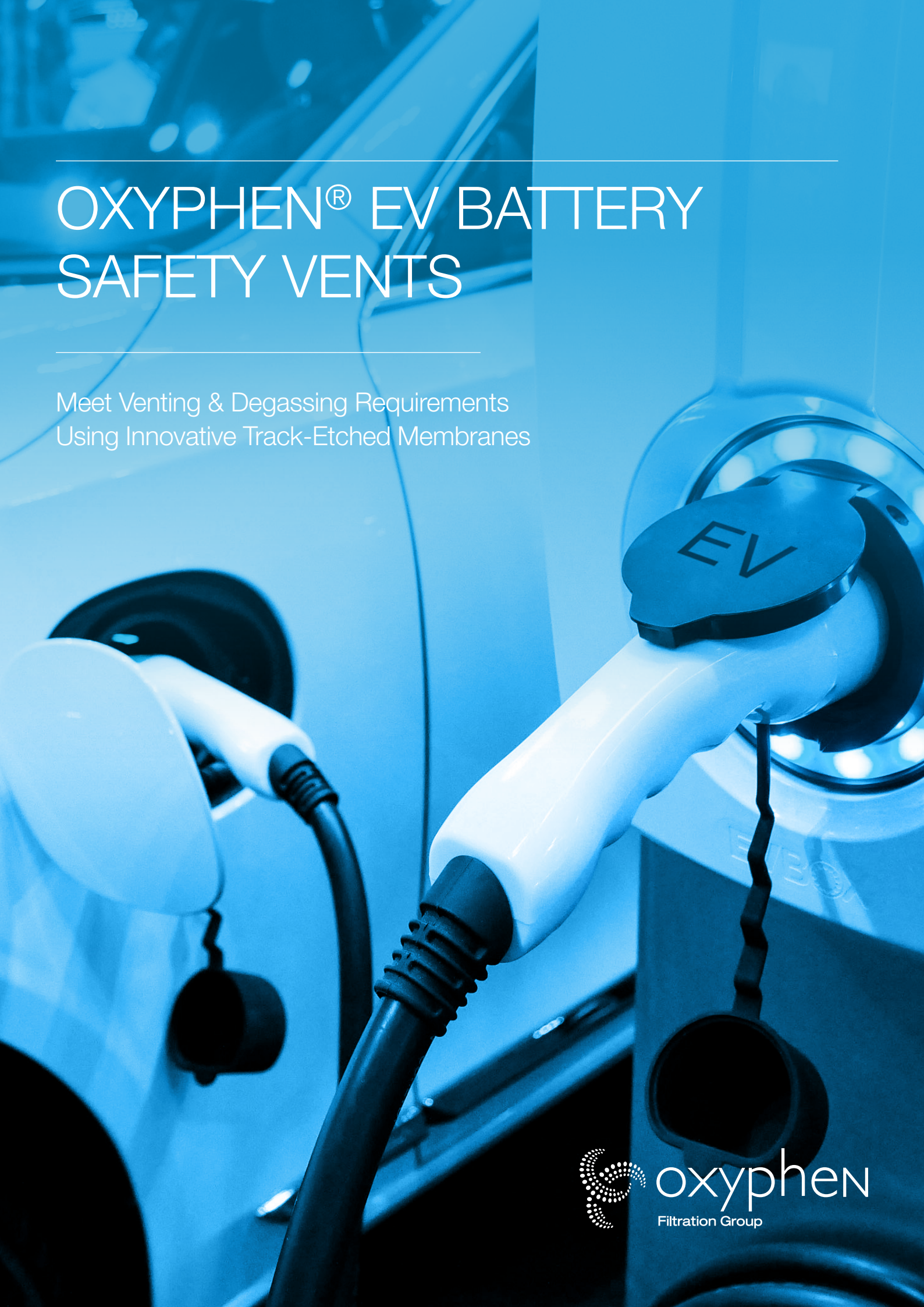
