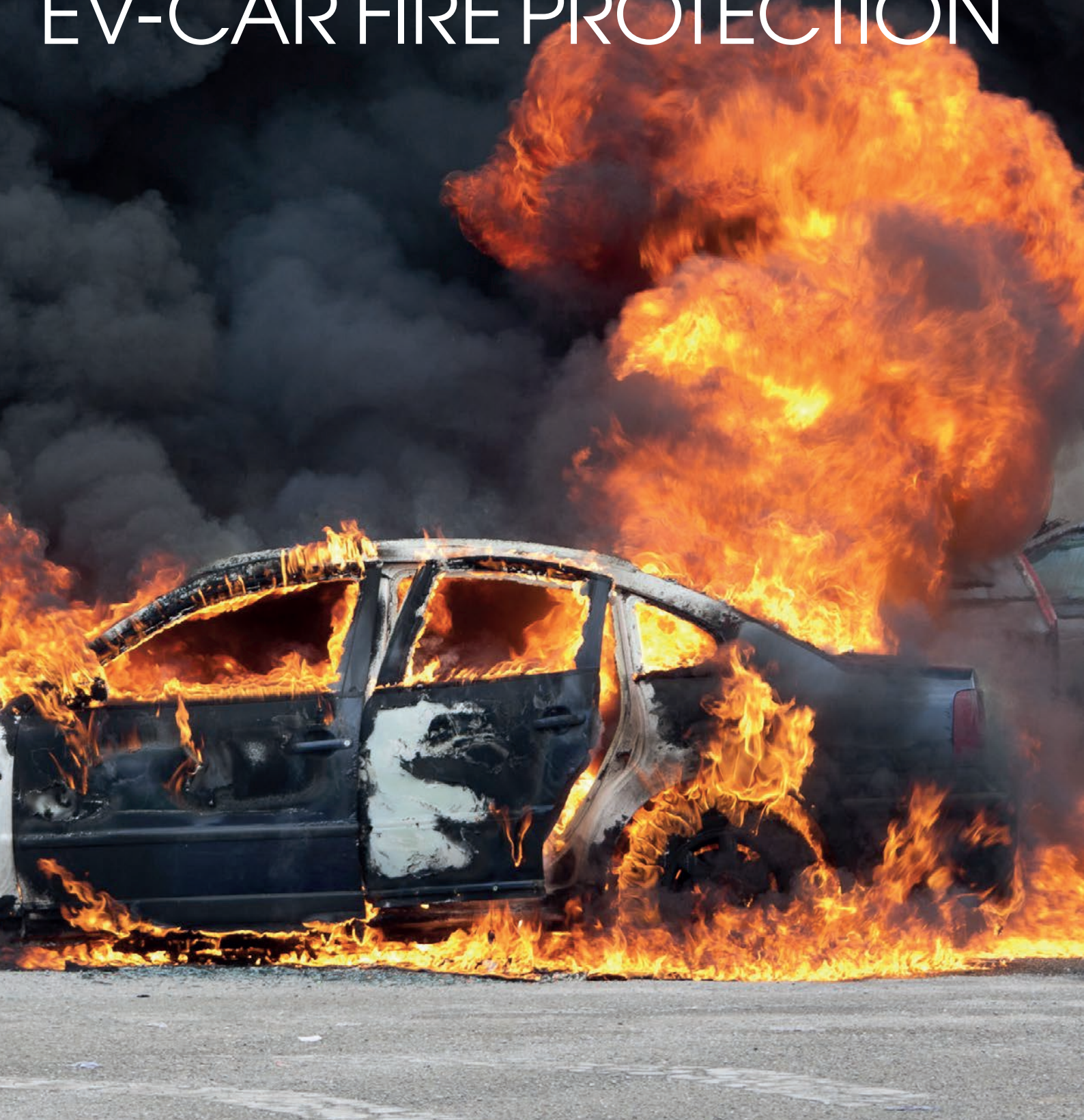


FIRE ISOLATOR

EV-CAR FIRE PROTECTION



EV FIRE PROTECTION

The danger of lithium-ion batteries, such as those found in smartphones, E-scooters, E-bikes and electric vehicles (EVs), catching fire or exploding is well known. Although the actual impact of an EV battery catching fire and the dangers that those fires can cause are widely known, it remains very difficult to extinguish these fires.

