ChaoJi Standard
Faster, Safer, and Compatible to All

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China Electricity Council
Director

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CHAdeMO
Secretary General
ChaoJi Project Tasks

**Purpose**
- Update ChaoJi Technology constantly to introduce into the market
- Ensure compatibility between ChaoJi and GB, CHAdeMO, CCS for smooth transition and harmonization
- ChaoJi as common language between Car and Charger
- ChaoJi as the base for future international harmonization
- China and Japan jointly lead the project
- Welcome participation and contribution from the world
- Vehicle side and grid/charger side work together

**Technical Target**
- With updated technology, develop safest and lowest cost charging service
- With high quality of service, make our EV customers comfortable and feel the advantages of EVs
- Contribute to deploy EVs into the market by fully compatible ChaoJi globally

**Process**
- China and Japan jointly lead the project
- Welcome participation and contribution from the world
- Vehicle side and grid/charger side work together
## Status of Charging Standards

<table>
<thead>
<tr>
<th></th>
<th>CHAdeMO</th>
<th>GB/T</th>
<th>US-COMBO CCS1</th>
<th>EUR-COMBO CCS2</th>
<th>Tesla</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connector</strong></td>
<td><img src="image1" alt="Connector" /></td>
<td><img src="image2" alt="Connector" /></td>
<td><img src="image3" alt="Connector" /></td>
<td><img src="image4" alt="Connector" /></td>
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<tr>
<td><strong>Inlet</strong></td>
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<td><img src="image7" alt="Inlet" /></td>
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<td><img src="image9" alt="Inlet" /></td>
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<tr>
<td><strong>Protocol</strong></td>
<td>CAN</td>
<td>PLC</td>
<td>CAN</td>
<td>CAN</td>
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</tr>
<tr>
<td><strong>Max Power</strong></td>
<td>400kW</td>
<td>185kW</td>
<td>200kW</td>
<td>350kW</td>
<td></td>
</tr>
<tr>
<td><strong>Market Power</strong></td>
<td>150kW</td>
<td>125kW</td>
<td>150kW</td>
<td>350kW</td>
<td>120kW</td>
</tr>
<tr>
<td><strong>Start @</strong></td>
<td>2009</td>
<td>2013</td>
<td>2014</td>
<td>2013</td>
<td>2012</td>
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<table>
<thead>
<tr>
<th><strong>Proposing</strong></th>
<th>CHaoJi</th>
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<tbody>
<tr>
<td><strong>Max Power</strong></td>
<td>900kW</td>
</tr>
<tr>
<td><strong>Market Power</strong></td>
<td>50 – 900kW (TBT)</td>
</tr>
<tr>
<td><strong>Start @</strong></td>
<td>2020</td>
</tr>
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</table>
Needs for EV Charging Functions

**High Power**
- Short charge duration
- Higher utilization rate
- Improved efficiency by focused investment

**Direct Current**
- Higher efficiency
- Stable for Power Grid
- No on-board charger on the EV side

**Charge and Feed**
- V2X function

**International**
- Safe and reliable standard
- Harmonization
ChaoJi Project History

2016
Research

2016.03, Shenzhen, China
#1 High Power Charge Workshop

2017
Industry

2017.05, Beijing, China
High Power Research WG

2018
Common Work International

2018.02, Nanjing, China
New Connector, CP Circuit

2018.11~, China
High Power Demo Station
Connector Function Test

2019
Demo Start International

2019.10, Shanghai, China
Research and review for High Power Charge Technology and Standard

2019.08, Tokyo, Japan
with China, Japan, Germany, Swiss,
Italy, Australia, Netherland, Korea
ChaoJi International WG

2019.08, Beijing
CEC & CHAdeMO MoU Agreement
ChaoJi WG

2020
Standardization

2020
International

2018.08, Beijing
CHAdemo MoU Agreement
ChaoJi WG

2018.08, Tokyo, Japan
with China, Japan, Germany, Swiss,
Italy, Australia, Netherland, Korea
ChaoJi International WG

2018.05, Beijing
High Power Demo Station
Connector Function Test

2017.05, Beijing, China
High Power Research WG

2016
Research

2016.03, Shenzhen, China
#1 High Power Charge Workshop
ChaoJi Development Plan

2020 Kick-off

2022
High-Power
Heavy-Duty/
Luxury EVs
in market

2023-2024
Old model
slow down

2025-
ChaoJi
evolution

2022-2035
Coexistence
Old & ChaoJi
by market
needs

2032-2035
Transfer to
ChaoJi
EV & Charger

2020-2032
EV Sales

2020-2032
EV Manufacturing

GB etc
ChaoJi
Dual
Increasing ChaoJi Attractiveness

- Ensure backward compatibility with ALL global standards
  -> Utilizing current existing asset for EV and chargers
- Provide safe and reliable charging service with minimum Cost
- Applicable from heavy-duty, large vehicles to small cars
- Localization with certification system
  -> Empower local businesses and support local deployment
- Propose as international standard
ChaoJi International Standardization

Introduction
✓ IEC TC69 WG12 use of adapters
✓ IEC TC69 MT5 CHAOJI CP Circuit (61851-23AnxB)

Development
✓ IEC SC23H 62196 CHAOJI connector Assy proposal
✓ Proposal to IEC 61851-23
✓ CHAOJI Control Pilot proposal

Acceleration
✓ IEC SC23H CHAOJI adapter proposal
✓ IEC TC69 CHAOJI Safety System Proposal

Harmonized Compatible International Standard
<table>
<thead>
<tr>
<th>Project</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
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<td>CCS</td>
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ChaoJi Towards Harmonization

Compatible

ChaoJi Compatible with other projects.
Thank you!
谢谢！
ありがとうございました!