

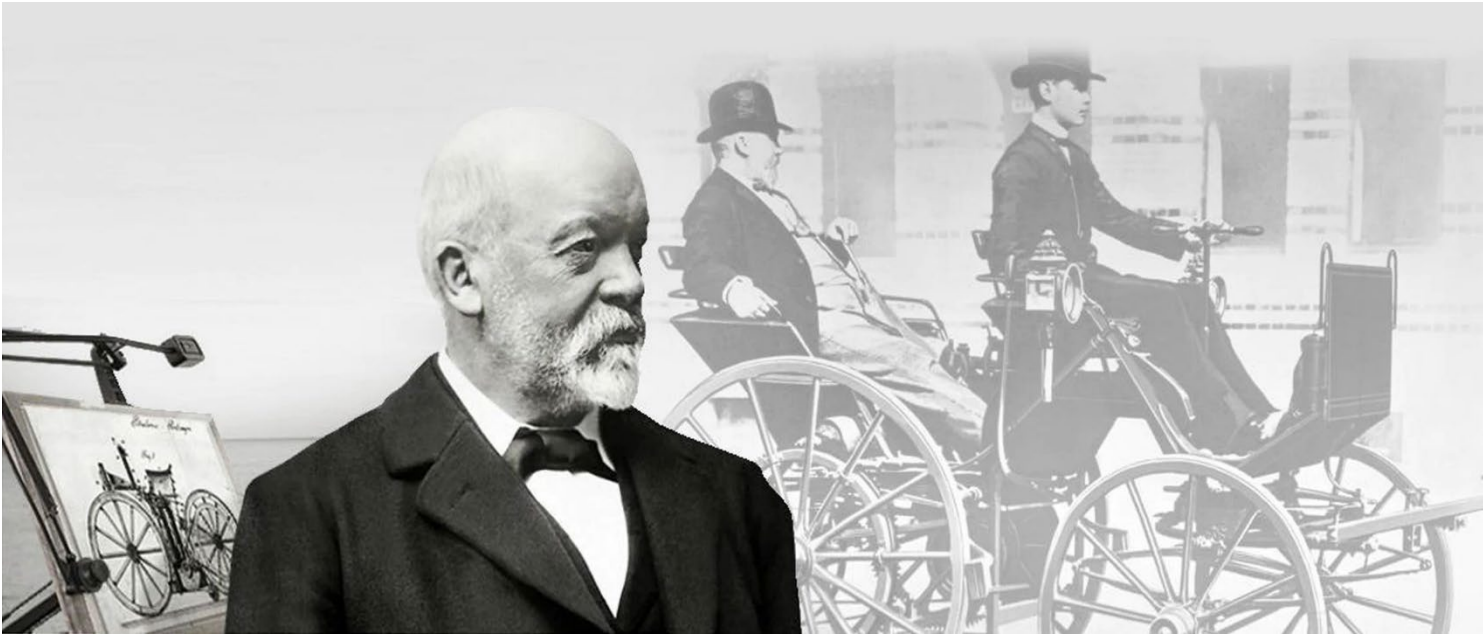
A front-facing view of a dark-colored Mercedes EQ SUV. The car is centered in the frame. The Mercedes-Benz star logo is prominent on the front grille. The license plate area displays 'EQ 7003E'. On the windshield, a large, stylized batman logo is visible. The background is a simple, light-colored wall with a vertical yellow stripe on the left side. The floor is a dark, reflective surface.

THE USE OF ELETRIC  
MOTORS TECHNOLOGY AT  
MERCEDES



| TYPE OF CONTENTS                  | STUDENT ID | TOPIC                                           |
|-----------------------------------|------------|-------------------------------------------------|
| Massimo Ianniello (Group Leader)  | 2132317    | INTRODUCTION/BACKGROUND                         |
| Etilio Jahaj                      | 2131879    | CHALLENGE BEFORE INTRODUCING THE ELECTRIC MOTOR |
| Dan Bajenaru                      | 2129380    | INSIGHT OF THE ELECTRIC MOTOR AT MERCEDES       |
| Kristian Nash                     | 2130196    | IMPACTS OF THE ELECTRIC MOTOR AT MERCEDES       |
| Domenico Masiello (Deputy Leader) | 2128600    | LESSONS DRAWN FROM THE CASE STUDY/CONCLUSION    |