Imagine this happening in a carpark, on the cardeck of a ferry or in a building. The consequences could be disastrous. The methods for extinguishing a lithium-ion battery fire are depending on the location and size of the fire. However, as a general rule, using only water will not do the job and special strategies & methods are needed to fully and safely extinguish or isolate an EV car fire.

KEY FACTS ABOUT EV-FIRES

Here are a few key facts that everyone dealing with EV's on ferries or in car parks should know and do about EV-fires:

1. EV car fires can reach peak temperatures of over 1500 °C
2. Be sure to be well trained in the various actions that need to be performed

ABOUT THE **FIRE/ISOLATOR** CONCEPT

In general, there is no single solution to extinguish EV car fires, and/or lithium battery fires. Most specialists agree that more than one solution should be available. Once an EV fire occurs on board a ferry or car carrier, the shipowner/captain must be able to reach the nearest port as soon as possible to keep damages to an absolute minimum. In case of an EV on fire in a car park, charging station, workshop, the goal must be to minimize the collateral damage. Specialists with a long track record of fighting E-fires invented a concept based on live tests and best practices for the best method to fight an EV fire is in order to have minimum damages towards a building or ship construction and humans. The conclusion was that a combination of different extinguishing methods delivers the best results. With this best practice, the concept of Fire Isolator was born.

The Fire Isolator Concept holds 5 elements that, when used together, deliver the best results when fighting EV-fires on board ferries or in car parks:

1. The use of a High Temperature resistant Fire Blanket
2. The use of a Water Mist lance
3. The use of aerosol units that interrupt the chemical chain reactions occurring in the flames and replaces oxygen
4. Training
5. The use of a thermal imaging camera to monitor the temperature of the fire is strongly advised

EV FIRE ISOLATOR CONCEPT

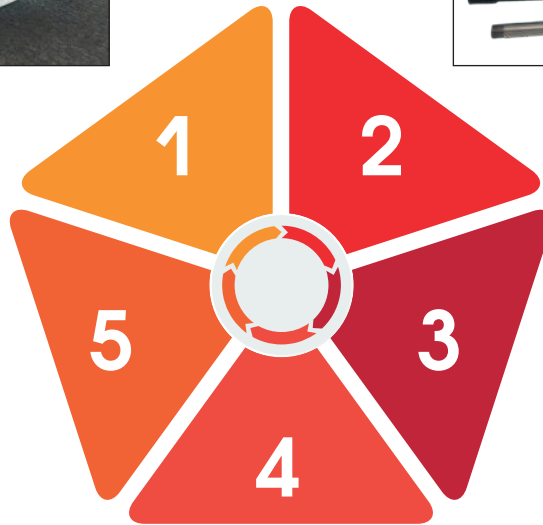
Fire blanket



Water mist lance set



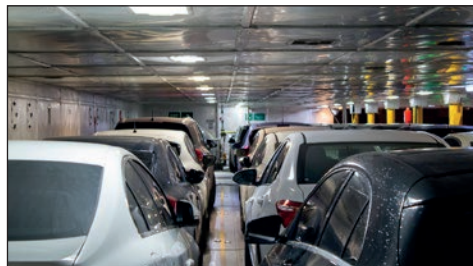
Thermal camera



Aerosol units



Training



EV **FIRE ISOLATOR** PRODUCTS



FIRE ISOLATOR BLANKET - FI-BL0906

The Fire Isolator Blanket is the best way to control and isolate car fires for All-Electric Vehicles (EVs) as well as normal cars. The Fire Isolator Fire Blanket will directly assist in containing the flames, lowering the temperature, and reduce smoke and toxic fumes. The blanket is temperature resistant up to 1600 °C, and is easy to place over the vehicle because of the coloured loops. This blanket is available in multiple sizes upon request. For lithium batteries, E-scooters and E-bikes we have 2x2 meter and 3x3 meter blankets available.



