

SAFETY LESSONS LEARNT BULLETIN

Issued: June 2022

Electrical component failure damages panel door

Information sharing:

A power factor correction (PFC) unit failed within the high level screw pump control panel at Pinxton STW.

The pressure generated within the PFC casing caused the dielectric components (capacitor) to be ejected from the casing, with the resulting pressure wave forcing the panel door off.

The lower catch looks like it stripped its plastic threads creating a turning movement, forcing the top catch off and then the hinge pins off from the other side allowing the door to fall.

The ejected component from the PFC was found around 2 metres away on the floor outside the panel and it still retained a charge. The electrician attending shorted this to earth to de-charge it.

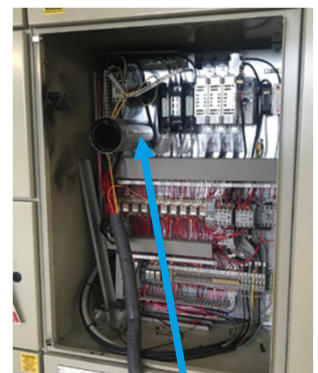
There was no resulting fire although some plastic cable trunking inside the panel was melted and charred. We believe this was a result of the hot component contact. The panel ammeter fitted in the door had been pushed out by the internal pressure.

The orientation of the PFC was towards the door. This is unusual as it is more often parallel to the door or vertical. Had it been in the normal orientation the ejected material would not have impacted on the door and stayed contained within the panel

The damaged panel was found at 14:20 on 07/06/22 but no one had been in that building since the previous day so the actual fail time is not known other than sometime in the previous 24 hours. The pump was still running and therefore had not raised any fail alarm.

Key messaging:

- All electrical panels must have latches fully engaged
- All electrical panels must be locked
- Panel doors must not have holes in them where indicators, switches or meters have been removed or damaged
- Panel door hinges must be in good working order and be able to take the weight of the door
- Review where there are known capacitors of a similar orientation within your work areas
- Inform local electrical SAPs and get guidance if unsure of what is required
- Remove the fuses feeding the capacitor if it is facing the door (as in the photo below) but only if the equipment can still run. Motor & pump capacitors will need to remain in place
- Only first skill electricians to carry out this task



Capacitor



Ejected Components