# 1. HISTORY AND BACKGROUND



**KARL BENZ (1844 - 1929)**

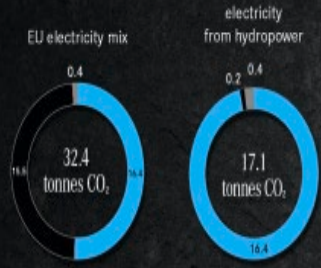


**Daimler-Motoren-Gesellschaft  
(DMG).**

# 1.2.AIM & OBJECTIVES OF MERCEDES

## The CO<sub>2</sub> balance of the Mercedes-Benz EQC - dependent on power generation

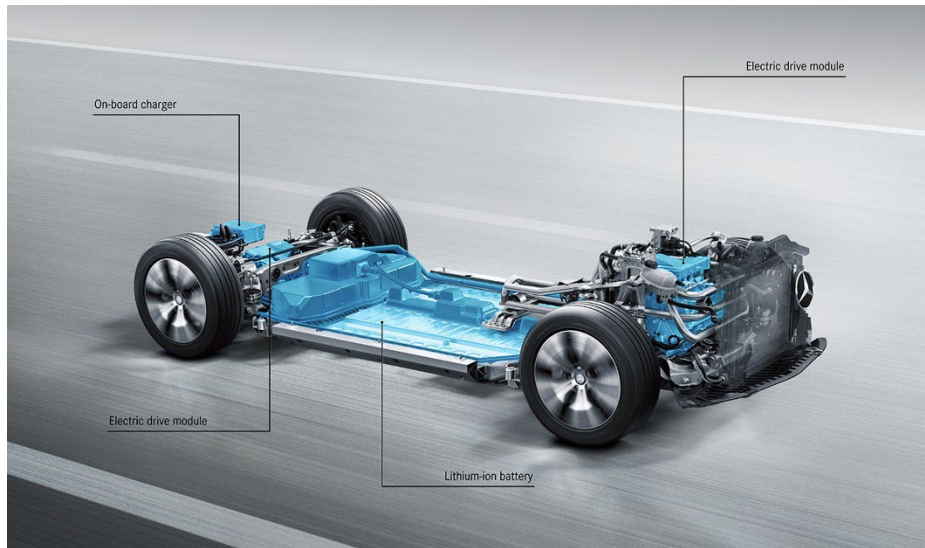
The life-cycle CO<sub>2</sub> balance of the EQC 400 4MATIC (combined power consumption: 20.8 - 19.7 kWh/100 km; combined CO<sub>2</sub> emissions: 0 g/km)\* varies depending on the source of the electricity used for driving.



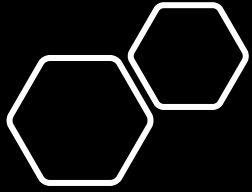
■ Car production  
□ Electricity generation  
■ End of Life



