



中国汽车技术研究中心

SGS 6 – 12

# ***HFCV-GTR/SGS-6***

**BEIJING**

**2009.05.26-29**

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**China Automotive Technology And  
Research Center (CATARC)**



中国汽车技术研究中心

# ***Chinese Presentation***

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**CATARC, China**

**HFCV-GTR/SGS-6, BEIJING, 2009.05.26-29**

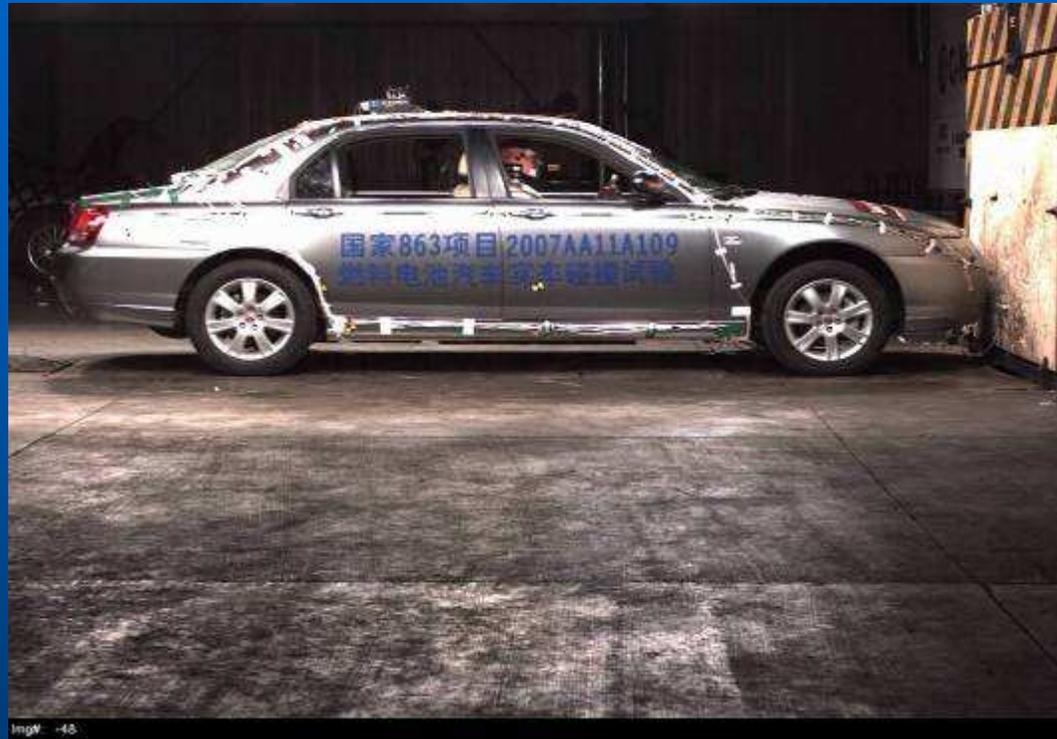
# *content*

- Tests
- On Chinese GB
- Comments on SGS-6-02

# Crash Test -1



# Crash test-2



# Crash test-3



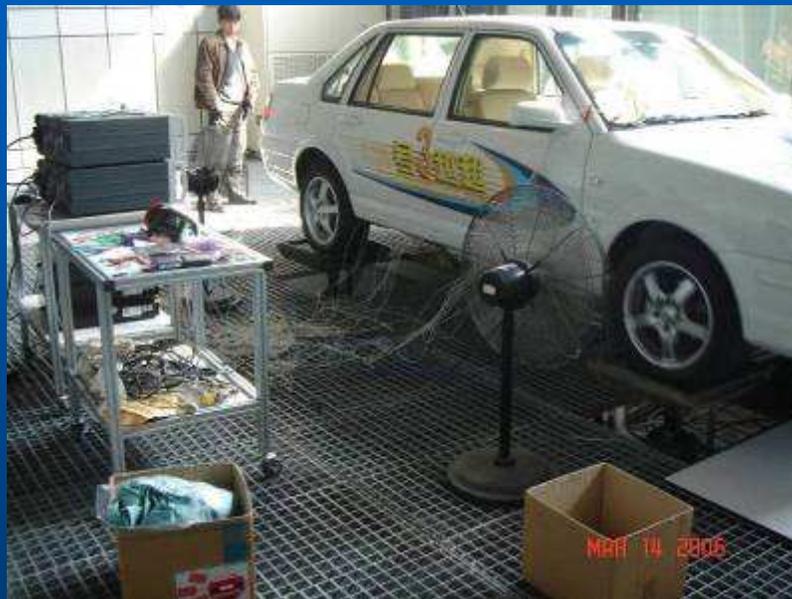
# Road Performance Test



# Test on Chassis Dynamometer



# Vibration spectrum acquisition



# Vibration