

Special Report

Electric Vehicle *Fire Blankets*

FSJA presents a Special Report on Electric Vehicle Fire Blankets, produced in collaboration with America Fire Blanket

MARKET ANALYSIS

Analyzing the fire blanket market in the Americas and its path to becoming one of the industry's most recognized fire suppression tools

p38-39

INDUSTRY EXPERT

Former UL business leader Chris Hasbrook explores the demands of EV fire containment and how design decisions affect frontline safety

p44-45



KNOWLEDGE PARTNER

Joe Hosey and Mark Ebedes, Co-Founders of America Fire Blanket, discuss why their EV fire blanket may be the most meaningful technical advance in fire suppression methods since water

p40-43



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Editor's Introduction

Electric Vehicle Fire Blankets

Welcome to this month's Special Report on Electric Vehicle Fire Blankets, produced by Fire and Safety Journal Americas in collaboration with America Fire Blanket.

Electric vehicle incidents confront responders with behavior that escalates quickly and demands clear scene control. Lithium-ion batteries can surge in temperature, release hazardous gases and sustain a reaction that does not respond to conventional suppression tactics. For those on the ground, the priority is gaining enough control to protect people nearby, secure adjacent assets and hold a safe perimeter while thermal runaway progresses.

A tool shaped by modern risk

As EV use increases, fire blankets have moved into the conversation as a practical method for containment. Their purpose is straightforward, yet far from simple in execution. A blanket must settle over the vehicle cleanly, hold its form under intense heat and limit the chance of the incident escalating into neighbouring bays or structures. This requires materials with high endurance, predictable behavior and enough structural consistency to cope with long-duration events or uneven flame patterns.

A key concern raised by departments is the behavior of gases underneath a sealed cover. When pressure rises in confined space, sudden release can put crews at risk. Responders have described moments where lifting one edge of a blanket sends concentrated heat or smoke toward the team, turning a necessary action into a potential injury point. This challenge has prompted wider reflection on how containment tools might manage that pressure more deliberately. A blanket that directs gas movement in a controlled path offers a far safer operating window than one that leaves crews to create ad-hoc vent points.

“The aim is not to extinguish the battery reaction but to maintain control of its footprint.”

Containment in restricted environments

EV incidents in enclosed settings bring added complexity. Underground car parks, charging areas, and workshop bays present tight access, limited ventilation and the possibility of heat affecting surrounding structures far faster than in open-air incidents. In these situations, a containment tool that limits spread and stabilises conditions can support both evacuation and asset protection.

The aim is not to extinguish the battery reaction but to maintain control of its footprint so responders can work with reduced exposure and clearer lines of sight.

Tackling these challenges with a patented approach is America Fire Blanket, whose work centers on first responder protection and pressure direction during thermal runaway. Their contribution to this report outlines how these priorities shaped their design and why stability, containment and controlled venting remain core to modern EV fire blanket development. ■



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Market Analysis

Changing *the* culture

Analyzing the fire blanket market in the Americas and its path to becoming one of the industry's most recognized fire suppression tools

The fire blanket is more than a tool for extinguishing early-stage fires- it is an essential safety device. Consisting of a sheet of fire-retardant material placed over a fire in order to smother it, a fire blanket can be used to quell a small fire or wrapped around a person whose clothing is alight.

According to report by Intel Market Research, the global fire market blanket was valued at USD 280.39 million in 2024 and is project to reach a substantial USD 388.13 million by 2032, exhibiting a CAGR of 4.9% during the forecast period.

The North American fire blanket market is the undeniable global leader, with the region's command being impacted by its enforcement of fire safety codes across residential, commercial and

industry sectors. North America has a consistent and high-volume demand for certified safety products, notably including both traditional and technologically advanced fire blankets.

Innovation

The industry is growing beyond the stereotypical- with consistent product launches, high-level manufacturing and brands competing against one another. Therefore, the market is producing more innovative fire blankets than ever, with key players developing advanced materials like fiberglass and ceramic-based blankets. Other materials used by manufacturers include silica and woven fabrics that are designed to offer superior performance while being lighter-weight and increasingly more accessible to the user.



- ✓ Engineered for the realities of **EV battery emergencies**
- ✓ **Superior Quality and Performance**
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“While the fire blanket is not as notable as the fire extinguisher, it is on its way to becoming one of the most widely utilized safety devices.”

Standards and awareness

Across the Americas, governments and regulatory bodies are implementing stricter fire safety standards. The codes shaping the industry are there to mandate the presence of fire safety equipment. There is an undeniable economic impact of reform in regulations and standards, with businesses having to invest in testing and research in order to offer the latest safety solutions.

