LOCTITE

# E-MOBILITY REPAIR SOLUTIONS *FOR BATTERY & E-DRIVE SYSTEMS*

*IT'S TIME TO **MOVE** BEYOND*


Henkel

Henkel Adhesive Technologies

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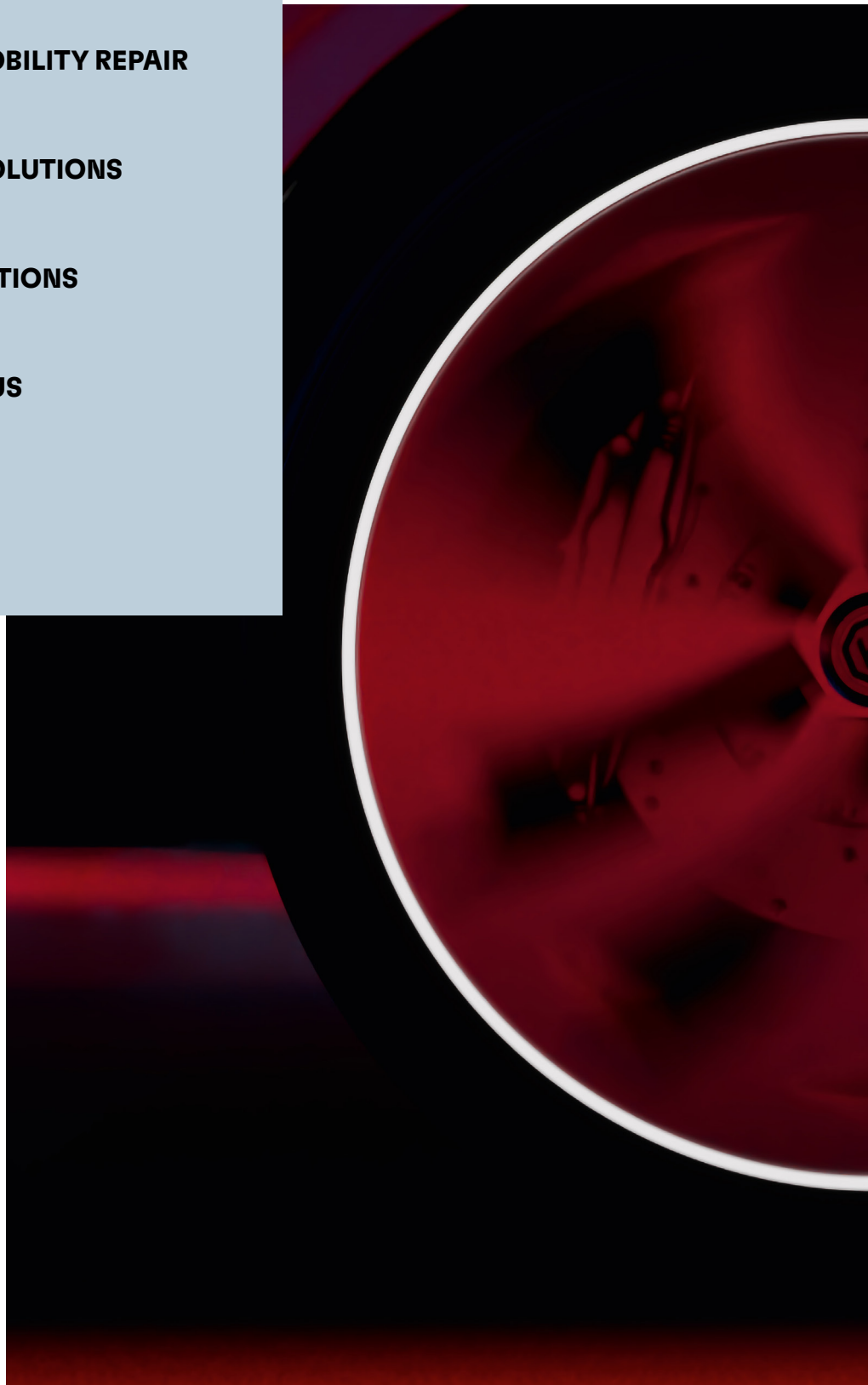


