

Advancing Battery Safety

The Importance of Early Gas Detection in Battery Storage

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The Rise of the Lithium-Ion Battery ...Fires

Battery Applications

**Battery Energy
Storage
Systems**

**Critical
Power
Delivery**

**Warehousing
& Logistics**

**EVs/Car
Parks**

**Battery
Manufacturing**

Battery Failures

**Battery Energy
Storage Systems**

**Critical Power
Delivery**

**Warehousing
& Logistics**

**EVs/Car
Parks**

**Battery
Manufacturing**



Tesla, USA, 2022

**Samsung, South
Korea, 2014**

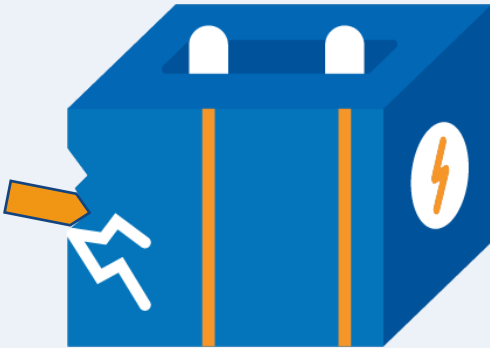
**Bolloré Logistics,
France, 2023**

**Fire Department,
USA, 2023**

**Battery Factory,
India, 2019**

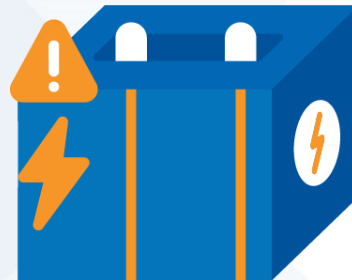
Battery Failure Modes

Mechanical

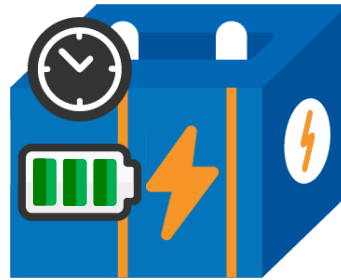


Puncture
Crushing
Penetration

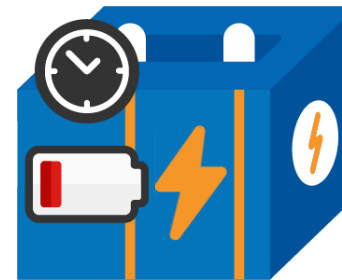
Electric



Internal
Short-Circuit

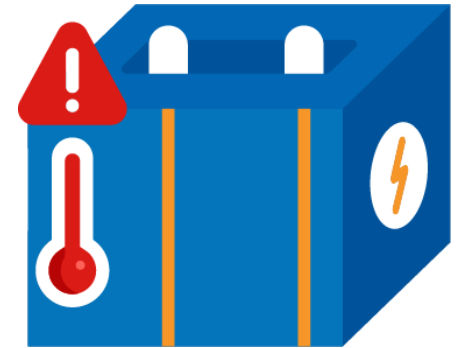


Over-
Charging



Over-
Discharging

Thermal

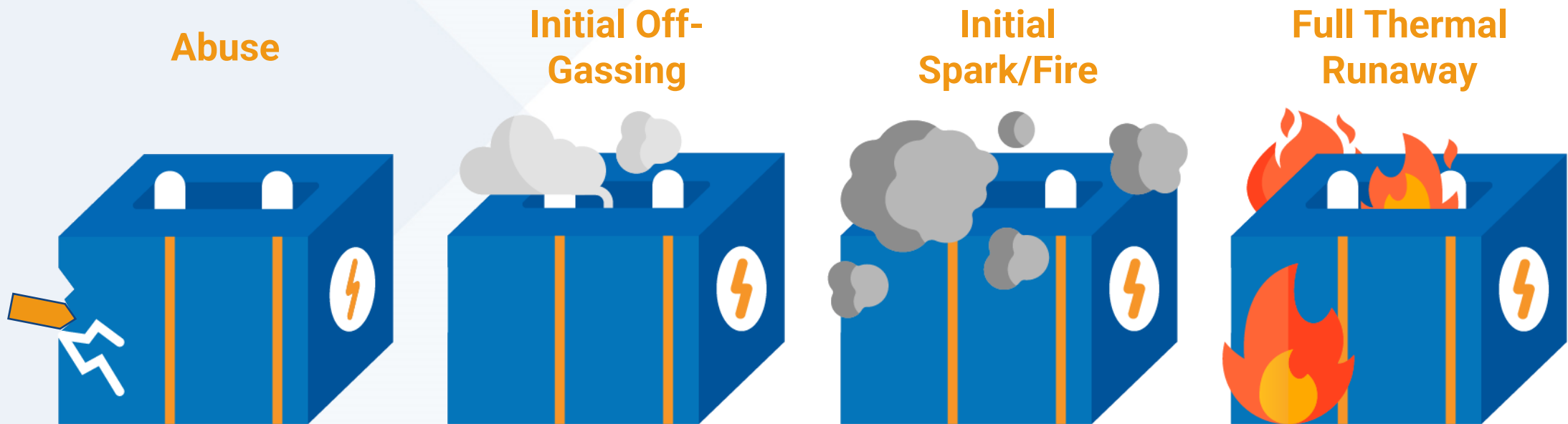


Overheating

All result in thermal runaway

Thermal Runaway – Timeline

Lithium-ion fires “will go up exponentially” and companies that are “adapting the best practices to manage thermal runaway will survive and succeed in this market.” – Marco Terruzzin, 2019

