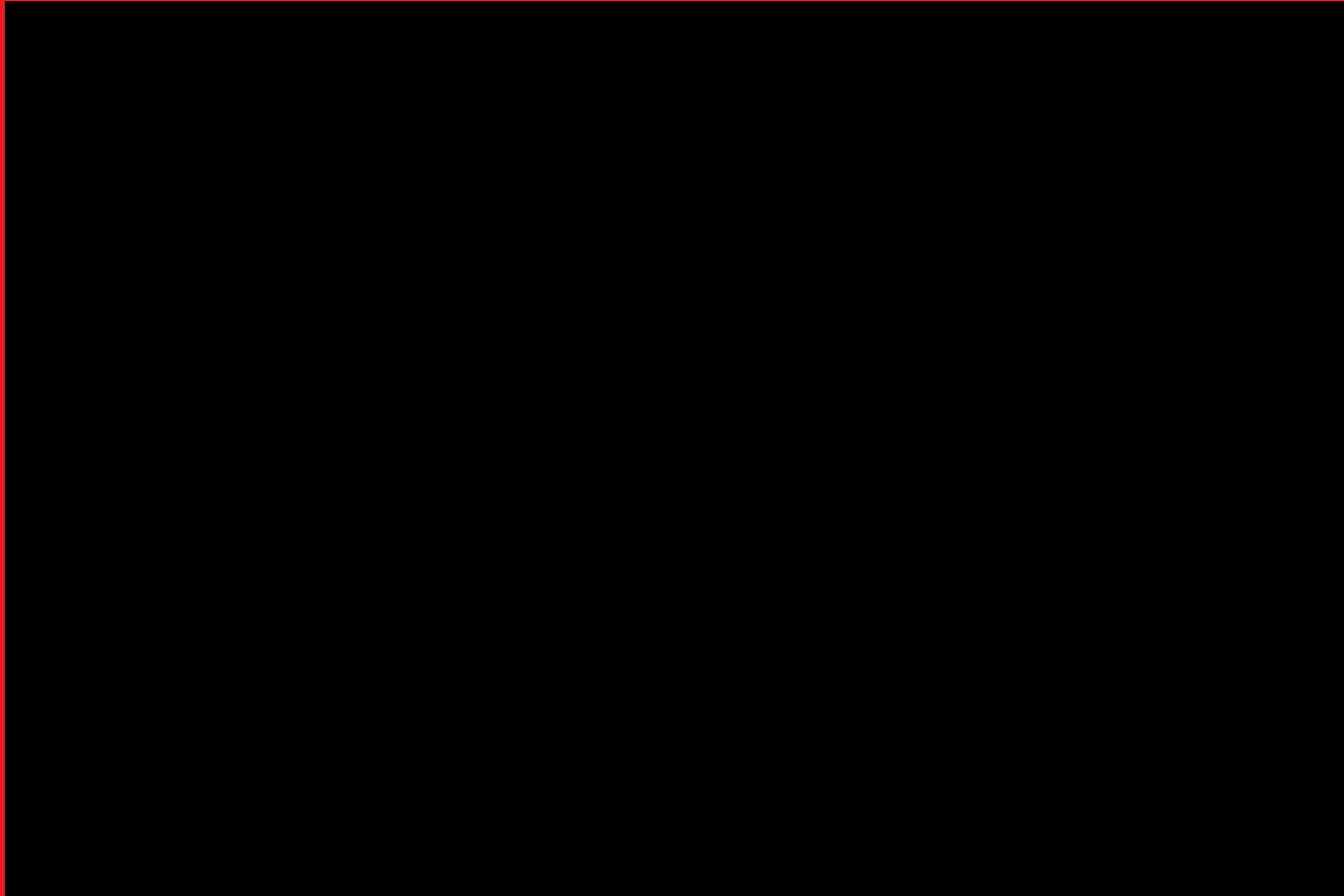


the risks around lithium-ion batteries





**lithium-ion batteries;
we use them everyday**





what's the impact of a lithium-ion battery fire?

