Wireless Power Charging Is Ready for Cars NOW!
EV is definitely the future dominating tech

- We are facing environmental challenges globally
- We are facing petrol price challenges globally
**EV Is Economical Efficiency And Expected to Have Potentially Huge Market Prospects**

<table>
<thead>
<tr>
<th></th>
<th>Mileage per day (km)</th>
<th>Fuel consumption (L/100km)</th>
<th>Power consumption (Kilowatt)</th>
<th>Cost per day (RMB)</th>
<th>Saving per year (RMB)</th>
<th>CO₂ emission reduced (ton)</th>
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</thead>
<tbody>
<tr>
<td>Traditional Bus</td>
<td>240</td>
<td>27</td>
<td>-</td>
<td>434</td>
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<td>Traditional Car</td>
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<tr>
<td>EV Bus</td>
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<td>-</td>
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<td>288</td>
<td>53,290</td>
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<td>EV Car</td>
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<td>4.5</td>
<td>5.4</td>
<td>4,599</td>
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Cable Charging as Current Mainstream Is Only Suitable for Operation Mode of “Gas Station"

- Manual operation is required, generally only for specialized personnel.
- Although strict design specifications to ensure safety, charging interface is easy to cause electric spark due to impact from high voltage and high current, which will result in device aging.
- Charging interface components are usually exposed to dust, rain, fog, smoke, etc. It is difficult to monitor and maintain the device.
- Damage rate for high power socket is very high from daily experience. The socket in a charging station requires frequently plug-in and plug-out. This will worsen the problem.
Cable Charging Exists Inherent Bottleneck for Station Construction and Operation Mode

• Required to build dedicated charging stations and charging poles. Need to occupy urban land. Difficulty for land acquisition.
  – Charging time is long for ordinary EV. Need to occupy a lot of urban land in order to support millions of cars being charged simultaneously
• Fast charging is adopted in cable charging, which will greatly shorten the battery life. The battery cost is the major part of an EV.
  – Appropriate to charge with speed around 0.5c
  – Batteries are designed with relatively high charge and discharge times and are suitable to frequent usage and frequent charging
• Support from the national grid is required to operate high power charging stations. The investment is huge.
  – Power of 250kw is required if to finish charge a 32kwh battery in 10 minutes. Megawatt power supply is required to support only 4 charging poles. Difficult to deployment.
ZTE leads revolution in wireless power charging
Wireless Charging Will Greatly Facilitate EV Usage

Daytime: supplemental charging
- Light charging & discharging
- Prolong battery life
- Time saving, efficient and safety

Nighttime: slow charging
- Prolong battery life
- Green, no pressure to grid
- Reduce usage cost
Wireless Charging Will Greatly Facilitate EV Usage

• Unattended, without manual operation but fully automatic operation, safe and reliable
• Frequent usage and frequent charging, so as to prolong the battery life and sustain the vehicle value even after a long term usage
• Charging with medium power charging, small pressure on the grid
• Strong ability to adapt to environment and bad weather. Convenient to popularize and install charging devices in parking lot and garage
• EV wireless charging system includes power supply, power transmitter, power receiver, controller, battery, etc.

• ZTE USA group recently finished the validation testing of core techniques for EV wireless charging. Ready for industrialization and standardization.

• Globally the technique validation is also performed in US, Japan and Korea based on independent requirement. Part of the achievement has been industrialized.
ZTE Wireless Charging System Platform - Major Metrics

1. DC input voltage $V_{dc} = 400V$
2. Output voltage $V_o = 580-630V$
3. Output power $P_o = 5kW$
4. Transmission distance: 20CM
5. System efficiency: $\eta > 0.9$
Overview of EV BUS operation

- EV BUS info APP portal
- Operation center
- Government related bureau
- EV status and location cloud
- EV safe info cloud
- EV monitoring cloud
- Billing cloud

APP

Grid

In car control&info IVU
Thank you