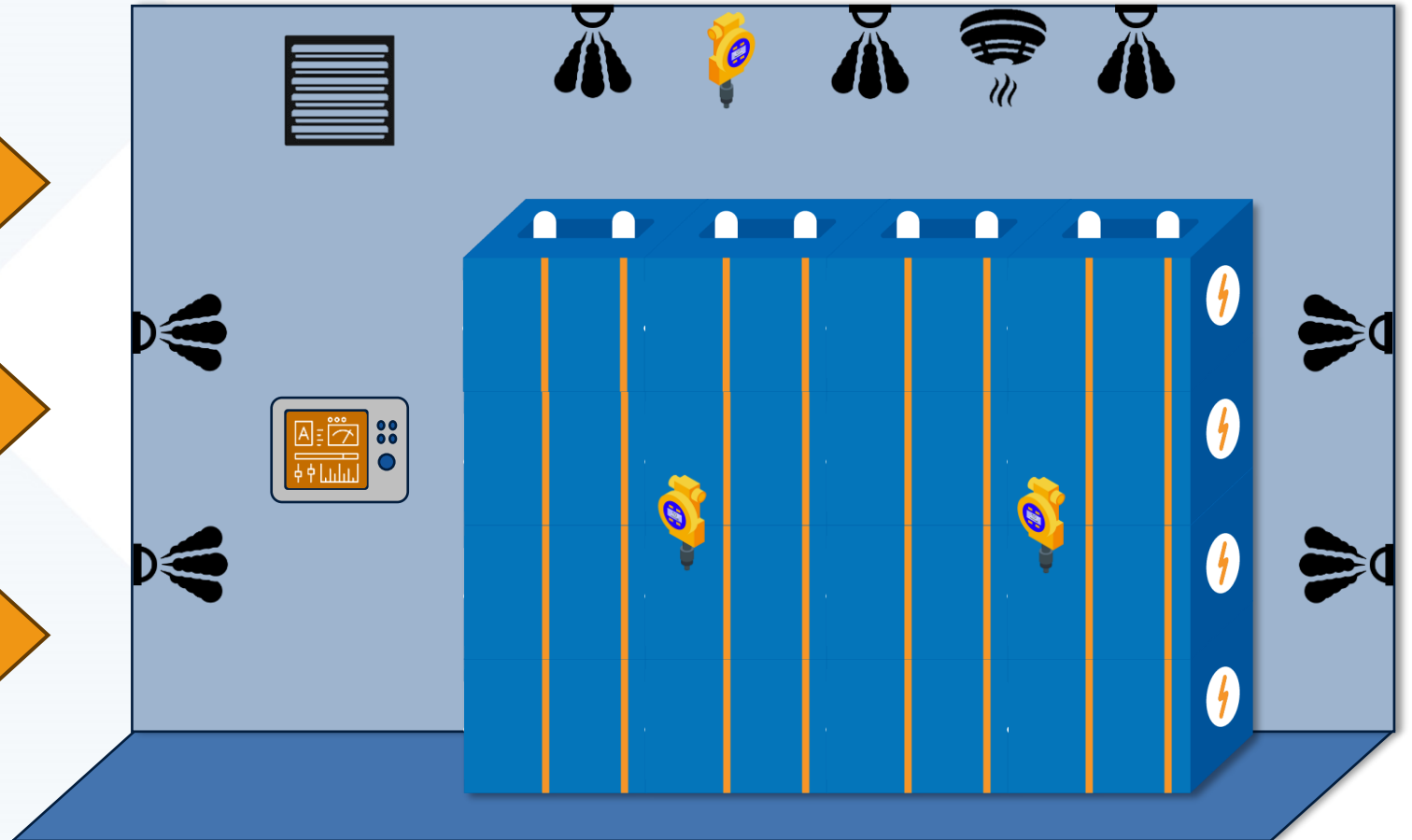


Gas Detector Positioning

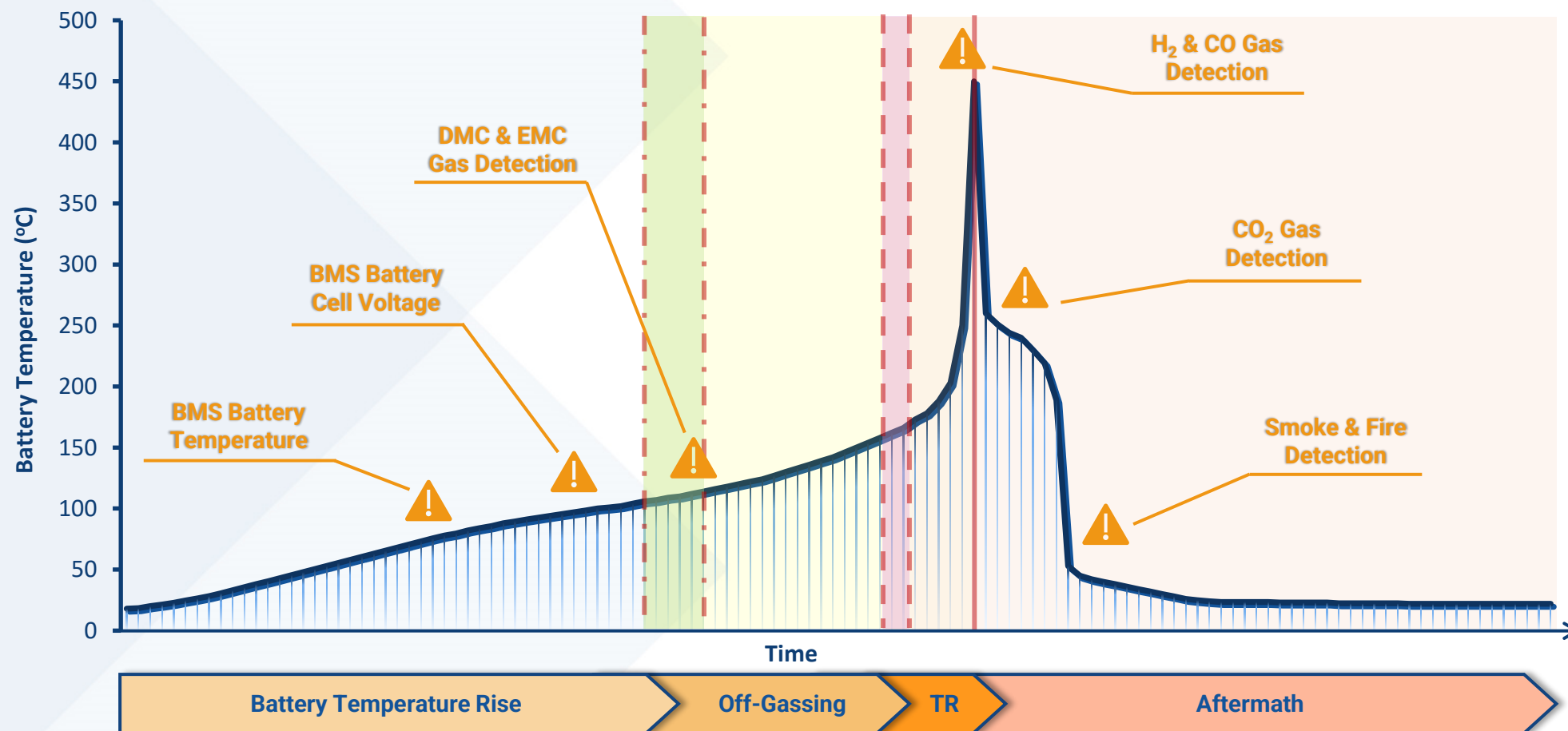
The EMC & DMC detectors need to be as close to the battery as possible.