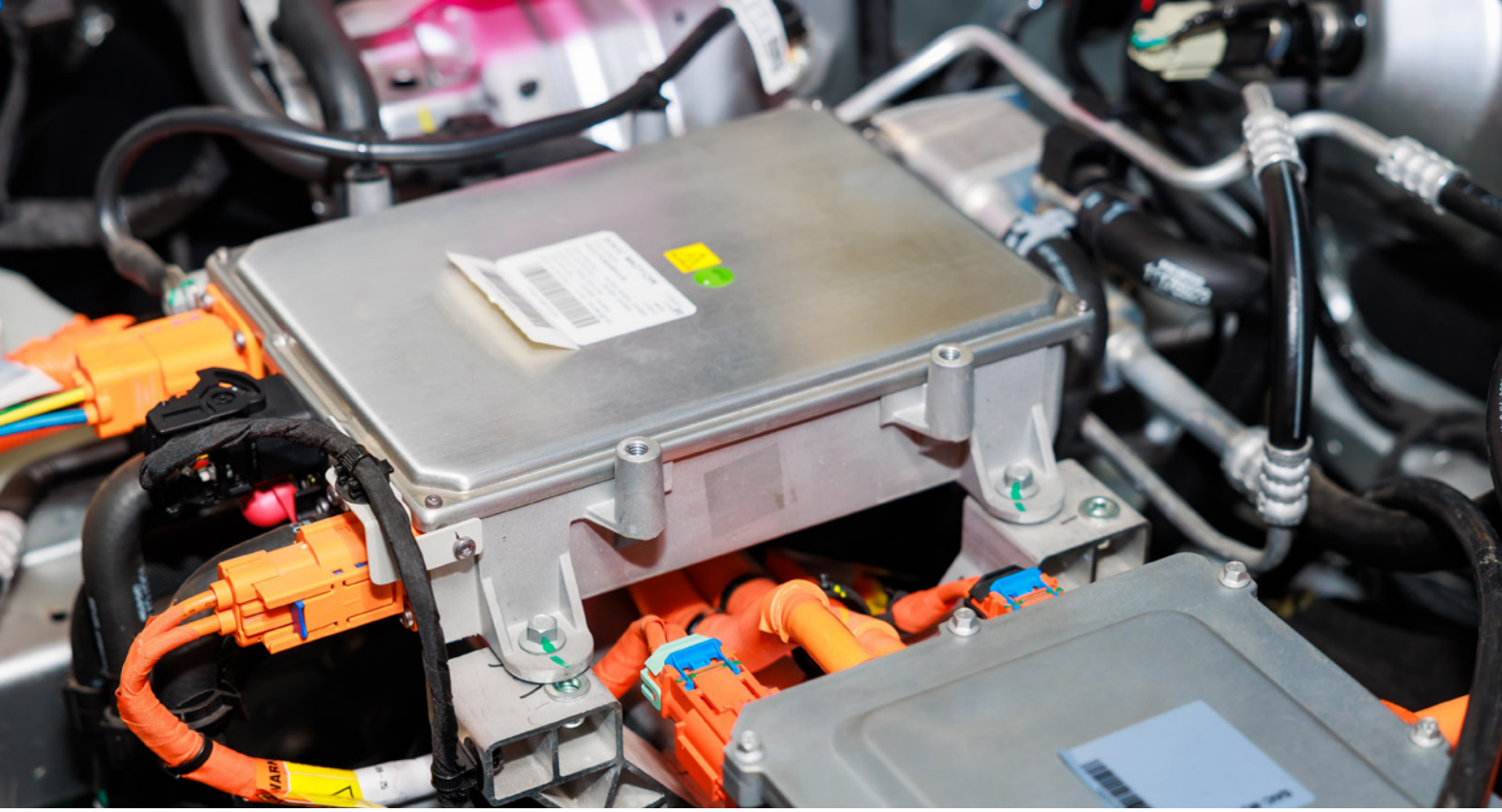
OXYPHEN® EV BATTERY SAFETY VENTS

