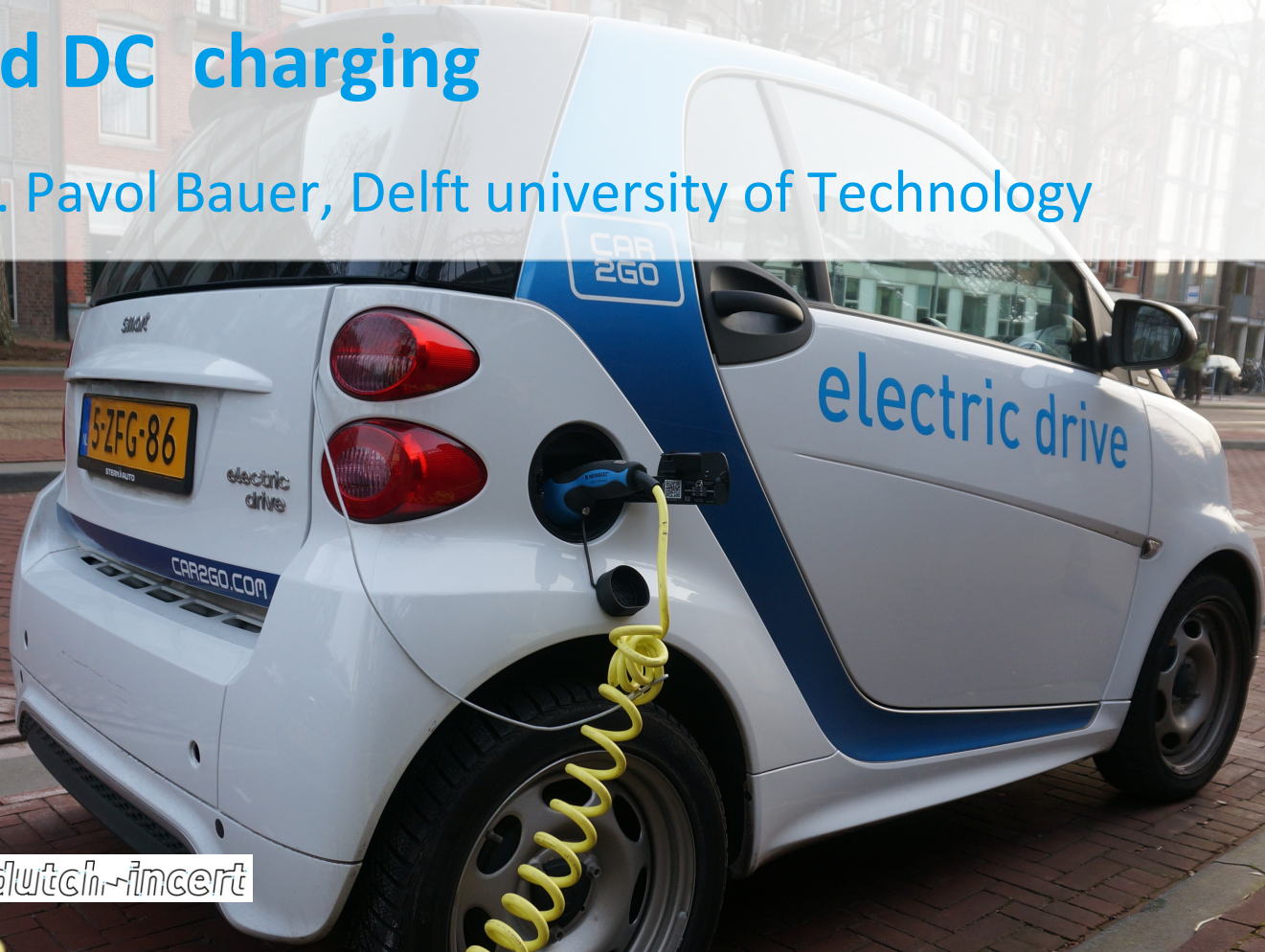


# AC and DC charging

