



MONTHLY ELECTRICAL INCIDENTS

ASP Manufacturing

April 2021



A technician working at the top of the Waste gas stack has received an **Electric Shock** to the hand whilst emission testing. When removing a small 240V ac pump from a container filled with water a shock was felt to the hand in the water. An investigation found the pump to be a standard domestic fish tank style pump which is double insulated and has a two core cable to it with no earth conductor. The cable was found to be damaged at the connection point to the pump with the neutral conductor exposed. The pump was RCD protected which did not trip as there was no current path to earth. As per Electrical Safety Manual 1.4.11.1 a visual inspection of the electrical article and lead should be undertaken to ensure the article has not suffered obvious damage, every time the article is used. Where possible eliminate the risk by using extra low voltage equipment (less than 50 volts ac or 120 volts dc) or battery operated equipment.



Pump submersed in water in the sampling container, with 240V lead



The fish tank style pump with damaged lead



Close up view of the damaged lead and exposed neutral conductor

Electricians were called to investigate why crane F492 had no cabin or riding lights. A 16 amp fuse was found blown. Preliminary inspections of all the light fittings, switches and cabling found no obvious signs why the fuse had blown. Fault finding below the control switches on the operator control desk found all the lighting cabling had been loomed together and this loom showed signs of heat damage. When the loom was opened up it was found a lot of the cores had been joined with inline link lugs and one of these joins had developed a hot joint. As the cores were all closely wrapped together in the loom the hot joint has damaged a lot of the cores and caused short circuits.



The loom of wiring inside the control desk tapped together and showing signs of heat damage



The loom opened up revealing the damaged wiring, damaged links in the cores and broken wires

An electrician doing routine inspections has noticed the condition of the lead to the air cooler at the exit end of MCL5. The lead was clearly damaged with exposed live conductors. The assumption has been made that the lead has been run over by the cooler and not notice by the operators who had place the cooler in position. The lead was protected by RCD which had not tripped.

As per the electrical safety manual 1.4.22 incorrectly or inadequately maintained electrical installations can create a situation which exposes personnel to electric shock. All electrical articles shall be routinely inspected to ensure safe and satisfactory operation of the electrical installation.



Close up view of the damaged cable



The portable air cooler with the damaged lead

A very bad example of how not to run an extension lead was found. The extension lead had been run from an RCD protected outlet in the workshop up to the roof where a power board was being used for roof repairs. A gap had been cut in the workshop wall to poke the lead through with only an old caution flag protecting the cable from the sharp edges. The lead had been run up a wall with no supporting structure and was run over the sharp edge of the top roof sheeting with no mechanical protection. The cable did have a compliance tag on one end but the tag was blank and not filled out. Surprisingly the cable had numerous cuts and nicks in the outer insulation.



Back and front views of the cut in the wall sheeting with the lead running through it.

Note the old caution flag is only protecting the bottom of the cable, there is no protection from the top piece of cut wall sheeting.