Test of Fuel Cell Vehicle



# Test of FC System



# Vibration Test for Fuel Cell Stack



## *H2 leakage*



# *H2 leakage*



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# FC stack safety



电堆伺服系统

挤压试验台液压系统



试验仓外观



穿刺挤压试验台

电堆浸泡池



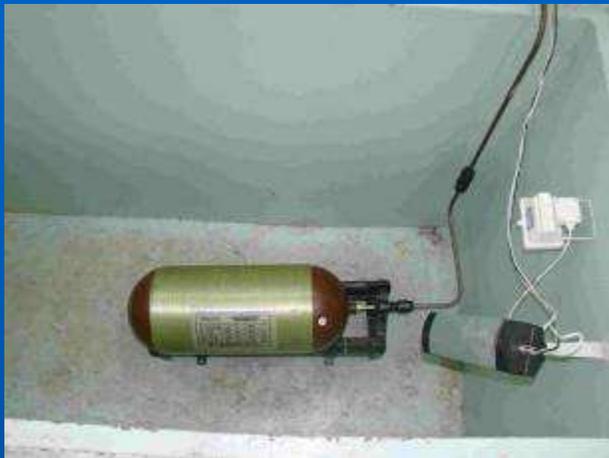
## H2 tank



- 火烧
- 枪击
- 水压
- 爆破
- 疲劳



# Tank safety



试验井

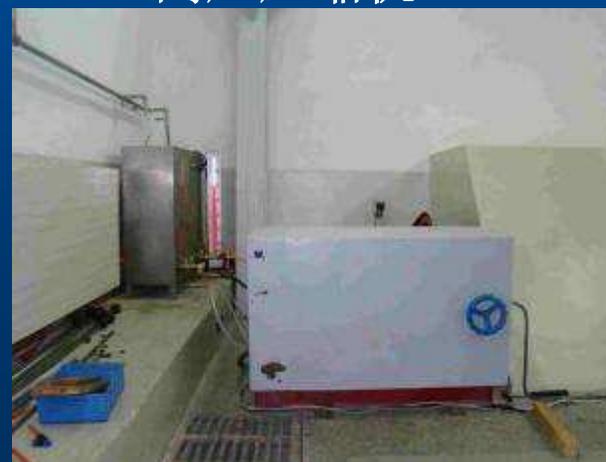


控制柜

监控数采



高压压缩机



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# Compressed gas



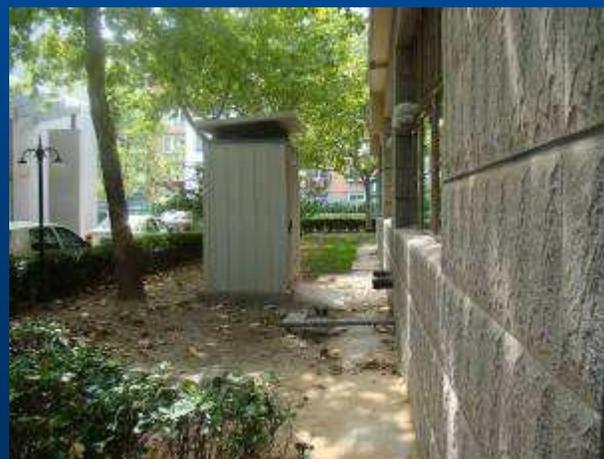
气瓶电堆安装强度试验台



高压燃气附件试验台



高低温箱



工作气瓶间  
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## *FC: airtightness*



