



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

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UNIT I: INTRODUCTION TO HYBRID ELECTRIC VEHICLES

TOPIC : **HISTORY OF ELECTRIC VEHICLES**





INTRODUCTION



- An **electric vehicle (EV)** is a vehicle that uses one or more electric motors for propulsion.
- It can be powered by a collector system, with electricity from extravehicular sources, or it can be powered autonomously by a battery (sometimes charged by solar panels, or by converting fuel to electricity using fuel cells or a generator).
- EVs include, but are not limited to, road and rail vehicles, surface and underwater vessels, electric aircraft and electric spacecraft.
- EVs first came into existence in the late 19th century, when electricity was among the preferred methods for motor vehicle propulsion, providing a level of comfort and ease of operation that could not be achieved by the gasoline cars of the time. Internal combustion engines were the dominant propulsion method for cars and trucks for about 100 years, but electric power remained commonplace in other vehicle types, such as trains and smaller vehicles of all type





1920's – 1950's

- After enjoying success at the beginning of the 20th century, the electric car began to lose its position in the automobile market. A number of developments contributed to this situation.
- By the 1920s an improved road infrastructure improved travel times, creating a need for vehicles with a greater range than that offered by electric cars. Worldwide discoveries of large petroleum reserves led to the wide availability of affordable gasoline, making gas-powered cars cheaper to operate over long distances. Electric cars were limited to urban use by their slow speed (no more than 24–32 km/h or 15–20 mph) and low range (50–65 km or 30–40 miles), and gasoline cars were now able to travel farther and faster than equivalent electrics.
- Gasoline cars also overcame much of their negatives compared to electrics, in several areas. Whereas ICE cars originally had to be hand-cranked to start – a difficult and sometimes dangerous activity – the invention of the electric starter by Charles Kettering in 1912 eliminated the need of a hand starting crank. Further, while gasoline engines are inherently noisier than electric motors, the invention of the muffler by Milton O. Reeves and Marshall T. Reeves in 1897 significantly reduced the noise to tolerable levels.



1920's – 1950's

- Finally, the initiation of mass production of gas-powered vehicles by Henry Ford brought their price down.
- Most electric car makers stopped production at some point in the 1910s. Electric vehicles became popular for certain applications where their limited range did not pose major problems. Forklift trucks were electrically powered when they were introduced by Yale in 1923.
- In Europe, especially the United Kingdom, milk floats were powered by electricity, and for most of the 20th century the majority of the world's battery electric road vehicles were British milk floats . Electric golf carts were produced by Lektro as early as 1954.
- By the 1920s, the early heyday of electric cars had passed, and a decade later, the electric automobile industry had effectively disappeared.



Electric vehicle TAMA, produced by Tachikawa Aircraft Company in 1947



The [Henney](#) Kilowatt, a 1961 production electric car



1960's – 1990's

- In 1959, American Motors Corporation (AMC) and Sonotone Corporation announced a joint research effort to consider producing an electric car powered by a "self-charging" battery.
- AMC had a reputation for innovation in economical cars while Sonotone had technology for making sintered plate nickel-cadmium batteries that could be recharged rapidly and weighed less than traditional lead-acid versions . That same year, Nu-Way Industries showed an experimental electric car with a one-piece plastic body that was to begin production in early 1960.
- In the mid-1960s a few battery-electric concept cars appeared, such as the Scottish Aviation Scamp (1965), and an electric version of General Motors gasoline car, the Electrovair (1966)



1960's – 1990's



Charging station with NEMA connector for electric AMC Gremlin used by Seattle City Light in 1973



Th!nk City and Buddy in Oslo, Norway



2000s

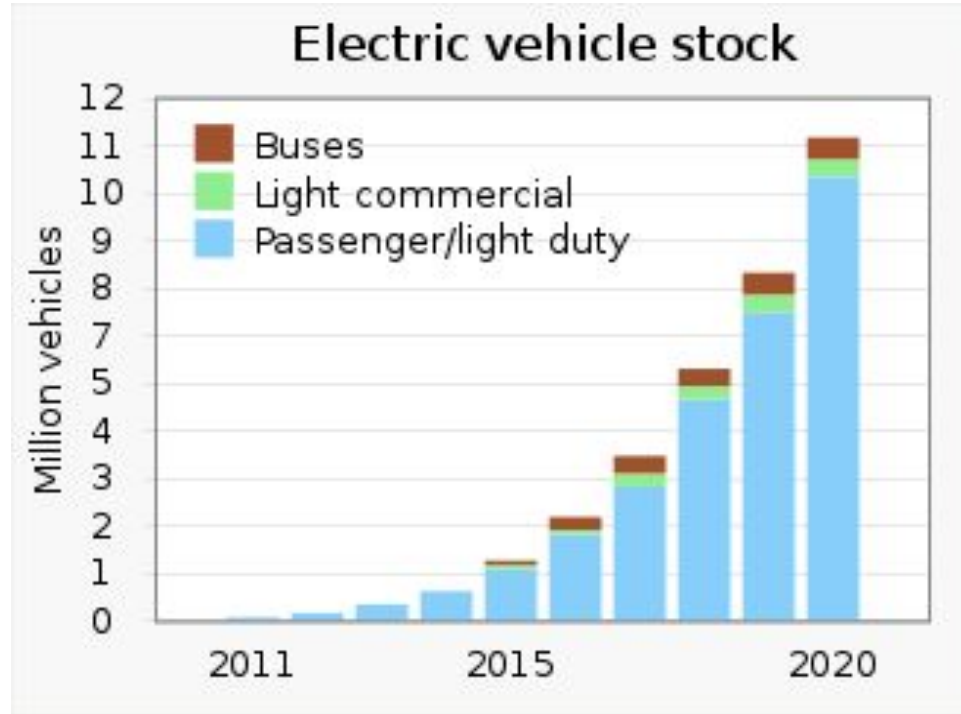
- California electric car maker Tesla Motors began development in 2004 on the Tesla Roadster, which was first delivered to customers in 2008.
- The Roadster was the first highway legal serial production all-electric car to use lithium-ion battery cells, and the first production all-electric car to travel more than 320 km (200 miles) per charge . Since 2008, Tesla sold approximately 2,450 Roadsters in over 30 countries through December 2012.
- Tesla sold the Roadster until early 2012, when its supply of Lotus Elise gliders ran out, as its contract with Lotus Cars for 2,500 gliders expired at the end of 2011.
- Tesla stopped taking orders for the Roadster in the U.S. market in August 2011, and the 2012 Tesla Roadster was sold in limited numbers only in Europe, Asia and Australia