Alongside regulatory stringency, the American fire blanket market is currently being marked by high consumer awareness. As a result of campaigns and a willingness to change the culture surrounding fire safety awareness, homeowners are beginning to purchase fire blankets as a standard kitchen safety item more than ever. It is become a necessity rather than an option. Similarly to homeowners, corporations and businesses are integrating fire blankets into their base-level emergency response plans. Alongside campaigns and continuous education from governing bodies and fire departments, awareness of the fire blanket is only growing.

Limitations

However, there are some restraints on the market- with the most prolific being the common belief that fire blankets are a tool that can only be primarily used in certain scenarios, such as in the kitchen. This limits their use as a tool as compared to fire extinguishers, which are widely perceived as being the go-to fire protection tool. Alongside being defined a niche or single- use product, fire blankets often last several years without needing a replacement unless they are used. This means that the products are not often sold, making market grow often stagnant.

Overall, the fire blanket market is on an upwards trajectory, with ever-changing regulators meaning money is being consistently pushed into progressing innovation. Technological advancements are also economically beneficial, with brands beginning to compete against each other to claim the title of the latest breakthrough product. While the fire blanket is not as notable as the fire extinguisher, it is on its way to becoming one of the most widely utilized safety devices. ■

**INNOVATION FOR
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Joe Hosey and Mark Ebedes, Co-Founders of America Fire Blanket, discuss why their EV fire blanket may be the most meaningful technical advance in fire suppression methods since water

Knowledge Partner

Made in AMERICA, built for THERMAL runaway

Electric vehicles have forced a change in the way first responders think about car fires. Lithium-ion batteries can enter thermal runaway, release large volumes of gas and burn for hours even when oxygen is restricted. Fire blankets that work on gasoline and diesel cars have been pushed into situations they were never built for.

Joe Hosey and Mark Ebedes have built America Fire Blanket around that problem. Their goal is to build blankets that actually match modern fire risks rather than rebadging low-cost imports.

Building a company around higher standards

The co-founders come from very different sides of the safety world. Hosey spent decades in testing, inspection and certification, including senior roles at Underwriters Laboratories (UL) and the Canadian Standards Association (CSA). Ebedes' background is in marketing, communications and brand positioning. Hosey handles the performance and compliance questions; Ebedes focuses on how to present them to the people who need them.



"I think we are a fantastic complement to each other in regard to how to build this company out," Hosey says. "My background is in testing, inspection and certification, including standards. I bring the product performance and technical expertise, while Mark tells the story."

A year before the launch of America Fire Blanket, Ebedes established Canada Fire Blanket for the Canadian market. That product line became the starting point for many of the construction choices that later defined the U.S. company and helped refine manufacturing before expanding south.

Redefining the home fire blanket

The company's first step into the market was the development of a traditional one meter by one meter fire blanket for home and office use. Hosey found that many available blankets were identical products with different labels. "There are a multitude of companies that are just buying stuff as is off Alibaba, putting their name on it and selling it on Amazon," he says. He explained that most options were low-cost items that deteriorated quickly, often breaking down into fiberglass fragments within a short time and were designed to meet a price point rather than a performance standard.

In response, Hosey said they worked with the factory on a stronger weave and manufacturing method to build a blanket that would remain reliable throughout its life. He said: "We wanted something that would last, perform well and give people

real confidence." The result is a blanket that does not expire, is supported by a lifetime satisfaction guarantee and has been developed to suppress smoke and fire more effectively than typical market products.

"A battery that goes into thermal runaway does not depend on surrounding oxygen, which changes the role of a blanket."

Ebedes and Hosey chose a different path with their manufacturers, focusing on stability, predictable suppression behavior and construction that withstands handling in real emergencies. The result became the foundation for what they call their Smoke-X Technology™ suppression performance.

The team continues to develop additions to the residential range and is preparing another patent filing focused on user safety. Hosey describes it as a feature intended to support someone deploying a blanket in a home or office incident, shaped by observed behavior in stressful moments.

Hosey also noted that the one meter by one meter blanket can support fire departments that want to raise funds for community ▶



programs. He said the company is open to discussing special pricing or tailored arrangements and that they are keen to work directly with fire departments that see the blanket as a practical option for fundraising or resale initiatives.

EV fires, off-gassing and new risks

The origins of the TREV system, named for its role as a Thermal Runaway Electric Vehicle blanket, came from conversations with trainers, chiefs, standards committees and advisors such as former UL fire science leader Chris Hasbrook. Those discussions centered on how lithium-ion incidents behave compared with internal combustion fires.

