



MAGNUM CAP

Electrical Power Solutions

ELECTRIC MOBILITY

IS AN ELECTRIC VEHICLE A GOOD
ALTERNATIVE TO CURRENT ICE VEHICLES?

IS ELECTRICITY A GOOD ALTERNATIVE TO
PETROLEUM BASED FUELS?

DOES THE BATTERY SUBSTITUTE THE
CONVENTIONAL FUEL TANK?

ELECTRIC MOBILITY

RANGE

PERFORMANCE

COMFORT

VEHICLE PRICE

PRICE PER KM

USABILITY

MAINTENANCE

CO₂ AND POLLUTION

BATTERY ISSUES

WHERE TO CHARGE

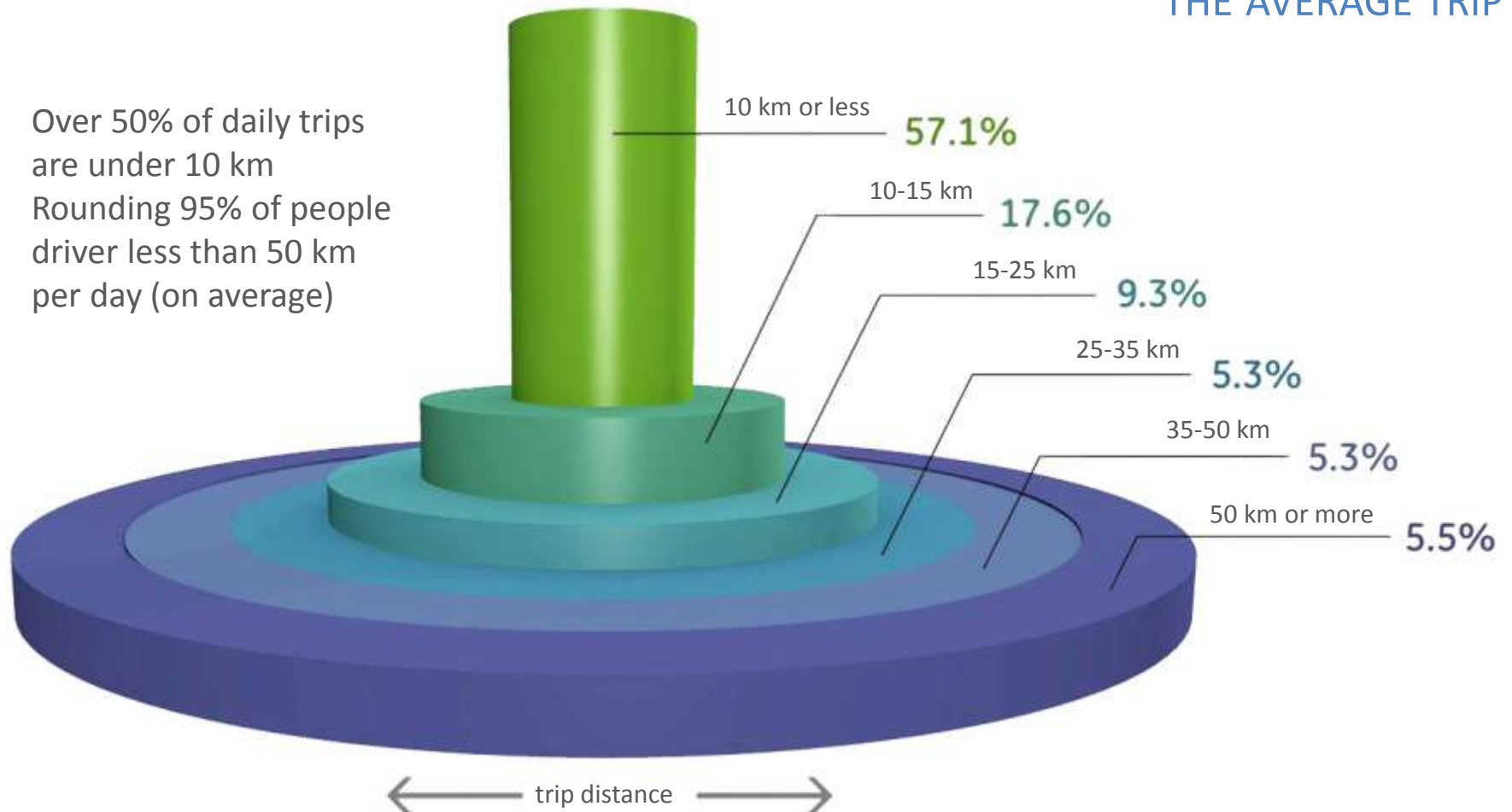
GRID IMPACT

HOW MUCH OIL WE SAVE

How We Drive

THE AVERAGE TRIP

Over 50% of daily trips are under 10 km
Rounding 95% of people driver less than 50 km per day (on average)



