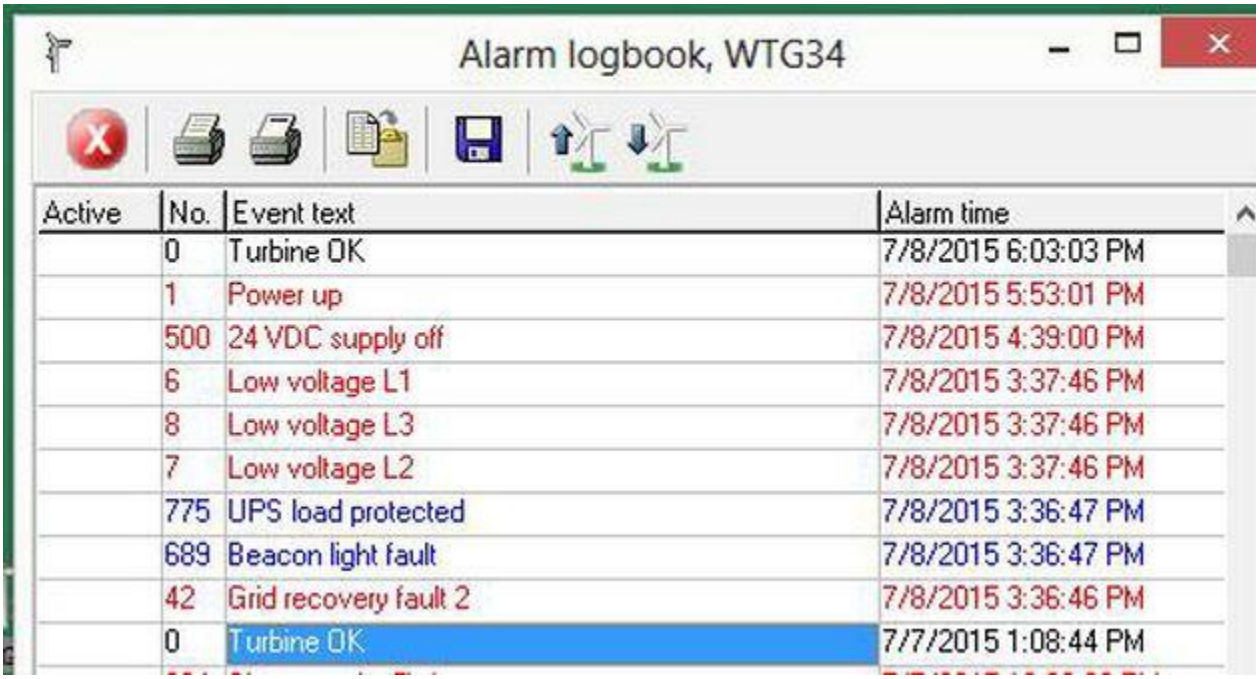
- **Explanation**

The main circuit breaker can trip in many ways, mostly its related to grid errors, but sometimes it´s also related to different turbine problems.