## CO<sub>2</sub> NEUTRALITY



## ELETRIC DRIVING

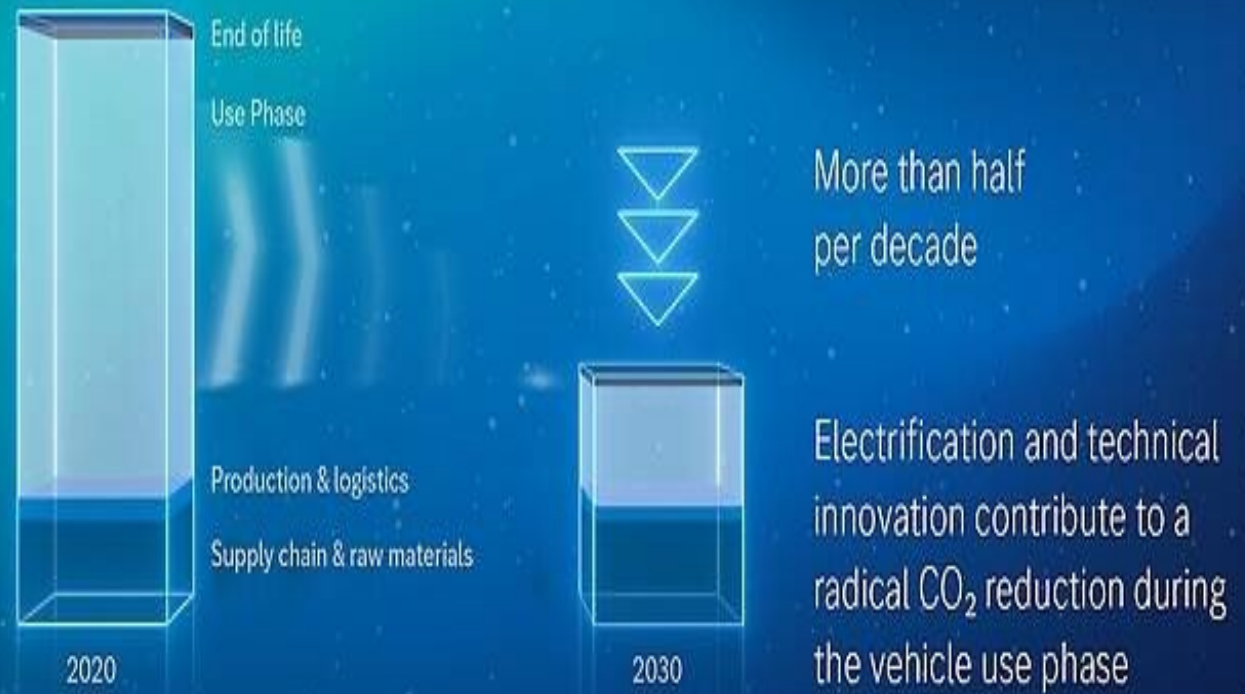


## 1.3.SCOPE / PURPOSES OF MERCEDES

- Electrifying the vehicle fleet
- Charging with green energy
- Improving battery technology
- An extensive use of recycled materials
- Renewable energy in production.

More than 50 per cent CO<sub>2</sub> reduction per vehicle in this decade

Mercedes-Benz Cars targets the full lifecycle of its cars on the way towards carbon neutrality



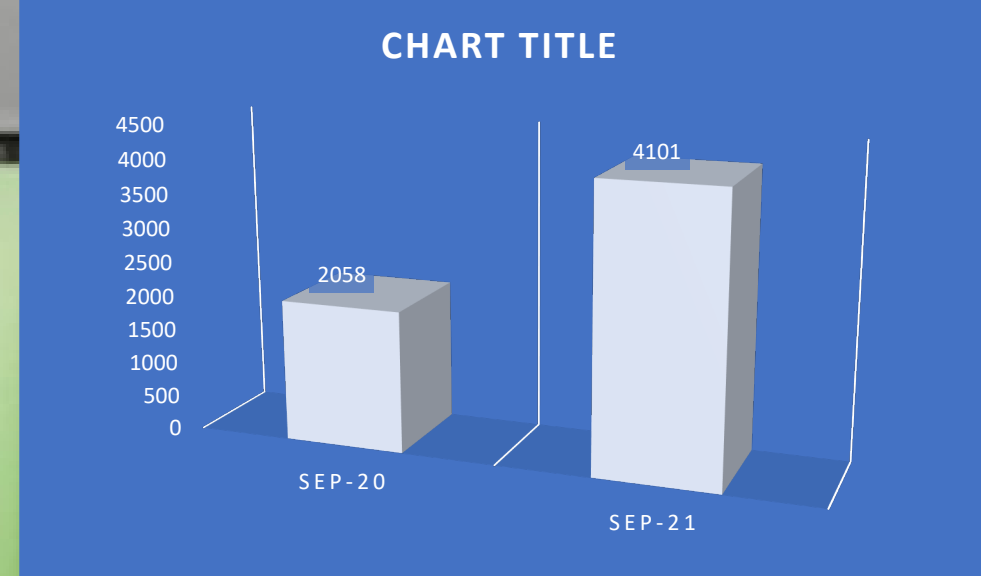
## 1.4.MISSION & VISION OF MERCEDES

1. IMPROVE CUSTOMER SERVICE
2. EMPOWER EMPLOYERS
3. PROMOTES INNOVATION
4. RELATIONSHIP
5. GROWTH



## 1.5.CURRENT STATUS OF MERCEDES

- Nearly 100% growth in sales at 4,101 units in 09/21 compared to 09/20
- They're a status symbol
- Mercedes-Benz are massive innovators