## *Extrusion and puncture of FC*



## *Tank safety: breakup*

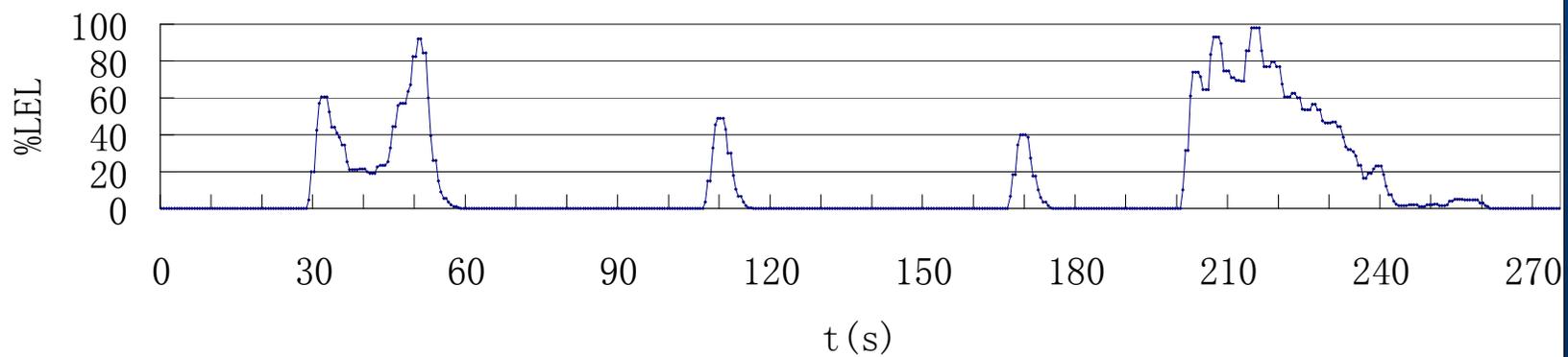


- 爆破压力符合要求；
- 但是爆破产生了一块碎片；

# Realtime emission



采样间隔0.5s



# *Static emission*



## *Part 2: On GB*

- Parts to system to vehicle
- LFL
- Handbook
- Crash requirements
  
- One word: FCV CV EV

# ***Part 3 : Comments on SGS-6-02***



# *Technical Proposal*

- No. 1.4.2 Add “For compressed gaseous hydrogen system, the vent of the overpressure protection device...”
- No. 1.4.3: Add “For liquid hydrogen system, it must be ...”;
- No. 1.4.5: This is structure design requirements, moved to part A or deleted?

# *Technical Proposal*

- No. 1.4.9: “The hydrogen gas discharge from other pressure relief systems ”should be changed to “The hydrogen gas discharge from any opening(s)””

# *Technical Proposal*

- No. 1.5.2: “Hydrogen releases from the vehicle exhaust system e.g. purge shall be limited locally at the point of discharge throughout normal operation including start-up and shutdown to less than 4% average concentration of hydrogen in air by volume in any moving 3 seconds time interval”:
- Why 3 seconds? Please explain it;

# *Technical Proposal*

- No. 1.5.5: “...ensure that a joint is bubble free for 3 minutes during leak test at 0.01 MPa with air”.
- The test pressure is too low; What relationship with 2.2.1?

# *Technical Proposal*

- No. 1.8: Removable storage system is NOT allowed in many countries for a type-approved vehicle due to immature technology, we wish to delete all related contents. The tech is under developing, so leave rooms for development in the future.

# *Technical Proposal*

- No. 2.1.1: details not needed; Some items should be moved to operating procedure
- No. 2.2.1: “...gas mixtures shall be converted to an equivalent leakage rate to that for 100 per cent hydrogen”.
- How to convert? Please explain the method in detail.

# *Technical Proposal*

- No. 2.3: Why 100mm? Define warm-up;
- Test conditions, e.g. test place, wind speed. Please explain the purpose of the test?

# *Technical Proposal*

- No. 2. 4:
  - If the main shut off valve is closed, how to deal with?
  - Considering the special factor of the H2, the crash test should be carried out in a different way from the conventional ones. Main shut off valve should shut off first, then modify the test procedure. Check the main stop valve just after the crash test. ;
  - 60 min , which takes after a gasoline vehicle crash test, is too long for the measuring the leakage amount of H2. or another timing point.

# *Technical Proposal*

- **Proposal (No.2.4)**

- carry out the crash test using a relative low pressure; ;
- check the valves
- air-tightness test of system and parts, e.g. valves, piping, fitting, etc
- take out the tank, and carry out the air tightness test on it

Thank you!

谢 谢 ！