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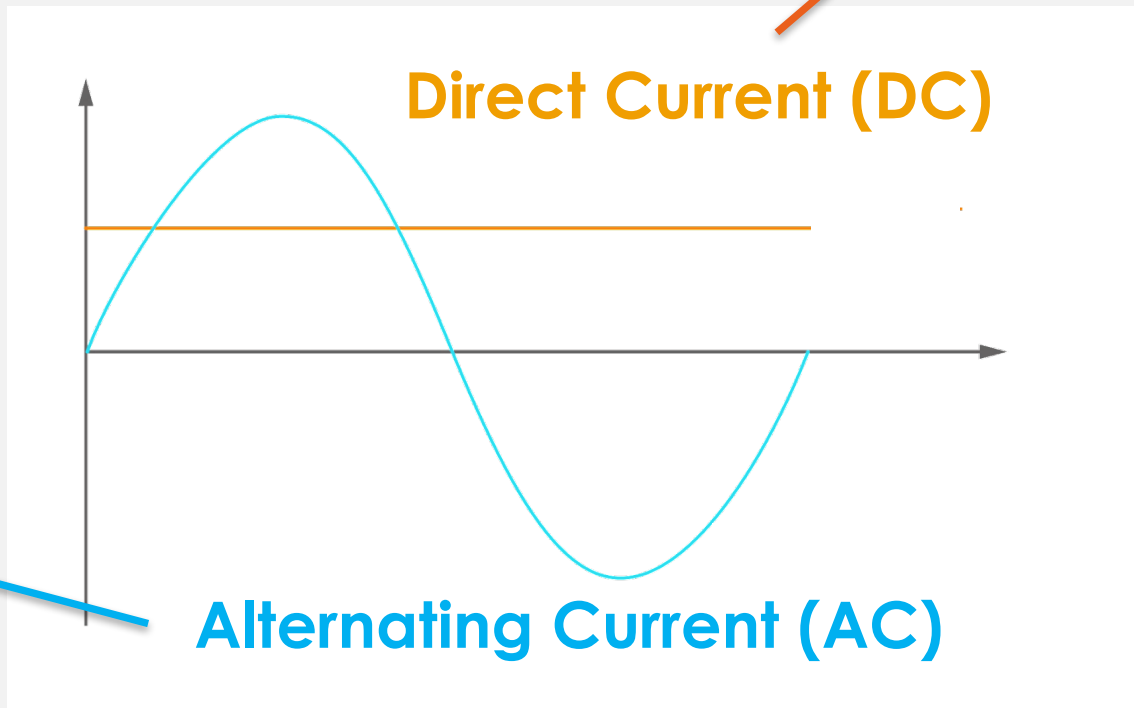