They need to ideally be on the lower half of the battery modules.

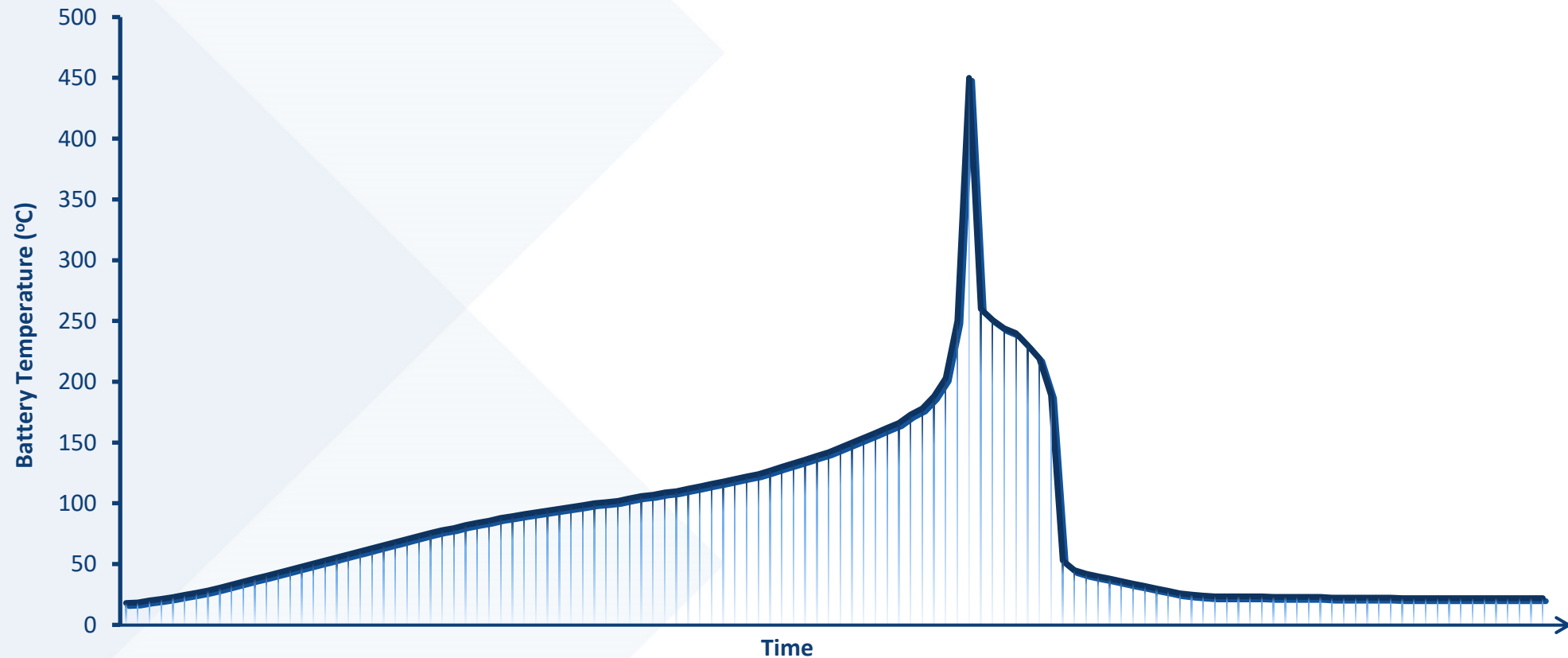
Hydrogen detectors for venting need to be on the ceiling.