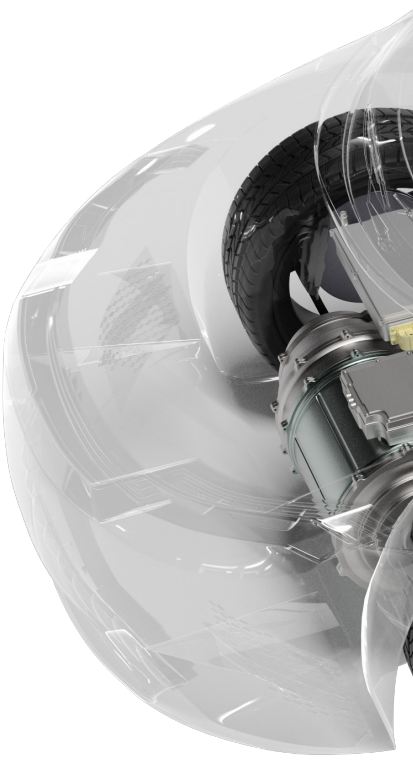
# UNDERSTANDING THE CHALLENGES OF *E-MOBILITY REPAIR*

**The push for sustainability is transforming the automotive industry. This global shift is leading to the rapid growth of e-Mobility, changing not only how we drive but also how we repair and maintain electric vehicles, which presents significant challenges for the repair ecosystem.**

## BATTERY SYSTEM:

The battery system is the core component of any electric vehicle, accounting for up to 40% of the total cost. This makes cost-efficiency and reliability critical throughout the battery's lifecycle. Challenges include:

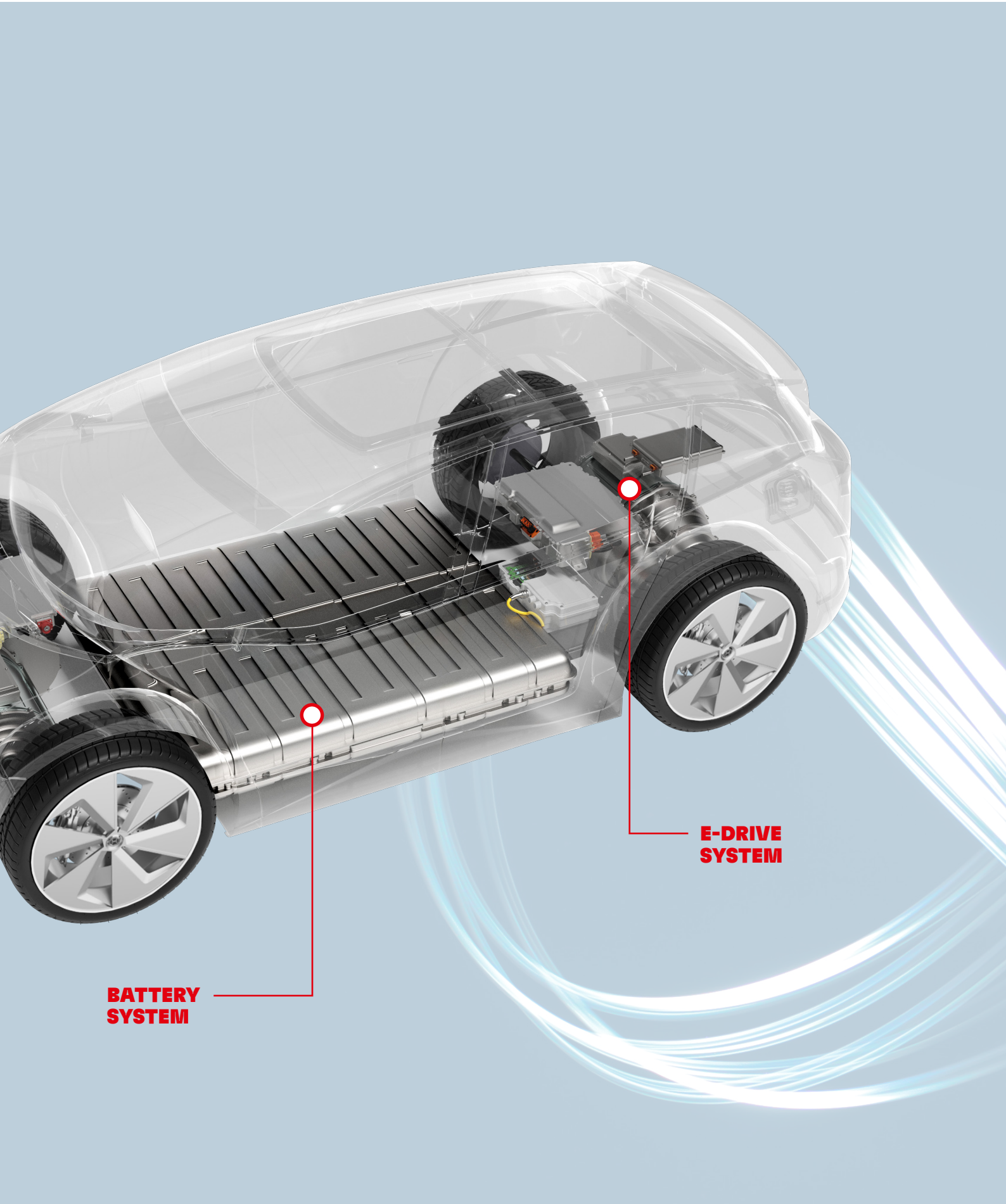
- ensuring reliable sealing of the battery after opening
- restoring efficient thermal management after the replacement of faulty battery modules
- ensuring a high-quality repair: crucial for passenger safety.



