Safety Relays on PDB Fail to Open

Scope

This safety alert applies to all output devices that use PDB (Power Distribution Board) 10-4112. Product configurations such as the Kodak® Magnus™ VLF platesetter with thermal 3 head and the Magnus VLF with APL (Automatic Pallet Loader) are most at risk. (This is due to the higher current loads that need to be switched with the safety relays.)

Potential Hazard

A potentially hazardous condition exists when the normally open contacts of both redundant safety relay pairs fail to open. In this case, the safety relays malfunction and the contacts weld together.

Presently, this condition is not being monitored, detected, and acted upon as intended. Under this abnormal condition, the intended switched off load (such as a thermal 3 head) remains energized, even when the safety interlocked access panels are open. That is, the thermal 3 head can still draw the power that it requires.

In almost every case, whenever safety interlocked access panels are open, the firmware disables (takes offline) the output device, so the risk of injury to the exposed operator is low. However, in this case, the thermal 3 head remains energized and the service engineer can still communicate with the head through the diagnostic prompt in Service Shell.

For example, an output device with a thermal 3 head can use a direct diagnostic prompt in Service Shell where the head is connected using Telnet over an Ethernet link. With this type of connection, the service engineer has direct control of the thermal head and can turn on the write laser even though the interlocked access panels are open.

The safety relays function to disconnect the AC power to the write laser power supply. However, in this case, on PDB board 10-4112, it is possible that both safety relays controlling the power to the thermal 3 head fail in a closed state. (That is, both relays malfunction and their contacts are welded closed.) This means that power can still go through to the write laser.

If the safety relays fail and the safety interlocked access panels are open, the potential hazard exists where the service engineer can still turn on the thermal 3 head using the direct diagnostic prompt, exposing the service engineer and/or an operator to high-powered laser radiation.

Prevention

Important: When the safety interlocked access panels are open as described, the service engineer must *never* attempt to operate the output device using remote diagnostics (through Service Shell or a service representative in the Response Center). In particular, the service engineer must *never* turn on the write laser power.

Solution

Product Development is currently working on a firmware solution to actively monitor the state of the redundant safety relay pairs. The firmware will shut down the output device when it detects that a safety relay fails to open. This will prevent the accumulation of two undetected failures, which could create a potentially hazardous condition where the intended switched off load remains turned on. When the solution becomes available, we will publish it in the Product Support Newsletter.

Product Development is also working on a solution for improved reliability of the safety relay contacts—so that the safety relay contacts will not weld together into a closed state.