eMobility Charging Ecosystem

Kuwait Smart Grid Conference & Exhibition
30 - 31 October 2019, Radisson Blu Hotel
Mr. Herbert Klausner, CEO Siemens Kuwait
Megatrends that are changing our world

By 2050, nearly 70% of the world population will live in cities; today it's 54%.


At the UN Climate Conference in Paris in 2015, almost all nations of the world agreed to limit anthropogenic global warming to well under 2º centigrade.

Source: Earth System Research Laboratory, NOAA, 5. Oktober, 2017

By 2020, the global volume of data will soar to 44 zettabytes, and 50 billion devices will be connected.


In the time span of 20 years, global export volume has more than quadrupled.

Source: Statista, 2017
75% of energy consumed in cities

33% for transportation
Siemens charging technology for multiple applications

• Scalable
• Flexible
• Reliable
• Sustainable
The e-Bus depot of the future - more than a charging pole
Our wide range of available products, solutions and services
## Siemens Portfolio for eCar charging

<table>
<thead>
<tr>
<th>1</th>
<th>AC charging wall poles (≤22 kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• For use in residential garages, semi-public/public locations</td>
</tr>
<tr>
<td></td>
<td>• Type 2 plug connection</td>
</tr>
<tr>
<td></td>
<td>• Up to 32 A</td>
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<td>• Voltage: 400 V</td>
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<table>
<thead>
<tr>
<th>2</th>
<th>Compact-Power-Charger (50;150 kW)</th>
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<tbody>
<tr>
<td></td>
<td>• for use in public domain (e.g. urban gas stations, depots, enterprises and retail locations)</td>
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<tr>
<td></td>
<td>• all relevant charging standards:</td>
</tr>
<tr>
<td></td>
<td>- CCS (Combined Charging System)</td>
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<tr>
<td></td>
<td>- CHAdeMO</td>
</tr>
<tr>
<td></td>
<td>- Type 2</td>
</tr>
<tr>
<td></td>
<td>• voltage range: 200V – 850/920V DC</td>
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<thead>
<tr>
<th>3</th>
<th>High-Power-Charger</th>
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<tbody>
<tr>
<td></td>
<td>• for use in public domain (e.g. highway transit charging, urban gas stations, depots)</td>
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<tr>
<td></td>
<td>• all relevant DC-charging standards</td>
</tr>
<tr>
<td></td>
<td>- CCS</td>
</tr>
<tr>
<td></td>
<td>- CHAdeMO</td>
</tr>
<tr>
<td></td>
<td>• voltage range: 200V – 920V DC</td>
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</tbody>
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<thead>
<tr>
<th>4</th>
<th>Multi-Charging-Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• for use in public domain (e.g. highway transit charging, depots)</td>
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<tr>
<td></td>
<td>• all relevant DC-charging standards</td>
</tr>
<tr>
<td></td>
<td>- CCS, - CHAdeMO</td>
</tr>
<tr>
<td></td>
<td>• customer specific configuration</td>
</tr>
<tr>
<td></td>
<td>• voltage range: 200V – 920V DC</td>
</tr>
</tbody>
</table>
With the Siemens e-Car Operation Center we provide an IT system to manage the entire e-Mobility process.
Selecting Siemens as your partner will provide you the following advantages:

- Technical know-how as manufacturer
- Open standards & vendor neutral
- Practical experience as operator
- One-stop shop
- Advisors with business and engineering background
- International project experience
Siemens eBus charging infrastructure
High Power Charging (HPC) – Off-board top-down pantograph “Stockholm project”

Customer: Vattenfall Sweden

Busline 73 with a milage of 6.5 km

- Two charging points with low voltage power supply (400 V AC)
- Installed charging power per charging point of 150 kW

Siemens scope of delivery:
- Two charging points equipped with each
  - 1x 150kW HPCC (High Power Core Charger)
  - 1x Transformer for HPCC
  - 1x Low voltage power connexion
- 2x Customer specific mast with top-down pantograph
- 2x Pantograph cover
- Sensors for positioning and safety features
- Commissioning

Customer scope of delivery:
- Erection and installation
- Civil Works and permits

Additional information
- 10-month project realization
- In public operation since March 2015
- Two plug-in hybrid buses from Volvo in operation
Siemens eBus charging infrastructure
High Power Charging (HPC) – Off-board top-down pantograph “Montreal project”

Customer: STM (Societe du Transport du Montreal) Montreal, Quebec, Canada

Busline 34 with a milage of 10 km
- Two charging points with low voltage power supply (600VAC)
- Installed charging power per charging point of 450 kW

Siemens scope of delivery:
- Two charging points equipped with each
  - 1x 450kW HPCC (High Power Core Charger)
  - 1x Transformer for HPCC
  - 1x Low voltage power connection
- 2x Customer specific mast with top-down pantograph
- 2x cover for mast and pantograph
- Sensors for positioning and safety features
- Erection and installation
- Commissioning

Additional information
- 13-month project realization
- Public operation scheduled for March 2017
- Three full electric buses from Novabus in operation