Hosey explains that gasoline and diesel fires respond well to oxygen restriction while lithium-ion batteries in thermal runaway continue generating heat through internal chemical reactions. The battery does not depend on surrounding oxygen, which changes the role of a blanket.

Crews on the ground are trying to manage that pressure with tools that were never designed for it. “The tendency currently is that the firefighter will try and lift up a corner of the fire blanket to allow the release of those gases so it does not explode and destroy the blanket and cause a bigger problem,” Hosey says. “In the course of doing that, the pressure escapes and it is knocking people down, broken fingers, wrists, bruises, contusions, and there is a potential for flame to come rushing out.”

That is now feeding into standards discussions. Hosey recalls a recent conversation with a Canadian fire chief: “He said what he knows about EV fire blankets is that they are potentially dangerous and they are recommending they be taken out of service from the trucks. Then I said, ‘What if you had a fire blanket that controlled the off-gassing up and away from the firefighter?’ He said they would go into the field immediately.”

Designing TREV around first responder safety

Responder feedback shaped the TREV design brief. The blanket needed to contain heat for long durations, manage pressure in a predictable direction and maintain a stable form even during irregular flame or gas release.

The resulting patent covers a venting concept that directs gases along the top of the blanket and out toward the front or rear of the vehicle. Instead of allowing pressure to build beneath the material, apertures under a covered channel guide heat, smoke and gas upward and then outward in a controlled path.

The vent system is at the center of that concept. Hosey says their proprietary, patent-backed design is built to channel off-gassing up and away from firefighters and other first responders, creating a controlled path for pressure that conventional blankets do not provide. He explains that a series of apertures beneath a covered channel guides uncombusted gases, smoke, heat and occasional flame along the roof line before releasing them toward the front or rear of the vehicle. This controlled movement of pressure is the defining feature that shaped the TREV and positions it as a new category of EV fire blanket.

“The TREV blanket is built to stay stable under heat so pressure moves where it should, not through weak points in the fabric.”

The goal is clear containment, not suffocation. “It is going to contain all the flames,” Ebedes says. “It is not going to allow that fire to spread to other surfaces but it is not necessarily trying to extinguish what is underneath there by cutting off the oxygen. It is a slow release of that pressure so that the blanket can do what it is and be the best containment that is now safe for everyone around it.”

TREV is shaped around containment and responder safety as equal factors



and the team wants fire departments to see the blanket as a practical tool for real scenes, not a product defined by lab-only behavior.

Construction built for heat and duration

The vent system depends on a fabric capable of holding its shape under significant heat for long periods. Hosey describes the TREV blanket's construction as built for stability, high-temperature endurance and reduced gas seepage through the textile itself. This helps direct pressure into the venting system rather than through weak points in the fabric.

The blanket measures 30 feet by 20 feet, weighs around 65 pounds and includes extended straps for two-person deployment. The company can produce larger formats for heavy-duty equipment, commercial fleets or industrial environments upon request.

Ebedes notes that the blanket's heat tolerance aligns with the demands of lithium-ion fires where temperatures can exceed conventional vehicle incidents and where responders may need containment for many hours.

Designed for apparatus and buildings

America Fire Blanket will offer TREV in two formats. The first is a duffel model for fire apparatus. Fire departments can carry it to roadside scenes where suppression water may be scarce. The blanket can help contain the fire's footprint and support efforts to limit spread into brush or nearby structures.

The second format is a building-mounted cabinet. Hosey has been speaking with officials considering new expectations for underground and indoor parking areas. Those discussions recognize scenarios in which a single EV fire in a garage could threaten the building above. TREV is intended to provide a containment option where hydrant access or ventilation systems may not be sufficient during the early stages of an incident.

Facilities with charging stations, multi-level parking areas and municipal



garages are among the settings the company expects to serve.

One fire, one blanket

America Fire Blanket recommends treating each blanket as single-use when exposed to a real fire. Hosey explains that a blanket exposed to heat or mechanical stress may appear intact while still carrying hidden damage. He emphasizes that fire departments should not rely on a blanket that has been dragged, pressed under a vehicle or exposed to sharp edges during deployment.

“The goal is containment that protects the responder, not a blanket that traps pressure and creates another hazard.”

Ebedes places the focus on personal safety. “It is a small investment for the benefit it provides for safety and why risk any compromise to safety for the second, third, fourth or tenth fire that it may be used on,” he says. “If it performed and did its job just once in its first use, then that is well worth it as value for what the product provides.”

Hosey highlights the economic dimension. A single EV fire in a parking structure or warehouse can lead to losses far beyond the cost of a new blanket. Fire departments and facility

managers must weigh the value of reliable containment against the downstream costs of failure.