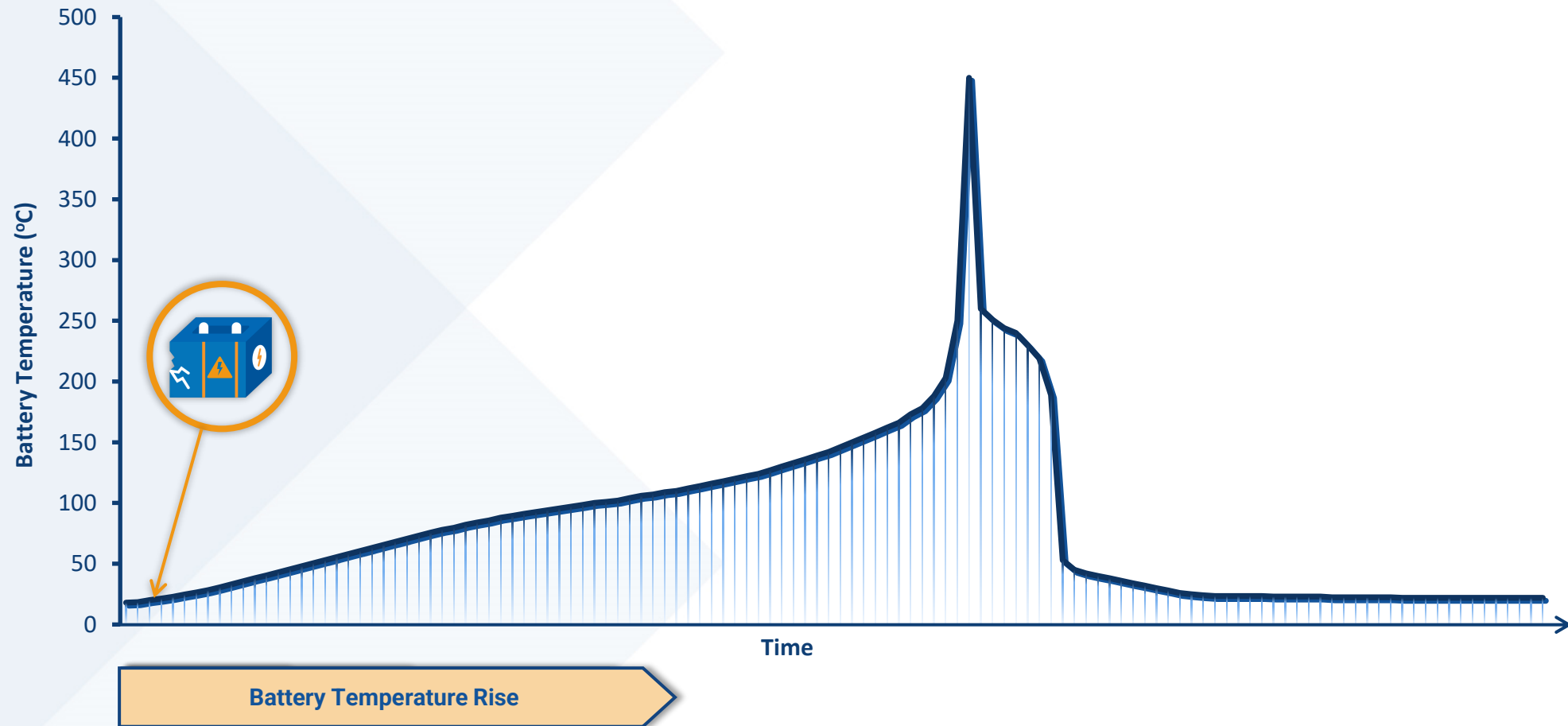
Battery Failure Alarms



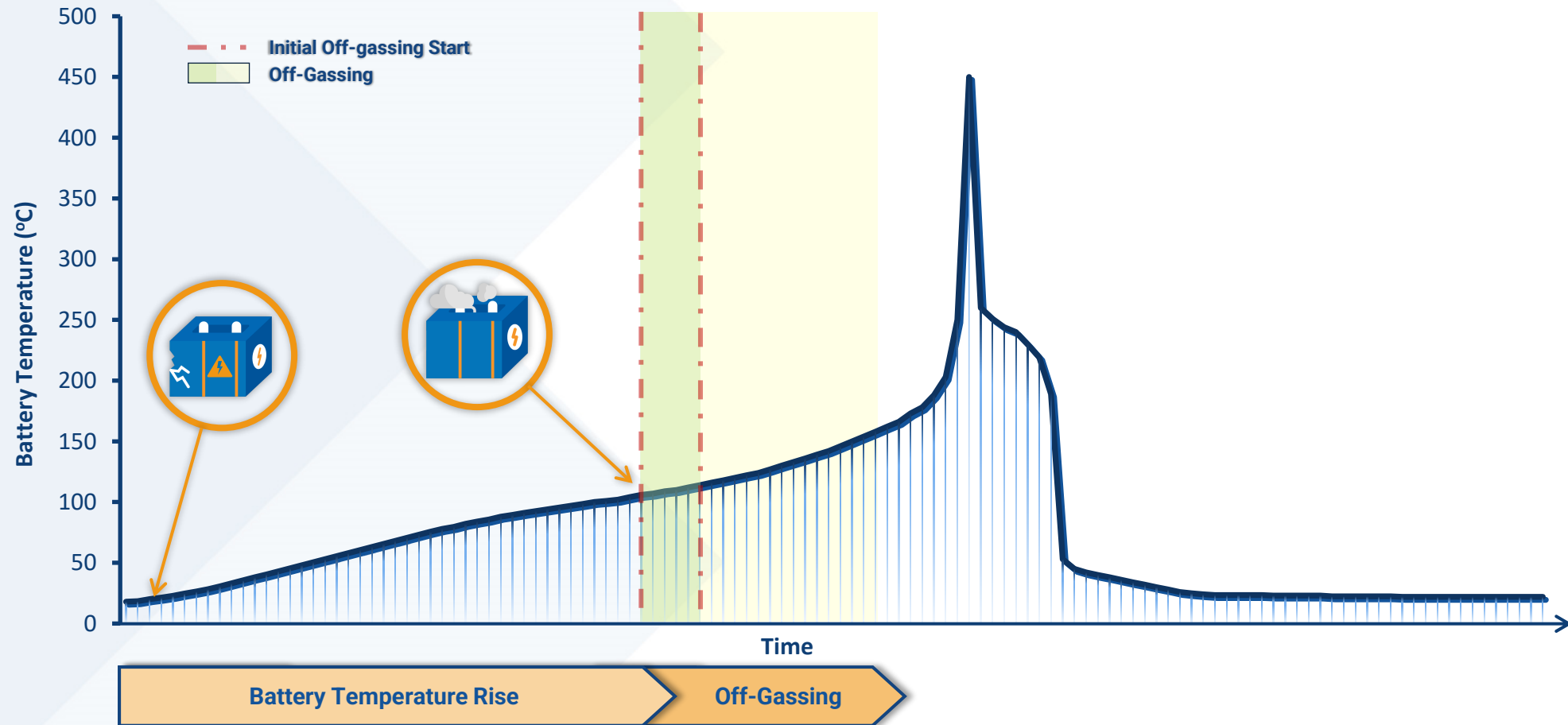
Battery Failure Timeline



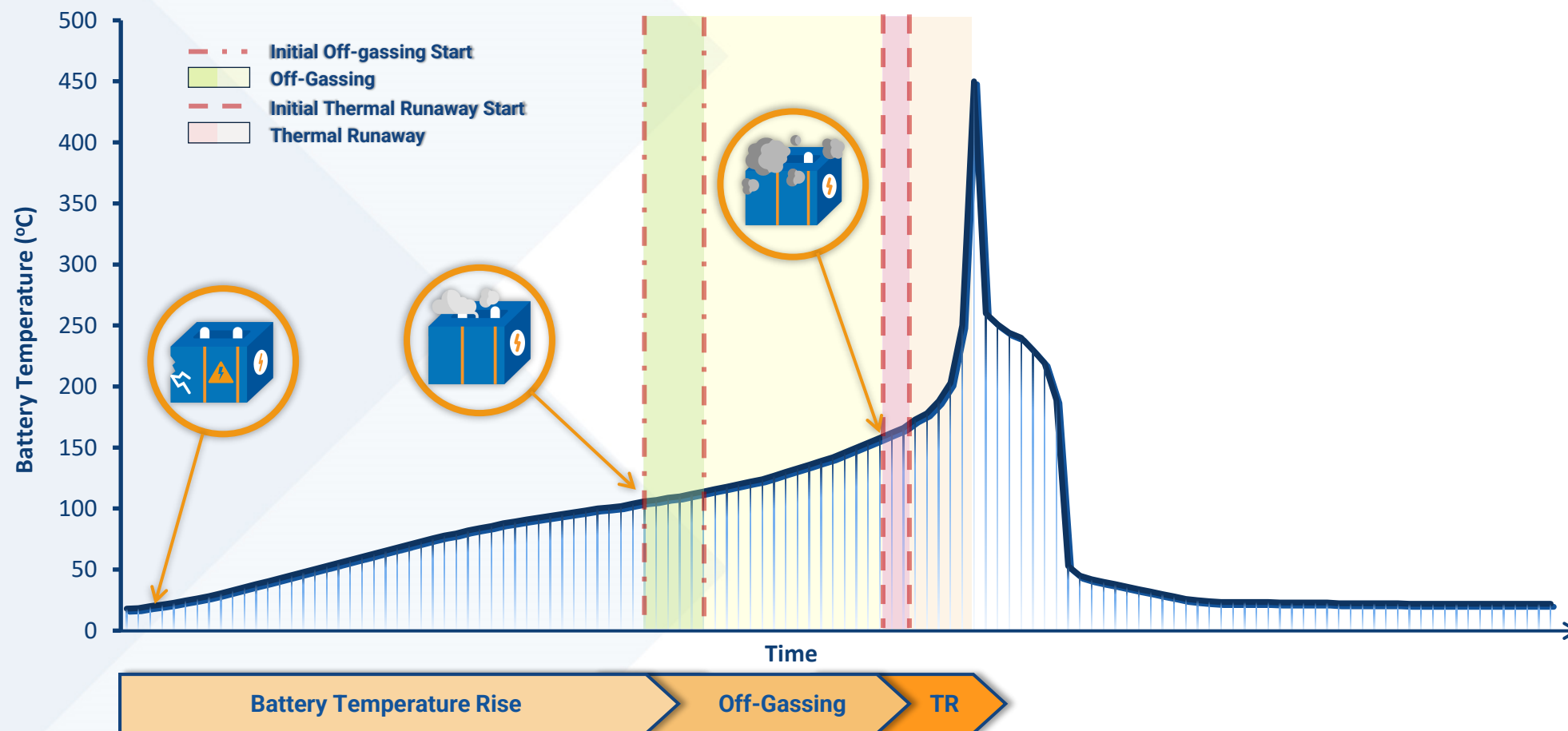
Battery Failure Timeline



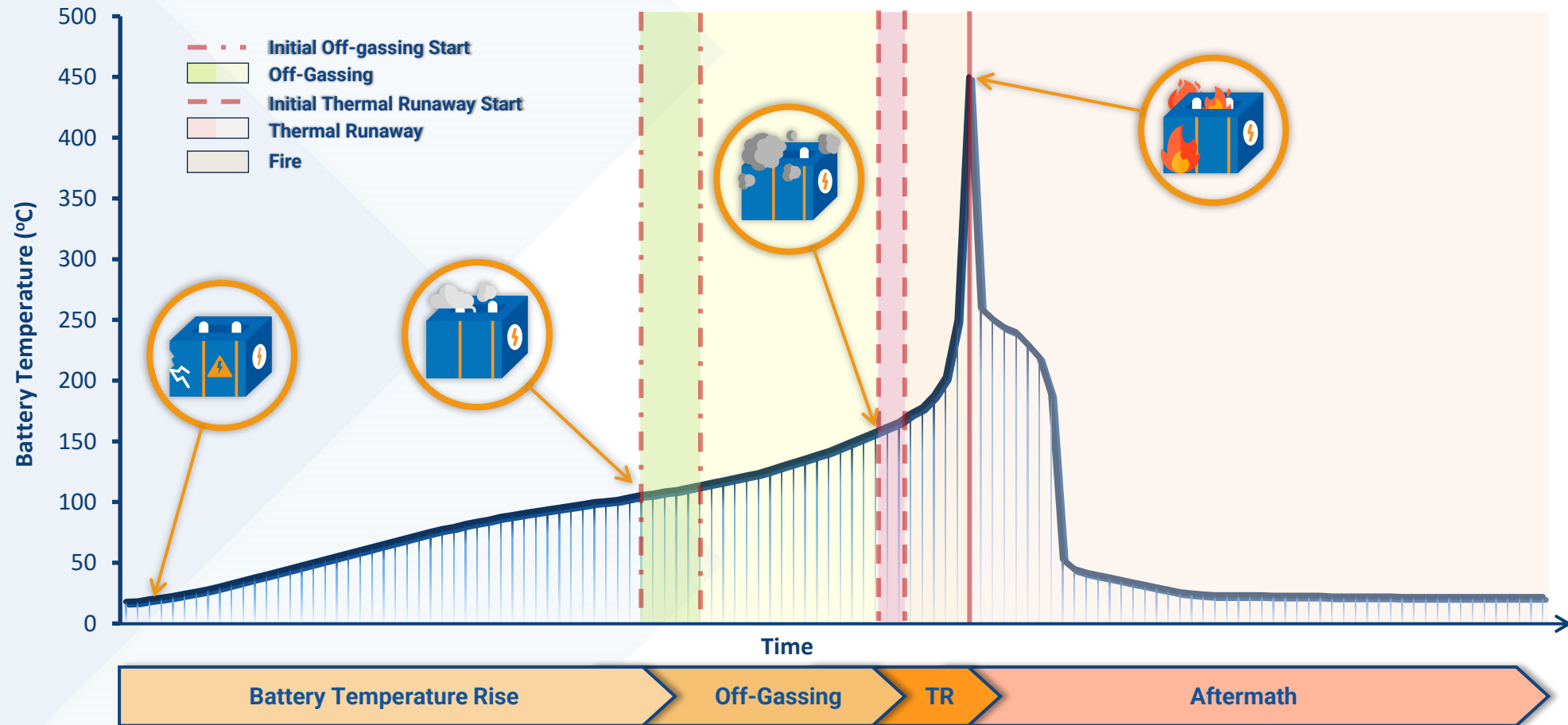