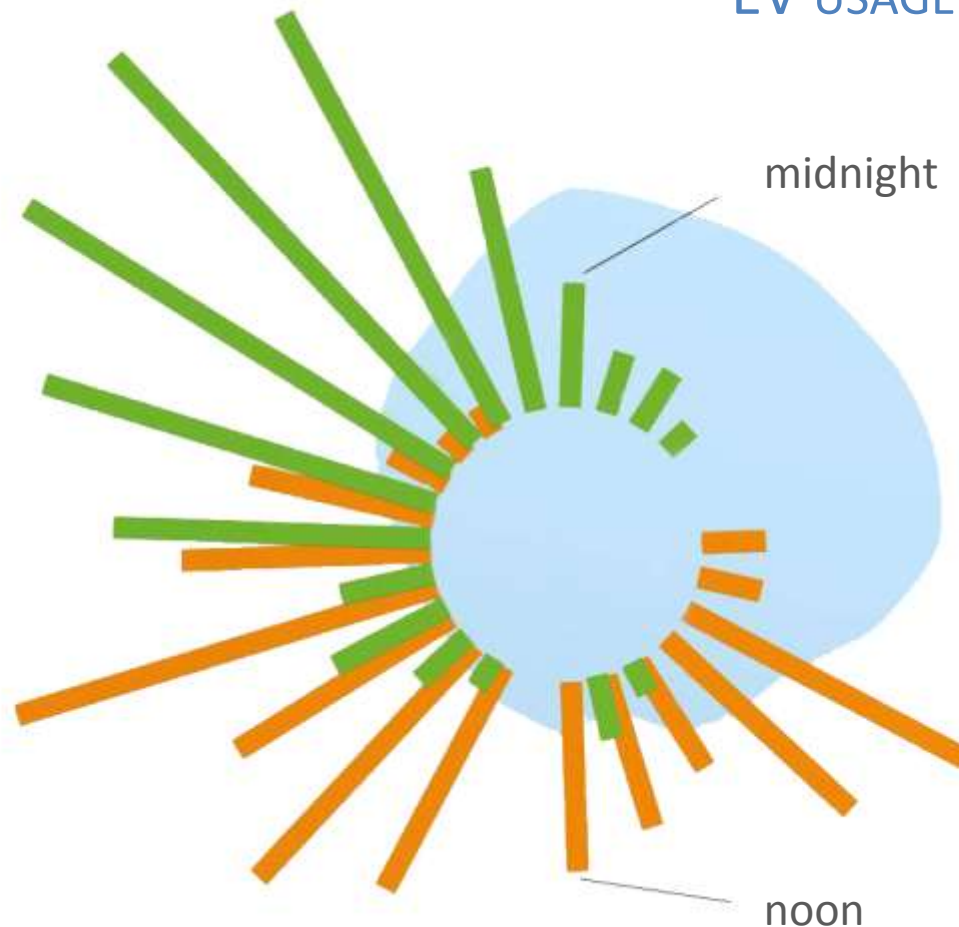
How We Drive

EV USAGE PATTERNS

- Excess Grid Capacity
- EV Charging
- EV Driving

Understanding EV Driving Behavior may help identify grid efficiency.

Smart EV chargers can help take advantage of the excess grid capacity, by delaying EVs charging to later at night when electricity demand is lower



How We Drive

HOW MUCH OIL CAN WE SAVE

Based on 250.000 km
vehicle life estimation



ELECTRIC MOBILITY

THE MOBILITY OF THE FUTURE

Everyone knows that petroleum reserves are becoming depleted and increasingly expensive to extract.

Our exhaust emissions are polluting the environment and causing climate change.

Here, electric mobility is a key component.



1/5

TRANSPORTATION ACCOUNTS FOR:
of global primary energy use

1/4

of all energy-related CO2 emissions
with nearly 50% of those emissions
originating from passenger vehicles

ELECTRIC MOBILITY

THE MOBILITY OF THE FUTURE

Electric vehicles are very efficient.

EVs give us the opportunity to use energy from renewable sources in transport.

Pollution will prevent mobility. Mobility flourishes economy and individual freedom. EV may be the solution

ELECTRIC MOBILITY

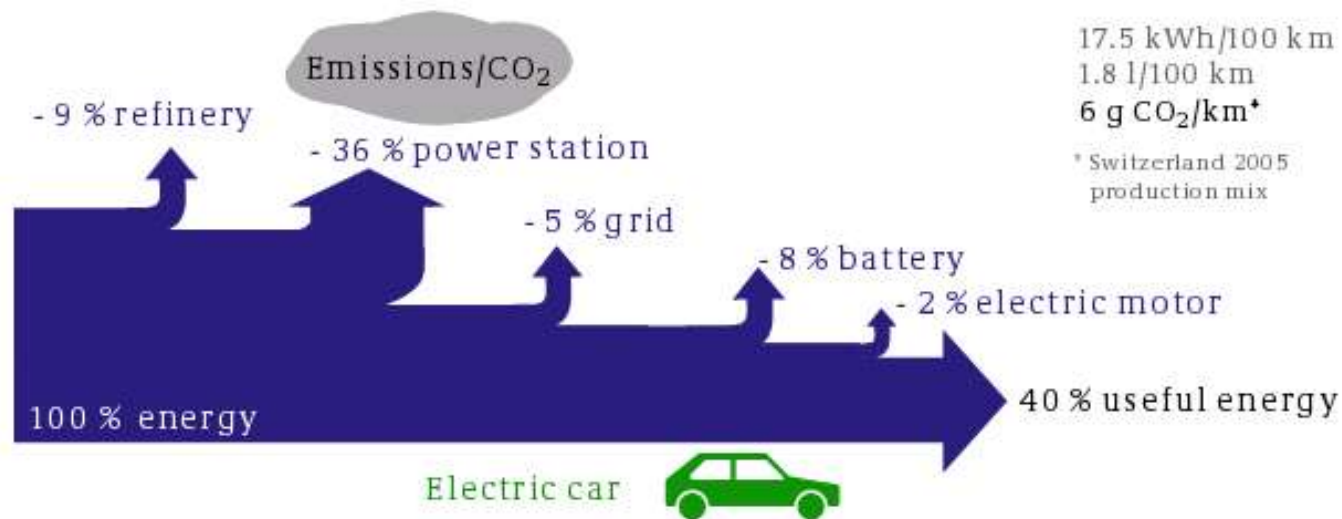
THE MOBILITY OF THE FUTURE

In the medium to long term, electric mobility can also help to support the changeover to renewable energy as part of the transformation of the energy system.

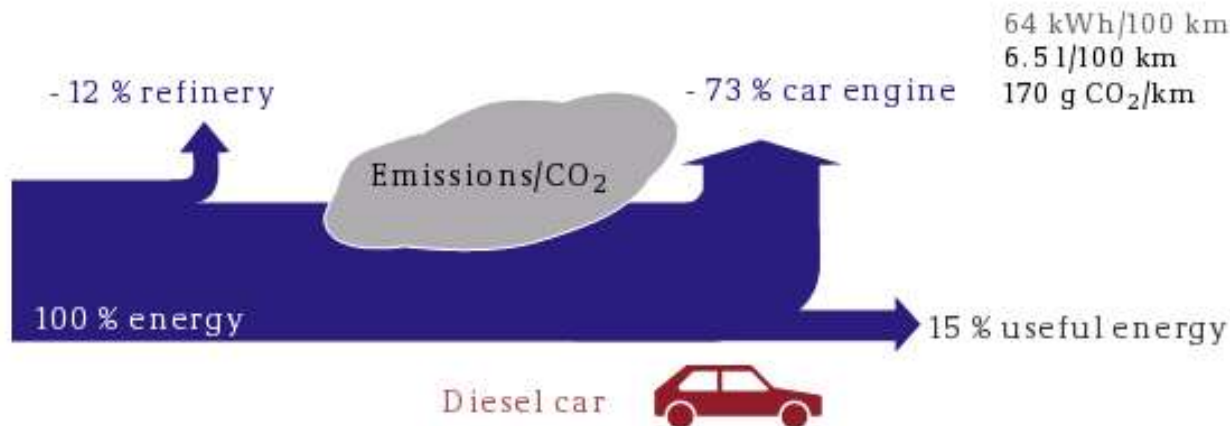
In addition, the vehicles can act as mobile storage devices to store electricity from renewable energy and, if needed, feed it back to the grid.

