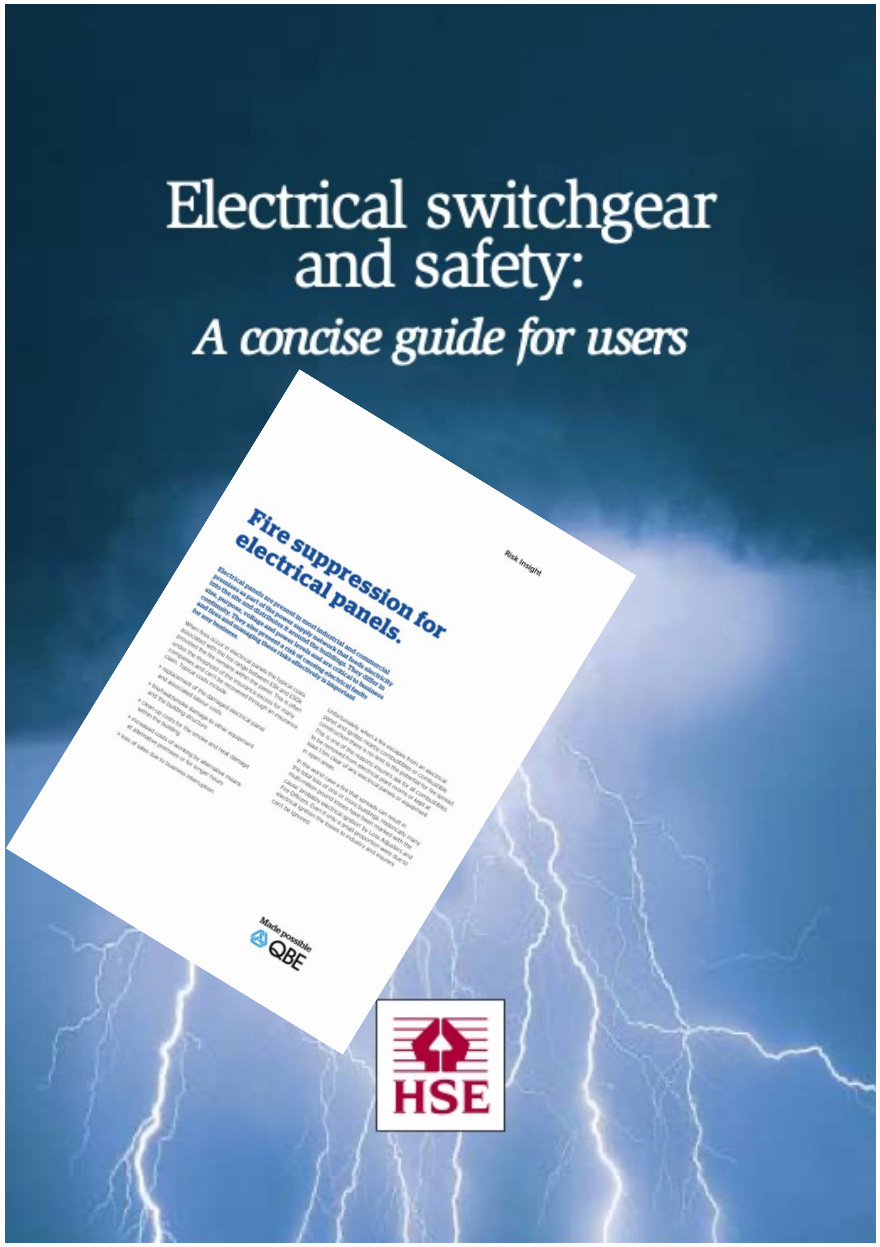
THERMARESTOR®
innovation transforming fire safety

How Thermarestor protects an Electrical Switchpanels



Effects of fires in the switchgear

Fires in electrical switchpanels are not frequently publicly reported - in fact there are no available figures to confirm how many or causes.

The consequences are dramatic in terms of business continuity, financially and even in reputational damage in some cases.