## E-DRIVE SYSTEM:

The electric motor of an EV operates under high mechanical stress and environmental exposure. The high motor speeds, of up to 20.000 RPM, lead to increased wear in the bearings. Additionally strong vibrations can cause bolts to loosen. Therefore, it is essential to...

- replace bearings using high-performance retaining solutions
- ensure bolts are protected against loosening using threadlockers
- restore a reliable seal after repair to protect against moisture and dust.


E-DRIVE
SYSTEM
BATTERY
SYSTEM

# PIONEERING EV REPAIR

## EMPOWER SUSTAINABLE E-MOBILITY WITH EV BATTERY REPAIR

**Repairing EV batteries is more than a service—it's a step toward building a circular economy for battery systems. By extending the life of existing batteries, we can significantly reduce environmental impact, minimise greenhouse gas emissions, and optimise the use of valuable resources.**

Battery repair also opens up exciting new revenue opportunities, making it a compelling solution for stakeholders across the entire battery value chain.

The impact is clear: repairing a typical BEV battery pack by replacing individual modules to restore functionality can achieve up to 77% cost savings and up to 91% emission reductions compared to replacing it with a new pack. Read more in our whitepaper.

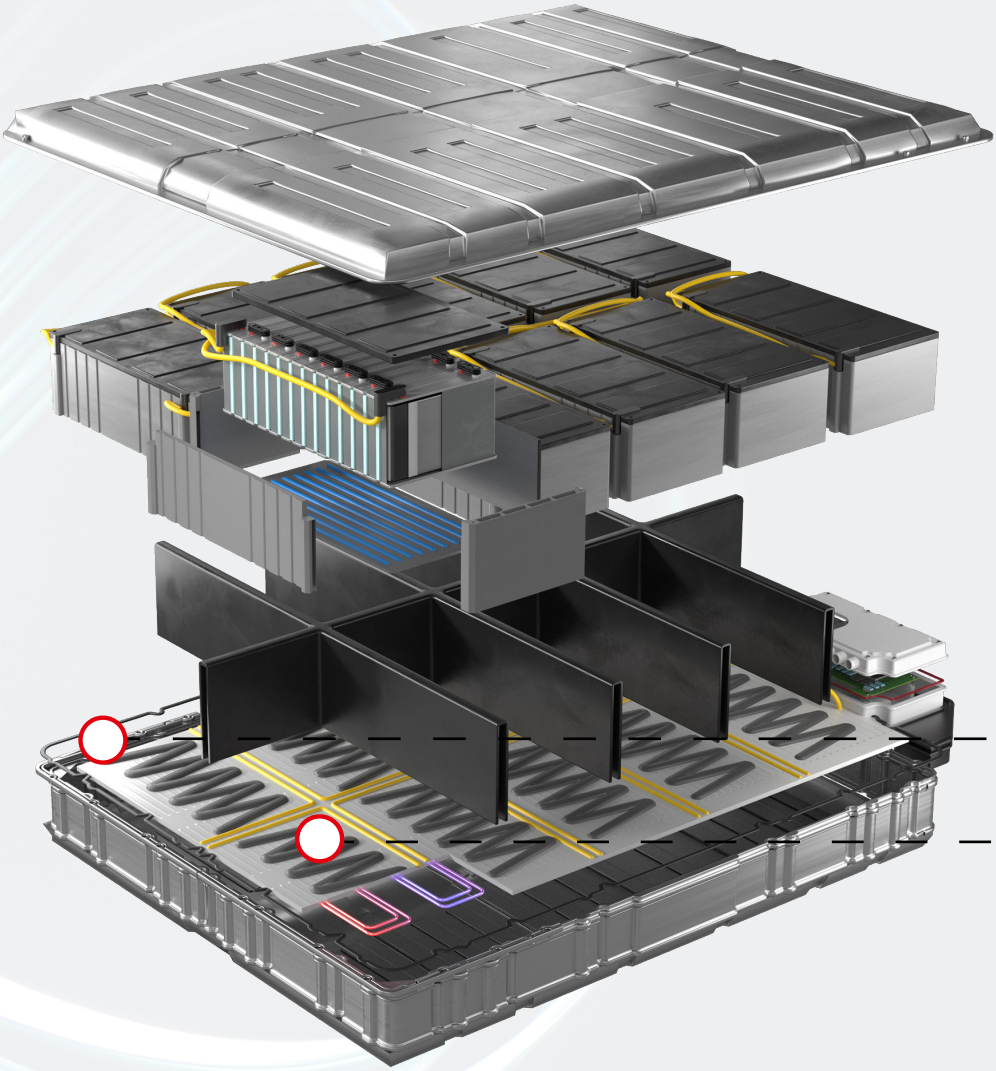
*(Source: PEM RWTH Aachen University & Henkel Adhesive Technologies - EV Lifecycle Optimization Through Battery Repair whitepaper)*

**DOWNLOAD WHITEPAPER**
Find out more in our whitepaper