Thus, in the future, they will make an important contribution to grid stability.

EFFICIENCY AND CO₂ EMISSIONS



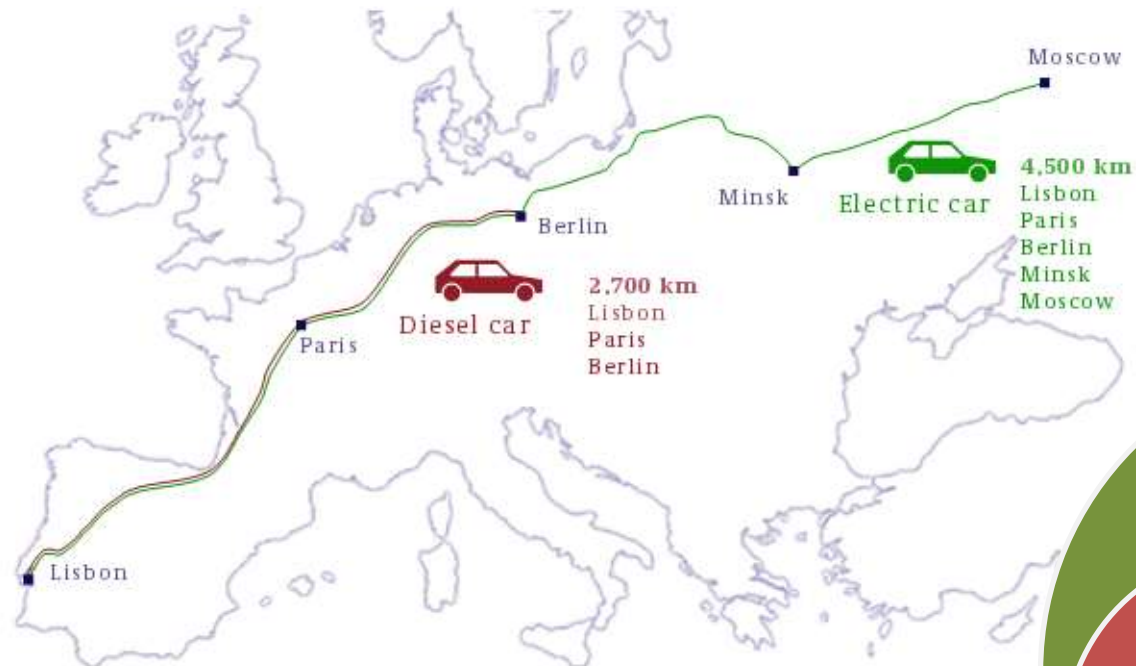
An electric car converts 40% of the primary energy (energy from naturally occurring sources such as coal, gas or petroleum) into useful energy ...



... whereas a diesel car converts only 15%

ENERGY EFFICIENCY

RANGE ON ONE BARREL CRUDE OIL



ELECTRIC VEHICLE

4.500 KM

DIESEL VEHICLE

2.700 KM

SOME FIGURES

900

million vehicles
currently in the
world

98%

use fossil fuels

1.100

million vehicles in
the world in 2020

50g/km

CO₂ that EVs can achieve, with a
moderately clean electric grid

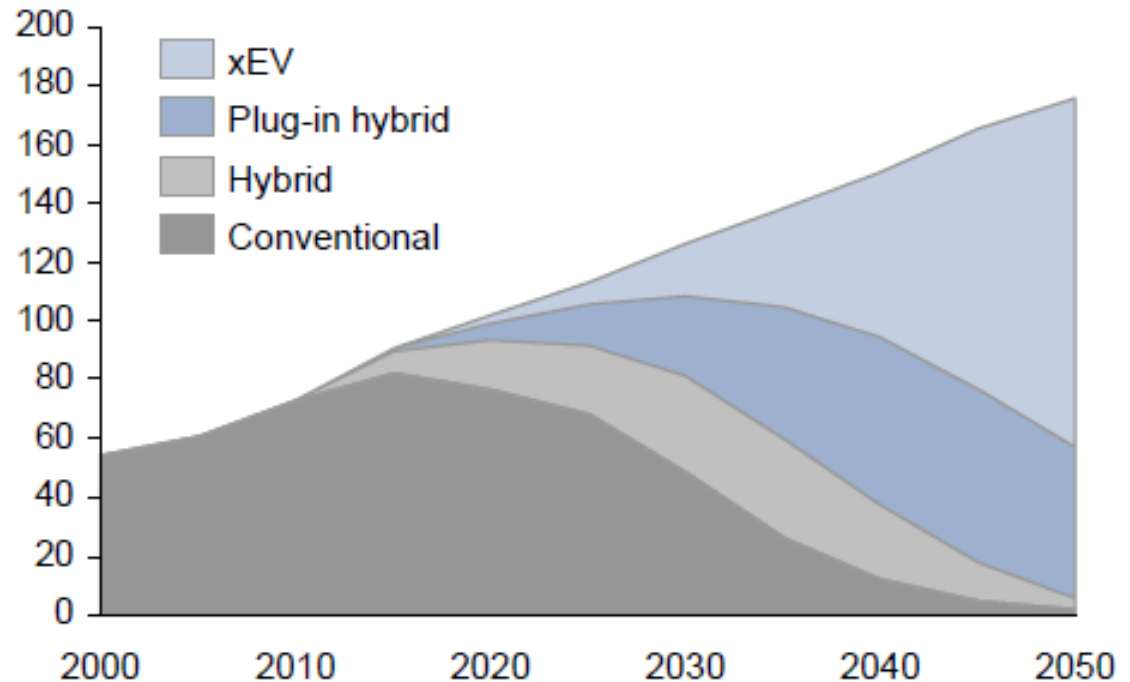
today's most efficient cars, emit
between 100 and 150g of CO₂ / Km

WORLD EV/PHEV SALES MILLIONS

EXPECTED VEHICLE NEW SALES BY TECHNOLOGY TYPE

Global CO2
emissions must be
cut by at least 50%
by 2050

Expected global passenger car sales (in million units p.a.)

