

PQSynergy 2017, Chiangrai

Electrical Cars & Chargers in China - Update

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April 2017



Power Quality in reality



Blackout by lightning in Kunming

- ◆ Single phase power supply from utility available – until 2:30am next day
- ◆ 2/3 of hotel floors with no power
- ◆ Lobby shop lighting by candle
- ◆ No lift – carry luggage up to 9th floor

Hotel lift



New energy vehicles in 2016

- ◆ Number of new energy vehicles by 2016 in China; **1.09 millions**
- ◆ **87%** increase year on year growth in volume
- ◆ New energy vehicles production; 517,000 (EV: 417,000) in 2016, increase 51.7%
- ◆ New energy vehicles sales in 2016; 507,000 (EV: 409,000) increase 53.0%

Increase of EV in 2016

- ◆ Number of EV by 2016; 741,000, with 223.2% increase comparing with 2015
- ◆ EV production in 2016; 417,000
- ◆ EV sales in 2016; 409,000

Production of new energy vehicles in 2016

2016中国新能源汽车产量趋势 (辆)



Official target in 2017

- ◆ Over 800,000 new energy vehicles sold in China in 2017
- ◆ However, in Jan. 2017
 - ◆ EV production only 5857, going down 63.8%
 - ◆ EV sales only 4978, going down 67.8%

Driven by Policy

- ◆ In Beijing, 150,000 car licenses released a year
 - ◆ 90,000 licenses for gas cars
 - ◆ 60,000 licenses for electrical cars
- ◆ Gas car licenses; by lottery draw once every two months;
 - ◆ Winning chance: 0.127%
 - ◆ More than 50% applicants can not get in life
- ◆ On average, prices of EVs appx. 3 times prices of gas cars on same level

Shanxi Taxi

- ◆ 8000 taxi cars all replaced by Electrical cars (BYD) in 2016
- ◆ 350km per charging



Public charger increased quickly in 2016



Public chargers increased quickly in 2016

- ◆ 100,000 new public chargers were built in 2016
- ◆ Up to 150,000 public chargers in total available by 2016
- ◆ Some large public charging stations were built and opened
 - ◆ Tiantan Art Center: 100 DC chargers with 60kw each opened in 2016
 - ◆ Beijing Fang: 100 DC chargers with 60kw each opened in Jan. 2017
- ◆ Residence districts
 - ◆ Subsidiary by government

Increase of public chargers in last 12 month



EV chargers

- ◆ 2017 schedule : To increase 800,000 chargers in total.
 - ◆ 100,000 public chargers (DC chargers)
 - ◆ 700,000 private chargers
- ◆ To increase 160,00 by China State Power Grid



Problems of public chargers

- ◆ Updating of chargers due to standards revised;
- ◆ Upgrading from low charging capacity to high capacity
- ◆ Quality of chargers

Top list of cities with chargers by 2016



Numbers of chargers in cities and provinces

各省级行政区域公共类充电桩分布图 单位：个



Swapping Station in Beijing



More swapping stations built in Beijing in 2016

- ◆ 50 swapping stations built for E-taxi by 2016
- ◆ Target in 2017; building 150 new swapping stations
 - ◆ Meet charging demand of 25,000 E-taxis in future
 - ◆ Replacing battery within 3 minutes

Swapping station in Shandong Province



Swapping station in Zhejiang Province



Swapping charging station in Hainan



Swapping charging station in Hainan



Swapping charging station in Hainan



Power Quality in future

- ◆ More and more EV chargers built in cities.
 - ◆ Private electrical cars
 - ◆ Public E-taxis
 - ◆ EV buses
- ◆ PQ standards on EV charging stations.

A vibrant blue sky with scattered white, fluffy clouds. The words "THANK YOU!" are written in large, bold, white, sans-serif capital letters, centered in the middle of the frame. The text has a slight drop shadow, making it stand out against the blue background.

**THANK
YOU!**