

Norwegian EV Industry and How It Relates to the Fastener Industry

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As of 2020, roughly 2.81 million passenger cars were registered in Norway. On the other hand, in the same period, the number of electric cars and plug-in hybrids totalled 490,000 units and there were more than 330,000 registered battery electric vehicles (BEV) in Norway. It means 29.2% of cars in Norway are EVs.

These numbers have made **Norway the world's leader in terms of the use of electric vehicles**, because more than 1.36 million units of new electric passenger cars, including battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEV), were sold across Europe. The share of Norway in 2020 was 63% and was 56% in 2019.

How did Norway become the leading EV user in the EU? The history of using EV in Norway is detailed as below:

- In 1990, Norwegian government abolished the tax on imported EV cars.
- In 2000, Norwegian government decreased annual registration tax for EVs.
- Between 2000-2018, Norwegian government decreased 50% of the tax for EV car manufacturers.
- Between 2000-2017, Norwegian government exempted EV drivers from road tolls and EV drivers could use public parking free of charge.
- In 2001, Norwegian government abolished VAT on EV purchases.
- From 2005, EVs are allowed to drive on bus lanes in Norway.
- Between 2009-2017, EVs had free access to road ferries.
- In 2015, Norwegian government abolished the tax on leased EVs.
- From 2017 Norwegian government has given a 50% discount for EV drivers on parking fees, road tolls and ferry charges.
- From 2018 Norwegian government has decreased 40% of the tax for EV car manufacturers.

Besides rolling out EV incentives, Norway has also invested in first-class charging infrastructure to support the transition to more sustainable vehicles.

Future of EV in Norway

Norway is ahead of the game in EV sales, with gasoline's share of the new car market vanishing more and more every month, faster than almost any other countries could have predicted. This has led Norway to have the earliest target for the phaseout of new gas vehicle sales in the world – 2025. But gas cars might not even last that long. According to an analysis printed by the Norwegian Automobile Federation's magazine, *Motor*, the downward trend in sales for gas cars has been so consistent and steep that the last new gas car sales in Norway could happen just a few months from now, in April 2022.

This can happen because Norway has implemented a rapid and ambitious transition from petrol to electronics in the car using targeted and ambitious policies. They have implemented this hybrid policy by subsidizing green technologies and raising taxes on polluting counterparts. Norway has successfully launched an EV charging infrastructure and even made it free for use in certain locations. This makes consumers feel not only making the right environmental and financial decisions, but also making the easiest choice. Norwegians can easily turn to electric cars.



Compared to the numbers in 2020, the numbers in October demonstrate the speed of a growing EV market in Norway.

In October 2021, 89.3% of passenger car registrations belonged to EV (Plug-in EVs), 4.4% belonged to Hybrids (Plug less EVs), 2.6% belonged to Diesel, and 3.7% belonged to petrol cars. It should be noted that Plug-in EVs are separated into two categories, i.e., 70.1% are full battery electrics (BEVs) and 19.2% are plug-in hybrids (PHEVs), which is a continuing shift towards BEVs over recent months.

Tesla is the leading brand in Norway and Volkswagen Group, though still far from Tesla, has ranked in the 2nd place.

Some critical parts assembled with the newly developed fasteners are:

- **Powertrains and inverters in EVs:** the range of an electric vehicle depends on the Power Distribution Units (PDU). Accordingly, fasteners should be highly durable and resistant to vibrations and to extreme temperatures.
- **Bodies of EVs:** fasteners that are made of high-strength materials, are easy to assemble and disassemble and provide high corrosion resistance.
- **Chassis in EVs:** Fasteners in chassis must be vibration-proof, resistant to corrosion as well as to extreme temperature changes and able to maintain clamp force of assembly.
- **Exterior of EVs:** Fastening elements should be quickly replaceable, captive, reusable for assembly and disassembly and suitable for easy and safe mounting.
- **Interior of EVs:** Fasteners used in various materials, meet the requirements for light construction as well as high design and functionality requirements and are available in different colour variations.

Fasteners and EVs

With the rapid acceleration of growth in EVs, the associated parts like fasteners have required a new approach. It is a technical challenge as new products are developed. The role of fasteners in this bigger picture around EVs is significant: not only are fasteners a necessary component in the vehicles themselves, but charging units, EV battery casings and general infrastructure equipment all require high quality fasteners to provide robust and secure settings for this valuable technology.

Copper Fasteners in Norway

(New Opportunity, New Material, and New Businesses)

Since copper features the highest electrical conductivity rating above all other common metals, it is used in practically every assembly and/or product involved with electric applications. **Cold headed copper fasteners and components are commonly utilized, but not limited to, the following applications of electric vehicles: power transmission, charging, battery, navigation, controls, etc.** In addition, components involved in these applications often require a special plating finish to prevent corrosion, improve conductivity, and protect the integrity of electrical contact surfaces. Nickel, Tin, and Silver are among the most used plating materials for electrical component applications. The following table shows the growth of imported copper fasteners to Norway. Four times growth in 10 months (from February of 2020 to September 2021).

The Growth of Imported Copper Fasteners to Norway

(Unit: KG)

Feb. 2020	Mar. 2020	Apr. 2020	May 2020	Jun. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020
22,339	22,877	11,084	10,831	11,228	7,927	14,650	15,028	24,044	15,169
Dec. 2020	Jan. 2021	Feb. 2021	Mar. 2021	Apr. 2021	May 2021	Jun. 2021	Jul. 2021	Aug. 2021	Sep. 2021
22,704	12,965	49,728	36,381	40,842	34,703	65,788	36,112	60,433	81,718