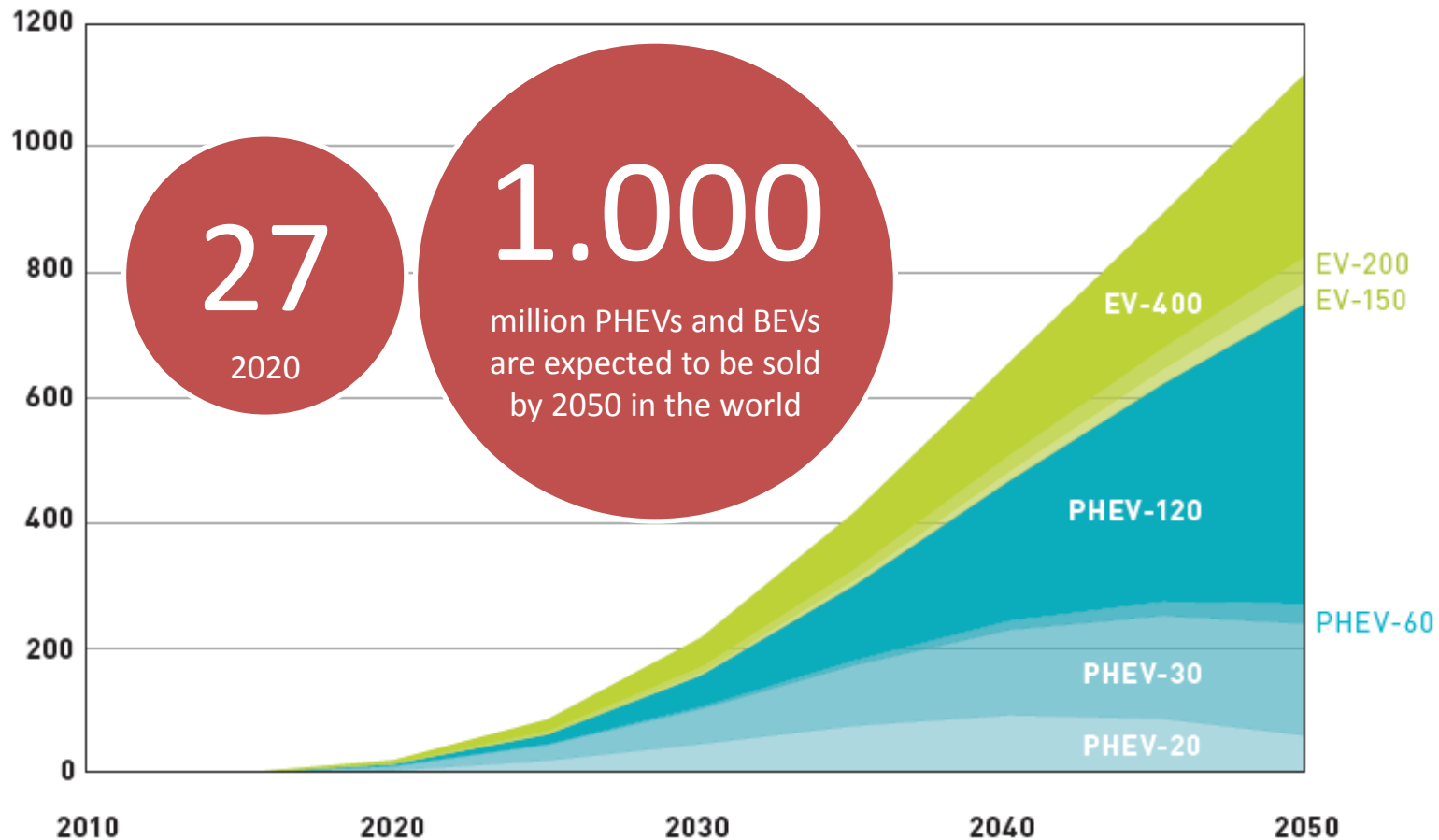


Source: IEA: Global Energy Report 2010; Siemens

1) xEVs including battery-electric vehicles (BEV), electric vehicles with range extender (EREV), and fuel cell electric vehicles (FCEV)