By the time you read this presentation there will be a more recent example that you will remember, that had more impact and will have and a more dramatic consequences to the owner





Stansted Airport power outage causes delays for passengers

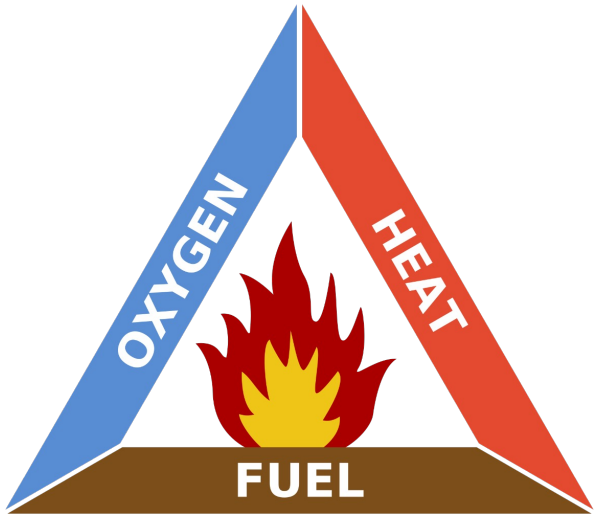
August 2023

Stansted Airport power failure causes passenger delays

Before any fire, overheating happens first.

Electrical fires typically follow this progression / stages:

1. High-resistance fault
2. Localised heating
3. Pyrolysis / Carbonisation
4. Ignition
5. Fire



There is no smoke without fire – but remember there is no fire without heat

A fire does not require an Arc to be present.

What does an over heating look like?

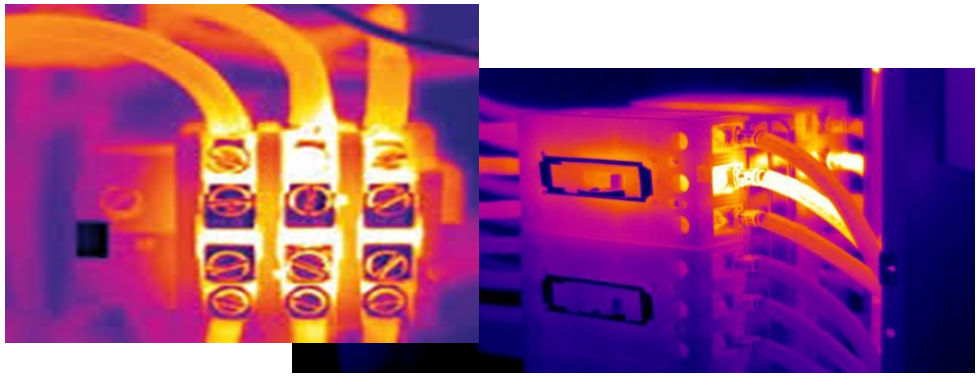
What do the effects look like?

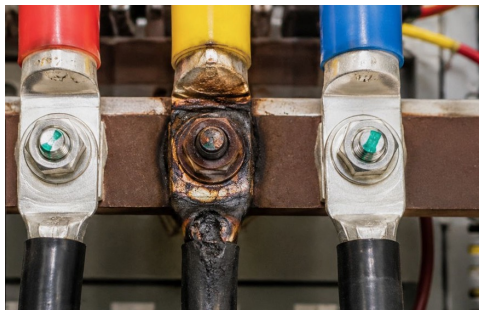
- Incorrectly terminated cables
- Loose terminals – cable cores change shape if subject to thermal stress
- Cables installed with unnecessary physical forces – tight bends close to terminals

