

SKANSKA



# New and Emerging Risks – Lithium Ion Batteries

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# Introduction

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# New and Emerging Risks

- Lithium-ion battery use and types of use are increasing.
- Understanding safe operation, storage and maintenance of batteries is crucial.
- Industry guidance recognises risks of lithium-ion batteries.



# A Growing Problem, but Why?



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- Lithium-ion batteries are highly reactive with the environment, i.e. shock impact, general wear, poor maintenance.
- Fires are becoming more frequent within the construction and waste industries.
- Lithium-ion batteries become a self-oxidising chain-reacting fire and often cannot be extinguished.
- Likely to be hundreds of batteries on site at any one time, posing a significant fire risk.
- Battery powered transport including e-scooters and e-bikes have increased in popularity.
- Current charging arrangements on site are not sufficient and need to be improved



# What is Thermal Runaway?

Chemical process rapidly producing heat and gas.

Occurs before flames are visible.

Gases vent from battery as vapour cloud - **exposure is very harmful!**

Carbon Monoxide

Carbon Dioxide

Hydrogen Fluoride

Hydrogen Chloride

Hydrogen Cyanide

Sulphur Dioxide

Hydrocarbon Droplets

# What is Thermal Runaway?

Crushing

Penetration

Overcharging

Overheating

Short Circuit

Thermal  
Runaway



Smoke

Fire

Explosion

# What is Thermal Runaway?





# Battery Fire Incidents

On 13<sup>th</sup> April 2022, Skanska UK experienced it's first Lithium-Ion battery fire.



A statement from the fire services at the time advised that fires of this nature are becoming an almost daily occurrence.

# Examples of Poor Practice



# Final Thoughts?

Construction projects must robustly risk assess the hazards associated with lithium-ion batteries.

The following needs to be considered;

- Raise awareness with projects and supply chain.
- Review of battery charging arrangements and standard of battery banks.
- Provide suitable disposal arrangements for lithium-ion batteries.
- Provision of suitable class extinguishing media (Lith-Ex / AVD).
- Reviewing arrangements surrounding e-bikes, electric plant & electric vehicles.





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