WORLD EV/PHEV STOCKS MILLIONS

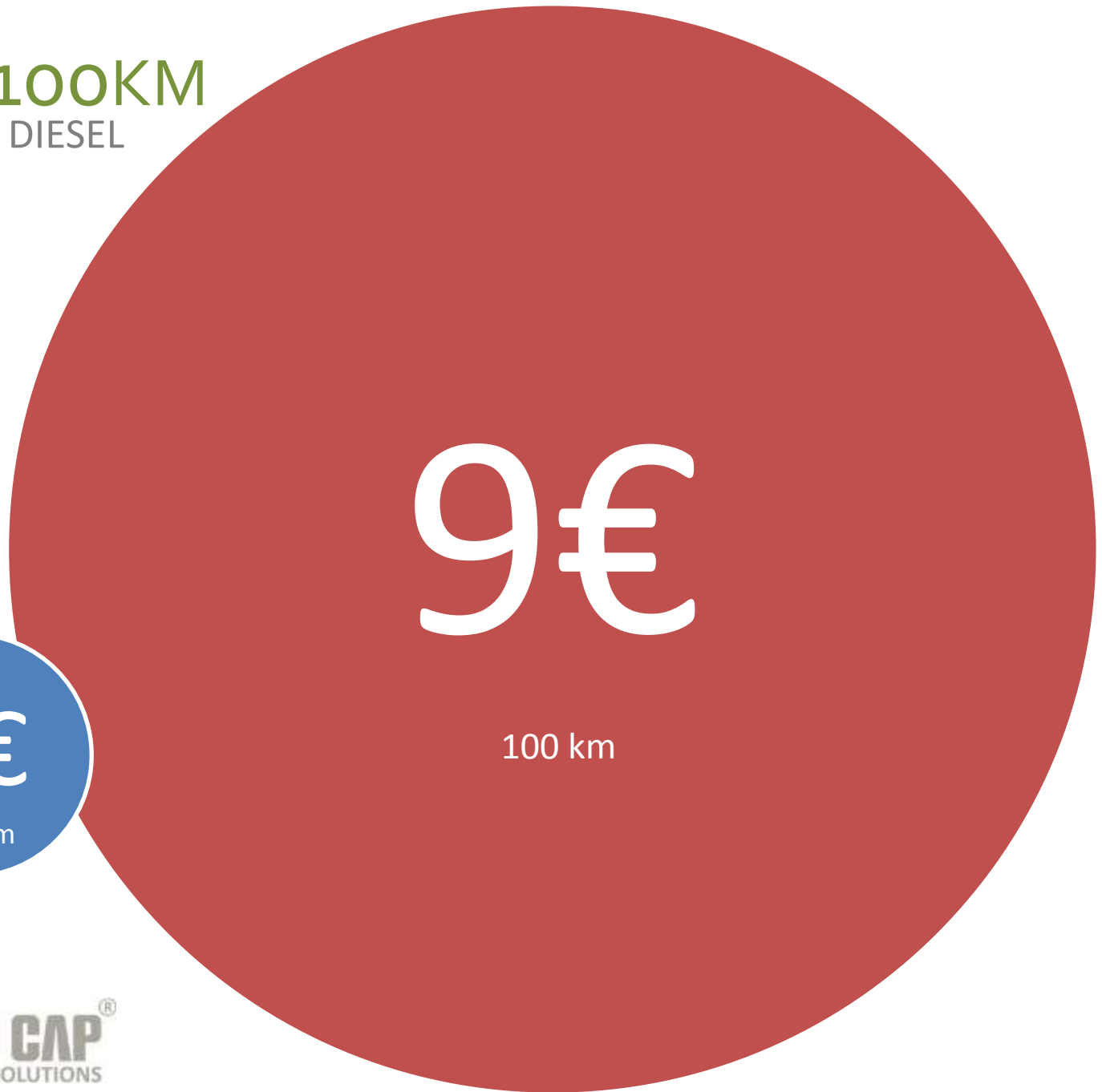
EXPECTED VEHICLE STOCK BY TECHNOLOGY TYPE AND RANGE IN KILOMETERS (KM)



PRICE PER 100KM

BEV COMPARED TO DIESEL

9€ = 450 km
if driving an EV



BY 2050, MOST OF THE
VEHICLES ON URBAN ROADS ARE
TO BE POWERED BY RENEWABLE
SOURCES OF ENERGY.

NO NOISE, NO CO₂ EMISSIONS



THE VEHICLE ENGINE WILL BE ELECTRIC

View of a lithium-ion
battery inside an
electric vehicle

THE QUESTION IS HOW
TO FILL UP THE VEHICLE

Two alternative technologies
battery and hydrogen/
fuel cell

THE BATTERY

A STORAGE MEDIUM FOR RENEWABLE ENERGY IN BATTERY

$$3,6\text{kW} * 7\text{H} = 25 \text{ KWH}$$

POWERED ELECTRIC CARS, THE MOTOR DRAWS THE ELECTRICITY IT REQUIRES FROM THE BATTERY. AND IF THE BATTERY IS DEPLETED, IT HAS TO BE EITHER RECHARGED OR REPLACED BY A CHARGER ONE. EVERYONE IS FAMILIAR WITH THIS FROM THEIR MP3 PLAYER, PHONE OR TABLET PC

ISSUES AND OBJECTIVES

- Make the batteries less expensive – they still the EV most expensive component
- Increase energy density in the battery – the range of EVs still significantly low
- Work is also underway on the charging technology.
- The charging currents for recharging a battery are still limited and not easy to handle.

THE BATTERY

ADVANTAGES

95 PERCENT OF ALL CAR JOURNEYS ARE **SHORTER THAN 50 KILOMETERS.**

A GREAT ADVANTAGE OF THE BATTERY IS THAT IT CAN BE **RECHARGED AT HOME** WHEN YOU SLEEP OR AT THE OFFICE WHEN YOU WORK

EV BATTERIES MAY BE A STORAGE FOR **RENEWABLE ENERGY**

THIS SUGGESTS THAT, DESPITE EV CURRENT RANGE LIMITATION, BATTERY ELECTRIC VEHICLES CAN CERTAINLY MAKE A CONTRIBUTION TO OVERALL MOBILITY.

THIS MEANS THAT FOR THIS FORM OF ELECTRIC MOBILITY, THE INFRASTRUCTURE IS QUIET EASY TO IMPLEMENT.

90% OF THE TIME YOUR VEHICLE IS PARKED

THE MORE EV WE HAVE MORE RENEWABLE (AND UNPREDICTABLE) ENERGY SOURCES WE MAY USE

THE BATTERY

CHALLENGES

A MAJOR CHALLENGE IS THE
INSTALLATION OF PUBLICLY
ACCESSIBLE INFRASTRUCTURE.

THE INSTALLATION OF A CHARGING
INFRASTRUCTURE IN RESIDENTIAL
CONDOMINIUMS / APARTMENTS

QUICK / RAPID CHARGING
NETWORK

THIS IS REQUIRED FOR USERS WHO DO
NOT HAVE THEIR OWN GARAGE —
NORMAL CHARGE — IT MUST BE
ACCESSIBLE TO ALL ELECTRIC VEHICLE
USERS ON CUSTOMER-FRIENDLY TERMS.

SMART / SIMPLE AND SECURE WAY OF
CHARGE AT COMMON / SHARED GARAGES

THE NEED TO SUPPLY POWER TO ELECTRIC
VEHICLES MAKING LONGER TRIPS — TIME
TO CHARGE AND NUMBER OF AVAILABLE
CHARGERS

CHARGING MODES

MODE 1, 2 OR 3



Mode 2 charging cable with SCHUKO® and charging coupler for the vehicle

16A single-phase 230V



Mode 3 charging cable in accordance with VDE application regulation VDE-AR-E 2623-2 with two identical, finger-safe plugs.