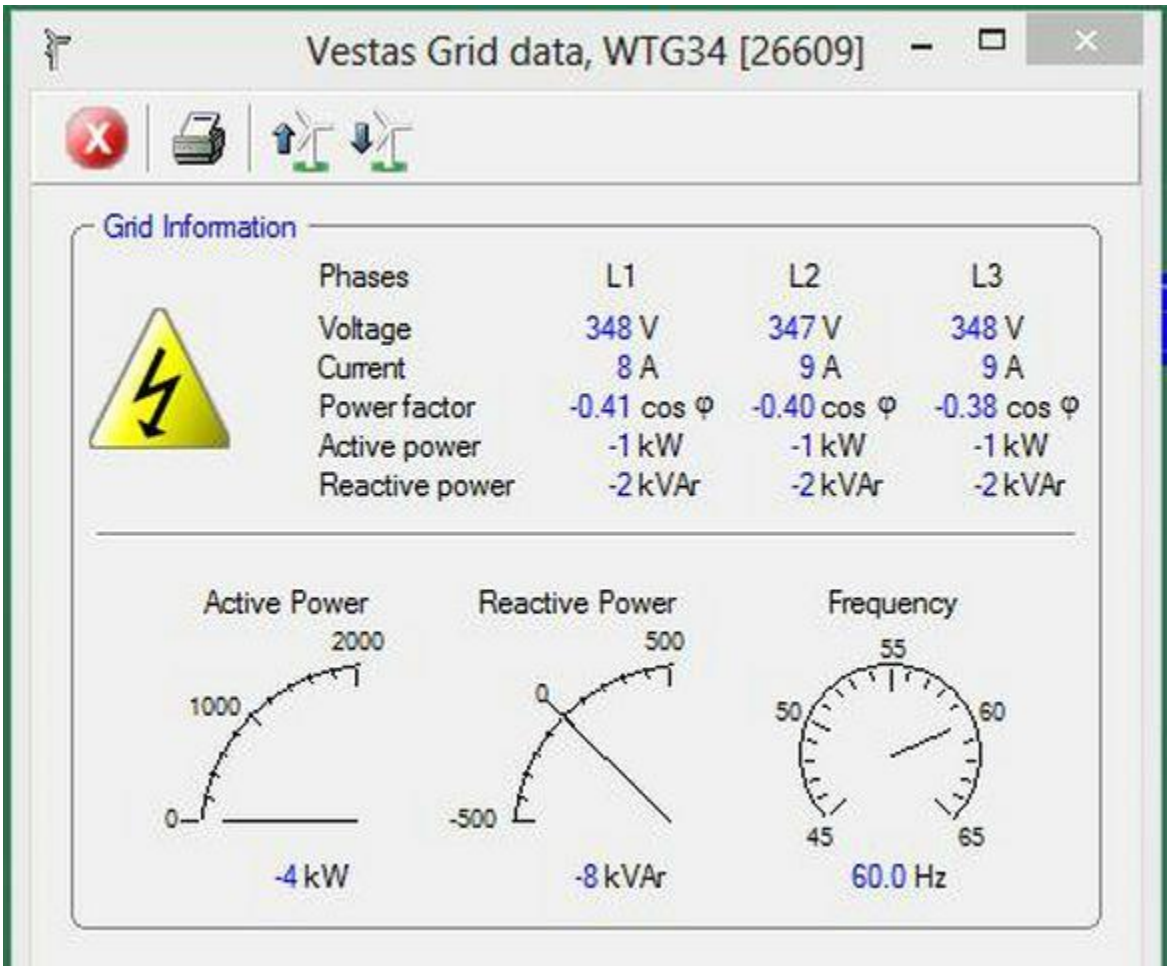
If Problem Occurred During/After Grid Event:

During grid events the turbine will often auto-reset prior to receiving feedback from F01 causing a “false” 504 alarm.