The Mitsubishi i-MiEV was launched in Japan in 2009

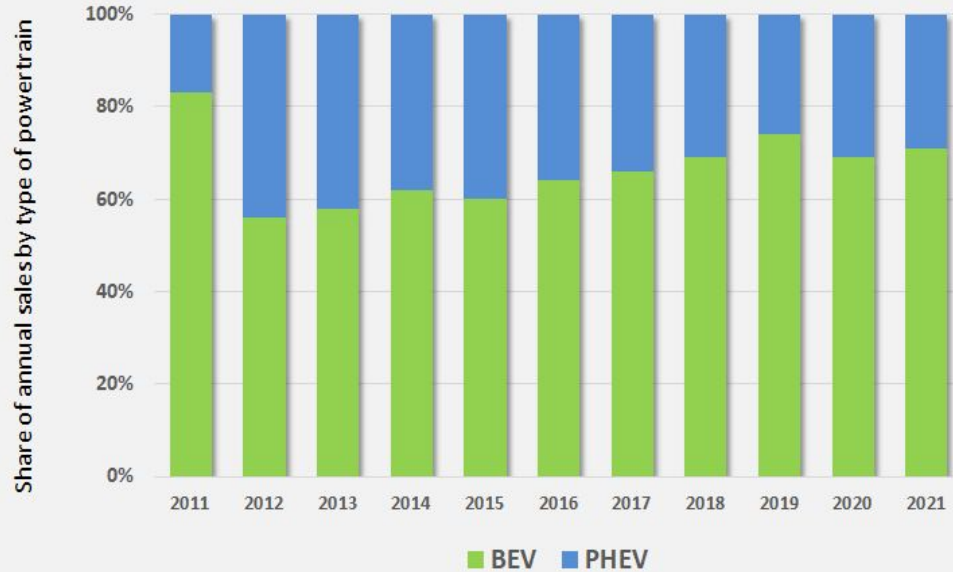


The first Chevrolet Bolt EVs were delivered to customers in the San Francisco Bay Area in December 2016





Split of annual global sales between all-electric cars and plug-in hybrids
(2011 - 2021)





2020s

- The Tesla Model 3 surpassed the Nissan Leaf in early 2020 to become the world's best selling electric car ever, with more than 500,000 total units sold by March 2020.



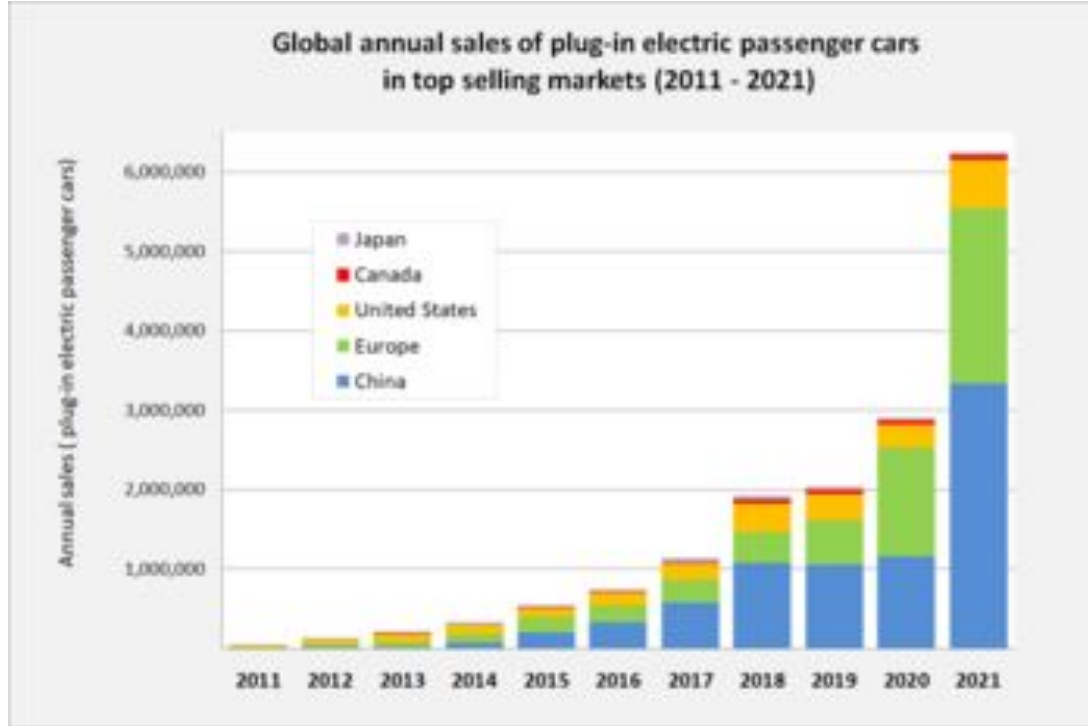
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THANK YOU