At present, different variants up to 32A three-phase and max. 22 kW charging capacity are available.

HYDROGEN/FUEL CELL TECHNOLOGY

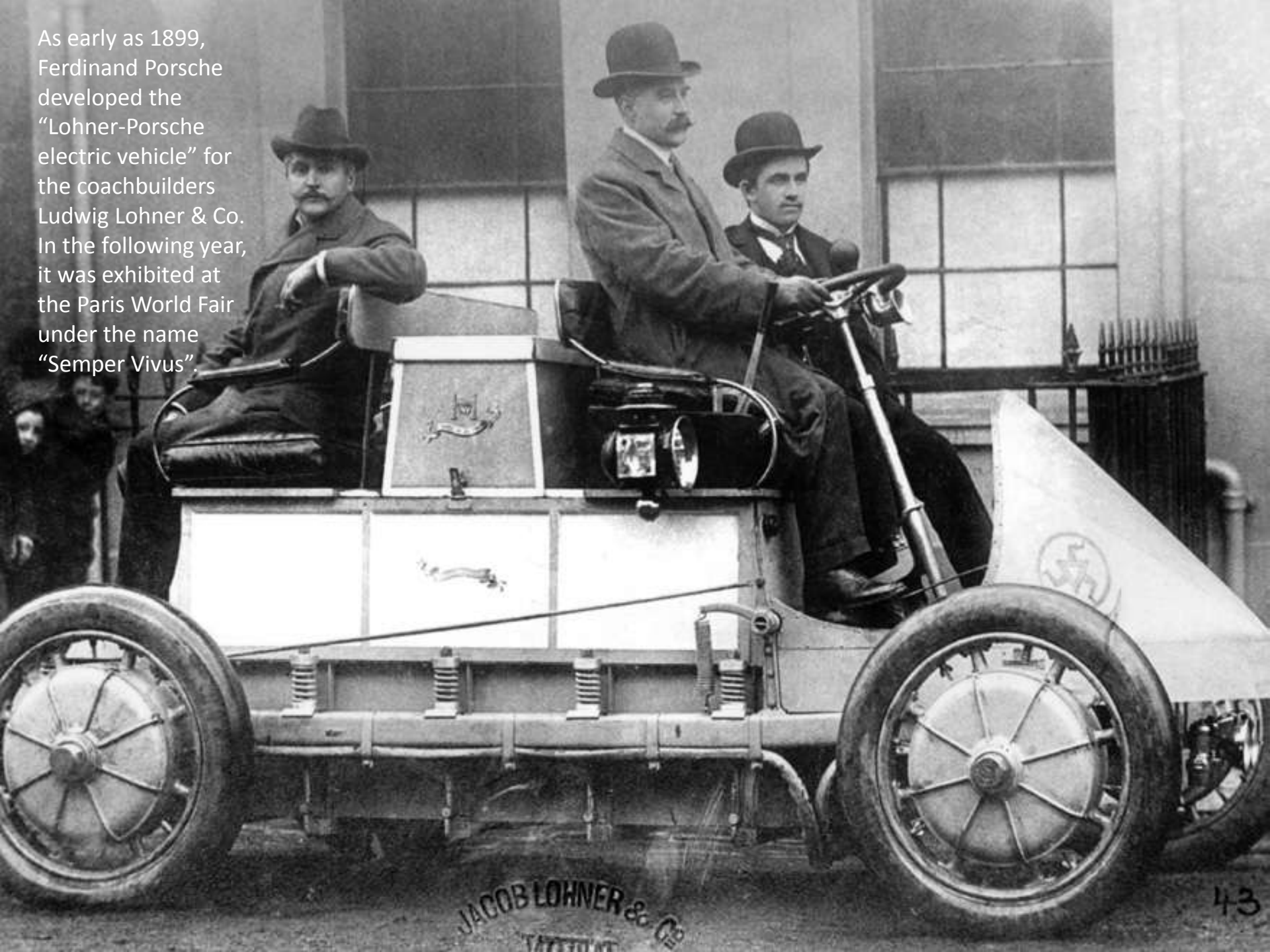
MAY BE AN ALTERNATIVE FOR LONG DISTANCES

FUEL CELL VEHICLES ARE ALSO POWERED BY AN ELECTRIC MOTOR. THE MOTOR GETS MOST OF ITS ENERGY FROM HYDROGEN CARRIED IN THE TANK, WHICH IS CONVERTED INTO ELECTRICITY BY A CHEMICAL REACTION IN FUEL CELLS IN THE VEHICLE.

EXPERIMENTAL VEHICLES HAVE REACHED RANGES OF OVER 400KILOMETRES

HYDROGEN AND FUEL CELL VEHICLES REQUIRE A PUBLICLY ACCESSIBLE NETWORK OF “HYDROGEN FILLING STATIONS”, BUT VERY EXPENSIVE TO SET-UP

As early as 1899, Ferdinand Porsche developed the "Lohner-Porsche electric vehicle" for the coachbuilders Ludwig Lohner & Co. In the following year, it was exhibited at the Paris World Fair under the name "Semper Vivus".



EV WORLD TODAY AND MUCH MORE ...