Made in America, preparing for 2026 and beyond

America Fire Blanket manufactures TREV in the United States using materials sourced from North America and Europe. Hosey sees domestic production as a way to maintain oversight and keep lead times predictable as orders increase. The company may consider additional Canadian production later, building on its original roots.

Production is planned to ramp up in early 2026, with distributors already requesting quotes. Ebedes expects consistent demand from fire departments, building owners and fleet operators. “We know the world will be faced with a high demand and supply will be challenging to keep up with that,” he says. “We will be working to supply as fast as demand.”

Hosey believes that codes will evolve as more jurisdictions share their experiences with EV incidents. “Professionals in that sector are all connected to each other,” he says. “They all talk to each other. Year over year, we expect codes and regulations to be refined and enhanced.”

When those changes arrive, Hosey and Ebedes want responders and facility managers to have a blanket designed for the conditions they encounter, built through consultation with the people who face those conditions daily. ■

Former UL business leader Chris Hasbrook explores the demands of EV fire containment and how design decisions affect frontline safety



Engineering *EV fire* resilience

Electric vehicle fire incidents create conditions that are different from traditional car fires, particularly when batteries enter thermal runaway and produce extreme heat, pressure and hazardous gases. These behaviors have tested existing containment tools and prompted fire departments to look for equipment designed to address EV fires.

America Fire Blanket is one of the companies responding to that need, and former UL business leader Chris

Hasbrook has been advising the team as they refine the design of the TREV system and its hazard-management approach. FSJA Editor Iain Hoey sat down with Hasbrook to discuss how EV blankets are being engineered for operational use.

What makes electric vehicle fires particularly challenging compared with conventional petrol or diesel fires?

Electric vehicle fires usually involve lithium-ion battery systems, which behave very differently from gas

powered vehicle fires. A conventional fire depends on heat, fuel and oxygen, and if you remove one of those elements the fire will usually diminish. Lithium-ion batteries disrupt that principle because one of the byproducts of their failure is oxygen. Once the battery reaches a critical point of heat, it produces enough of its own oxygen to sustain a process known as thermal runaway, where it continues to burn regardless of external conditions.

When lithium-ion batteries in EVs burn, they reach extremely high

temperatures. They also release explosive and toxic gases, and the fire becomes highly energised and kinetic, ejecting burning battery fragments and hazardous vapours. This behavior is far more violent than a typical petrol or diesel fire, and it can escalate very quickly.

Water alone does not resolve the situation. If an EV or energy storage system is still energised, applying water introduces a risk of electrocution. Water may briefly reduce some heat or gas, but it does not interrupt the reaction driving thermal runaway, and runoff carries heavy metals and contaminants into drainage systems. All of these characteristics combined make EV fires significantly more complex to manage.

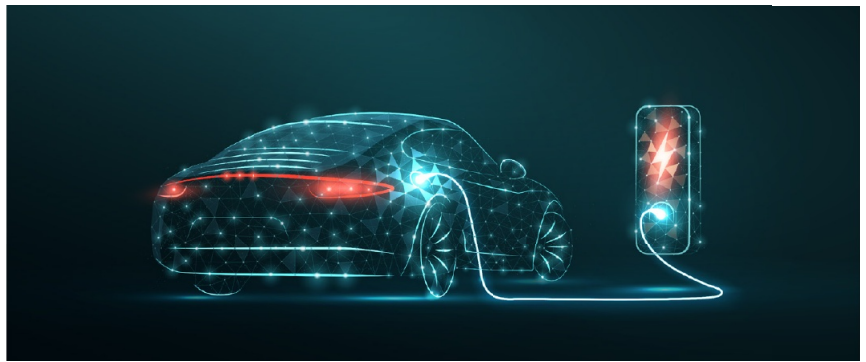
Can you explain the principles behind EV fire blanket design?

There are two main scenarios where a fire blanket might be applied to a vehicle. The first is when the vehicle itself is burning, and the intention is to slow the development of the fire long enough for first responders to evacuate people or secure nearby property. The second is when a nearby vehicle is burning and the blanket is used to prevent the fire spreading to an adjacent vehicle. In either case, trained first responders would ideally cover the entire vehicle to contain heat and shield the surroundings.

Thermal runaway can sustain temperatures approaching 1800 degrees Fahrenheit, so a blanket designed to tackle this must be made of a material that can cope with extreme heat while remaining structurally intact long enough for first responders to perform critical tasks such as evacuation or securing the scene.

How could controlled venting change the safety profile of an EV blanket?