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# EV charging

Battery

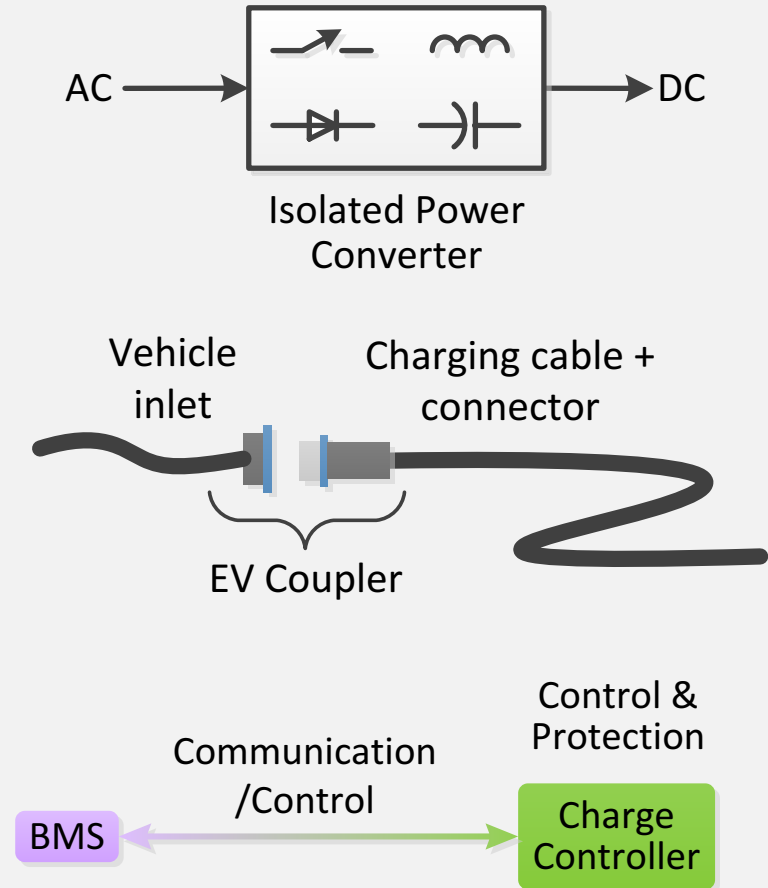


Electricity grid

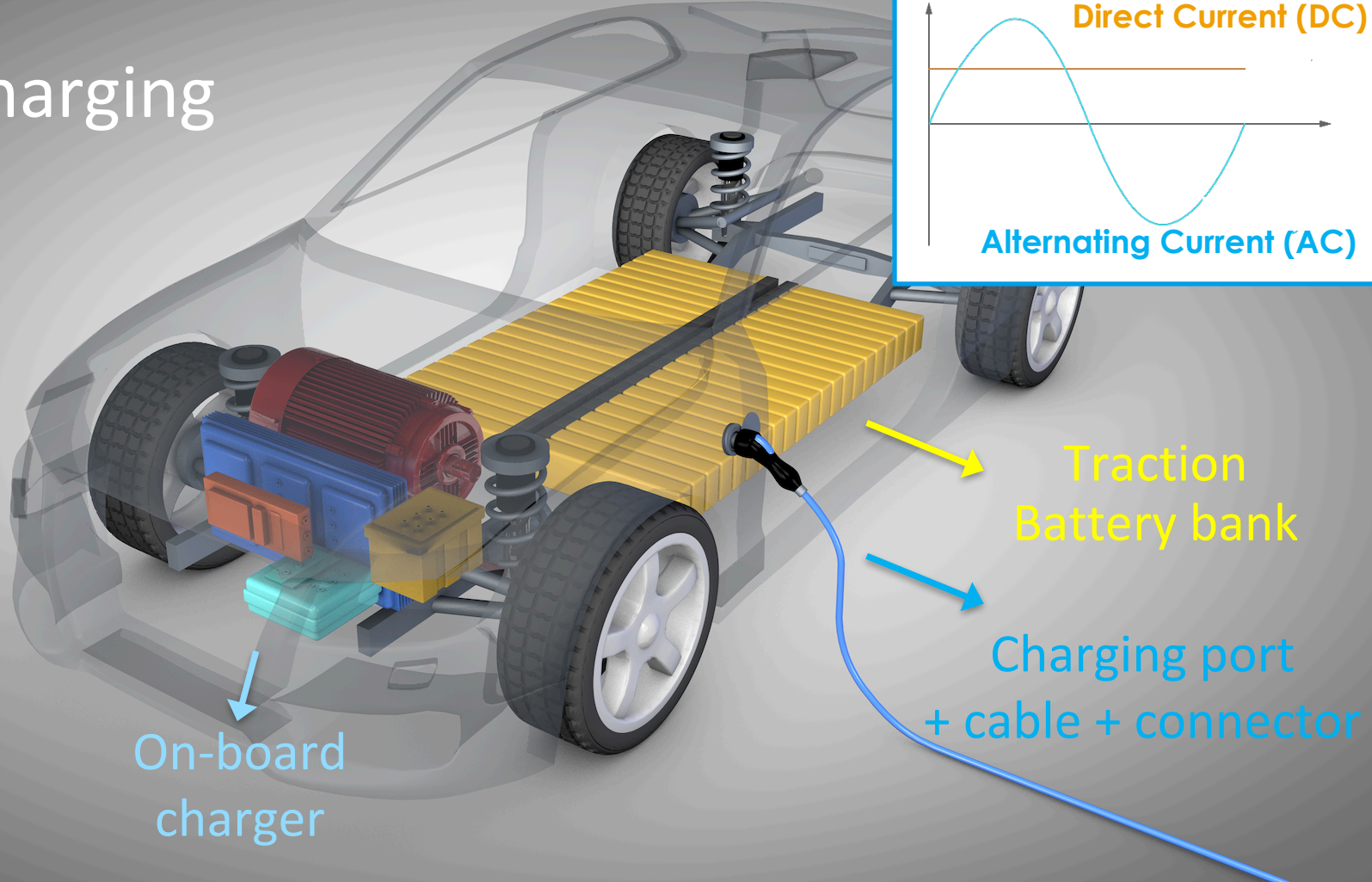


# Parts of EV Charger

1. AC/DC converter
2. Charging port + cable + connector
