



EN Lithium-Ion Fire Risk Assessment – Charging & Storage

SV Brandriskbedömning för litiumjonbatterier – laddning och förvaring

FR Évaluation du risque d'incendie des batteries lithium-ion – recharge et stockage

DE Brandrisikobewertung für Lithium-Ionen-Batterien – Laden und Lagerung

IT Valutazione del rischio di incendio delle batterie agli ioni di litio – ricarica e stoccaggio

NL Brandrisicobeoordeling lithium-ionbatterijen – opladen en opslag

ES Evaluación del riesgo de incendio de baterías de iones de litio – carga y almacenamiento



LITHIUM-ION FIRE RISK ASSESSMENT –

CHARGING & STORAGE

RISK OVERVIEW

Lithium-ion batteries can develop thermal runaway, leading to extreme heat, explosive gases, and rapid fire escalation.



CHALLENGES WITH TRADITIONAL FIRE SUPPRESSION

- Water can create hazardous gases such as hydrogen fluoride (HF).
- Foam and powder systems may trap heat and fail to stop the reaction.



CONSEQUENCES WITHOUT PROTECTION

- Rapid fire spread
- Severe damage to property and assets
- Operational downtime



RISK MITIGATION WITH MAUS SYSTEM

- Fire is contained within the cabinet
- No external flame spread
- External temperature remains below critical levels

CONCLUSION

The risk cannot be eliminated, but it can be controlled to a manageable and predictable level.

KIWA REFERENCE:



"This is an almost unstoppable chain of exothermic reactions that continue to spontaneously raise the temperature in a lithium-ion battery." (Kiwa Test Report, 2025, p.7)



"The consequences are very high temperatures, the release of dangerous gases, a fierce conflagration..." (Kiwa Test Report, 2025, p.5)



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BRANDRISKBEDÖMNING FÖR LITIJONBATTERIER –

LADDNING OCH FÖRVARING

RISKÖVERSIKT

Litiumjonbatterier kan drabbas av termisk rusning, vilket kan leda till extrem värme, explosiva gaser och snabb brandutveckling.



UTMANINGAR MED TRADITIONELL BRANDSLÄCKNING

- Vatten kan bilda farliga gaser såsom vätefluorid (HF).
- Skum- och pulverssystem kan kapsla in värme och misslyckas med att stoppa reaktionen.



KONSEKVENSER UTAN SKYDD

- Snabb brandspridning
- Allvarliga skador på egendom och tillgångar
- Driftstopp



RISKREDUCERING MED MAUS-SYSTEMET

- Branden hålls innesluten i skåpet
- Ingen extern flamspridning
- Utvändig temperatur hålls under kritiska nivåer

SLUTSATS

Risken kan inte elimineras, men den kan kontrolleras till en hanterbar och förutsägbar nivå.

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ÉVALUATION DU RISQUE D'INCENDIE DES BATTERIES LITHIUM-ION – RECHARGE ET STOCKAGE

APERÇU DES RISQUES

Les batteries lithium-ion peuvent subir un emballement thermique, entraînant une chaleur extrême, des gaz explosifs et une propagation rapide de l'incendie.



LIMITES DE L'EXTINCTION TRADITIONNELLE

- L'eau peut générer des gaz dangereux tels que le fluorure d'hydrogène (HF).
- Les systèmes à mousse et à poudre peuvent piéger la chaleur et ne pas arrêter la réaction.



CONSÉQUENCES SANS PROTECTION

- Propagation rapide de l'incendie
- Dommages importants aux biens et aux actifs
- Arrêt d'exploitation



RÉDUCTION DES RISQUES AVEC LE SYSTÈME MAUS

- L'incendie est confiné dans l'armoire
- Aucune propagation externe des flammes
- La température extérieure reste sous les niveaux critiques

CONCLUSION

Le risque ne peut pas être éliminé, mais il peut être maîtrisé à un niveau gérable et prévisible.

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BRANDRISIKOBEWERTUNG FÜR LITHIUM-IONEN-BATTERIEN – LADEN UND LAGERUNG

RISIKOÜBERSICHT

Lithium-Ionen-Batterien können in einen Thermal Runaway geraten, der zu extremer Hitze, explosiven Gasen und einer schnellen Brandausbreitung führt.



