

PDHonline Course E421 (2 PDH)

# **Electric Vehicles 101**

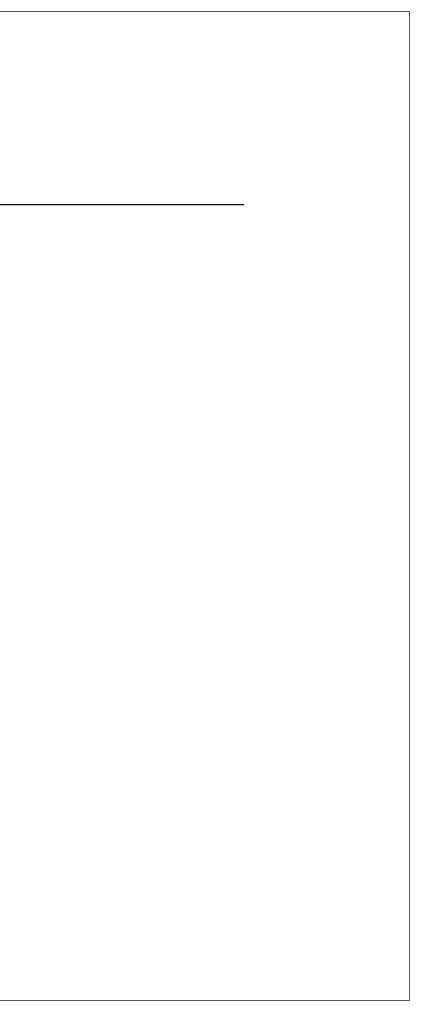
Instructor: John C. Huang, Ph.D., PE

2020

# PDH Online | PDH Center

5272 Meadow Estates Drive Fairfax, VA 22030-6658 Phone: 703-988-0088 www.PDHonline.com

An Approved Continuing Education Provider



# **A BRIEF HISTORY OF ELECTRIC VEHICLES**

From Europe to North America to Asia, the history of electric mobility is a demonstration of the world's persistent ingenuity and adaptation in transportation. The future of electric mobility – still to be written – will stand, in part, on the achievements and lessons learned from these earlier periods.

1832-39

Robert Anderson, of Scotland, builds the

first prototype electric-powered carriage.

1834

Thomas Davenport, of the United States,

invents and installs the first direct current

electrical motor in a car that operates

on a circular electrified track.

## 1888

German engineer Andreas Flocken builds the first four-wheeled electric car.

#### 1897

The first commercial electric vehicles enter the New York City taxi fleet. The carmaker, Pope Manufacturing Co., becomes the first large-scale EV manufacturer in the United States.

#### 1899

The "La Jamais Contente," built in France, becomes the first electric vehicle to travel over 100 km per hour.

#### 1900

Electricity-powered cars become the top-selling road vehicle in the United States, capturing 28% of the market.

# 1908

The petrol-powered Ford Model T is introduced to the market.

#### 1909

William Taft becomes the first U.S. President to purchase an automobile, a Baker Electric.

# 1912

The electric starter, invented by Charles Kettering, obviates the need for the hand-crank, making it easier for more people to drive petrol-powered cars.

# 1912 GLOBAL EV STOCK REACHES **HISTORICAL PEAK OF 30,000**

## 1930s

By 1935, EVs become all-but-extinct due to the predominance of internal combustion engine (ICE) vehicles and availability of cheap petrol.

## 1947

Oil rationing in Japan leads carmaker Tama to release a 4.5hp electric car with a 40V lead acid battery.

# 1966

The U.S. Congress introduces legislation recommending electric vehicles as a means of reducing air pollution.

#### 1973

The OPEC oil embargo causes high oil prices, long lines at petrol filling stations, and renewed interested in EVs.

# 1976

the "PREDIT" programme accelerating EV RD&D.

# 1996

To comply with California's Zero Emission Vehicle (ZEV) requirements begins leasing the EV1 electric car.

#### 1997

In Japan, Toyota begins sales of the Prius, the world's first commercial hybrid car. 18,000 are sold in the first production year.

# 1801-1850

## THE BEGINNING

The earliest electric vehicles are invented in Scotland and the United States.

# 1851-1900

THE FIRST AGE Electric vehicles enter the marketplace and find broad appeal.

# 1901-1950

# **THE BOOM & BUST** EVs reach historical production peaks

only to be displaced by petrol-powered cars.

# 1951-2000

# THE SECOND AGE

High oil prices and pollution cause renewed interest in electric vehicles.

# 2008

Oil prices reach more than USD 145 per barrel.

2010

The BEV Nissan LEAF is launched.

# 2011

The world's largest electric car sharing service, Autolib, is launched in Paris with a targeted stock of 3,000 EVs.

#### 2011

**GLOBAL EV STOCK REACHES** NEW HISTORICAL PEAK OF 50,000

# 2011

French government fleet consortium commits to purchase 50,000 EVs over four years.

# 2011

Nissan LEAF wins European Car of the Year award.

# 2012

The PHEV Chevrolet Volt outsells half the car models on the U.S. market.

2012 **GLOBAL EV STOCK EXCEEDS 180,000** 

# 2001-

# THE THIRD AGE

Public and private sectors recommit to vehicle electrification.