3. Battery management system (BMS) + Charge controller



# EV charging

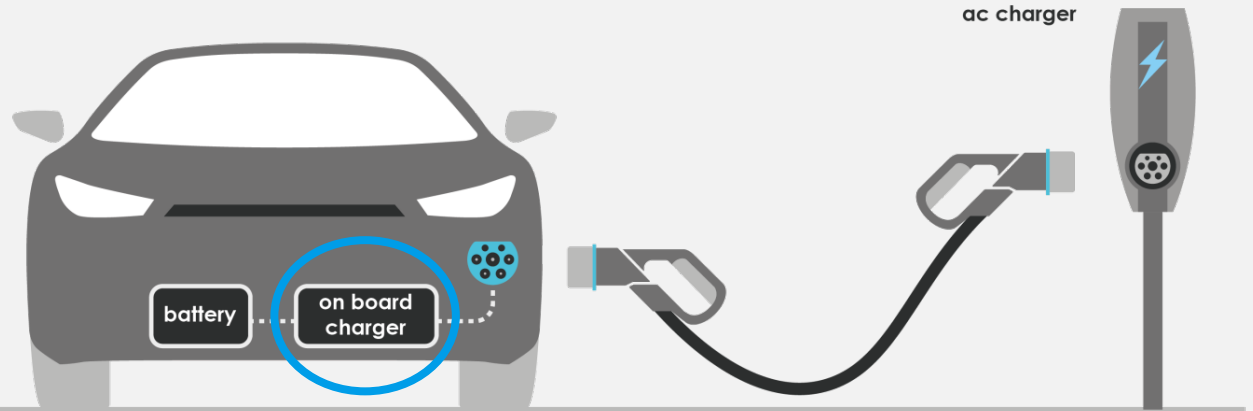


# On-board charger: AC charging

1.9 - 22 kW

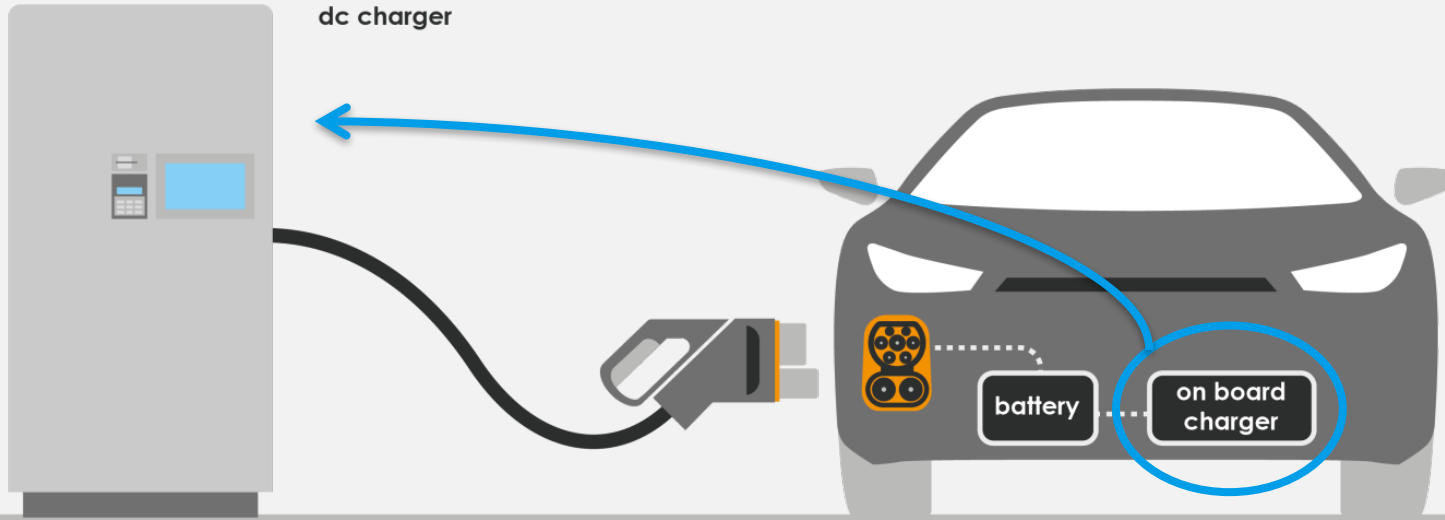
On board charger limited in power due to