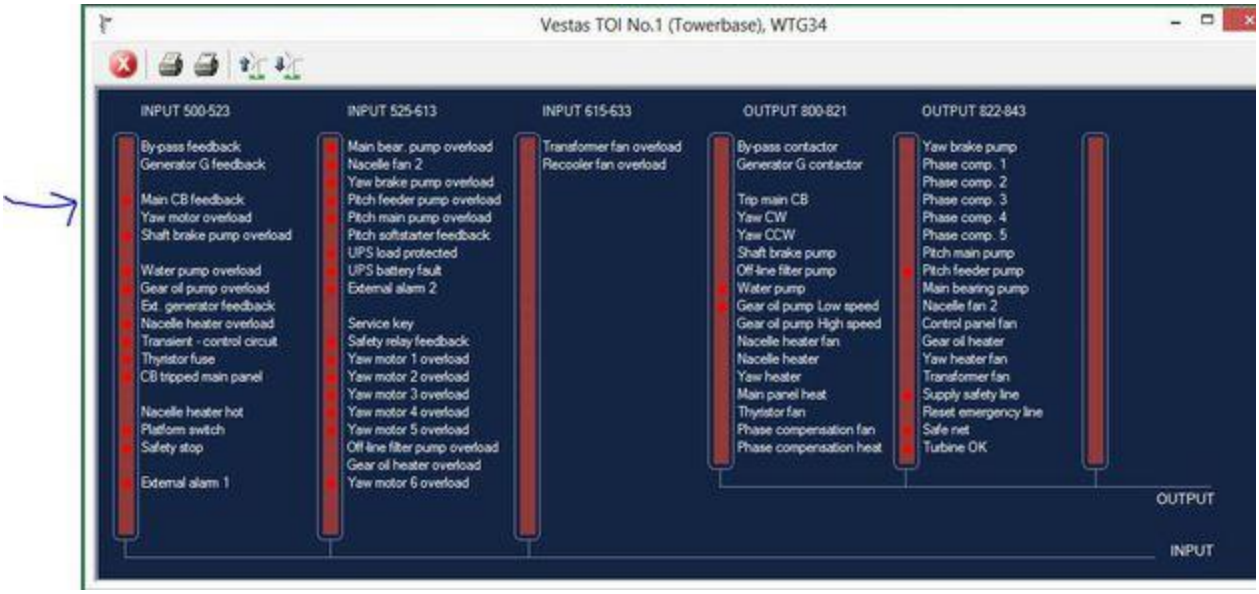
Check alarm log to see if a grid event has occurred and that the turbine is not in service mode (look for other grid or voltage alarms as seen in the below photo).



Check the turbine grid data to verify proper grid voltage (In VOB, right click turbine > online data > grid)



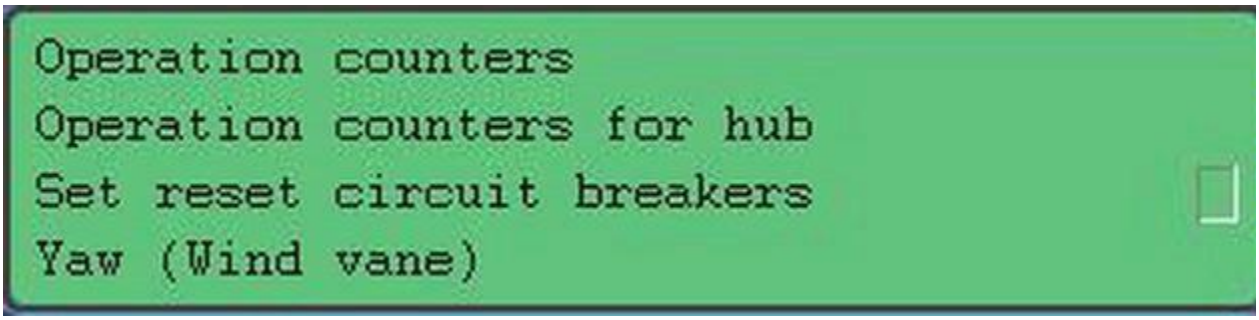
If alarm 504 is active after grid has been restored, check the TOI input for feedback from Main CB. If feedback is on, perform a reset. (In VOB, right click turbine – online data - TOI - TOI Tower Interface)