Battery Failure Timeline



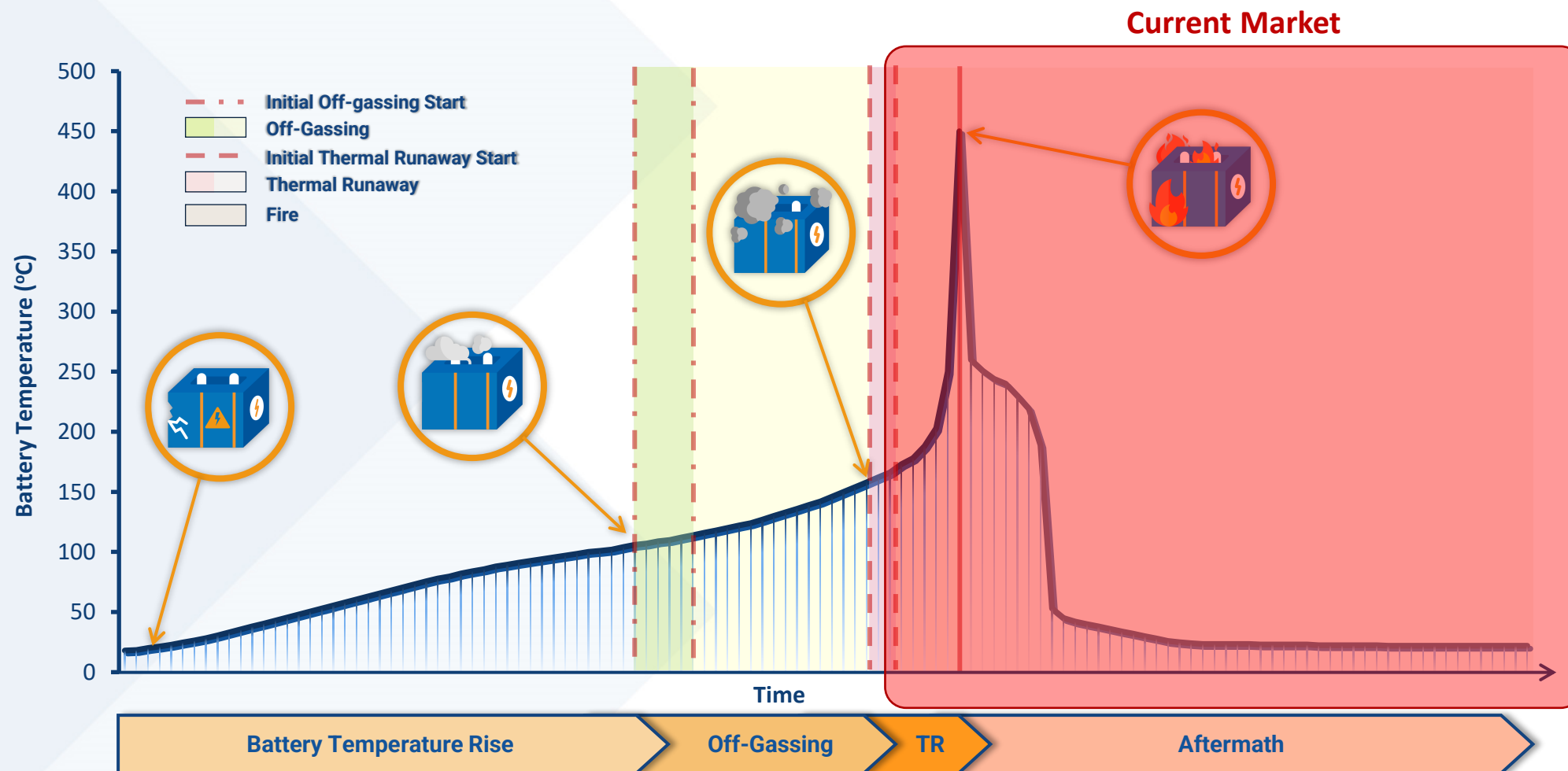
Battery Failure Timeline



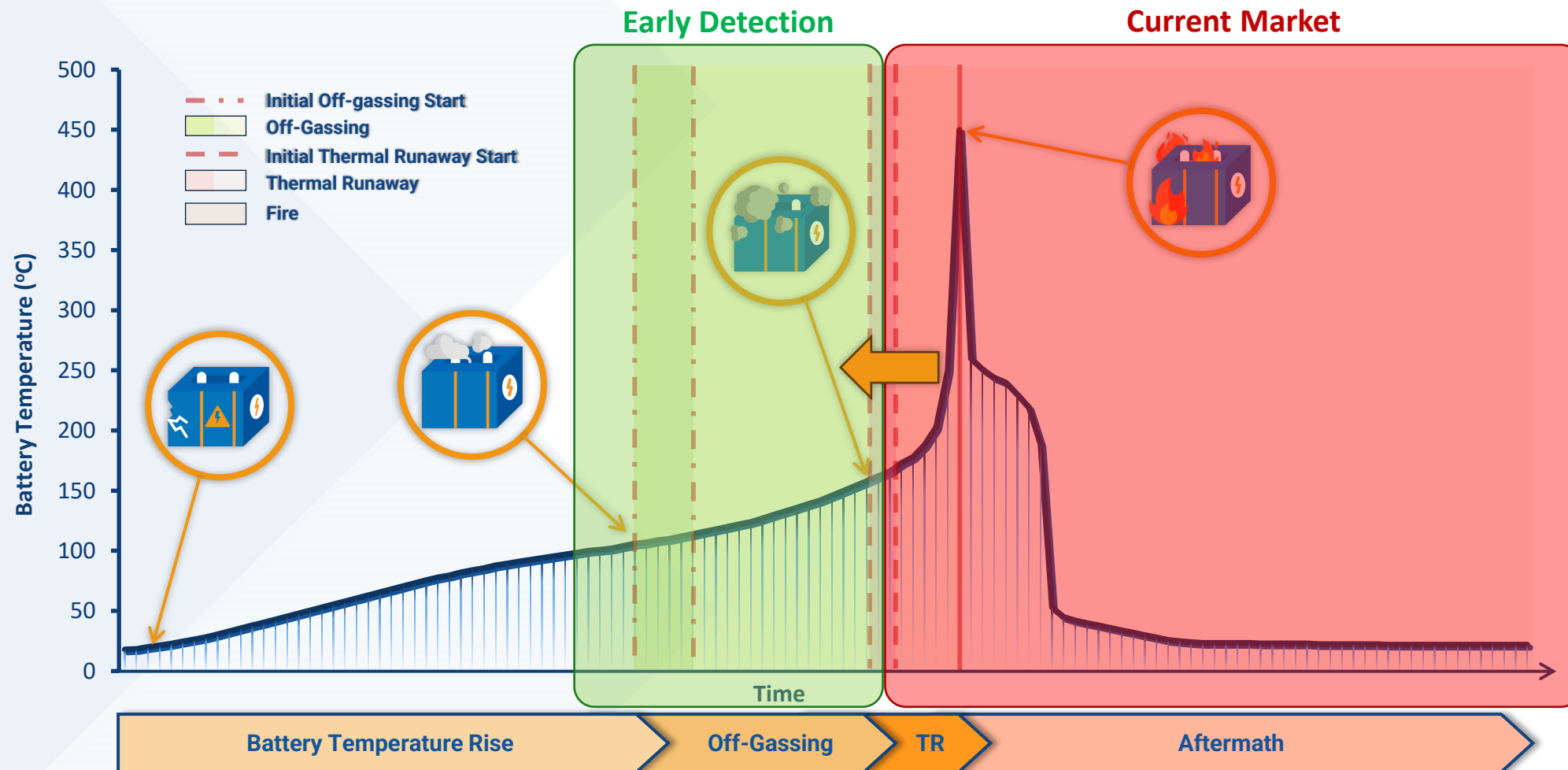
Battery Failure Timeline



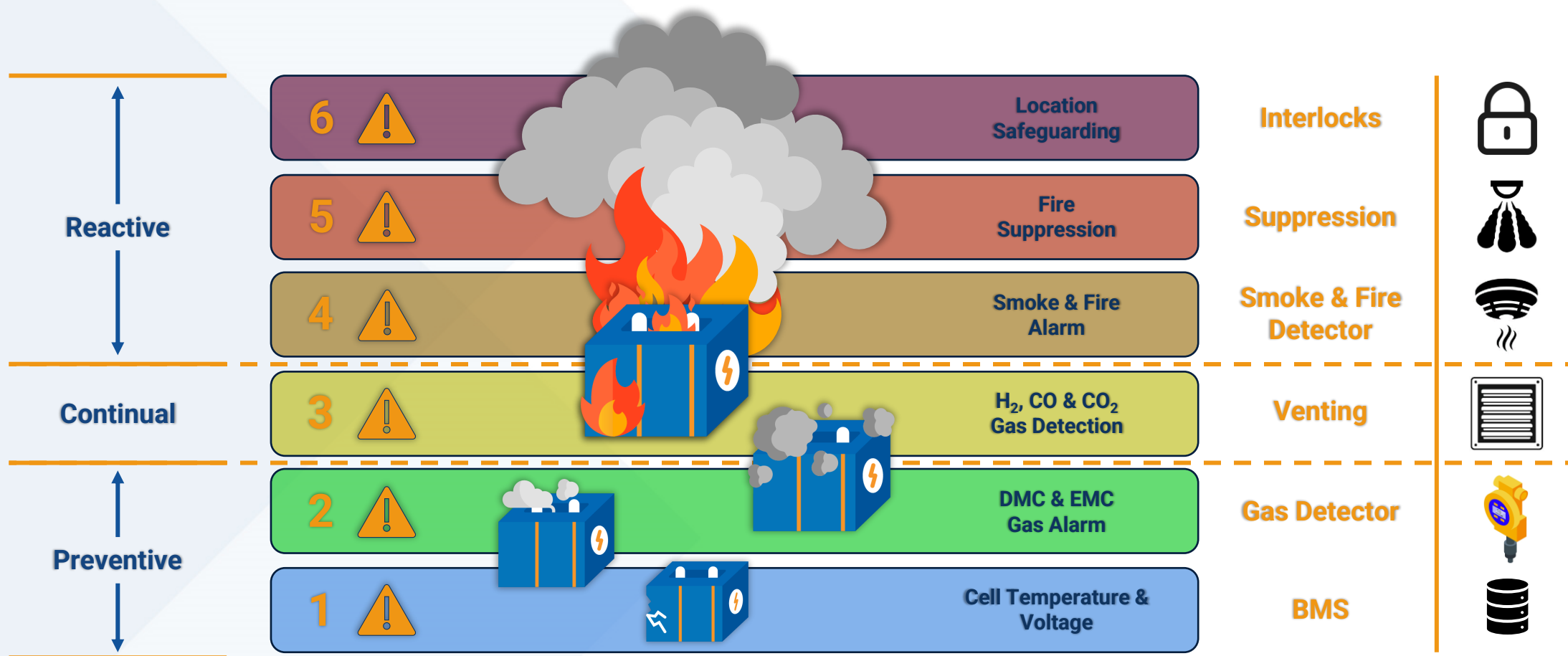
Battery Failure Timeline