Meet Venting & Degassing Requirements
Using Innovative Track-Etched Membranes



oxyphen
Filtration Group



Rechargeable lithium-ion batteries and battery packs are becoming increasingly demanded as the automotive industry continues its transition to electric mobility. To protect and ensure the safe use of these batteries, manufacturers must have a protective design and control features, as well as a last resort venting mechanism for each cell and battery pack – all while being exposed to environmental contaminants that can impede performance. Oxyphen's **Unique-Mem®** hydrophobic, track-etched membrane technology, which utilizes controlled pore sizes and pore densities, offers an all-in-one solution, protecting critical internal components from the ingress of liquid, dust, dirt, and other contaminants while also having the ability to burst at predefined overpressures to prevent potential explosions from taking place in the event of thermal runaway.

Did you know?

Under extreme abuse conditions, damaged or malfunctioning battery-components, short circuits, or other events, it is possible to start a "thermal runaway" process that develops a rapidly rising pressure, leading to an explosive release of that pressure from a cell or battery pack. Burning and exploding electric vehicles are the nightmare scenario of electric mobility and can pose great risk to the end user as well as massive liability for the automobile manufacturer.

Key Benefits

Protection Against Harsh Environmental Conditions

- Acts as a barrier against liquids and other contaminants
- Still allows for airflow to take place
- Performs even in extreme temperatures (-40 to + 150°C)*

*up to 180°C for special applications

Pressure Compensation & Degassing

- Maintains stable pressure levels as internal battery pressures rise and fall during normal operations
- Adjustable and defined burst pressures for emergency degassing during thermal runaway
- Less elastic than ePTFE – provides greater precision and a full-opening pop action

Ease of Assembly

- Can be bonded directly to customer's battery solution via ultrasonic welding, laser welding, or insert-molding
- Highly automated production process possible

100% Free of PFOA: Compliant with (EC) 1907/2006 REACH / Regulation (EU) 2019/1021 POP

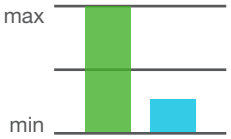
How the Product Works

Depending on the application, we recommend three different venting concepts.

Battery-System Venting Concepts

Microventing

- Airflow + water protection adjustable
- Pressure compensation

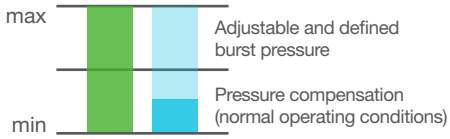


Protection level Airflow

- Small battery packs
- Electronic devices (AC/DC converter, battery charger)

Dualventing

- Pressure compensation
- Water protection
- Adjustable and defined burst pressure for emergency venting

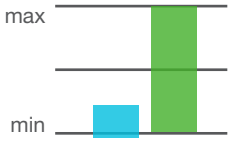


Protection level Airflow

- Small battery packs
- Big battery packs (EV, PHEV)