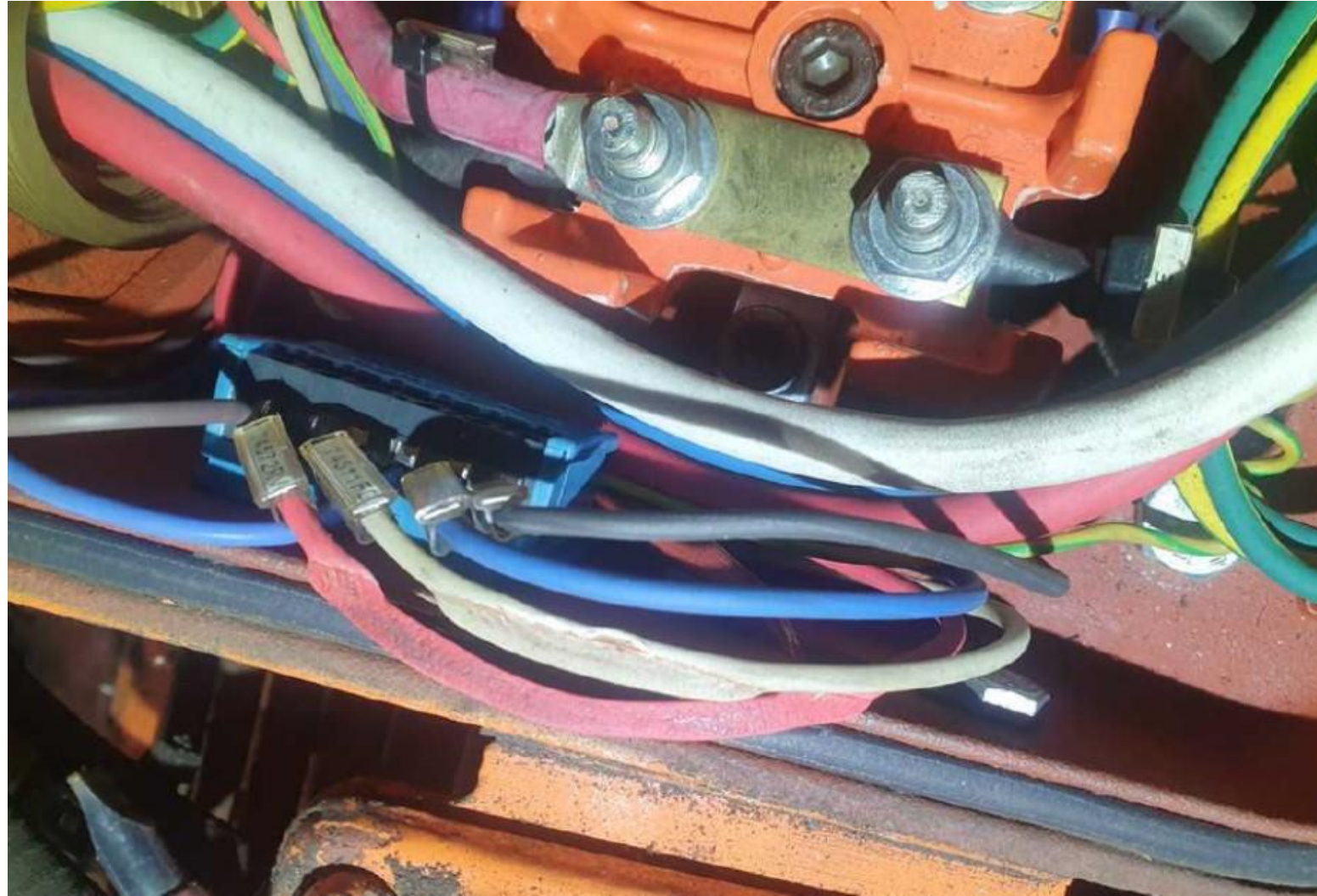


Two different tags with no details on them

The lead run up the wall with no support, onto the roof and point where it is sitting on a sharp edge



During start up on ZAL No.1 MCL process line the supply circuit breaker for the all the process AC brake supplies tripped out. An inspection of the individual beakers found entry bridle roll also tripped. Testing the brake circuit found the red and white phase cores were shorted to earth. The motor terminal box was opened to find the two cores had accidentally been squashed and the insulation damaged when the lid of the j-box had been screwed down and tightened. All care should be taken to ensure the integrity of a circuit is maintained when securing the lids or covers of electrical installations and the appropriate testing is conducted before power is restored to that circuit.



The two cores squashed by the terminal box lid

When 4-405 6.6kV dry type transformer enclosure was opened for routine maintenance a feather duster was found sitting very close to the 6.6kV terminations inside the locked enclosure. This circuit was last maintained in 2018.

After routine maintenance all electrical installation should be inspected to confirm the apparatus is in its original state and fit to go back in to service.

The feather duster sitting adjacent to the red phase 6.6kV termination

