# Disruptive Change: EVs and Finishing Opportunities

**Q.** We keep hearing about the changeover to electric vehicles and, as an applicator, we are looking for expansion opportunities but wonder about the reality of electric vehicles and what we can expect in terms of changes or automotive demand for future finishes?

Left: Easter morning 1900, 5th Avenue, New York City. Spot the automobile. (Source: U.S. National Archives). Right: Easter morning 1913, 5th Avenue, New York City. Spot the horse. (Source: George Grantham Bain Collection).

**A.** Valid questions. As recently as five years ago, there continued to be doubt about the viability and growth of the electric vehicle (EV) market. Many people said it wasn't realistic, it's too far off, the supporting infrastructure is nonexistent, the focus is not there, etc., but now, that is all changing. You can see it in everything from advertisements to automotive initiatives and investments — the roadmap to EVs is firmly in place. And it will happen faster than we think.

One of the most relevant examples of this type of disruptive technology happened in the early 1900s (see photo example). On a bright Easter morning in 1900, you could only spot one lone automobile amongst 50 horse-drawn vehicles on a busy New York Street. Just 13 short years later, on the same street, in the same town, there was only one single horse-drawn vehicle to be found amongst all the automobiles. Disruptive change had happened.

And it will happen again with EVs. It will not happen as a limited or small segment commitment either. Recent studies have shown OEMs are launching EVs into the high-profit margin segments of their SUVs, crossover vehicles and pickup trucks. There are a total of 87 new EV launches planned for North America between now and 2028. And 1.2% of these launches are coming from brand new EV startups (Rivian, Lucid and Amazon/Zoox, etc.) who are joining the existing field of OEMs committed to this evolution in automotive technology.

To address your question about the impact on the finishes and coatings needed, we should first review the radical shift in supplier components to the powertrain between internal combustion engines (ICE) and EVs. The basic components of an ICE powertrain include the internal combustion engine, transmission, turbocharger, fuel system, exhaust system and air intake system. On an EV, the basic components include a battery pack, an inverter, DC converter, traction motor, gearbox, and an onboard charging module. At the base level, these changes will require additional financial investments into the component manufacturing from the supply base.

From a surface finishing supply standpoint, there are often two concerns related to EVs: 1) Will steel consumption drop and 2) Will there be less fasteners on EVs? Let's look first at steel consumption.

The initial concern is that EVs are lighter weight and use less steel, however, it is important to note the weight of the battery pack replaces the weight of the engine and transmission. Projections indicate that overall ICE vehicle volumes will drop as EV volumes begin to increase, and total steel usage will remain at a steady volume, even increasing some over the next 20 years.

It is true that automotive manufacturers are looking at alternatives for lighter weight materials such as aluminum, aluminum alloy, magnesium and carbon fiber. Joining these different substrates together will lead to new challenges in coatings, especially associated with fasteners. A fastener connected to a piece of steel with a coating has a different galvanic reaction than a fastener connected to a piece of aluminum or other possible substrates. These differences impact corrosion resistance, conductivity, and raise concerns with electrical components. Further work is being done to evaluate fastener

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