AUDI - A3 e-tron



Audi - e-bike



BMW - Active E



BMW - i3 & i8 -



BMW - Pedelec Electric Cycle



Brammo - Empulse



Chevrolet - Spark



Chevrolet - Volt



Citroen - C-ZERO



Fisker - Atlantic



Mini - Electric



Nissan - Leaf



Opel - Ampera



Peugeot - Cycles



Peugeot - Partner



Renault - Circular Economy 4L



Renault - Twizy



Renault - Zoe



Smart - Fortwo Electric Drive



Smart - Scooter



SsangYong - XIV-1



Tesla - Model S

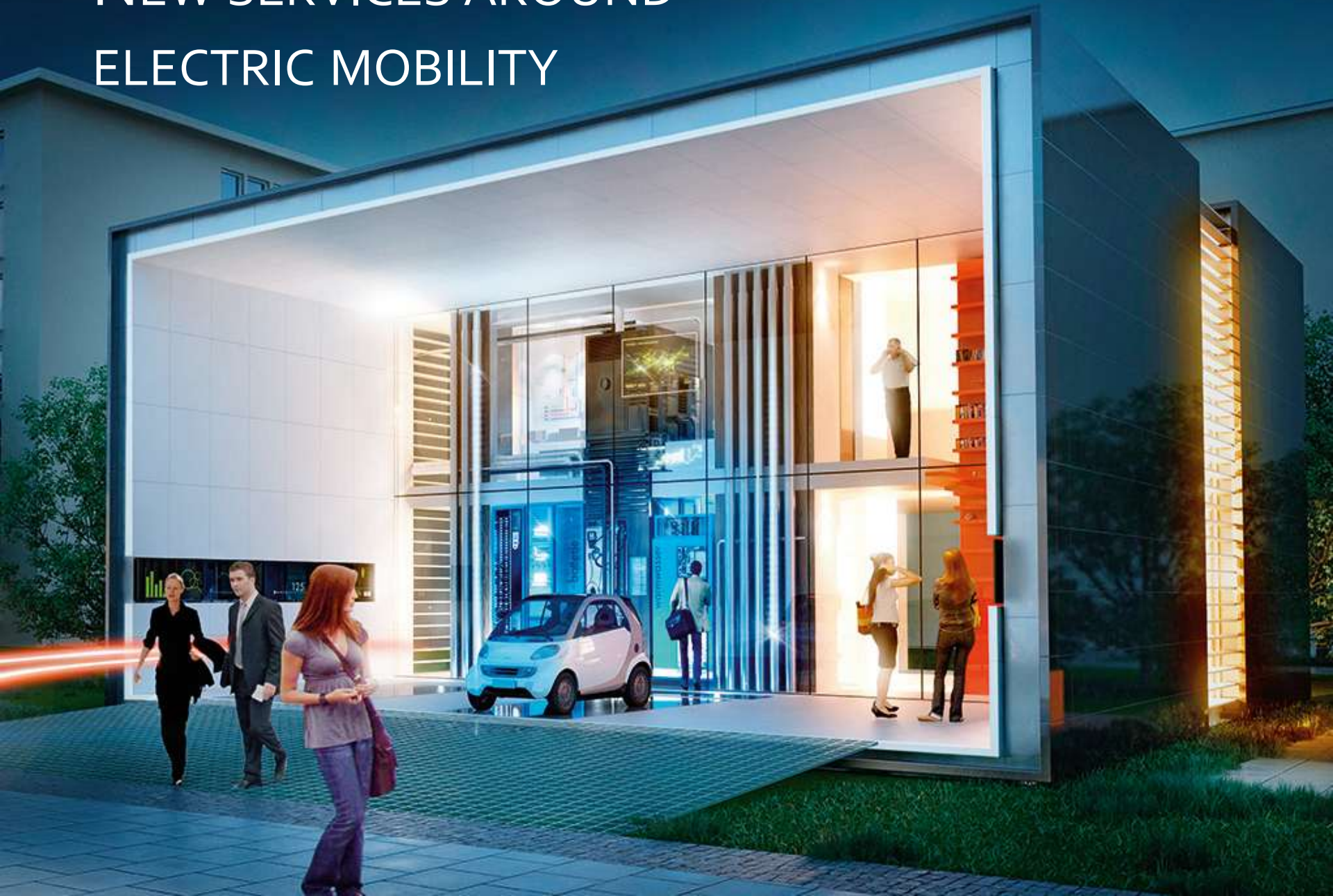


Toyota - iQ



Volvo - C30

NEW SERVICES AROUND ELECTRIC MOBILITY





MAGNUM CAP

COMPANY SUMMARY

AN ELECTRONICS TECHNOLOGY COMPANY



MANGNUM CAP IS A COMPANY FOCUSED ON DEVELOPING ELECTRONIC EQUIPMENT FOR ENERGY MANAGEMENT, CONTROLLING AND DISTRIBUTION, BEING IT'S CURRENT MAIN FOCUS THE MANUFACTURING OF EV CHARGING SYSTEMS AND ENERGY STORAGE DEVICES.



EU ENERGY TARGETS

20-20-20 BY 2020

THE MAGNUM CAP FOCUS MOTIVATORS

REDUCTION OF THE GREENHOUSE GAS EMISSIONS BY 20%

compared to 1990

Energy industries are responsible for 34% of CO2 emissions.

Transport comes just after with 30% of CO2 emissions.

INCREASE THE SHARE OF RENEWABLE ENERGY
SOURCES IN ENERGY CONSUMPTION TO 20%

20% INCREASE IN ENERGY EFFICIENCY

In spite of progress, significant additional efforts are needed to achieve the -20% energy consumption target.

BUSINESS SEGMENTS

ELECTRIC MOBILITY



RENEWABLES & SMART GRID INTEGRATION



ENERGY MANAGEMENT



INFORMATION TECHNOLOGIES



Our technologies, solutions and services are designed to reduce your company's electric energy costs and environmental impact.



ELECTRIC MOBILITY

COMPANY OFFER

COMPLETE PRODUCT LINE ON
CHARGING STATIONS

NORMAL CHARGE

RAPID AND QUICK CHARGE

HOME & CONDOMINIUM CHARGE

TWO WHEELS CHARGING SOLUTIONS

ENERGY STORAGE SYSTEMS

GRID AND EFFICIENCY MANAGEMENT

SERVICES AND CONSULTING



ELECTRIC MOBILITY

SMART CHARGERS | MEANING REMOTELY MANAGED AND OPERATED, INTEGRATED WITH A BILLING SYSTEM, CONNECTED TO USER APPLIANCES

CHARGE WHEN YOU PARK | SIMPLE, SMART, CHEAP AND SECURE AS THE BASIS (FOR OEM), BUT ALSO INCLUDING CHARGER TO HOME (LOAD MNG), CHARGE TO GRID (RENEWABLE, PRICES), CHARGE TO SUPPLIER (BILLING, ENERGY SELECTION), CHARGER TO USER (STATUS, COMMANDS), CHARGER TO VEHICLE (BI-DIRECTION, CHARGING SPEED, ...)