Repairing an average BEV battery pack by replacing individual modules to restore functionality can save up to 77% of cost and up to 91% of emissions compared to replacing with a new pack.

EV BATTERY REPAIR

# THERMAL GAP FILLERS AND GASKETING SOLUTIONS



# 01

## LOCTITE GASKETING SOLUTIONS

When it comes to the battery housing, achieving a secure seal is essential for protecting against moisture, dust, and external contaminants. Proper gasketing is critical to ensure the reliability and safety of the electric vehicle, especially after repairs when the housing must be opened and resealed.

With **LOCTITE Gasketing Solutions**, you gain access to a versatile portfolio of advanced polyurethane, silicone, and rubber-based formulations. Our products are specifically engineered to deliver robust, long-lasting seals that meet the demands of diverse battery designs.


# 02

## LOCTITE THERMAL GAP FILLERS

Ensure optimal thermal management with **LOCTITE Thermal Gap Fillers** in EV battery systems. Engineered to seamlessly transfer heat from battery modules to the cooling system, these innovative gap fillers deliver consistent, reliable performance in even the most demanding environments.

When replacing a faulty battery module, renewing the thermal gap filler is critical to maintaining performance and thermal stability. LOCTITE Thermal Gap Fillers are designed for effortless application, efficient heat transfer, and long-term reliability, empowering your EV battery to perform at their best.

