



# EV R&D in CAERI

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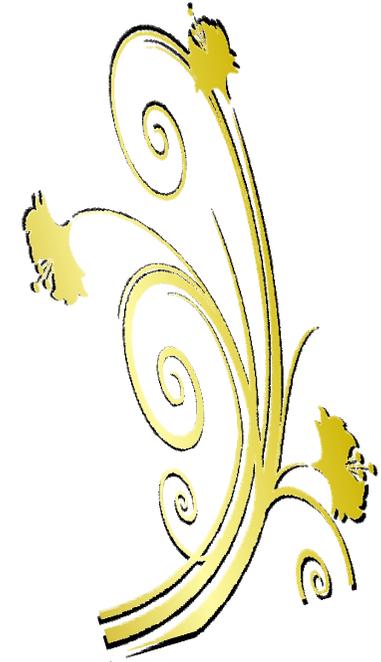
**China Automotive Engineering Research Institute**

**August 4<sup>th</sup> , Argonne, IL**



## I. Profile of CAERI

## II. EV R&D in CAERI



# History



- Established in 1965 by the central government
- Named *China Chongqing Automotive Research Institute* before, renamed as *China Automotive Engineering Research Institute* in 2007
- Today we have more than **1500** staffs, occupied area about **480,000 m<sup>2</sup>**
- After 46 years, CAERI has become one of the most important automotive institutes in China, which research and development scope including
  - Vehicles and components development
  - Testing and research
  - Products inspection and certification
  - Engineering Consulting



# Development and achievements



- Accomplished three history tasks of auto technology introduction drawing into China, French Berliet, Austrian Steyr and Japanese Isuzu.
- Designed and developed hundreds of autos and engines, also does body-design, light weight and performance development, structure analysis design, chassis integrated design, prototype vehicles, and test evaluation.

proposal A



# National NGV Engineering Research Center



- The first national engineering research center in China automobile industry
- R&D and products contributes the promotion of more than half million CNGV and LNGV in China



# The National Key Laboratory of Vehicle NVH and Safety Technology



- Approved by MOST, this lab's conclusive fundamental and engineering research will be completed to better the noise and vibration-related performance plus the auto safety in China.

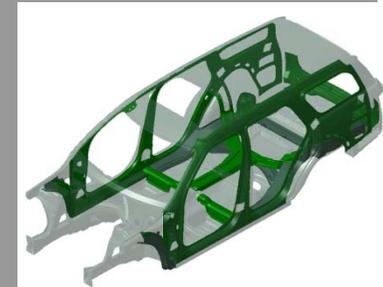
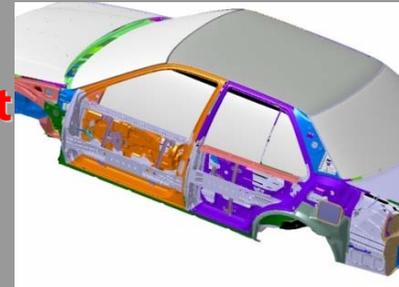


# The National Key Laboratory of Automotive Lightweight Engineering

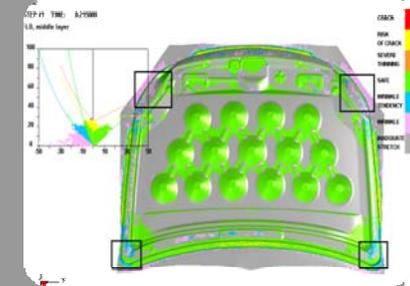
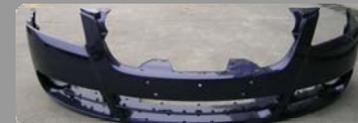


- Established by CAERI, SAE-China and Chinese OEMs
- Now we are carrying out the lightweight materials and processes common basic technologies, databases, and related standard-setting work

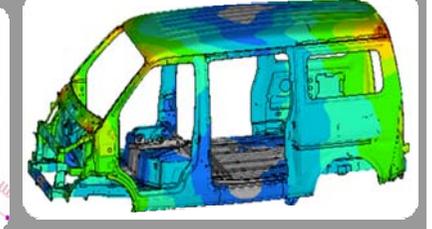
Lightweight structure design



Lightweight material research



Lightweight process design



# National Motor Vehicle Quality Supervision and Inspection Center



CAERI has founded **the National Center of Vehicle Quality Supervision & Inspection** to conduct quality inspection, development-oriented test evaluation