CHARGE WHEN YOU MOVE | QUICK DC CHADEMO CHARGING SYSTEMS (30 MIN), 3 PHASES AC RAPID CHARGING (1-2 HOURS)

FLEET AND E-CAR SHARING MANAGEMENT

TWO WHEELS MOBILITY AND SHARING SOLUTIONS FOR MUNICIPALITIES



SMART PARK

Reduces yearly carbon emissions by 193
tons of CO2 for every 100kW of power

Make unused space profitable while protects vehicles from the weather



Solar Carport System

Martifer Solar's PV Carport is an ideal solution for companies looking to transform outdoor parking areas into an energy system that produces proven financial and environmental results.

An innovative 'plug and play' EV charging system may be connected to charge your EV using 100% renewable energy, CO2 zero.

SMART PARK

PHOTOVOLTAIC GENERATION WITH
EV CHARGING SYSTEMS
INTEGRATIONS, THE WAY TO CHARGE
YOUR ELECTRIC VEHICLE WITH 100%
RENEWABLE ENERGY

WHILE PRODUCES SHADOW IN YOUR
CAR PARKING



QUICK AND RAPID CHARGE

A CUSTOMIZED SOLUTION FOR EVERY APPLICATION

FLEETS, EV CAR RENTAL, EV SHARING, SERVICE PROVIDORS, PARKING OPERATORS,
SME/COMPANY CAR PARKING, RETAIL LOCATIONS, ROADSIDE MEETING PLACES,
PETROL STATIONS



MULTI CONNECTOR

DC CHAdeMO

AC 3 PHASES

DC COMBO

MULTI POWER CABINETS

HIGH FREQUENCY MODULAR

LOW FREQUENCY

MULTIPLE SIZES

MULTIPLE POWER LOADS

QUICK AND RAPID CHARGE

GREEN CONNECTION TO THE GRID OR TO PHOTOVOLTAICS

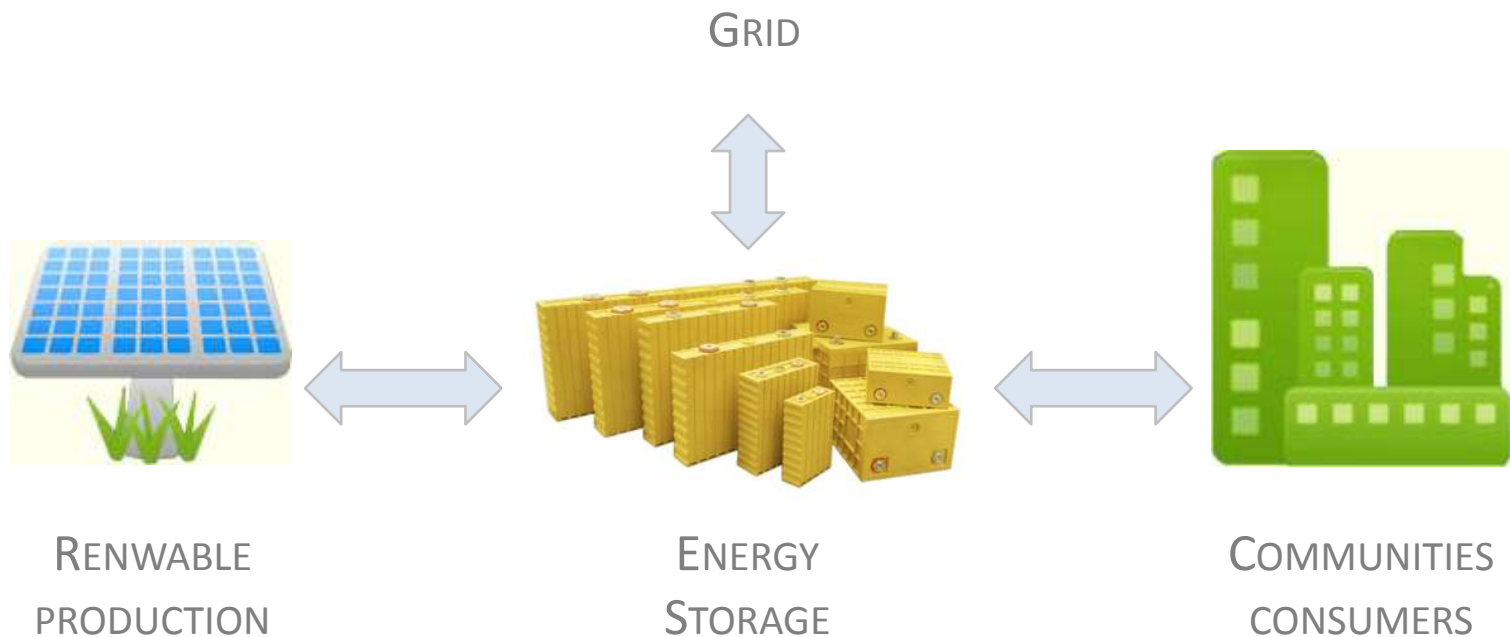
A 50KW DC CHARGER CAPABLE TO BE CONNECTED TO A LOW POWER SOURCE GRID OR TO A PHOTOVOLTAIC SOURCE



ENERGY STORAGE

CONNECTION TO THE GRID AND TO RENEWABLE SOURCES

ALLOWING TO STORE YOUR RENEWABLE PRODUCTION FOR FUTURE UTILIZATION
WHEN CONSUMING DEMAND IS HIGH



SOFTWARE

EV CHARGING MANAGEMENT

MAGNUM CAP network services



MAGNUM CAP

STATUS
STATISTICS
CONFIGURE AND MAINTAIN
CARD AND ACCESS MANAGEMENT



OPERATOR / ENERGY SUPPLIER / USER INTERACTION

STATUS / STATISTICS /
COMMANDS
SMS, APP, WEB
RFID CARD OR NFC



REMOTE CHARGER CONTROL

OCPP PROTOCOL BASED
START/STOP, SESSION
STATISTICS, USER ID LISTS,
START / STOP SESSION
TIME, KWH AT START /
STOP OF SESSION

API



THE FUTURE IS NOW



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