Battery Failure Timeline



Battery Failure Safety Levels



Battery Safety Solutions

Xgard Bright

Addressable Fixed-Point Gas Detector with Display

Flexible installation options

Analogue & RD-485 signals + optional HART

Wide range of sensors

MPS, Electrochemical, Pellistor, IR & PID

Rugged and reliable

Available in Aluminium & Stainless Steel

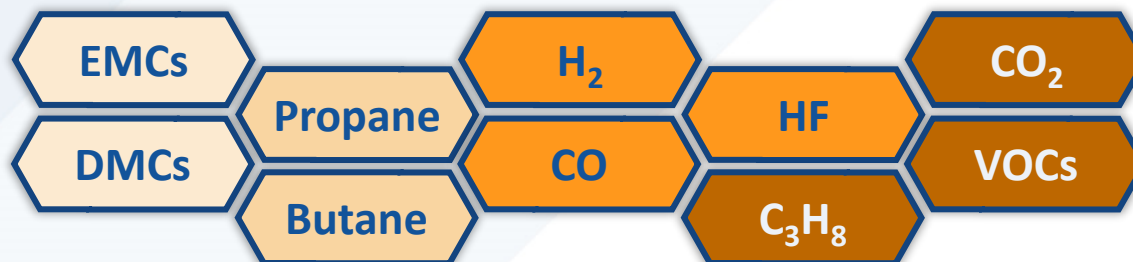
Range of Compatibility

Ability to connect with Gas & Fire Panels



Target Gasses (with MPS)