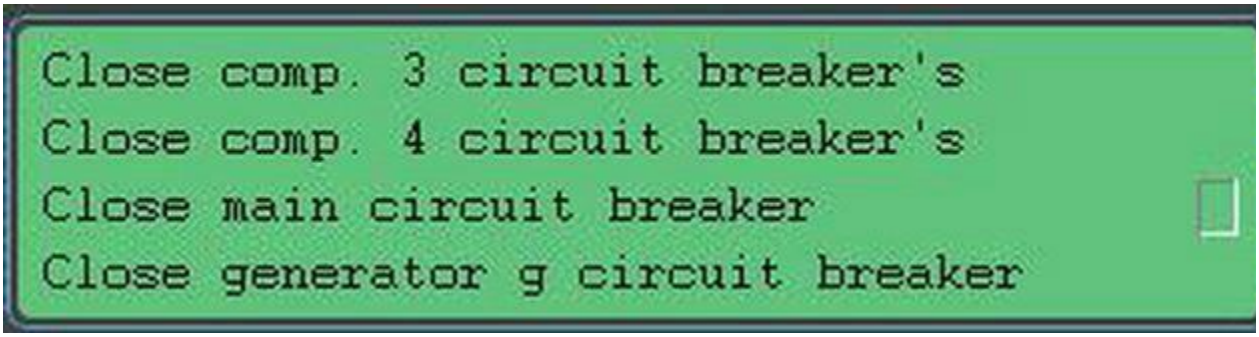
If not related to grid event and no one is in turbine:

- **Offshore models and all turbines above NM1500/64**, it is possible to reset the circuit breaker in remote:

[TAC menu] > [Service](1) > [Set reset circuit breakers]



Then:
[Close main circuit breaker] > [Close main circuit breaker]



Now you should be able to reset/start the turbine normally.
If the error reappears, a service team should be dispatch.

- **Below NM1500/64 or if you cannot find the menu**, the WTG doesn´t have automatic circuit breakers.

In that case, nothing can be done in remote and a service team should be dispatched.

Check alarm log to see if something indicates that this is caused by a person inside the turbine

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

The main CB **could also be trigged by personnel inside the turbine**.
Check alarm log to see if something indicates that this is caused by a person inside the turbine (Example: alarm 621-Service Key).

If YES, try to locate the person involved to notify, but **do not restart the WTG Remotely!**

Replace damaged cable sections

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

Check Generator cables for defects. If a section of cable is found to be defective- identify the root cause of cable damage, remedy the cause and replace the cable section.

Relevant documentation	
Description	**DMS No.**
Replacing Power Cables	0014-8672

Check and align the door limit switches.

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

Possible problem:

Incorrect alignment of door limit switches on +AT1 & +AT3

Solution:

Check and align the door limit switches. Improper alignment of these switches will cause nuisance trippings of MCCB while turbine running.

Door limit switch view:

Door limit switch in proper contact with panel door:

If Switch NO/NC contact problem, replace the switch.

Relevant spare parts	
Description	**Item No.**
DOOR-OPERATED SWITCH	60010456

Inspect the AT3 cabinet and components

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

Check Phase Compensation cabinet (AT3), damage could be addressed by CIM1993 and CIM1994. Check the CIM cases for the latest information regarding inspection, reporting and replacement of components.

Check the continuity of contactors individual phases and ensure no internal welding/ short circuit in the contact sets. Due to contact stuck, the fuse and MCB can trip.

Relevant CIM case		
CIM case	**Description**	**Tasklist**
1993	Controller - PFC Cabinet - V82-1.65 - The AT3 busbars are arcing and causing damage	12361
1994	Controller-AT3 Cabinet-V82 1.65. Conductors and fuses in the AT3 cabinet show signs of over heating	12516

Relevant spare parts	
Description	**Item No.**
CONT K350K10230 W/RC-UNIT 230V	60096832

Identify the loose connection

Does this solve the problem?