- Size restrictions
- Weight restrictions



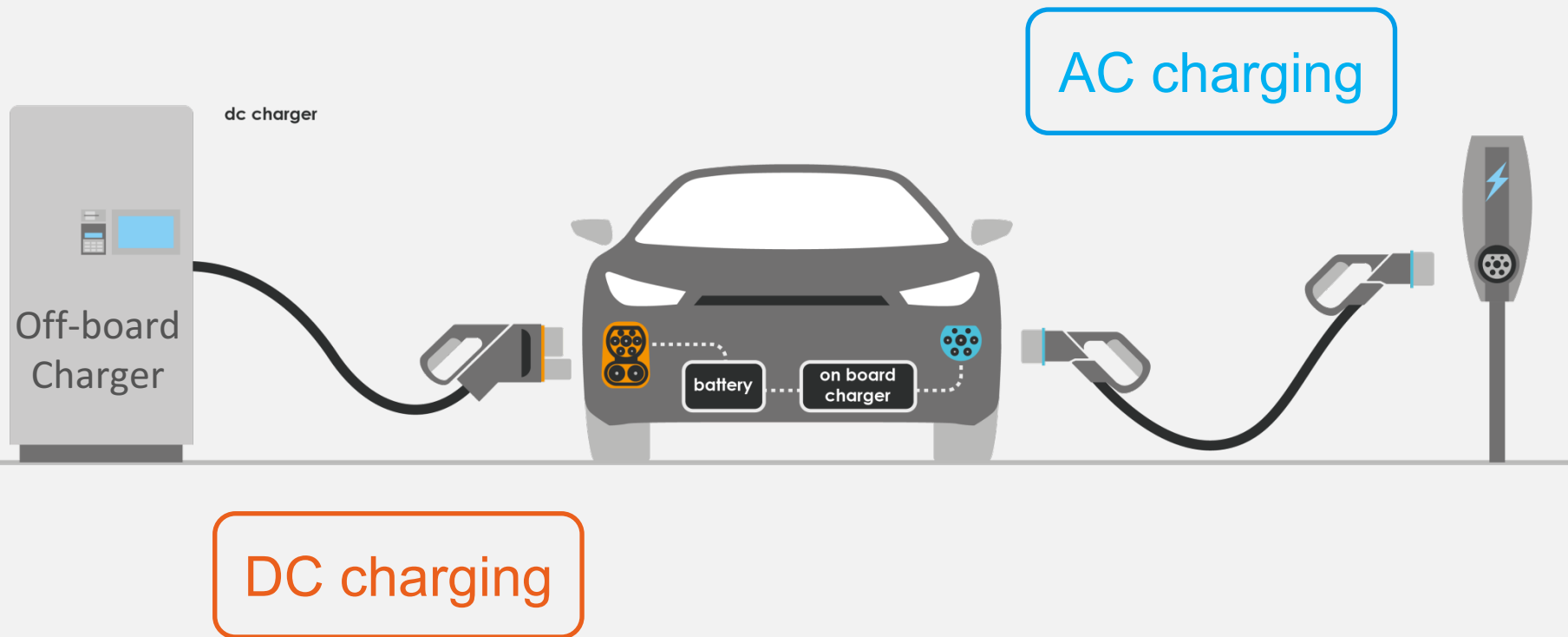
# Off-board charger: DC charging

50 – 350 kW



Off-board  
Charger

# AC and DC charging



Charging:

Connector Type & Power Level



# AC connector types

USA - Japan	Europe	China
<p>Type 1</p>  <p>Tesla AC</p> 	<p>Type 2</p>  <p>Type 3</p> 	<p>Based on Type 2</p> 

# DC connector types

USA	Europe	USA-Europe-Japan	China
<p>Tesla DC</p> 	<p>Tesla DC</p> 	<p>Chademo</p> 	<p>GB/T</p> 
<p>Combo 1</p> <p>Combined AC &amp; DC</p> 	<p>Combo 2</p> <p>Combined AC &amp; DC</p> 		