# DISCOVER OUR SOLUTIONS FOR *EV BATTERY REPAIR*

| Thermal Gap Filler Solutions | Key Properties | Chemistry | Curing | Thermal Conductivity |
|---|---|---|---|---|
| LOCTITE TFX 3010 | ▪ 2-component SMP Thermal Gap Filler<br>▪ Thermal conductivity: 3 W/mK<br>▪ Silicon-free, low compressive force, flame-retardant (UL 94 VO), compressible (Shore 00 75), 12-month shelf life | Silane-modified polymer/ silicone- free | RT | > 3 W/mK |


| Gasketing Solutions | Key Properties | Chemistry | Bonding & Sealing | Curing |
|---|---|---|---|---|
| LOCTITE PU EV 9780 | ▪ 1-component polyurethane gasketing adhesive<br>▪ Quick and easy application<br>▪ Fast sealing performance | Polyurethane | Bonding & Sealing | Moisture curing |
| LOCTITE PU EV 9790 | ▪ 2-component polyurethane gasketing adhesive<br>▪ Warm applied, easy and fast application<br>▪ Moisture independent curing | Polyurethane | Bonding & Sealing | Chemical curing |
| LOCTITE SI EV 9910 | ▪ 1-component silicone sealant<br>▪ Long open time and multi-substrate adhesion<br>▪ Excellent sealing properties and moisture barrier | Silicone | Sealing | Moisture curing |
| LOCTITE RB EV 9740 | ▪ Rubber butyl cord<br>▪ Immediate sealing performance (no cure time)<br>▪ Excellent resistance to environmental influences | Butyl rubber cord | Sealing | No cure |
| LOCTITE RB EV 9745 | ▪ 1-component rubber butyl<br>▪ Multi-substrate adhesion, permanently tacky<br>▪ Secondary sealing option in addition to formed gaskets | Butly rubber | Sealing | No cure |

LOCTITE

## SUCCESSFUL APPLICATION CASE

# GLOBAL STANDARD SOLUTION FOR *LEADING EV BATTERY MANUFACTURER*

## SITUATION

A leading automotive battery manufacturer faced a significant challenge: identifying the optimal thermal gap filler for EV battery repair operations. This critical material, applied between battery modules and cooling plates, ensures peak performance and safety by effectively dissipating heat. To meet the demands of global markets, the company sought a unified aftermarket standard and a trusted partner capable of delivering consistent, high-performance solutions worldwide.

In addition to a product with an extended shelf life to streamline inventory management, the manufacturer prioritised collaboration with a partner that could provide expert training for technicians. By aligning with a solutions provider dedicated to innovation, education and reliability, the company aimed to redefine EV battery repair processes—focusing on safety, efficiency, and seamless global implementation.

***COLLABORATION WITH LEADING EV BATTERY MANUFACTURER***

## LOCTITE SOLUTION

**LOCTITE TFX 3010** is a 2-part SMP Thermal Gap Filler specifically designed for high-performance thermal management in EV batteries. Delivering thermal conductivity of up to 3 W/mK, this silicon-free solution ensures efficient heat transfer and cures conveniently at room temperature. Ideal for EV repair and maintenance applications, it offers extended shelf life, smooth dispensability, and low compressive stress during installation—making it a workshop-friendly choice for reliable and effective use.

LOCTITE experts offer hands-on training to demonstrate how to use the product for improved performance, along with technical support.

## BENEFITS

**High Thermal Conductivity**
LOCTITE TFX 3010 delivers 3.0 W/mK thermal conductivity for efficient heat dissipation, while its silicone-free formula prevents contamination of sensitive components

**User-Friendly Application**
The product is easy to apply manually, reducing the time needed for installation and ensuring consistent application, which enhances both repair quality and efficiency.

**Extended Shelf Life**
With a shelf life of 12 months, LOCTITE TFX 3010 is well suited for global distribution and simplified inventory management.

***LOCTITE TFX 3010 THERMAL GAP FILLER APPLICATION***

*E-DRIVE REPAIR*

# RETAINING, GASKETING, THREADLOCKING

## 01

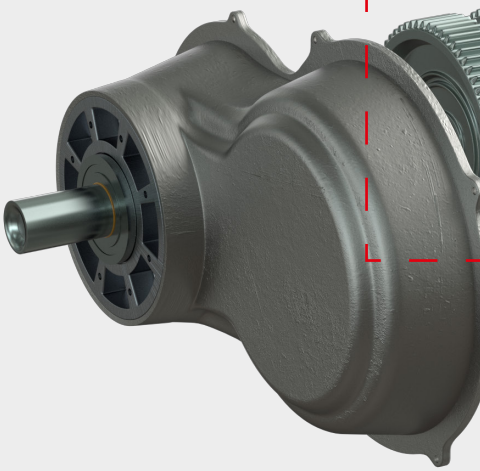
### LOCTITE RETAINING SOLUTIONS

Retaining solutions play a crucial role in the repair of cylindrical parts such as bearings and gears in the e-Drive. LOCTITE retaining solutions extend the e-Drive's life by providing strong, reliable bonds even under high-speed and high-torque conditions.