HERAUSFORDERUNGEN BEI HERKÖMMLICHER BRANDBEKÄMPFUNG

- Wasser kann gefährliche Gase wie Fluorwasserstoff (HF) erzeugen.
- Schaum- und Pulversysteme können Wärme einschließen und die Reaktion möglicherweise nicht stoppen.



FOLGEN OHNE SCHUTZ

- Schnelle Brandausbreitung
- Schwere Schäden an Eigentum und Vermögenswerten
- Betriebsstillstand



RISIKOMINDERUNG MIT DEM MAUS-SYSTEM

- Das Feuer wird im Schrank eingeschlossen
- Keine externe Flammenausbreitung
- Die Außentemperatur bleibt unter kritischen Werten

SCHLUSSFOLGERUNG

Das Risiko kann nicht beseitigt, aber auf ein beherrschbares und vorhersehbares Niveau kontrolliert werden.

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VALUTAZIONE DEL RISCHIO DI INCENDIO DELLE BATTERIE AGLI IONI DI LITIO – RICARICA E STOCCAGGIO

PANORAMICA DEI RISCHI

Le batterie agli ioni di litio possono sviluppare una fuga termica, con conseguente calore estremo, gas esplosivi e rapida propagazione dell'incendio.



PROBLEMI CON L'ESTINZIONE TRADIZIONALE

- L'acqua può generare gas pericolosi come il fluoruro di idrogeno (HF).
- I sistemi a schiuma e polvere possono intrappolare il calore e non riuscire ad arrestare la reazione.



CONSEGUENZE SENZA PROTEZIONE

- Rapida propagazione dell'incendio
- Gravi danni a beni e proprietà
- Fermo operativo



MITIGAZIONE DEL RISCHIO CON IL SISTEMA MAUS

- L'incendio è contenuto all'interno dell'armadio
- Nessuna propagazione esterna delle fiamme
- La temperatura esterna rimane al di sotto dei livelli critici

CONCLUSIONE

Il rischio non può essere eliminato, ma può essere controllato a un livello gestibile e prevedibile.

RIFERIMENTO KIWA:



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BRANDRISICOBEOORDELING LITHIUM-IONBATTERIJEN –

OPLADEN EN OPSLAG

RISICO-OVERZICHT

Lithium-ionbatterijen kunnen thermal runaway ontwikkelen, wat leidt tot extreme hitte, explosieve gassen en snelle branduitbreiding.



UITDAGINGEN BIJ TRADITIONELE BRANDBESTRIJDING

- Water kan gevaarlijke gassen zoals waterstoffluoride (HF) vormen.
- Schuim- en poedersystemen kunnen warmte vasthouden en de reactie mogelijk niet stoppen.



GEVOLGEN ZONDER BESCHERMING

- Snelle brandverspreiding
- Ernstige schade aan eigendommen en activa
- Operationele stilstand



RISICOBEPERKING MET HET MAUS-SYSTEEM

- De brand blijft binnen de kast ingesloten
- Geen externe vlamverspreiding
- De buitentemperatuur blijft onder kritieke niveaus

CONCLUSIE

Thet risico kan niet worden geëlimineerd, maar kan worden beheerst tot een hanteerbaar en voorspelbaar niveau.

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EVALUACIÓN DEL RIESGO DE INCENDIO DE BATERÍAS DE IONES DE LITIO – CARGA Y ALMACENAMIENTO

RESUMEN DEL RIESGO

Las baterías de iones de litio pueden sufrir fuga térmica, lo que provoca calor extremo, gases explosivos y una rápida escalada del incendio.



DESAFÍOS DE LA EXTINCIÓN TRADICIONAL

- El agua puede generar gases peligrosos como fluoruro de hidrógeno (HF).
- Los sistemas de espuma y polvo pueden atrapar el calor y no detener la reacción.



CONSECUENCIAS SIN PROTECCIÓN

- Rápida propagación del incendio
- Daños graves a bienes y activos
- Parada operativa



MITIGACIÓN DEL RIESGO CON EL SISTEMA MAUS

- El incendio queda contenido dentro del armario
- Sin propagación externa de llamas
- La temperatura exterior se mantiene por debajo de niveles críticos

CONCLUSIÓN

El riesgo no puede eliminarse, pero puede controlarse hasta un nivel manejable y predecible.

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