*“We had a lithium-ion fire that **completely destroyed** and **gutted** our unit. Something we took for granted until we experienced the ramifications of it...staff were **demoralised** coming into somewhere that was a home for 6 years to suddenly having nothing there...it caused **major disruption** to our projects, and we lost thousands in kit”*

Ben Smart, Chaffin Works

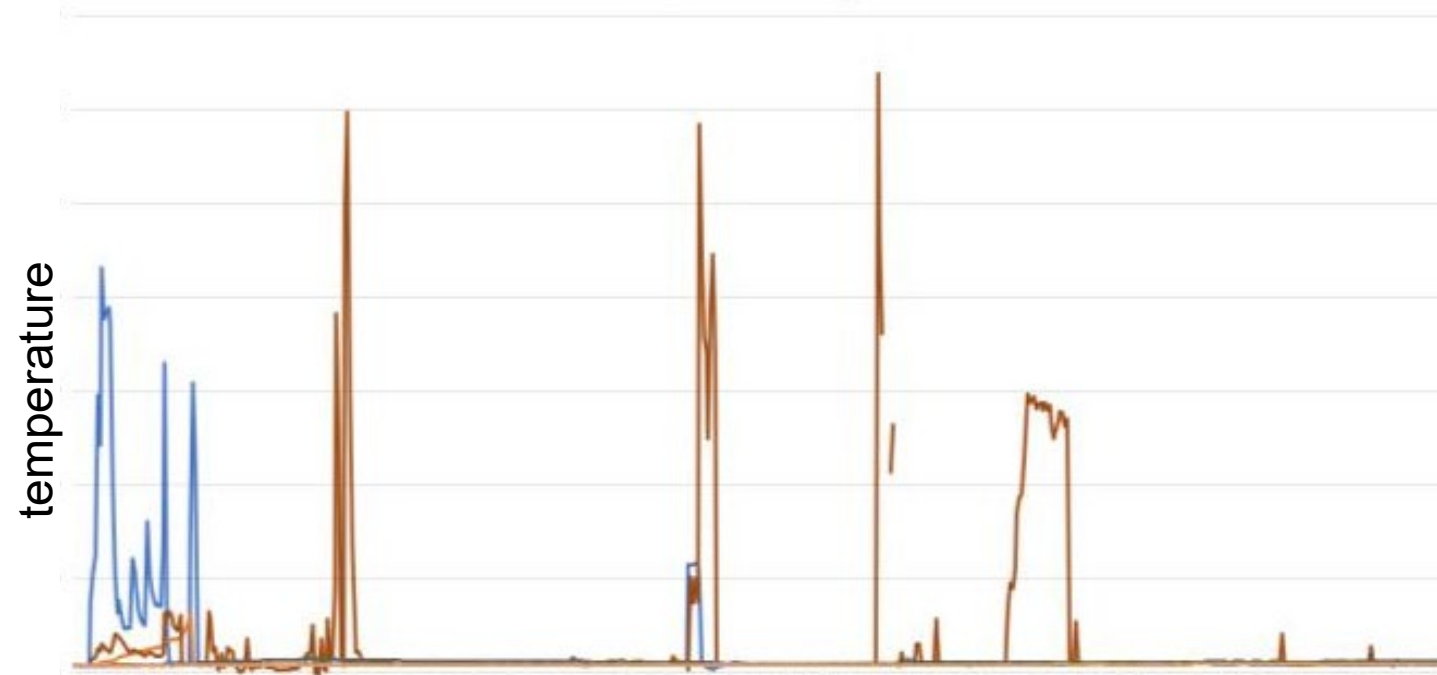




what does our research and testing show?

no fire suppressant (fire rated unit)