## 2. CHALLENGES OF THE ELECTRIC VEHICLES IN THE CAR INDUSTRY



## 2.1. INADEQUATE INFRASTRUCTURE

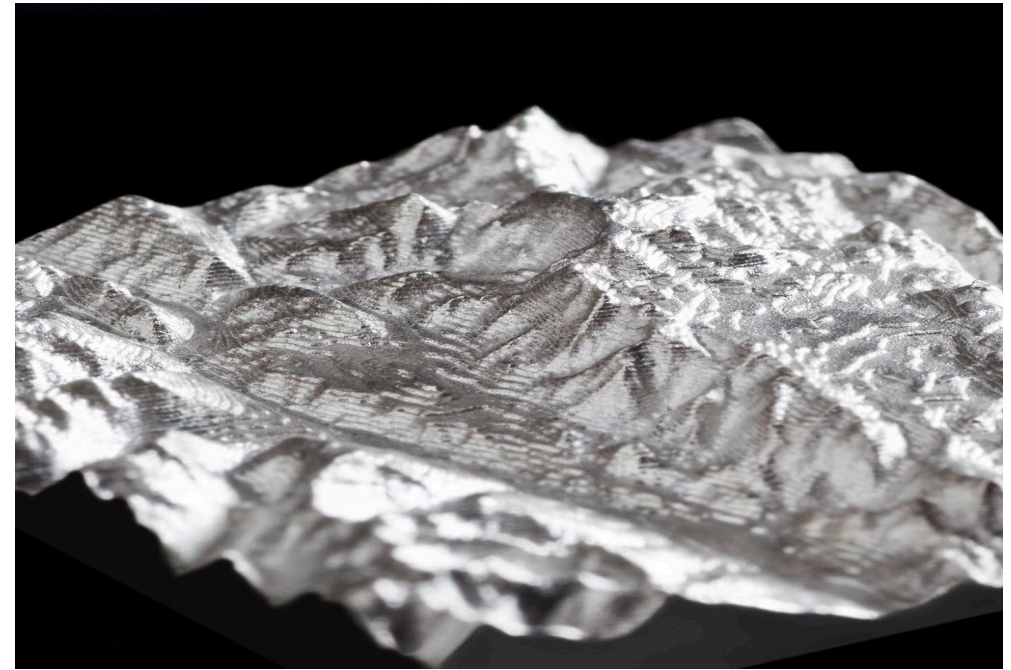
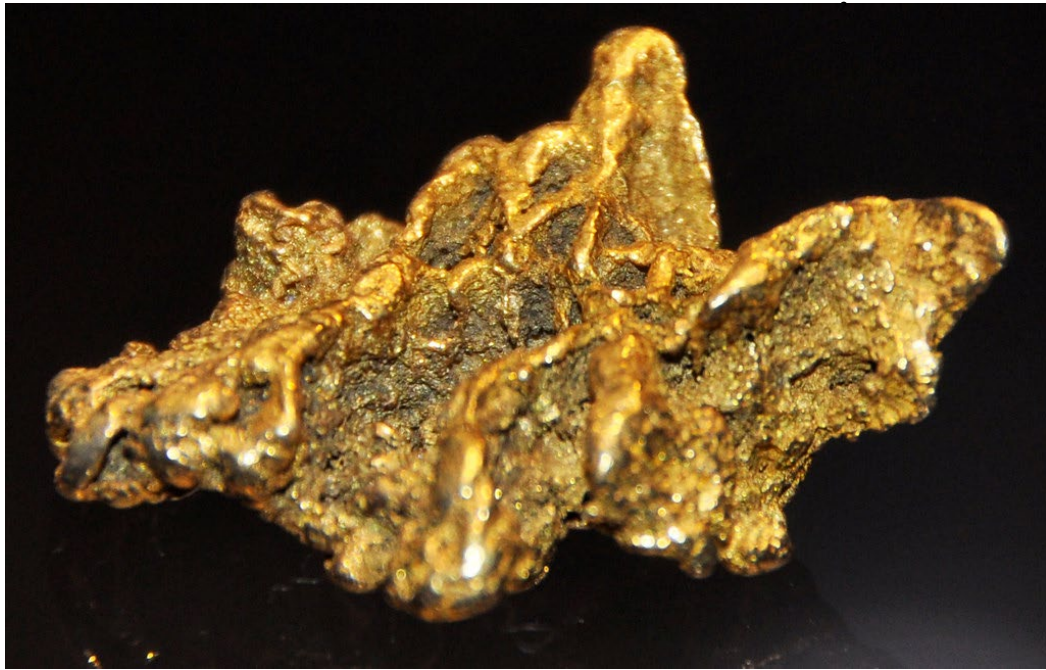
The cumulative number of EVs on U.S. roads could reach 35 million by 2030,

However there are only 115,000 charging ports in the U.S which is the country with the most EVs at the moment



## 2.2. Critical minerals and rare earth materials

- Electric vehicles use two precious earth metals: gold and silver. These are used in minute quantities in the circuit boards, which also occurs in modern fossil fuelled vehicles. The circuit boards run the electronics. In result this made and still makes EVs





- If offshore rare earth metals were suddenly denied to the U.S or anywhere else then domestic EV production would abruptly stop.
- This is a major concern on the EV production.