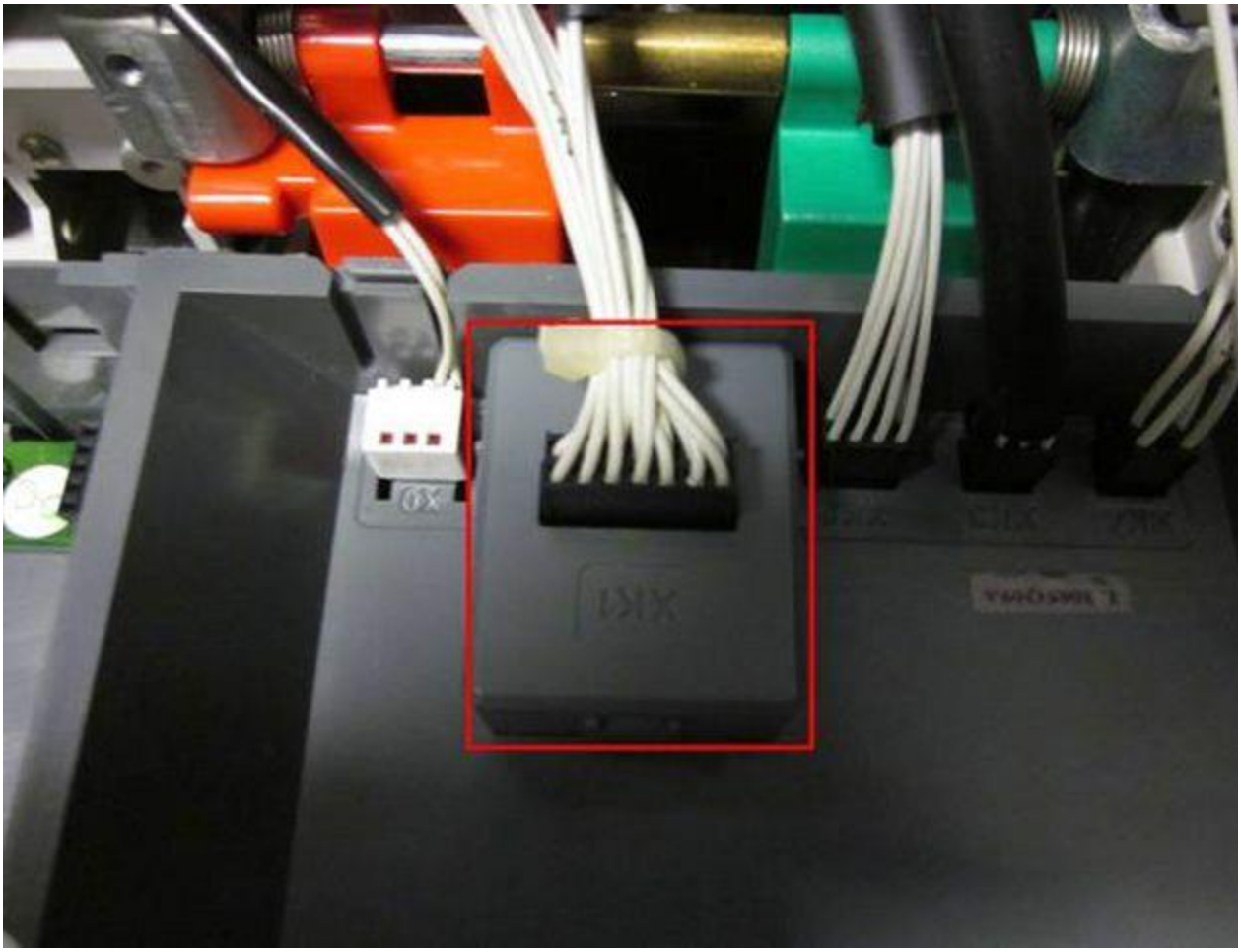
1] Yes

2] No

3] I don't know

- **Explanation**

Loose connections in the XK1 wires will cause 504- Main CB Tripped alarm in the turbine.



Identify the loose connection by using the program ABB SD Test Bus2 V3.20 - Ref: WI 0004-6840 Downloading Event Data from Emax Circuit Breakers.

Relevant documentation	
Description	**DMS No.**
Downloading Event Data from EMAX Breakers (Mk4+ 60Hz)	0004-6840

Check the Breaker Trip unit & Breaker Operation

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

  CIM case 1839 addresses the EMAX breakers on the V82 60Hz MK4 and above regarding nuisance trips. Check the

CIM cases for the latest information regarding inspection, reporting and replacement of components.