Macroventing

- High gasflow
- Low water resistence
- Emergency Venting



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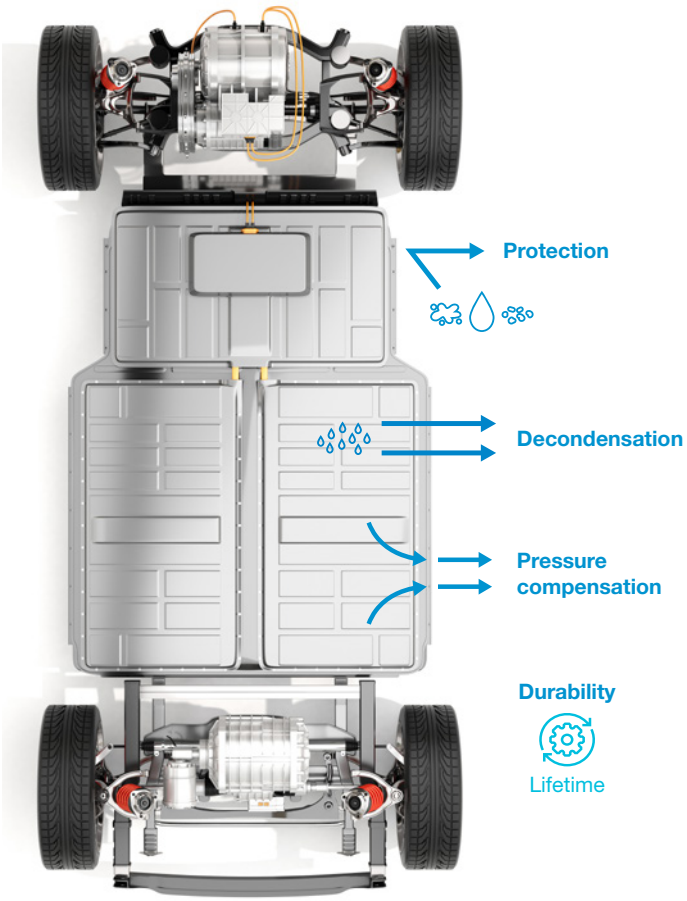
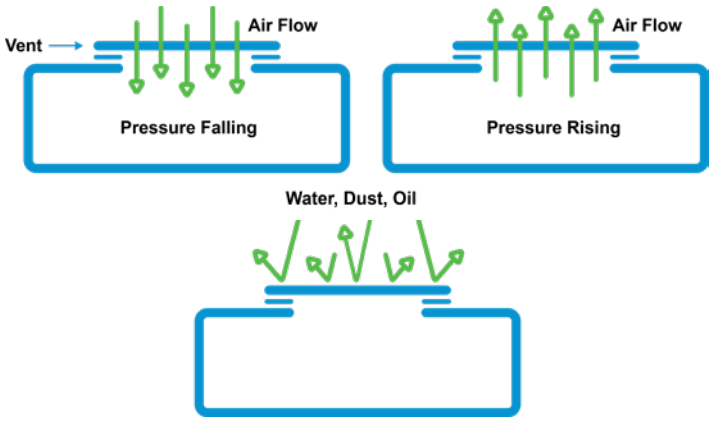
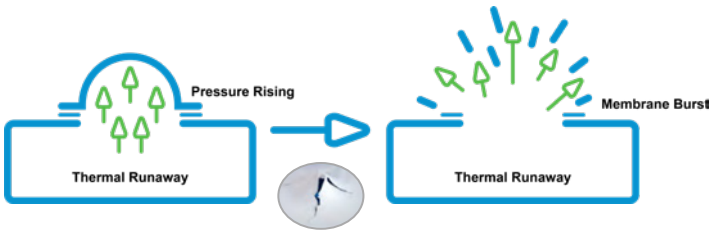


Normal Operations:



During Emergency Thermal Runaway:

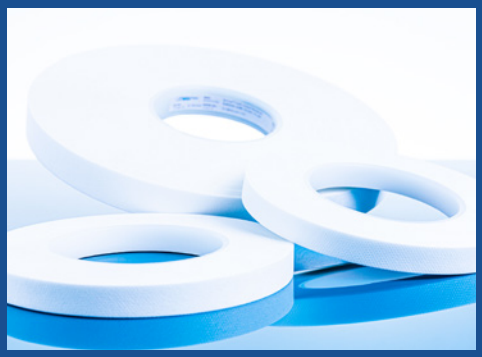


Technical Specifications

Available Options	
Airflow	Up to 1'700 l / (bar cm² min)
Water Entry Pressure (WEP)	Splash water protection up to 3 bar
Standard dimension	Outer diameter up to 55 mm
Adjustable burst pressure for emergency venting	From 0.2 – 5.0 bar
Applicable Temperature Range	-40 to + 150°C (up to 180 °C for special application)

Material Options
PET Track-Etched unlaminated
PET Track-Etched laminated with PET/ PP non-woven
PET fiber bonded membranes

Oxyphen Product — Standards for Battery Venting Concepts



Rollstock and Disks

OxyPad® Self-Adhesive Membranes

OxySeal® Injection Molded Units

Track-Etched Membrane Airflow vs. PTFE

Overview on airflow distribution track-etched membrane technology vs. PTFE technology

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