# Charging Power Level

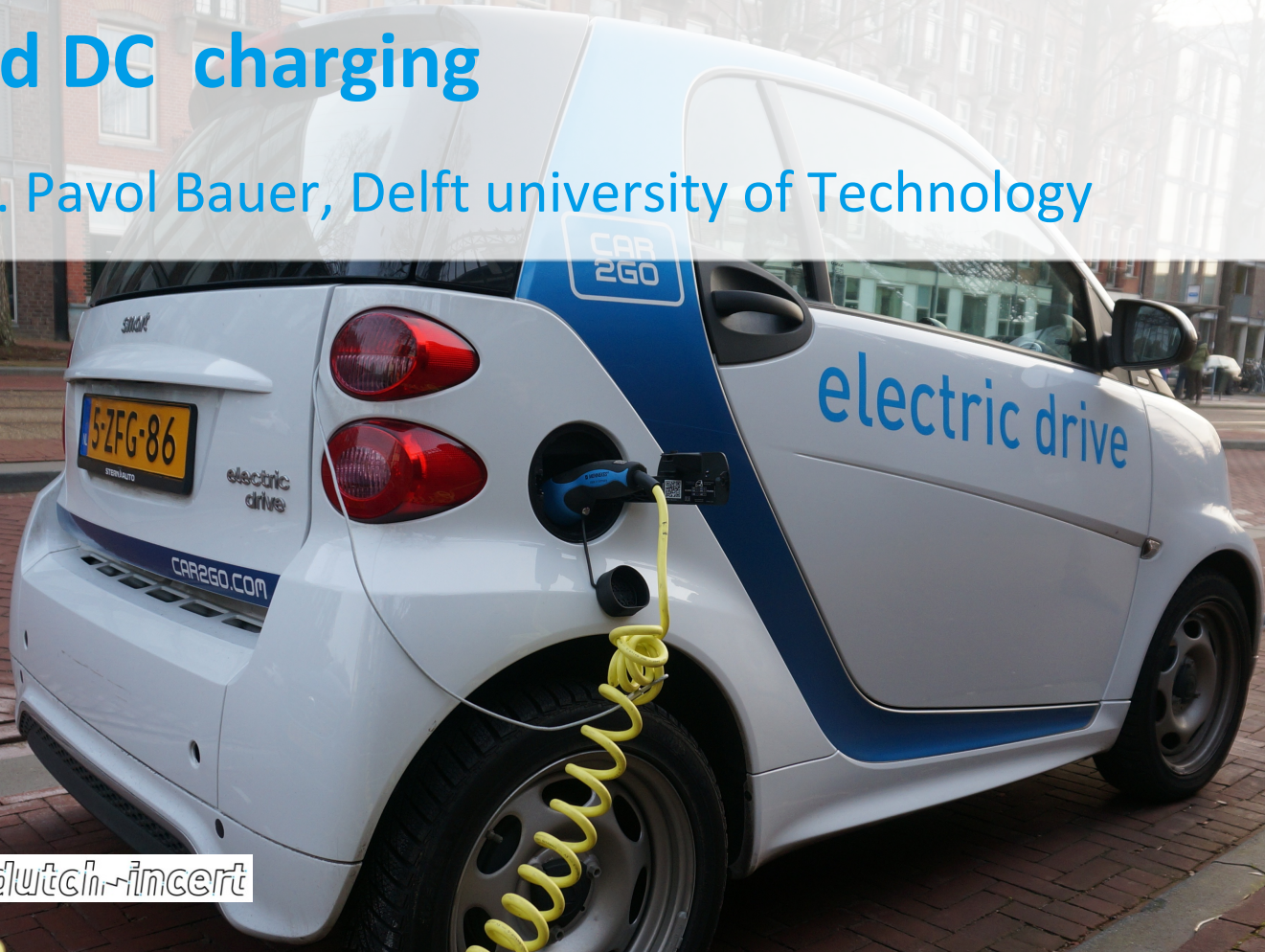
1 kWh = 5 km



Charging level	AC / DC	Power	km added per hour of charging
Level 1	AC and DC	0-10 kW	50 km
Level 2	AC and DC	10-50 kW	50 – 250 km
Level 3 (Fast charging)	Only DC	> 50 kW (up to 350 kW)	250 – 1750 km

# AC and DC charging

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