We call this a High Resistance Connection and it results in a Thermal Event

This applies to ANY electrical connection



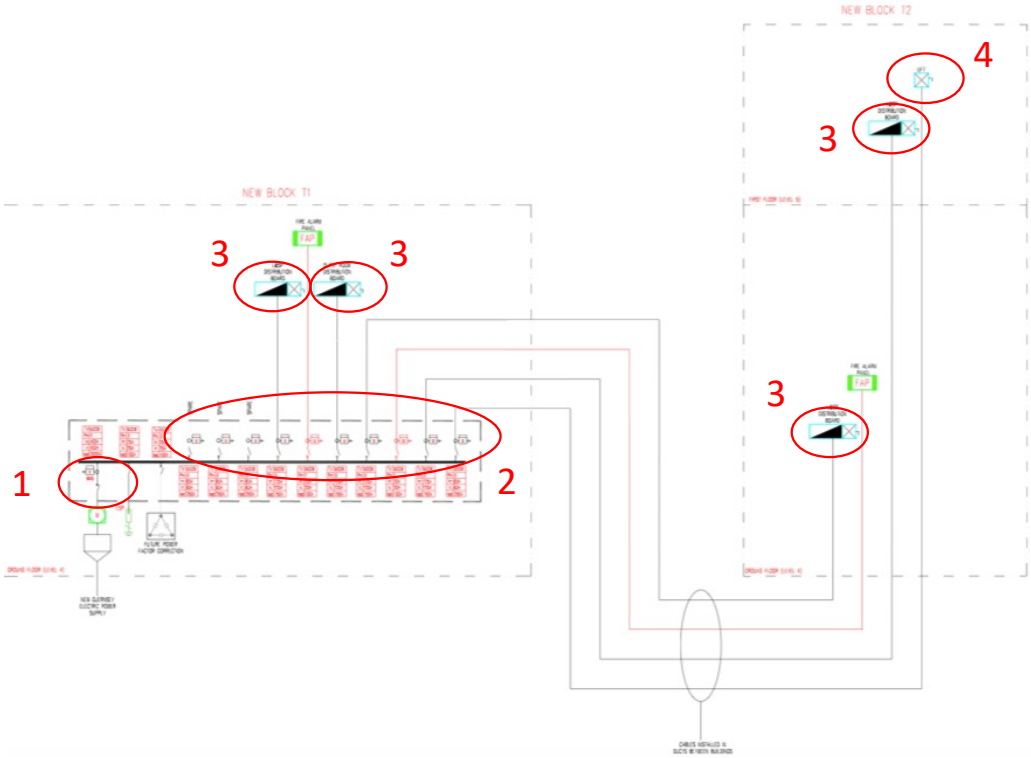




Where do problems occur

At any terminal in the electrical distribution system, from the intake point to the final sub-circuit or supply

1. Main Panel incoming cable terminals
2. Main Panel outgoing cable terminals
3. Distribution Board incoming and outgoing terminals
4. Remote isolator incoming and outgoing terminals



Current options for the detection of a Thermal Event – and the means to resolve

The following are the current options available

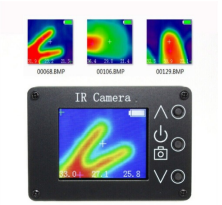
A. Detect and Notify - Maintenance teams monitor panels and report issues. This is periodic and will not recognize a problem in real-time

B. Detect and Extinguish - A fire occurs, an external system senses there is a fire and notifies, usually manually, a human reaction is needed for a response

C. Detect and Extinguish - A fire occurs, a local extinguishant system automatically operates.

All incur considerable initial and ongoing costs and / or delays

















Thermarestor – a Different Solution



Thermarestor gives early warning of a Thermal Event. It gives building owners and custodians time to investigate the situation BEFORE a fire occurs.

Thermarestor is a passive device that activates when a heat rise of above 80degC (+/- 5degC) is detected.

MultiPoint and Single point sensors protect wiring connections.