Early
Off-gassing



Thermal
Runaway



Find out more

Case Studies

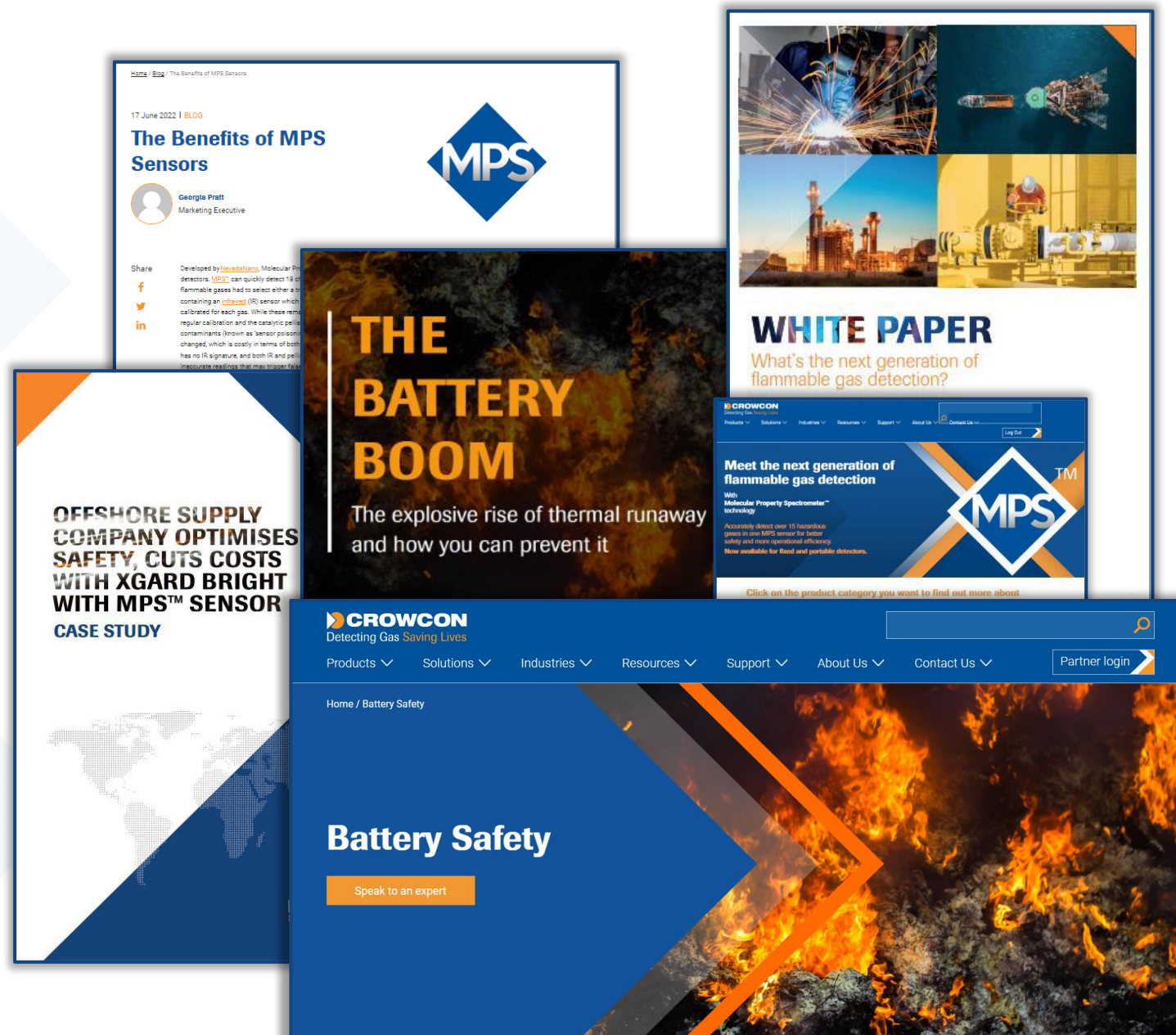
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Thank You

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