## 02

### LOCTITE GASKETING SOLUTIONS

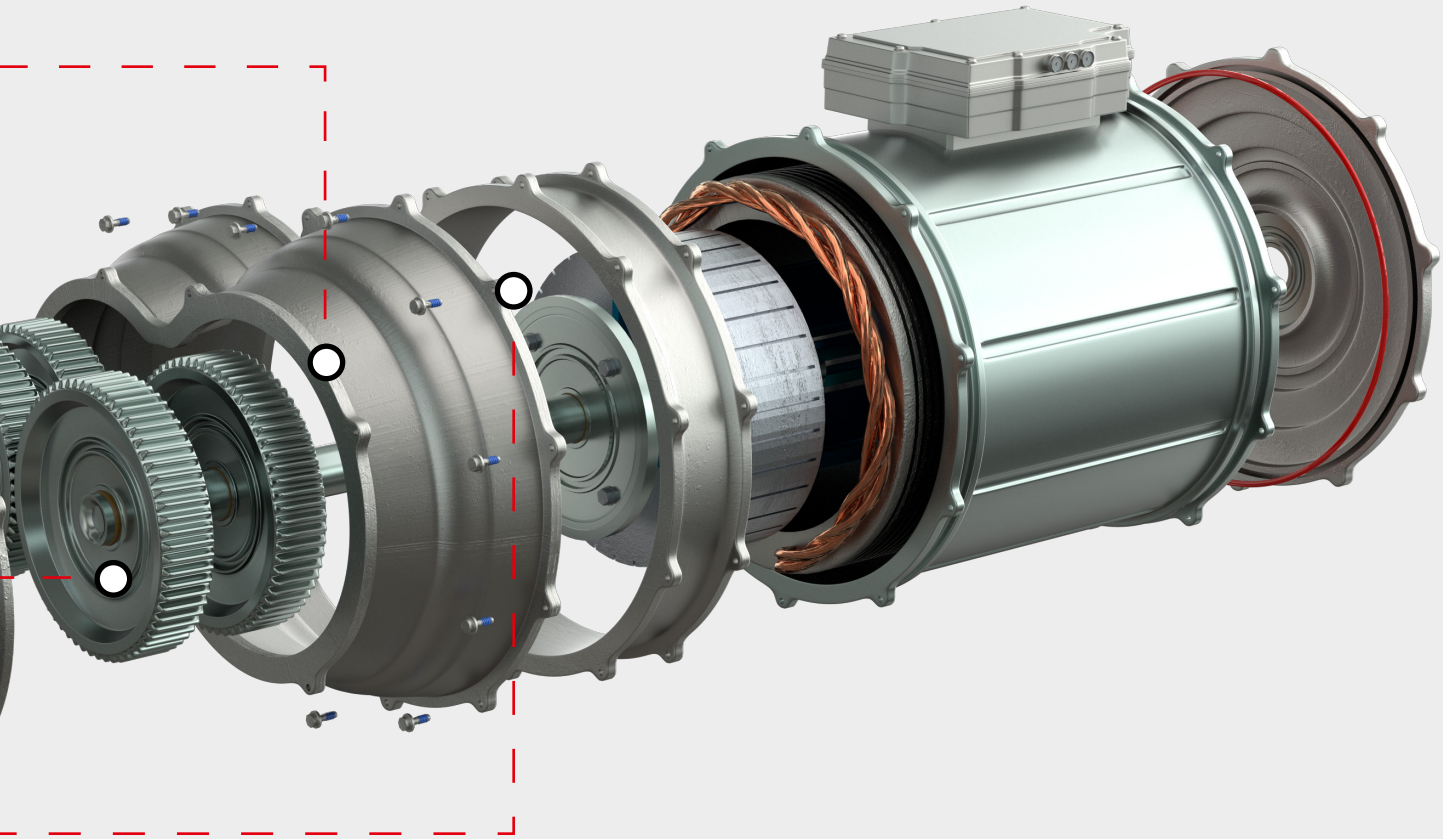
Gasketing solutions play a critical role in ensuring the reliability and longevity of e-Drive systems by providing robust seals that protect against leaks, contaminants, and harsh environmental conditions. LOCTITE advanced gasketing solutions ensure secure, durable seals that withstand high temperatures and vibrations, helping maintain optimal performance while extending the life of the e-Drive.