## 2.3. CUSTOMER ACCEPTANCE

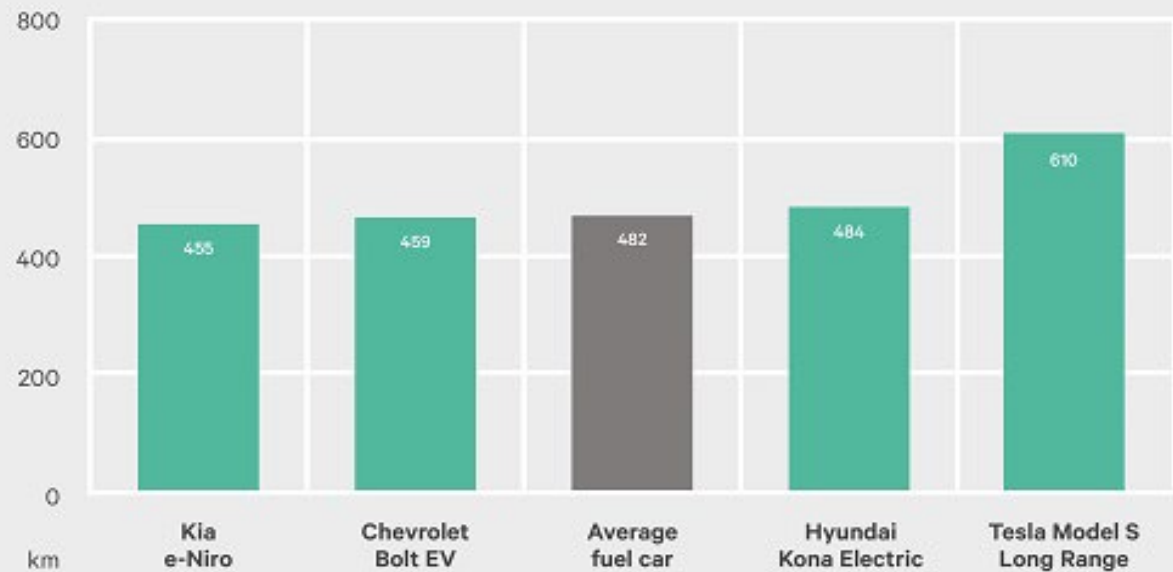


- A key question is how EVs will pass through different owners. Most people don't buy new vehicles. So can EVs live long enough to be passed down to a second or third owner?
- This is what made it difficult for people to buy EVs before.

## 2.4.FREEDOM OF RANGE

- The Freedom of range of an electric is less than a fossil fuel car but before it used be much less, this made it harder for people to buy one before modern technology.

Range Of New Electric  
Vehicle Models



*3.INSIGHT OF*  
*THE ELECTRIC*  
*MOTOR*



### 3.1. WHAT IS AN ELECTRIC MOTOR

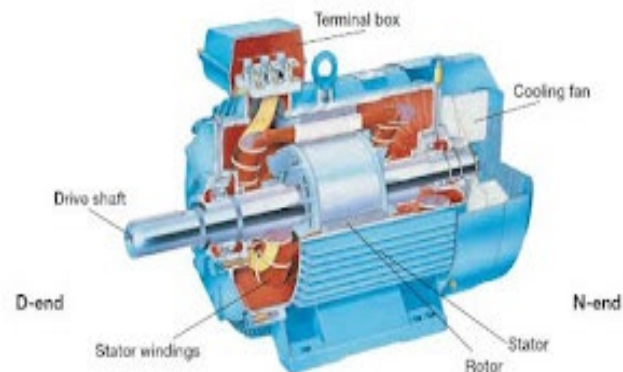
The electric motor is basically a machine that transforms electric energy in mechanical energy.



# 3.2. Components of the electric motor

The 7 most important parts of an electric motor as stated by Amrie Muchta (2017) are:

- ❖ Stator Coil
- ❖ Rotor Coil
- ❖ Main Shaft
- ❖ Brush
- ❖ Bearing
- ❖ Drive Pulley
- ❖ Motor Housing

