Automotive Electrification Presenting New Opportunities to Logistics and Supply Chain Companies
# TABLE OF CONTENTS

- **Introduction and Overview** ......................................................... 3
- **Key Drivers** .................................................................................. 3
- **Impact on Logistics & Supply Chain** ........................................... 4
- **DHL Charged to Deliver** ............................................................... 6
- **Outlook and Conclusions** ............................................................ 7
INTRODUCTION AND OVERVIEW

The International Energy Agency projects that 125 million EVs could hit the road by 2025, leaping considerably from roughly 3.2 million today. From what once accounted for a handful of models a decade ago will take 23% of the global passenger vehicle market by 2025. In just a few years, Tesla, the all-electric market disruptor, has eclipsed the valuation of the likes of Ford and GM, having just two production models to market. Not to be overshadowed, GM is a leader among EV-minded automakers as the only OEM successfully producing them at scale today with its Bolt and Volt. Other automakers are following fast. Renault-Nissan plans to offer 8-12 battery-electric vehicles by the early 2020s. In fact, nearly all automakers have understood the need to transition out of petroleum-based combustion engines and penetrate the EV market. BMW announced its goal of 15-25% of group sales from EVs by 2025, while Volkswagen aims to sell 2-3 million EVs by that time. With this in mind, Frost & Sullivan projects that global sales of electric vehicles could reach 30.8 million units by 2025, surging at an aggressive 29% growth rate.

KEY DRIVERS

The momentum driving EV proliferation comes as much from regulators as it does from businesses and consumers. Despite talks of rolling back short-term targets in emission reduction and CAFE, the long-term goal remains clear—transportation needs to become cleaner, setting the stage for increasingly stringent standards. These guidelines are truly directing automakers toward powertrain electrification. That is not to say we have reached peak efficiency in gasoline engines and must now look elsewhere, but to understand that electric powertrain cost economics are typically favored when lowering environmental impact is prioritized. Consumers are benefitting by taking advantage of a lower total cost of ownership, incentives in the form of tax credits, and valuing the lower carbon emissions. Businesses follow
the same sentiments, seeing opportunities to cut company costs. Although many groups see significant advantages with mass EV adoption, it provides a new set of challenges to others. The logistics sector will certainly need to adjust to a new landscape, understanding we are on the frontier of a new supply chain dynamic.

IMPACT ON LOGISTICS & SUPPLY CHAIN

Unlike past advancements within the industry, electrified powertrains represent a transformational change in automotive technology. As a result, the roles and responsibilities of automakers and suppliers are being rehashed as well, collaboratively investigating who is better positioned to develop and manufacture the new parts and systems.

1. Suppliers adopting more of the powertrain

Frost & Sullivan expects an outcome where suppliers contribute more than what they have in the past. This is due to a few major factors, the first being that conventional automaker-produced components, such as the combustion engine and transmission, will be irrelevant in battery electric vehicles. So why are automakers handing off the core vehicle system to suppliers? The main reason is batteries are complex—both in design and manufacturing. They require not mechanical, but a specific set of electrical, thermal, and chemical knowledge largely new to OEMs. Although automakers have considered acquiring or cultivating this technology in-house, several favor outsourcing to suppliers who have existing R&D branches and the historical know-how to best manufacture these components. Logistics providers expect to realize new inbound carrying opportunities as new parts enter automotive supply chains.
2. **Fewer parts, fewer shipments?**

Some speculate how much EVs and hybrids will really affect logistics expenditure as they replace ICE vehicles. The concern is that this new growth won’t offset the losses associated with transporting the smaller volume of individual parts found in electric powertrains. Frost & Sullivan expects 40-50% of powertrain components found in gasoline-powered vehicles to be omitted in future EVs, painting a logistics picture with a smaller pool of parts to transport. Oil pans, crankshafts, spark plugs, ignition coils, and several others mechanical pieces found in cars today won’t be needed in xEVs. Conversely, automakers may be forced to re-evaluate logistics as hybrid vehicles gain popularity because they combine the complexity of both ICE and EV vehicles. The supply chain effects of this transition will be catalyzed more by the decline of internal combustion engines than the rise in electric vehicles, so the logistics impact of this adaptation isn’t expected to materialize until the mid-to-late 2030s.
3. **Centralized distribution**
   Any logistics provider will tell you that EV battery packs bring more logistics hurdles than engines and transmissions ever could. The main reason for this is their weight—often twice that of a conventional ICE powertrain, making shipment innately cumbersome and costly. The next challenge pertains to batteries’ potent lithium-ion core, requiring a hazardous materials certification and careful packaging arrangements to ensure safe shipment. Ultimately, these concerns drive automakers to select battery suppliers as close to their manufacturing facilities as possible. This presents a major challenge for many automakers, as cell production is concentrated in China and Korea. German automaker Daimler has quickly adapted, constructing new battery manufacturing facilities in Beijing (via partner BAIC) and Tuscaloosa, Alabama, to ensure its EVs can penetrate these major markets. As a result, logistics providers should expect less ocean cargo and more freight traffic from the industry as battery modules force a more regional shipment network.

**DHL CHARGED TO DELIVER**

Leveraging key partnerships and in-house technology, DHL is well positioned to serve the needs of automakers in the expanding EV revolution. DHL has established its expertise in EV logistics, already shipping batteries as a technology product for years. Moreover, DHL boasts Germany’s largest electric fleet, as it has developed and manufactured over 7,000 StreetScooter EVs and 12,000 e-bikes and e-trikes. This fleet is the foundation of its goal to reduce emissions by electrifying 70% of its fleet by 2025, eventually planning to replace all delivery vehicles with EVs running on renewable energy. In the meantime, DHL actively supports Formula E, transporting batteries, charging units, infrastructure, and equipment necessary to run the Championship race. This partnership not only demonstrates the advantages of electric mobility and logistical proficiency of transporting 450 tons of freight throughout the season, but serves as a means to further promote electric mobility R&D.
OUTLOOK AND CONCLUSIONS

While it is too early to model the impact of EVs on logistics traffic in the automotive sector, it’s clear the dynamics will change, including new opportunities that will emerge. In the short to midterm, Frost & Sullivan expects a moderate increase in inbound shipments as automakers broaden their hybrid and electric vehicle capabilities, complementing their traditional powertrain orders with inverters, batteries, and additional EV-specific components. As gas-powered vehicles begin exiting the stage, it’s difficult to imagine a scenario without greater network consolidation in the long term but still presenting complex opportunities pertaining to crucial systems like batteries for the logistics players.
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