## 03

### LOCTITE THREADLOCKING SOLUTIONS

Threadlocking solutions are vital for the durability and reliability of e-Drive systems in EVs, as they secure fasteners against vibrations. Designed to prevent loosening of threaded fasteners, LOCTITE Threadlockers help maintain the structural integrity of the e-Drive even under demanding conditions.



# DISCOVER OUR PORTFOLIO FOR *E-DRIVE SYSTEMS*


| Threadlocking Solutions | Key Properties | Chemistry | Strength | Temperature Resistance |
|---|---|---|---|---|
| LOCTITE 222 | Low strength | Acrilyc | Low | 150°C |
| LOCTITE 243 | Medium strength | Acrilyc | Medium | 180°C |
| LOCTITE 290 | Medium-high strength, low viscosity (penetrates assembled fasteners) | Acrilyc | Medium-High | 150°C |
| LOCTITE 2400 | Medium strength, no labelling (no hazard symbols, risks or safety phrases) | Acrilyc | Medium | 150°C |
| LOCTITE 2700 | High strength, no labelling (no hazard symbols, risks or safety phrases) | Acrilyc | High | 150°C |



| Gasketing Solutions | Key Properties | Chemistry | Flexibility | Temperature Resistance |
|---|---|---|---|---|
| LOCTITE SI 5699 | Great for flange sealing and rigid flange sealing on, for example, transmissions and cast metal housings. | Silicone | High | 200°C |
| LOCTITE SI 5910 | Excellent oil resistance | Silicone | High | 200°C |
| LOCTITE 518 | Certain flexibility, suitable for aluminum flanges | Acrilyc | Medium | 150°C |
| LOCTITE 510 | High temp resistance, easy process | Acrilyc | Low | 200°C |

| Retaining Solutions | Key Properties | Chemistry | Flexibility | Temperature Resistance |
|---|---|---|---|---|
| LOCTITE 603 | High strength, oil tolerant | Acrilyc | High | 150°C |
| LOCTITE 638 | High strength, increased temperature resistance | Acrilyc | High | 180°C |
| LOCTITE 620 | High temperature resistance (curing at 180°C/356°F required) | Acrilyc | High | 230°C |

# DISCOVER OUR *COMPLEMENTARY RANGE*

## DISPENSERS

| Complementary Range | Key Properties | Use for |
|---|---|---|
| LOCTITE EQ HD 16 2C Pneumatic Dispenser | Pneumatic dispenser for 2-component sealants and adhesives in 2 x 200ml cartridges | Thermal gap filler application (LOCTITE TFX 3010) |
| TEROSON ET STAKU HAND GUN | Manual dispenser ideal for aluminium and plastic cartridges | 1-component gasketing applications |
| TEROSON POWERLINE II | High-pressure pneumatic dispenser ideal for 1-component aluminum and plastic cartridges | 1-component gasketing applications |

## CLEANERS

| Complementary Range | Key Properties | Use for |
|---|---|---|
| LOCTITE SF 7063 | Colourless, methylal-free, solvent-based cleaning agent for pre-assembly cleaning and degreasing of surfaces | Cleaning e-Drive subcomponent parts prior to threadlocking, gasketing, and retaining applications |
| TEROSON VR 10 | Transparent, liquid cleaner designed for the pretreatment of substrates before bonding or sealing. Free of chlorinated hydrocarbons (will not harm car paints when used on a short-term basis) | Cleaning battery prior to thermal gap filler and gasketing applications |