FIRE ISOLATOR WATER MIST LANCE - FI-WMLANCE

The Fire Isolator Water Mist Lance is your assistant in quickly and efficiently reducing fires in EV vehicles. By moistening the blanket, the blanket will become nearly gas tight, to save the aerosol cloud and prevent oxygen from coming in. Also the temperature of the fire is lowered.

The Fire Isolator Water Mist Lance can penetrate directly into the battery in an easily accessible location. This method allows water to enter the battery cells directly.



FIRE ISOLATOR AEROSOL UNITS - FI-AUCA2

Our Aerosol Units are lightweight, hand-held units designed to provide portable fire extinguishing. Aerosol Units are perfect for providing control of the situation together with the Fire Isolator blanket, can save valuable time, prevent a flashover and bring the temperature of the fire down dramatically, to around 200 °C.



FIRE ISOLATOR TRAINING

For a safe and accurate use of the Fire Isolator concept we offer training programs. Our standard training package consists of a full day of training in which you can learn about the characteristics of lithium-ion fires and how they compare to normal (car) fires, about the background and reason for launching the Fire Isolator and you can get hands-on with the concept in a practical (dry-) training of concept. You will learn how to quickly unfold and deploy the fire blanket, how to deploy the water mist lance and aerosol units. Any training will earn you a Fire Isolator training certificate. These trainings can take place on our location in the Netherlands or on a location of your preference.



FIRE ISOLATOR THERMAL CAMERA - FI-BCAM

A thermal imaging camera is a type of the thermographic camera used in firefighting. By rendering infrared radiation as visible light, these cameras allow firefighters to see areas of heat through smoke, darkness, or heat-permeable barriers. In the context of the Fire Isolator concept, it is important to monitor the temperature under the fire blanket to see if more aerosol units need to be deployed



DIPPING CONTAINER

A dipping container in which the EV needs to end up submerged, for probably even several days. To be provided by local fire brigade or car salvage company.

With the Fire Isolator, the fire in an EV can be controlled for hours, in order to have time for the fire brigade for their logistics and preparation of the final solution.

THE FIRE ISOLATOR CONCEPT IN FACTS

- EV car fires can reach peak temperatures of over 1500 °C (as witnessed during our tests). Regular combustion engine cars of around 800 °C.
- By covering the burning EV with the Fire Isolator blanket, the temperature of fire already dropped to around 600-800 °C
- After using the water mist lance and aerosol unit, the temperature of the fire dropped to around 200-300 °C
- The Fire Isolator is a concept that allows you to control the fire and minimize collateral damage
- When the EV car's battery is still heating up (eg by using monitoring systems) but has not caught fire yet, the Fire Isolator concept can be deployed without using Personal Protection Equipment
- Once the EV car is burning, the Fire Isolator concept should be deployed using PPE and SCBA
- The Fire Isolator fire blanket is reusable up to 6-7 times, based on the results from our own live tests

PRODUCT IMAGES & CERTIFICATES



PRODUCT CERTIFICATES

- Fire Blanket:
ASMT D6413 Flame resistance certificate by HPL Engineering
- Fire Blanket:
ISO EN 13501-1 Reaction to fire certificate by HPL Engineering
- Aerosol units:
ABS Product Design Assessment Certificate, among others
- Water Mist Lance:
ABS Product Design Assessment Certificate

ACCESSORIES

Required accessories like fire suits, thermal imaging cameras, firehoses, coupling and cabinet can be quoted. Ask us for the pricing information.

EV **FIRE ISOLATOR**



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