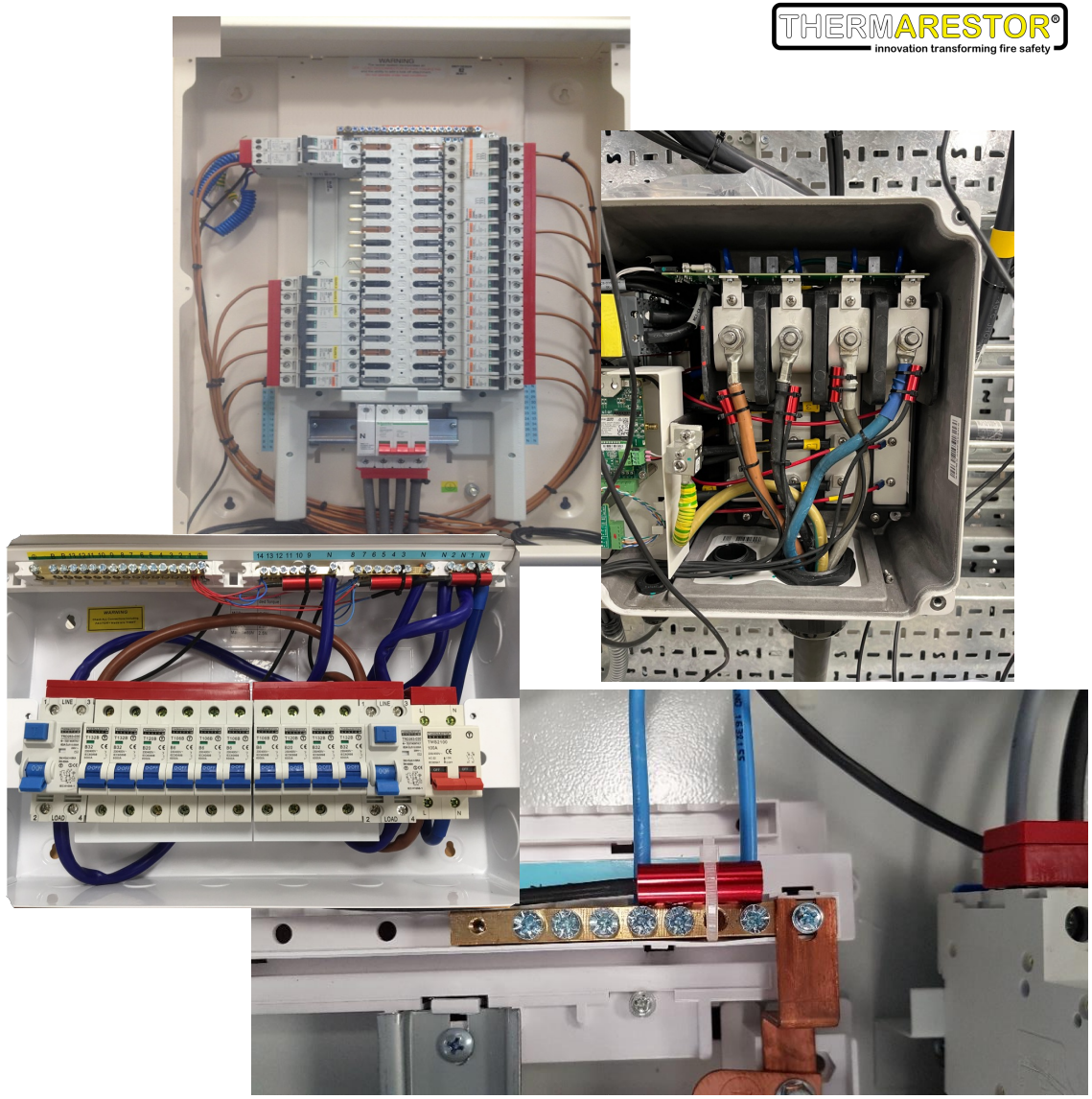


A pre-ignition solution is better than putting out a fire.

Thermarestor Installed

Thermarestor sensors can be installed in any type of switchgear, from the incoming supply terminals to the final outgoing circuit protection device or control isolator

Thermarestor can be installed in new installations and as a retrofit item for existing installations.