## PRIMER

| Complementary Range | Key Properties | Use for |
|---|---|---|
| TEROSON Bond<br>All in one Primer | Promoting the adhesion of PU gasketing products for EV battery repair | PU gasketing applications |

# MOVE BEYOND *WITH US*

## ENGINEERED FOR SUSTAINABILITY

Our new comprehensive range of e-Mobility repair products is engineered to improve circularity, efficiency and safety across electric vehicle (EV) applications. We are providing tools and resources to help repair shops adopt sustainable practices in their operations by improving repair quality, extending the life of batteries, reducing waste, and ensuring safe use in application.

## IN PARTNERSHIP WITH YOU

We are committed to building strong partnerships with workshops and industry leaders to tackle the challenges of e-Mobility repair. By offering step-by-step instructions, tailored solutions, and hands-on technical support, our aim is that every repair professional can confidently address high-voltage safety standards, component complexity, and sustainability demands.



## INNOVATION AT THE HEART

Our e-Mobility adhesive portfolio has been specifically designed to meet the evolving needs of e-Mobility repair. And we invest in research and development, working continuously with technicians and engineers to ensure our solutions are at the cutting edge of e-Mobility repair and maintenance.

## EXPERTISE AROUND THE WORLD

We bring decades of experience in adhesives and advanced materials to solutions for e-Mobility repair and maintenance. From production to repair and ongoing technical support, we equip professionals with the tools and knowledge needed to succeed in this high-growth market. We operate 14 world-class Training & Application Centres located in major industry hubs worldwide. Each center is staffed with expert application engineers who are ready to address your e-Mobility challenges and needs. These centers also provide comprehensive training programs to equip you with the knowledge and skills needed for efficient and effective solutions.

# TEROSON® FOR E-MOBILITY

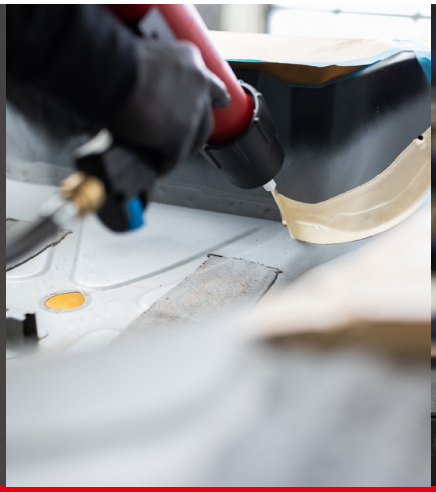
## AND ALL TYPES OF VEHICLE REPAIR

TEROSON products are made for professionals who repair vehicles to the highest standards, never back down from challenges, and set new industry benchmarks. With over 120 years' history, TEROSON collision repair offers reliable, safe and efficient solutions for bonding, coating, sealing, acoustics, stiffening, and reinforcing.

Discover how we restore your vehicle with precision and care, from rebuilding OEM parts with tailored adhesives to expertly replacing damaged components using high-strength TEROSON bonding solutions for structural integrity. For quick fixes, our 'smart repairs' ensure your car looks and performs its best. Trust us to keep you on the road safely and reliably.

## REBUILD

Common tasks that involve rebuilding OEM seams, metal or plastic parts. The adhesive range for rebuilding is broad and mainly chosen based on the substrates that need to be rebuilt. Common technologies are MS, EP and PU. Remember, rebuilding is often a time and resource saving alternative to replacing parts.




## REPLACE

Structural damage requires cutting out old parts and replacing them with new ones. Due to the size of the replaced parts, and the need to retain the structural integrity of the car, high-strength structural bonding power is needed. This is the premium class within collision repair and requires comprehensive knowledge and practice to re-establish original structural integrity.


## REPAIR

Small repair tasks. The things that can be fixed relatively easily, e.g., broken bumper clips, or components of similar complexity. These can be solved quickly with a selection of TEROSON solutions for smart repair. Note: small repair tasks are also referred to as ‘smart repair’.

LOCTITE

BEYOND THE BOND

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