



## The Next Technology Step:

### The Problem:

The most common cause of unplanned outages & Arc Flash incidents is bad connections on both copper and bus bar joints (where it can result in arc flash/explosion etc). It can also occur on cable connections, where fire is a major result. In both instances the resultant downtime and ancillary damage can be extensive & highly expensive.

### Current Technology Solution:

Periodic thermal imaging using Infrared cameras has, over the last two decades, become the accepted "Best Practise". However, there are a number of key problems that this solution does not overcome:

- To only inspect your most critical utility 1 day out of 365 leaves a huge amount to "luck". You are only inspecting less than 1% of the available time
- The "problem" is on the joints which are INSIDE the enclosure. The inspection is conducted on the OUTSIDE of the enclosure, and then "correlated" to what that means on the inside
- The introduction of thermal windows improved the situation, by increasing the amount of IR transmission via the window
- However, this option can be expensive & can reduce the integrity of the panel: even the best still obscures 30% IR transmission, providing only a limited view. If joints are in horizontal formation to window, it is only possible to see the front joint; this solution still does not overcome a 1 day out of 365 reliance on luck
- The IR inspection reports are not "real-time", cannot be integrated into the BMS or EMS & cannot be viewed remotely etc. i.e. they are not an integrated part of the management system

### New Technology Solution:

#### **EXERTHERM : New Patented IR Technology**

- The EXERTHERM IR sensor is small, non-contact, self-powered & has housing manufactured from non-conductive materials
- IR sensor is placed INSIDE the enclosure to DIRECTLY and CONTINUOUSLY monitor each critical joint. This overcomes all key problems evident in current technology solutions

- EXERTHERM IR Sensors have lifetime warranty & calibration. No other IR sensor can provide this, as ALL other IR sensors require power
- In addition, the IR sensor provides a Delta T (rise over ambient) reading. This eliminates variances in panel to panel, or site to site comparison, and is the accepted method of temperature measurement internationally
- Cable joints can be monitored using a patented cable sensor which straps to cable & delivers Delta T measurement
- All sensors connect back to data acquisition cards, which linearise, condition & convert signal to Modbus protocol. These are inter-connected, using standard 485 cable to form a network
- This enables simple and easy integration into any existing host BMS, EMS, or SCADA system
- In the event a stand-alone system is required with just common alarm to BMS, this can be provided & is fully web enabled to provide both local & remote view via LAN / WAN
- Recent introduction of NFPA 70E has limited the effectiveness, and increased the cost of thermal inspections where panels are opened
- EXERTHERM provides a solution which eliminates the risks associated with opening panels and thus enables compliance with NFPA 70E. It is widely accepted that within the foreseeable future it will be forbidden to open panels on energised Mv equipment
- EXERTHERM provides a future proof solution (for either new install or retrofit). This solution can also reduce annual outages to torque joint bolts



**EXERTHERM IR SENSOR**