NVH



Vehicle



Battery



Motor



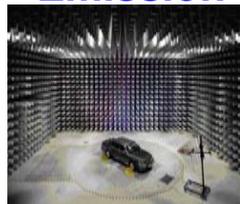
Emission



Parts



Crash



EMC



Engine



Powertrain



# Electric Vehicles Developed by CAERI



New concept EV on 2011  
Shanghai Auto Expo



EV TAXI



2 tons EV



REEV For Chery



Gas/NGV ISG  
Hybrid



Hybrid Bus

# MOST 863 Programs — Benchmarking and database



**BEV**



**Plug-in**



**REEV**



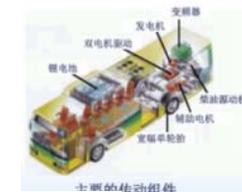
**Full Hybrid**



**Mild Hybrid**



**Power train of HDV**



**Chargers**

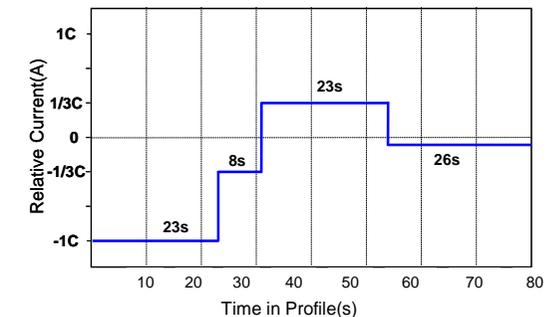
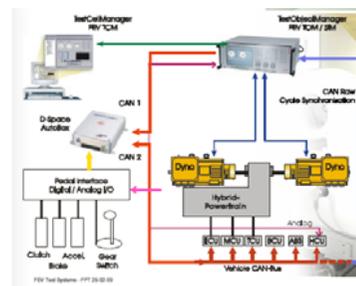


- Benchmarking more than 12 cars and two powertrain of bus, five chargers
- Building up the developing database for the industry
- Authorized by MOST, inspect other vehicles and parts developing projects in 863 program

# MOST 863 Programs — Researching test Codes and Standards



- Supported by MOST, researching the testing and inspection methods of for REEV, powertrain, battery etc.
- Providing more the ten test procedures and eight suggestions to the industry and national standards

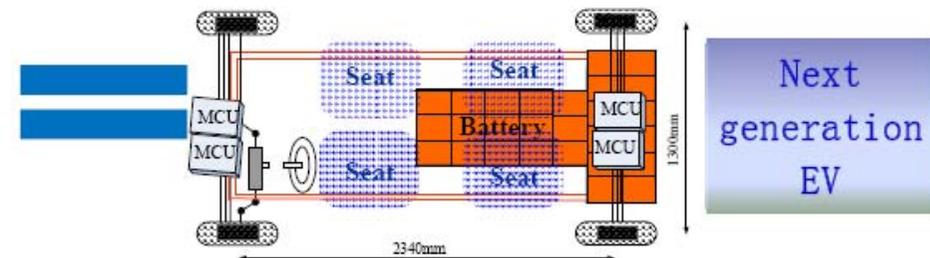
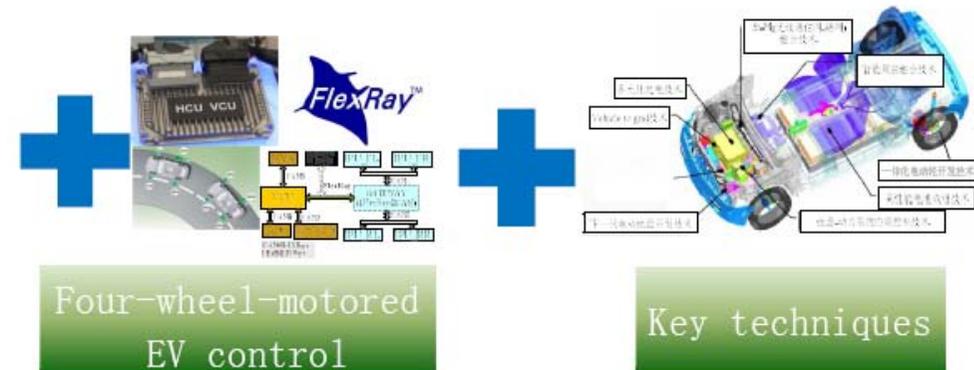


# MOST 863 Programs — Next Generation EV Development



## Supported by MOST, develop the next generation EV

- ◆ 4WD motor in Wheel powertrain
- ◆ Flexray communication system
- ◆ AutoSAR system



# Contribution to China EV Demonstration



- **Finished two projects,**  
*Research on technical solution of large scale electrical vehicle demonstration in Chongqing,*  
*Research on industrialization of electrical vehicle in Chongqing-* **funded by EF of US,**  
**the China Sustainable Energy Program**



- **Tested and evaluated the buses and cars demonstrated in China**



# Role in SEVIA



## 中央企业电动车产业联盟 State-owned Enterprise Electric Vehicle Industry Alliance

- Supported by SASAC, 20 companies organized the EV industry alliance in China

- In SEVIA, CAERI acts as the secretary unit for building up the standards and code of the alliance inside, promotes those to be the standards of the national

- CAERI also responses to build up the independent test center for the members of SEVIA



# Role in CERC-CVC



## Testing and Evaluation



## Standards



## Union of Next Generation EV



# International cooperation



- CAERI is the International cooperation Base which is authorized by Chinese government
- CAERI has carried out lots of co-projects with international institutes and companies



# Conclusion



- **CAERI acts important role in the field of EV R&D, evaluation, and standards making in China**
- **We would like to co-operate with US partners in this field to promote the development of EV**

