

“Drive Further”

Integrated Circuit Board Assembly Solutions for  
the Fast-paced Electric Vehicle Industry in India



Authored By



Sharan Aiyappa  
Automotive Industry Director - India

## Drive Further

With tech startups emerging to support the industry across the country, India's electric vehicle (EV) market is developing at a record pace. This progress is not only transforming the transportation sector but also influencing daily life and the country's economy.

I have witnessed how India has been a significant adopter of electric vehicles with millions of owners<sup>1</sup> across the country. A recent International Energy Agency (IEA) report revealed that 90% of electric motorbikes and scooters are cheaper and considered more desirable than non-electric vehicles.<sup>2,3</sup> Furthermore, the rising petrol price in major metropolitan areas is probably another catalyst for this push towards electric vehicles.<sup>4</sup>

With all that is occurring, the EV market in India is an exciting industry, with great potential, but these levels of excitement usually come with complexity. There are many components involved in the development of an electric vehicle. To guarantee safety, reliability, and overall performance, materials need to work together, especially on the circuit board, the core of electrical devices. To become a leader in this space, an Original Equipment Manufacturer (OEM) requires a distinct game-changer to give it a competitive advantage with a value proposition that ensures the best performing vehicles.

With years of experience and in-depth expertise in the circuit board and semiconductor assembly space, MacDermid Alpha is the solutions provider for the electric vehicle market globally. Our strong focus on the compatibility of materials, such as underfill, flux, and solder paste, that are interconnected, ensures high board-level reliability. Through decades of R&D and product development, including close engagement with our customers to understand their product specifications and applications, we have generated a unique commercial algorithm for providing integrated solutions for electric vehicles, our Reliance™ tool.

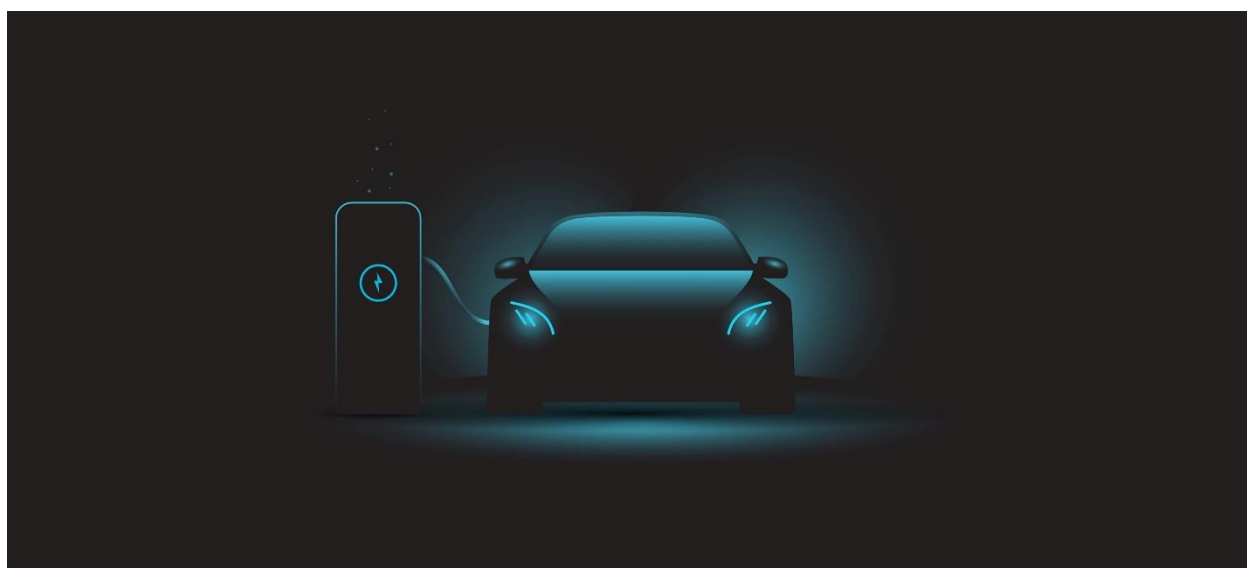
## **Maximized Potential of Electric Vehicles**

Unlike conventional vehicles, the performance and reliability of EVs are dependent on the thermal management system involving the battery packs, the power electronics system, and the motors used in the vehicles.

To run efficiently, the EVs need to operate at the optimum operating temperature. As for the lithium-ion battery pack used in EVs, the availability of discharge power for starting and accelerating the vehicle, and the battery's health is at its best at the optimum temperature (reference, Cadence, as below). This is also the case for the power electronics system that controls the speed of the electric traction motor and the torque it produces. EVs are most susceptible to increases in temperature when in operation which, if uncontrolled, can lead to component failures and even vehicle malfunction.

With thermal management of EVs being such an important aspect, automotive manufacturers are constantly seeking more effective solutions.

This is where MacDermid Alpha's strength lies as a total solutions provider for our automotive customers. Through leading brands such as Innolot® HiTech® and Electrolube®, we offer a wide range of solder alloys, fluxes, reinforcement polymers, such as edgebonds, underfills and adhesives, and conformal coatings that meet the stringent requirements of the automotive industry. These integrated material solutions ensure full compatibility of interacting products, yielding high reliability and performance throughout the product lifecycle. With expertise gained through years of in-depth analysis, backed up with actual test results, using our Reliance tool we can advise and support you on the best materials to use in your EV electronics to ensure optimum and long-lasting performance.



## Moving Closer and Ahead

There is no substitution for working with fewer partners during production, and there is no better strategy than pushing to reduce complexity for not only employees involved in production but also for drivers in the market. That is by simplifying sources of inputs. This will also have ripple effects in the ethos of the business, as it can lead to stronger supplier collaboration. A study from a leading management consulting firm shows that producers who participate in supplier development innovation beat industry trends by 2X in growth and have a substantial growth in EBIT.<sup>5</sup> MacDermid Alpha is involved in every step of the electronic device manufacturing process, giving us a unique position in the industry. With a deep understanding of the electronics supply chain, and through our integrated solutions, we help automotive manufacturers achieve increased component efficiency and improve performance for EV applications to meet the demand in this ever-growing industry.

## Interested in transitioning to our EV-based products in India?



Let's connect and I will help you take the first step.

Sharan Aiyappa

Automotive Industry Director – India

[sharan.aiyappa@macdermidalpha.com](mailto:sharan.aiyappa@macdermidalpha.com)

## Sources and References

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<sup>2</sup> Arasu, Sibi. Associated Press "India is one of the world's fastest-growing EV markets. This is why" 31 August 2023

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<sup>3</sup> International Energy Agency "Global EV Outlook 2023 – Analysis – IEA", April 2023 [Global EV Outlook 2023 – Analysis - IEA](#)

<sup>4</sup> Ministry of Petroleum, Natural Gas – Government of India "Retail Selling RSP of Petrol and Diesel in metro cities since 16.6.2017", (2023)

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<sup>5</sup> Agustin Gutierrez, Ashish Kothari, Carolina Mazuera, and Tobias Schoenherr "Taking supplier collaboration to the next level" | McKinsey, 7 July 2020

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Additional references:

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