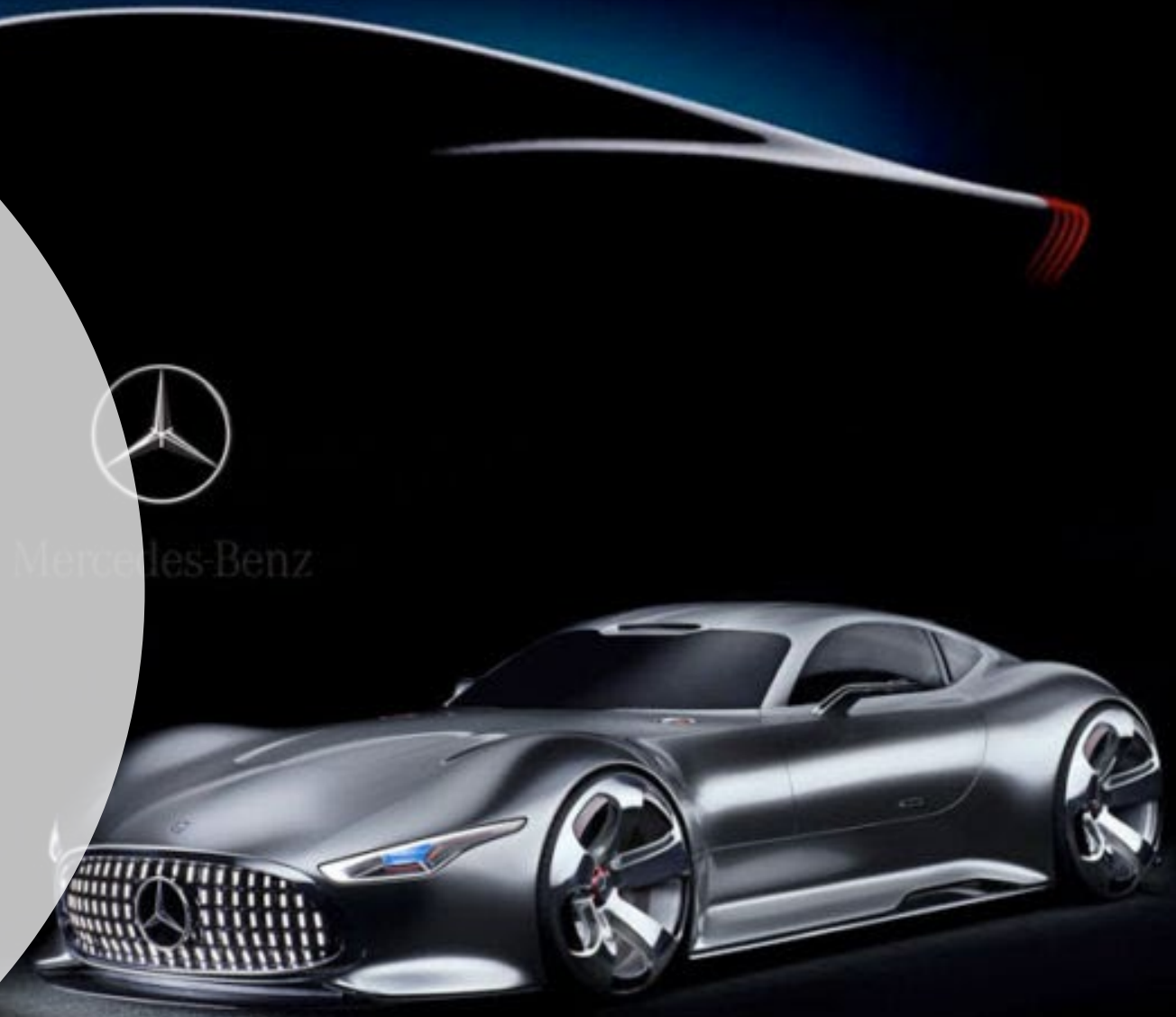


# 3.3 HOW IS THE ELECTRIC MOTOR WORKING



### 3.4. INTELLIGENT FEATURES AND BENEFITS

- ❖ High efficiency.
- ❖ High instant power.
- ❖ Fast torque response.
- ❖ High power density.
- ❖ Low cost.
- ❖ High acceleration.
- ❖ Robustness



A blue Mercedes EQ car is shown from the front-left, parked on a wet, reflective surface. The background features a coastal scene with greenery and a body of water under a cloudy sky. A large, semi-transparent white circle is overlaid on the right side of the image, containing the title text.