Earlier this year, I witnessed a series of large-scale research tests where an electric vehicle was intentionally put into thermal runaway. Firefighters applied a



standard EV blanket and attempted to contain the fire. When they lifted part of the blanket to vent the gases, the pressure built up underneath and released violently enough to potentially knock several firefighters backward. Thankfully no one was injured, but it was a clear demonstration of the danger posed by gas accumulation under a fire blanket.

“Water may briefly reduce some heat or gas, but it does not interrupt the reaction driving thermal runaway.”

Allowing those gases to escape and mix with air could help them dissipate and could reduce the potential for an explosion or fire extension. A venting system in an EV blanket that directs gases away from first responders is an innovative and practical idea. Being able to manage build-up of smoke and gases under an EV fire blanket safely is an important safety development. Managing gas safely is as important as managing heat.

What makes it hard to create an EV blanket that withstands heat while managing gas safely?

The challenge is balancing the intense heat of a lithium-ion fire with the rapid production of hazardous gases. If those gases are trapped, the pressure can rise to dangerous levels, as I have seen firsthand. Managing that build-up without creating another hazard is a significant engineering challenge. A containment tool has

to withstand the heat long enough to be effective while allowing enough controlled venting to prevent an explosive release. That balance is not easy to achieve.

How would you characterise the current standards work on EV fire management?

Standards Development Organizations recognise that related standards must be improved to address realities observed in the field, and standards development bodies are engaging with industry participants to work to address emerging risks. Across the world, fire professionals acknowledge that the state of the art is not yet meeting operational needs, and the consistency of these discussions shows how challenging the problems of mitigating and managing EV fires remain.

Which types of EV fire trials give the clearest picture of how a containment tool performs?

Full-scale trials involving real vehicles and controlled ignition scenarios tend to be the most informative. The test I observed earlier this year, where electric vehicles were purposely put into thermal runaway, involved large power sources, EV system overload conditions and live application of blankets by firefighters. Seeing how the fire developed, how the gases accumulated and how first responders interacted with the equipment revealed practical issues that smaller-scale tests simply cannot show.

It is these kinds of real-world EV fire trials that expose the fire pressure dynamics, the kinetics of battery failure and the limitations of certain containment methods, giving a real-world opportunity to test how an EV fire solution will perform. ■

Editor's Product

Possibly the best solution to fire since... water?

Introducing the TREV Fire Blanket: the Purpose-Built EV fire blanket patented design for maximize firefighter safety and fire containment



Electric vehicle fires create conditions that differ from combustion engine incidents, but the off-gassing pressure events beneath a blanket are what many fire departments identify as the most hazardous. During thermal runaway, heated gases can accumulate under a cover and release suddenly. Crews have been hit by those bursts while lifting corners to relieve the buildup, and fire departments have asked for equipment that removes the need for that moment of exposure.

Joe Hosey, Co-Founder of America Fire Blanket and a long-time safety and certification specialist, said that the new 'TREV' blanket was developed specifically for thermal runaway events.

Off-gassing as the central safety problem

The Thermal Runaway Electric Vehicle Blanket, or TREV, was created to reduce the injury risks caused by trapped gases. Instead of leaving first responders to manage pressure manually, TREV channels the buildup along a fixed path that directs it up and away from the first responder. When a battery enters thermal runaway, it produces

combustible and toxic gases under the blanket, and without a controlled route those gases can discharge violently.

“Everything about TREV is built to keep the scene controlled when off-gassing starts to build.”

Hosey said some jurisdictions questioned the safety of non-vented models because crews have been lifting corners in search of relief points, and so he stressed that TREV represents a new category of EV firefighting and containment, combining first responder safety with sustained containment capabilities of more than 2,000 degrees Fahrenheit.

Guiding gas in a controlled direction

The core of the TREV blanket design is its venting channel, built along the top of the blanket. As gases rise from the vehicle, the system guides the flow toward either end in a

controlled direction. This removes the need for first responders to create release points themselves and reduces the unpredictable bursts that have caused injuries. Its design keeps the blanket in contact with the vehicle while the venting structure directs gas away automatically once deployed.

Two deployment formats

TREV will be offered in two formats. One version is supplied in a duffel for storage on response vehicles. The other is housed in a steel cabinet for wall-mounted use in indoor or underground parking areas or dealership service bays.

Production is preparing to scale in 2026, with fire departments and facility managers already requesting information. Hosey summarized the aim clearly: “Everything about TREV is built to keep the scene controlled when off-gassing starts to build. That is what first responders need, and that is what this blanket is made to handle.” ■

Find out more

For more information on the product visit: americafireblanket.com/ev-fire-blanket



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