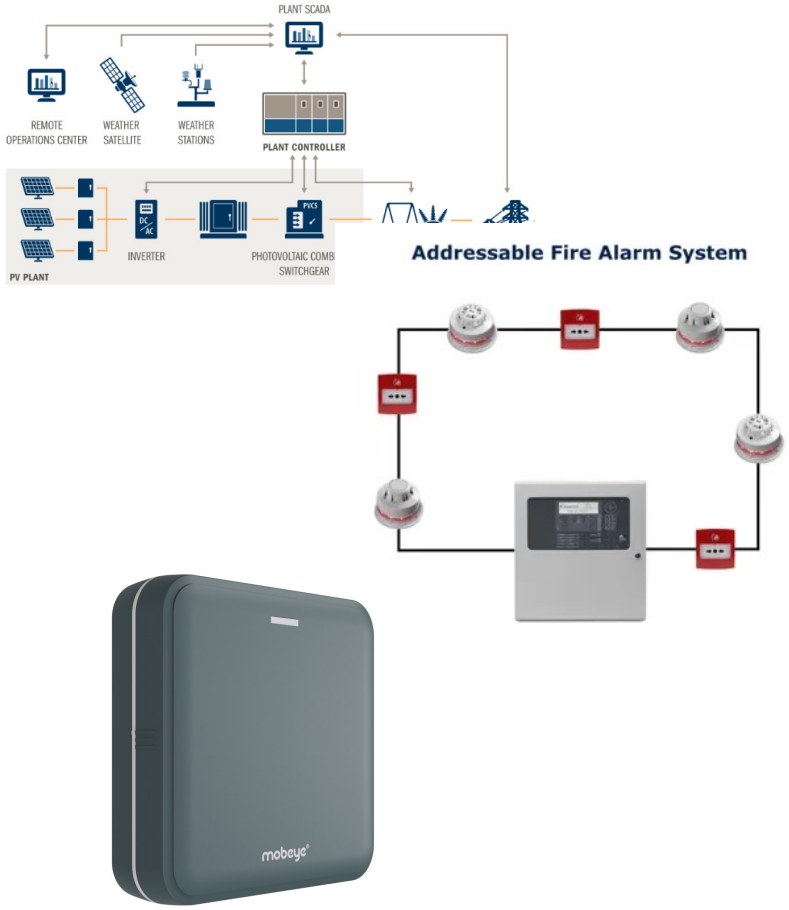


Signaling / reporting

Thermarestor sensors can be made by incorporating in a system wide, such as a Fire Alarm or SCADA.

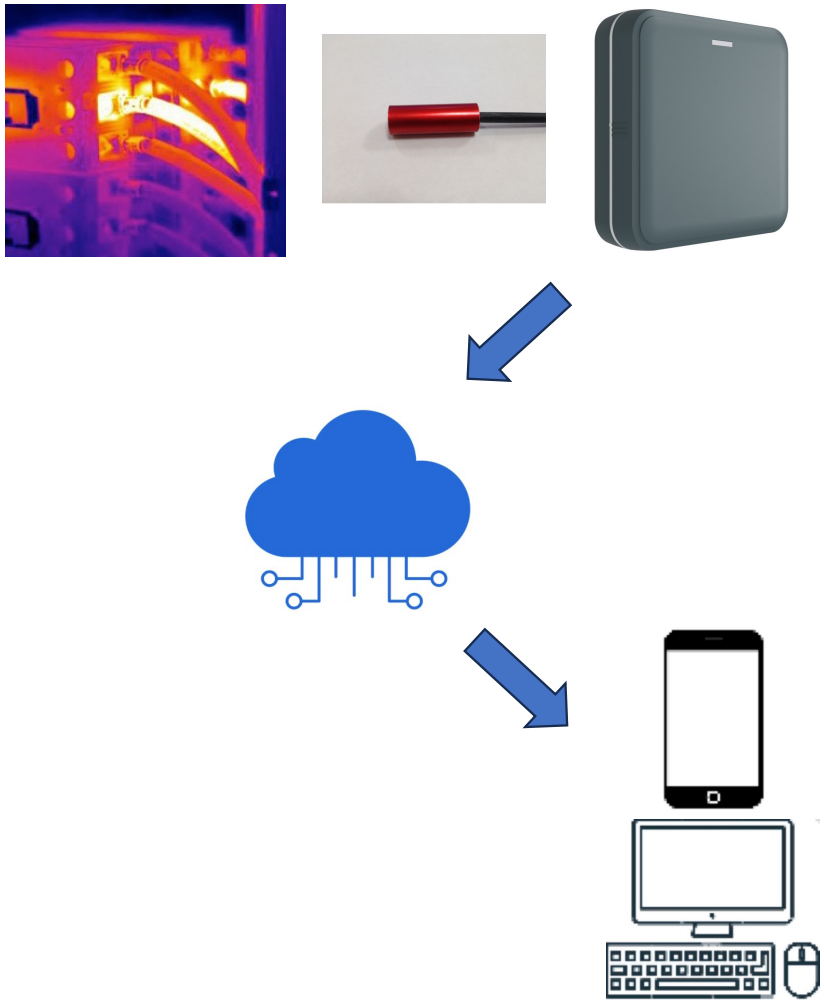
However, Thermarestor has a 4G communicator, to create a self-contained autonomous system.