# *4. Impact of the electric motor at Mercedes*

# 4.1. Positive Impact

- ❖ Advanced Systems
- ❖ Better for the environment
- ❖ Cheaper to operate



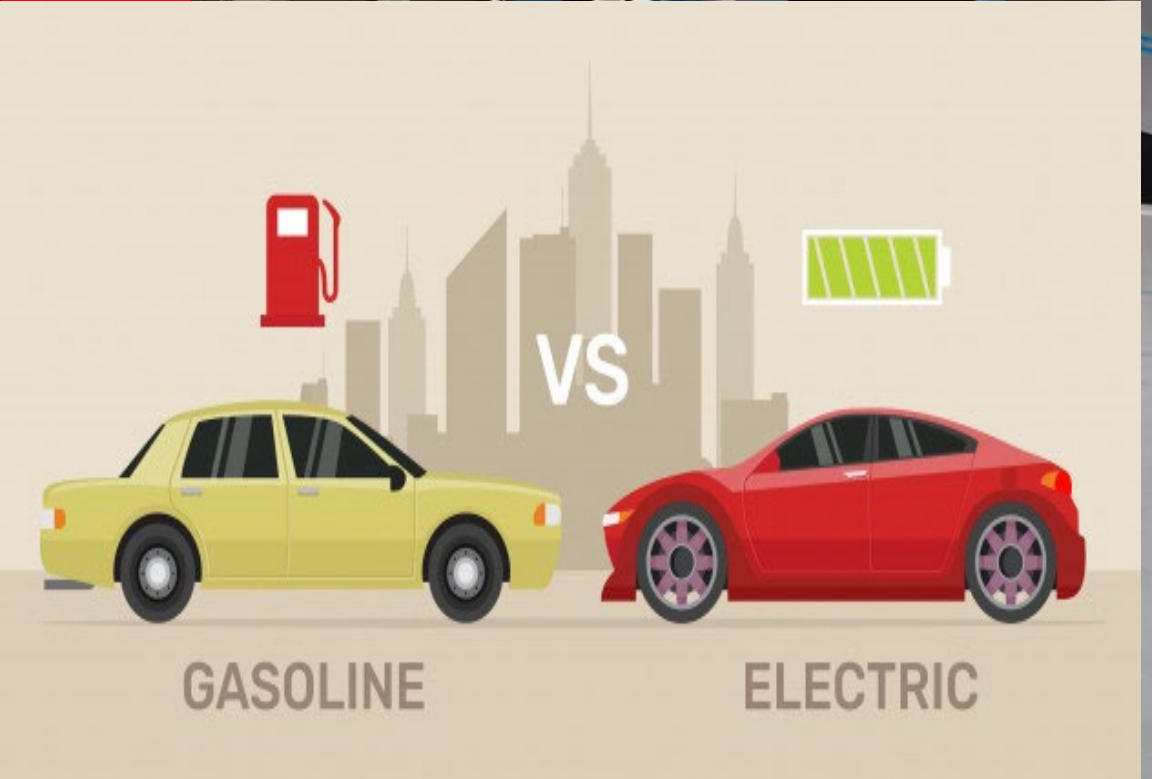


## 4.2. Negative impact

- ❖ More expensive to purchase
- ❖ Harder to operate
- ❖ Being electric is inconvenient

# 5. Lessons drawn from the case

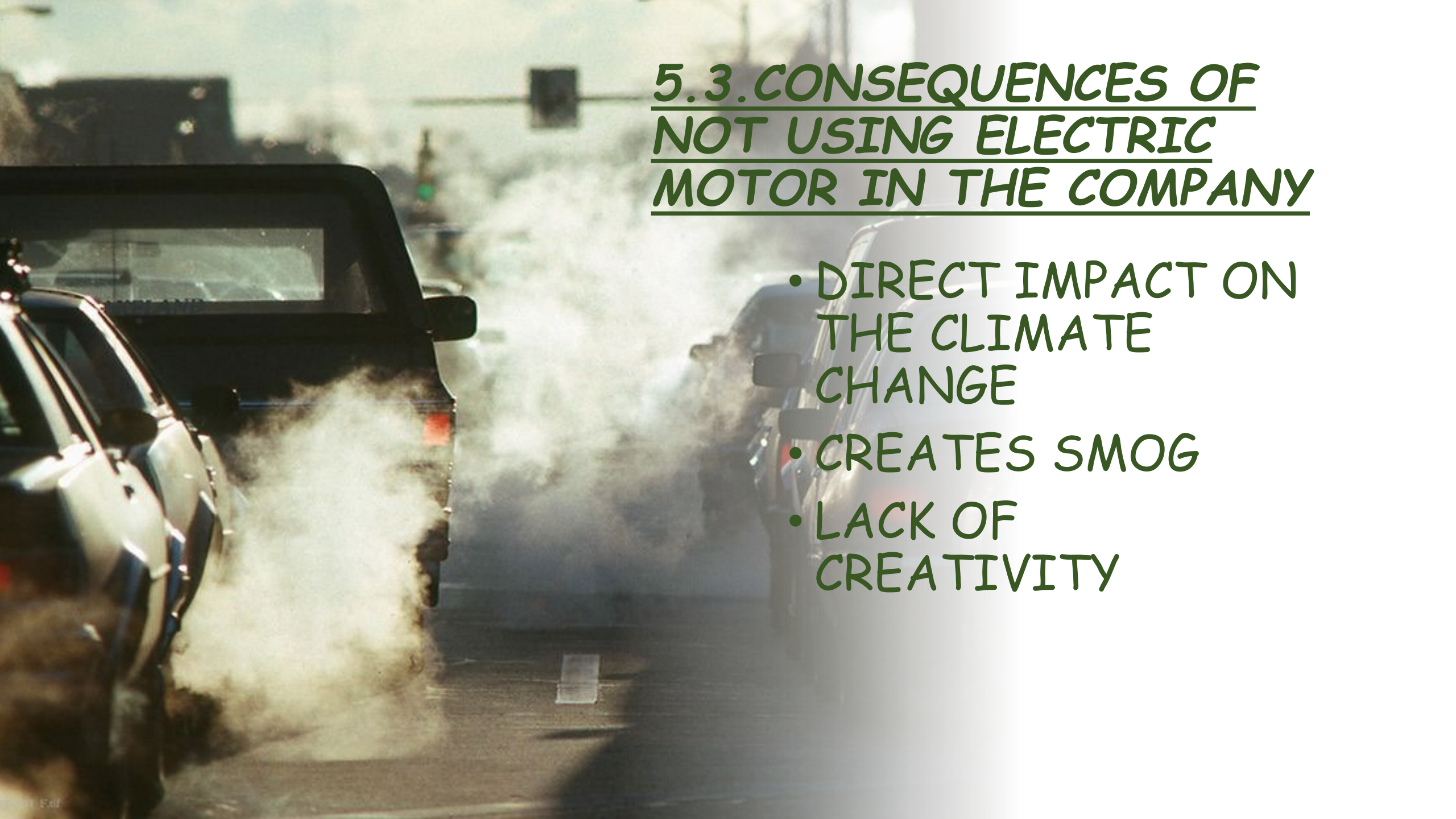
## 5.1. DIFFERENCES BETWEEN TRADITIONAL AND MODERN