Failure of PR111/P relay also will cause the MCB trip

Relevant spare parts	
Description	**Item No.**
Relai tp. PR111/P LSIG	60078101

Relevant CIM case		
CIM case	**Description**	**Task list**
1839	Controller- ABB V82 EMAX E3 Breakers - Breakers trip without cause	12650

Relevant documentation	
Description	**DMS No.**
Downloading Event Data from EMAX Breakers (Mk4+ 60Hz)	0004-6840
Maintenance Instructions on E-max Air Circuit Breakers	0029-1747

Inspect and replace faulty contactors

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

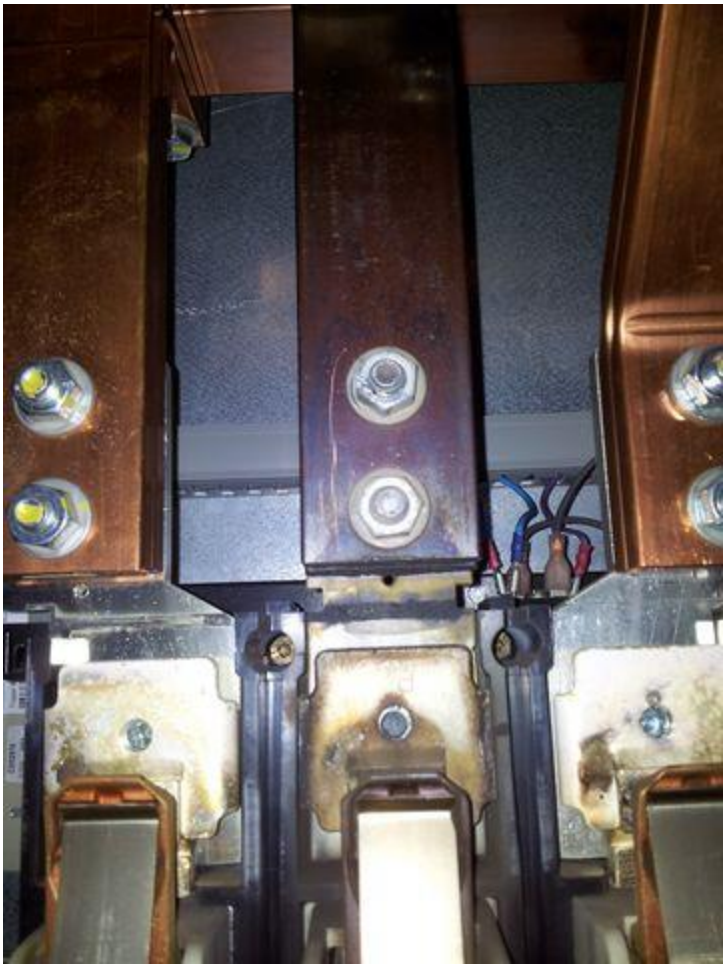
NOTE: Ensure all Vestas policies, local regulations and good practices are followed before entering the AT1 cabinet. Ensure all LOTO has been applied and reviewed.

In the AT1 Main Panel, inspect the main contactors K02, K01, K03. Open the contactor front covers and check for any visible signs of damage and/or burn marks.

Also check the copper bus bars for any damage, signs of burns, overheating or arcing.

Sites have experienced contactor damage and heat transfer to bus bars as a result which have also been damaged. Replace any defective contactors and damaged bus bars as required.

Relevant spare parts	
Description	**Item No.**
CONTACTOR	093693
BUSBAR KIT	60108673



Check generator and replace if needed.

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

  Check the generator. When taking measurements on the generator remember to dismount all cables, as it will make the measurement unreliable if they remain connected.

Relevant documentation	
Description	**DMS No.**
Electrical Measurement on Generator.	959335