The Thermarestor communicator gives higher functionality, a reporting and system management.



How the complete Thermarestor System Works

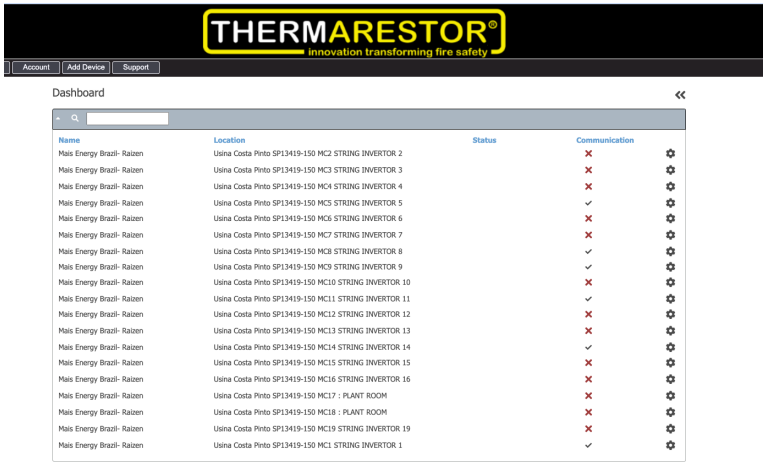
1. Connection overheats.
2. Sensor detects adverse temperature on equipment above safe design levels
3. Sends message to Thermarestor cloud monitoring portal
4. Cloud portal distributes warning calls, messages and email to nominated maintenance teams and stake-holders. Maintains audit trail records for later review.

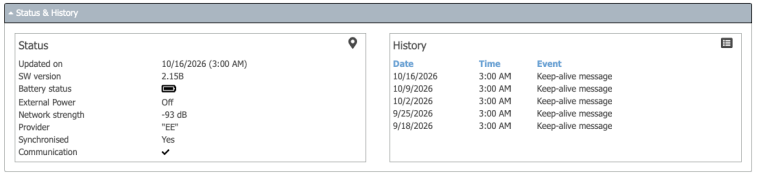


Maintenance Records

The Thermarestor cloud-based portal allows maintenance staff to review the status of the devices and communicators at any time.

It allows an operators to control and monitor the notifications issued for effective maintenance management.