| GASOLINE CARS         | ELETRIC CARS            |  |
|-----------------------|-------------------------|--------------------------------------------------------------------------------------|
| MORE EMISSION         | LESS EMISSION           |                                                                                      |
| LONG MILE RANGE       | SHORT MILE RANGE        |                                                                                      |
| QUICK REFUEL          | TAKES HOURS TO RECHARGE |                                                                                      |
| EXPENSIVE MAINTENANCE | CHEAP MAINTENANCE       |                                                                                      |

## 5.2. THE IMPORTANCE OF ELECTRIC MOTORS AT MERCEDES:

- GOOD FOR THE ENVIRONMENT
- NOISELESS
- ECONOMIC GROWTH
- SAFETY FEATURES





### 5.3. CONSEQUENCES OF NOT USING ELECTRIC MOTOR IN THE COMPANY

- DIRECT IMPACT ON THE CLIMATE CHANGE
- CREATES SMOG
- LACK OF CREATIVITY

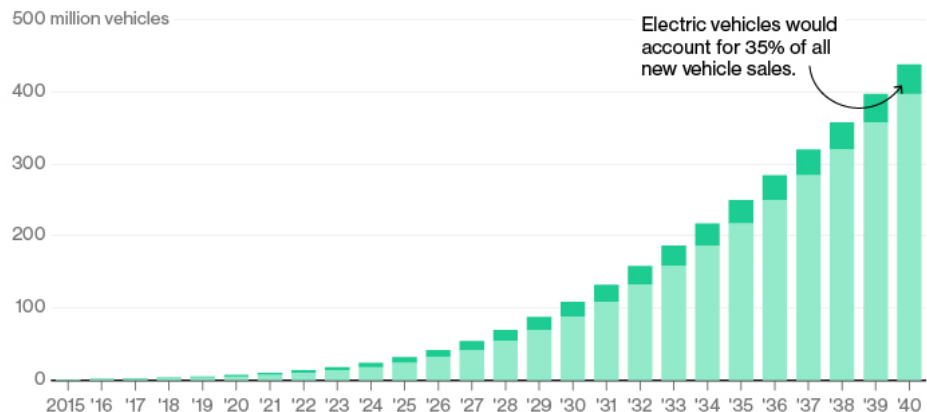
## 5.4.FUTURE PROSPECT OF MERCEDES

- FROM 2025 ALL THE CARS WILL BE ELECTRIC ONLY
- AMBITION TO BE CO2-NEUTRAL BY 2039
- CLIMATE PROTECTION AND AIR POLLUTION CONTROL

### The Rise of Electric Cars

By 2022 electric vehicles will cost the same as their internal-combustion counterparts. That's the point of liftoff for sales.

■ Projected annual sales ■ Cumulative sales



Sources: Data compiled by Bloomberg New Energy Finance, Marklines

Bloomberg



## 6.CONCLUSION

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- NEW DIGITAL SKILLS
- IMPROVED AND DEVELOPED TEAM WORK SKILLS
- THE IMPORTANCE OF MODERN TECHNOLOGIES IN THE WORK PLACE
- CONSEQUENCES AND THE IMPACT OF MODERN TECHNOLOGIES IN THE ENVIRONMENT

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