

## Controlling EV car fires with the Fire Isolator concept

On March 17<sup>th</sup>, 2022, a live demonstration of the Fire Isolator took place in Frederikshavn, at the Nordjyllands Beredskabs Uddannelsescenter in Hvims Denmark (Fire Training center). In front of an audience of Ferry owners, safety directors of both maritime and onshore sectors, port authorities, government, professional fire fighting teams, and dealers/distributors, all steps of the concept were successfully completed.

Where an EV car fire causes hectic and fear, the Fire ⚡ Isolator concept ensures control and overview. With this, we offer a proven and tested process that fits seamlessly into your EV car fire strategy.

### Target audiences:

- Ferry operators
- Shipping companies
- Car park management
- Facilities & real estate safety managers
- Professional intervention services

### Summary

This report provides a summary of the demonstration of the Fire Isolator concept that was performed on March 17<sup>th</sup>, the history of the concept, key insights into the operation of the concept, a conclusion and recommendations.











4.2 After the Aerosol unit was placed under the fire blanket, the fire temperature was reduced (within a minute) to under 100°C.



4.3 After the Aerosol unit was placed under the blanket, smoke was reduced by an estimated 90%. Below shows before and after placing the blanket.



4.4 Responders felt stress relief and no time pressure once the aerosol unit & blanket were in position.



4.5 Before the team that performed the demonstration started, they were made familiar with the products and procedures. Anyone deploying the **FIRE/ISOLATOR** concept should develop procedures for safety and fast positioning of the blanket on the EV. Training is necessary due to the size and weight of the blanket: 9x6 meters & weight of 40kg .



4.6 The low pressure aerosol units had immediate effect within seconds on temperature of fire once they were in position.

## 5 Conclusion

5.1 The **FIRE/ISOLATOR** concept is an easy to use method to isolate E-vehicles in order to minimize the collateral damage, (for ferries/ships) to win time to contain the situation and safely reach a port and (for car parks/facilities teams) to minimize the collateral damage until the EV can safely be removed by intervention services.

5.2 The **FIRE/ISOLATOR** concept provides control of the situation once the fire blanket is placed, this reduces stress situations by crew in these hectic situations as well as heat reducing to prevent damage to steel and/or concrete structures.

5.3 The effectiveness has clearly been demonstrated.

5.4 Attendees are convinced a staff / crew training is necessary in order to achieve the objective to isolate the car fire and avoid further collateral damage.

## 6 Recommendations based on test results

6.1 The **FIRE/ISOLATOR** developers recommend to install on every car deck of a RoRo ferry at least on average 2 sets of Fire blanket/aerosol suitcase (each containing 2 units) & 1 water mist lance per deck. Advised, based on best practice, is to have 4 blankets available per deck to also cover cars parked next to the burning EV.

6.2 The **FIRE/ISOLATOR** developers recommend to install on every car deck of a (Fjord) ferry with a max normal crossing-time of 1 hour at least 2 blankets and 1 set of aerosol units.

- 6.3 The number of **FIRE/ISOLATOR** sets (blanket/aerosol unit/water mist lance) to be present in car parks is to be decided in collaboration with building owners/facilities teams etc, depending on the surface and number of floors of the parking garage.
- 6.3 The **FIRE/ISOLATOR** developers recommend to have enough crew members onboard or present in a building who had a training by specialists in this matter.
- 6.4 The **FIRE/ISOLATOR** developers recommend that the crew should have a training course for fighting EV fires and to have regular training in EV fighting.





## ANNEX 1 – Preliminary conclusions

- A. The method described under 3.4 can only be achieved by a trained crew. Therefore it is recommended to train your team(s) in the concept during a simple 1 day course.

When the EV is already heavily burning, it is advisable that responders protect themselves with full PPE, including a Self Contained Breathing Apparatus.

It is critical that fire-fighting personnel are made aware of the risk posed by electric high-voltage equipment in electric vehicles.

- B. Possible application scenarios for the Fire Isolator concept along with already active firefighting systems onboard ferries

### Scenario 1

Perform regular temperature checks (preventive) using a thermal camera to early detect potential lithium batteries heating up. When a fire blanket is then installed on the car, any potential fire outbreak is managed early in the process.

### Scenario 2

When a EV fire occurs, the drenching system is activated. After the blanket is placed on the car on fire, the drenching system could be switched off to prevent any water damage/nuisance to occur.

### Scenario 3

When an EV car fire occurs, the drenching system is activated. The drenching system stays active until the port is reached. The drenching system is then switched off and the fire blanket is put over the car so that the ferry guests can

- C. Accessories which can be deployed in the **FIRE/ISOLATOR** concept.
- : Thermal camera with temperature till +1200° (e.g. Bullard)
  - : Fire axe, Fire suit (3/4 layer)
  - : GRP storage boxes, reclosable.

## 6 Attendance list

Brian Studsgaard MD of Studsgaard Safety A/S Fredrikshavn Denmark  
Mick Jensen Manager Studsgaard Safety A/S Fredrikshavn Denmark  
Michael Petersen Manager Studsgaard Safety A/S Fredrikshavn Denmark  
Willem Heijboer CEO T-ISS BV Dinxperlo Netherlands  
Jan Peter Verheuvél Manager T-ISS BV Netherlands  
Ron Verstegen MD T-ISS BV Dinxperlo Netherlands  
Konstantin Toregozin MD Garant Protech, Klaipeda Lithuania  
Ib S Nielsen, Beredskabsinspektør Nordjyllands Beredskap, Hvims, Denmark  
Uri Bitton, MD of UB Safe, Tel Aviv, Israel  
Kasper R Nielsen, Manager Lotek A/S, Sonderborg, Denmark  
John H Jorgensen, Port of Fredrikshavn, Fredrikshavn, Denmark  
Allan Christensen, Danish Maritime Authority, Denmark

and safety specialist teams of major Scandinavian Ferry operators