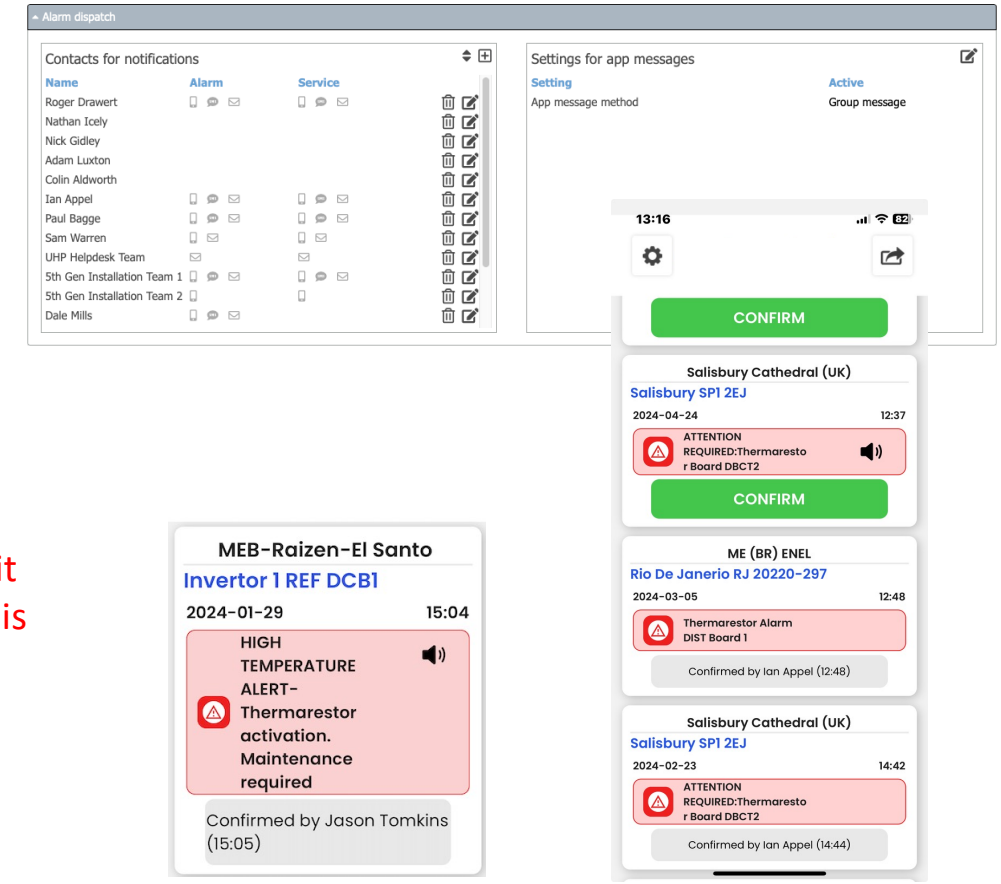




Cloud Platform Notifications

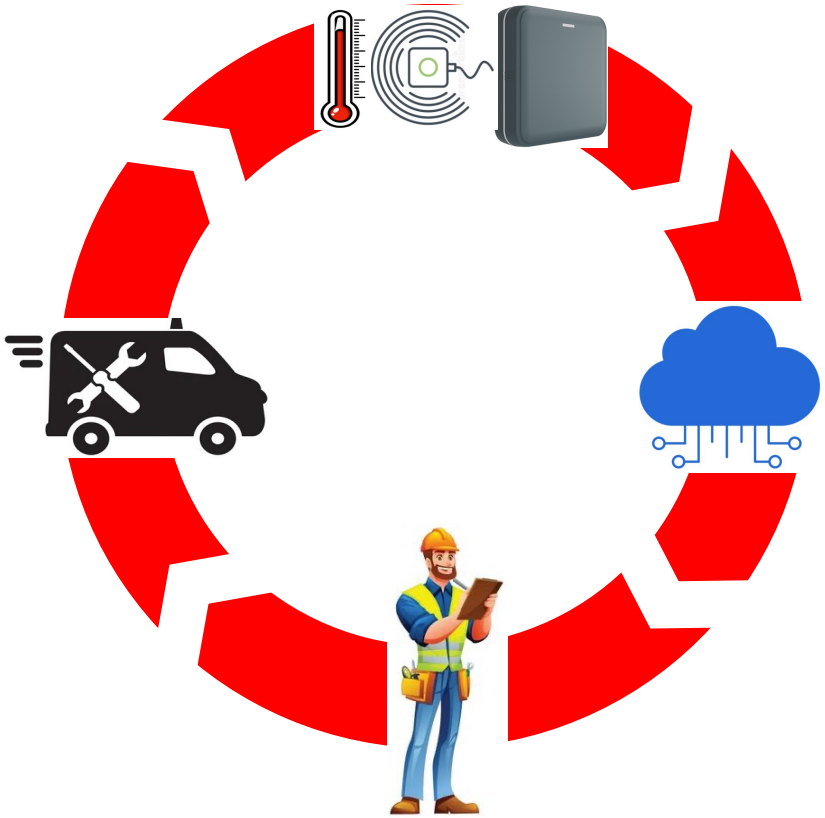
- Call, SMS, email to nominated personnel
- Phone app – push notification
- Unlimited contacts
- Unlimited access
- Unlimited recorded events

The sending of messages is fully automated by the portal, it does not require an operator to intervene i.e. the warning is given to someone to resolve it before a fire has chance to occur



Maintenance Sequence

Detection



Monitoring Portal

Engineer.
Notification from monitoring portal via SMS Email or call

Maintenance Check.
Known fault location due to individual communicator GPS telemetry

Testing and Certification

Fully tested, certified & verified

UK Trading standards

Schneider Electric Company

Intertek

Bureau Veritas

TUV-SUD