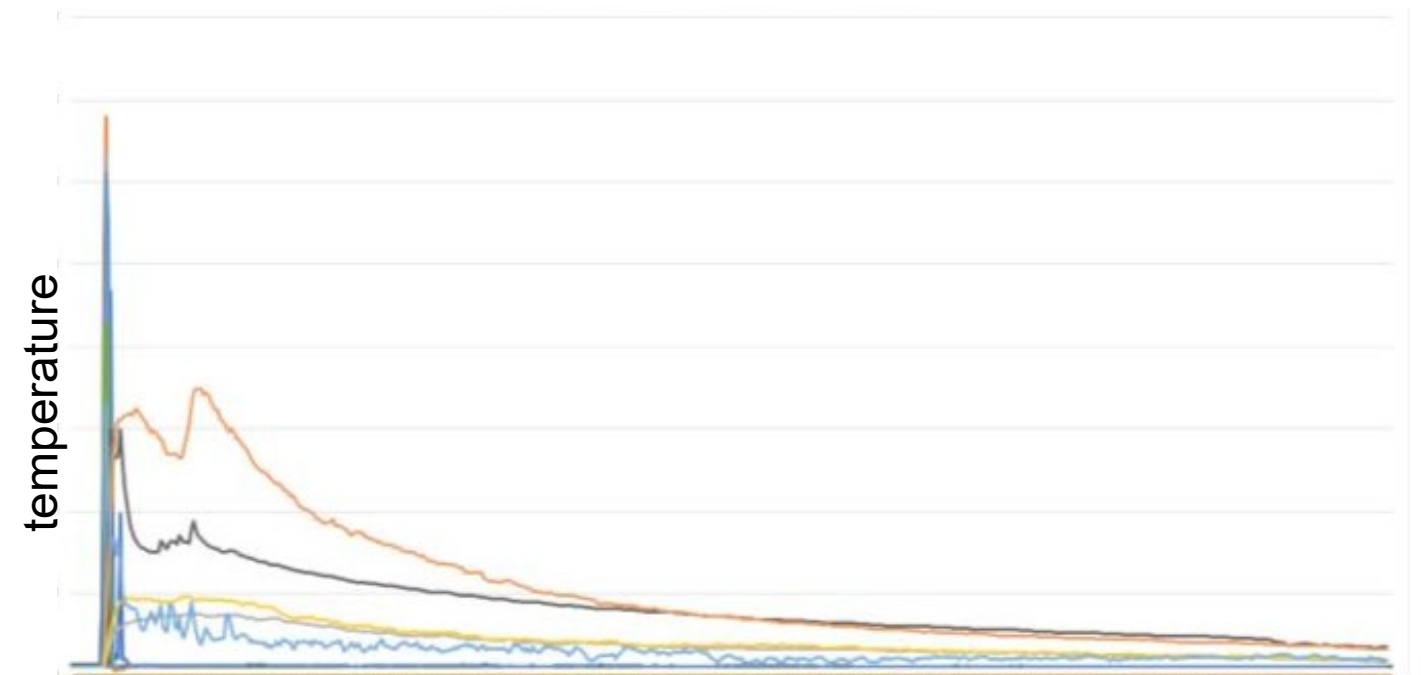
EN 14470- All Readings



1 hour

This graph shows the typical behavior for a lithium-ion battery going into thermal runaway. It displays sporadic and infrequent bursts of energy release peaking over 1000degrees.

fire suppressant



1 hour

This graph shows how a certified suppression agent can be used to knock down that energy release and aid the control of thermal propagation.

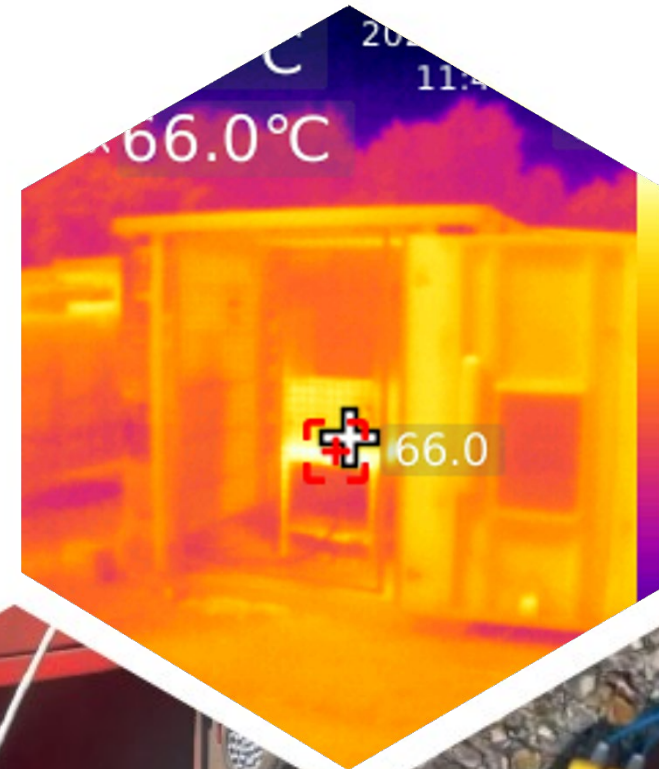


what does our research and testing show?

3 key points which will reduce the impact caused by a lithium-ion battery fire are:

- » **isolation**
to prevent the lithium battery fire causing a chain reaction
- » **ventilation**
to improve safety, efficiency and overall battery life-span
- » **rapid-cooling**
this method can be used to control thermal propagation as suffocation methods will not

- » isolation
- » ventilation
- » rapid cooling





isolation and rapid cooling





common fire rated misconceptions



EN14470 fire rating
standard relates to
flammable liquids NOT
lithium-ion batteries



features required for safer charging



Early gas and smoke detection



Multiple alert systems: fire alarm system & GSM alerts



Visual and audible alarm when there is a fire



Power cut-off when the internal temperature reaches 60°C or more



Forced ventilation to keep air flowing through the VoltHub



Thermostatic heater to keep the temperature at optimum levels



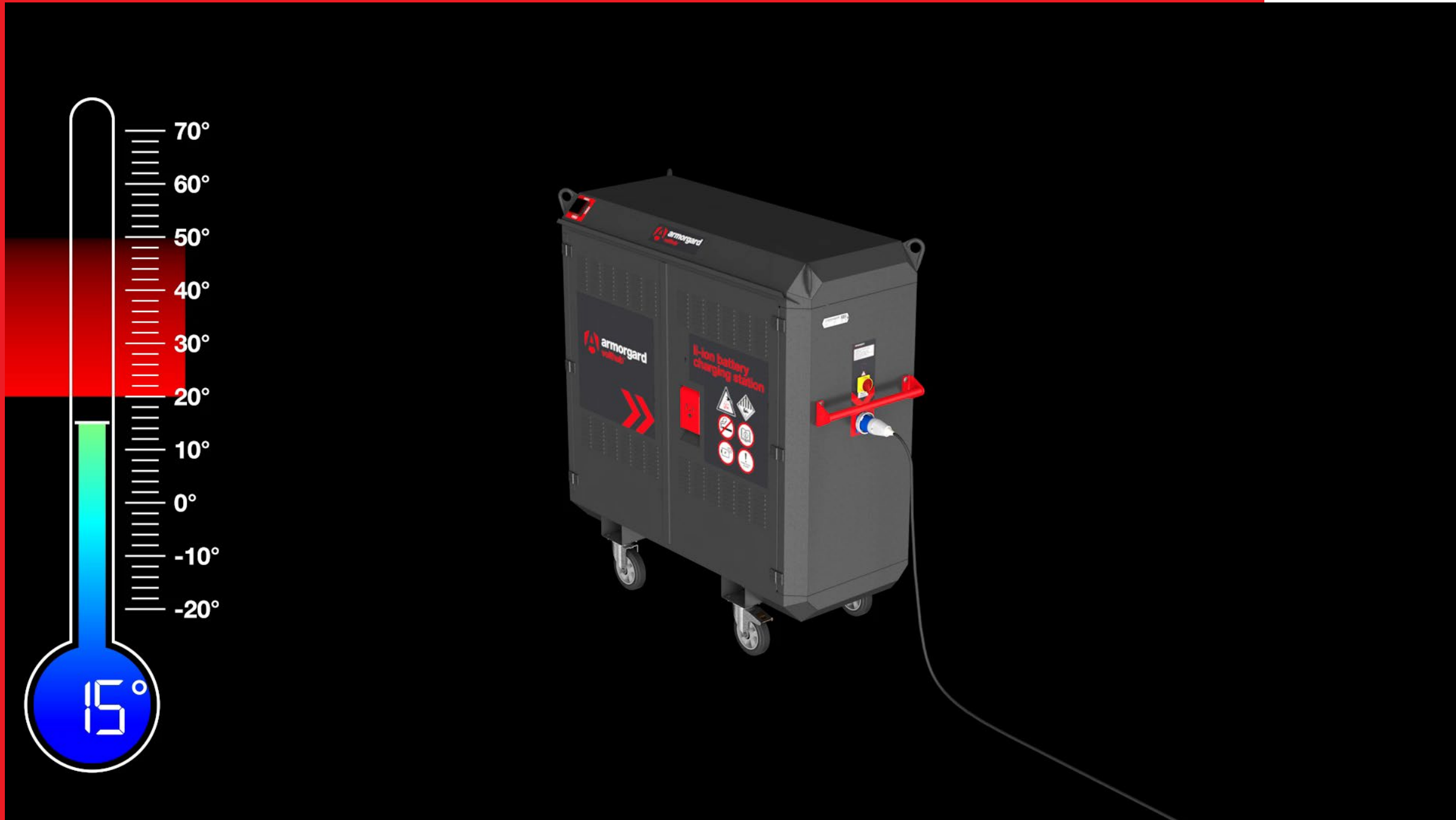
Weatherproof (certified IP55 rated)



Fire suppression and alert systems will still operate without mains power



forced ventilation





features required for safer charging



Early gas and smoke detection



GSM phone and text alert when there is a fire



Visual and audible alarm when there is a fire



Power cut-off when the internal temperature reaches 60°C or more



Forced ventilation to keep air flowing through the VoltHub



Thermostatic heater to keep the temperature at optimum levels



Weatherproof (certified IP55 rated)



Fire suppression and alert systems should still operate without mains power



whose advice do you take?



Royal Navy





how to mitigate the risks

armorgard
volthub™



armorgard
powerstor™

