



New Crash Test Facility in CAERI

Vehicle Safety Technology Research Center

2013.11





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About Us

关于我们



Research

相关研究



History

Vehicle Safety Technology Research Center

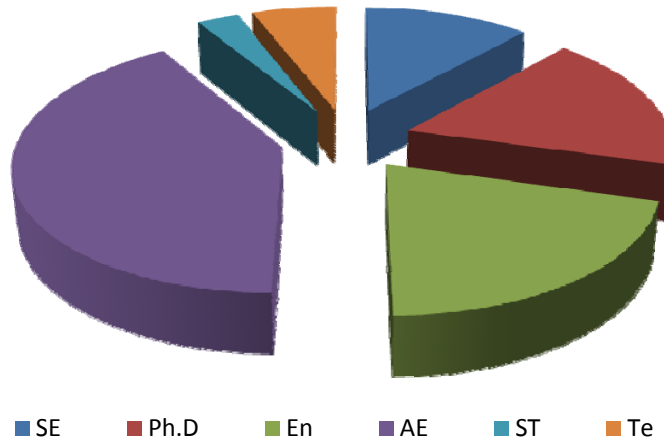
- 2003 Vehicle safety test division
- 2011 Vehicle safety technology research center
- Third-Party vehicle safety test and R&D organization for automotive industry

2 service platform for automotive industry

47 employees

**National Key Lab of
NVH & Safety Technology**

**Chongqing Vehicle/Biology
Crash Safety Key Lab**



Senior engineer **6**

Ph. D **5**

Engineer **11**

Assistant engineer **18**

Senior technician **2**

Technician **3**



Business

Crash test and evaluation/Performance development/Accident survey



Full vehicle crash test

- The regulation and standard tests
- Star assessment of NCAP
- Developing test
- Special test design
- Improving suggestion based on test result

Safety component test

- Component tests for safety belt/airbag/child restraint
- Pedestrian protection
- Whiplash test
- Test design for component supplier

CAE & Research

- CAE analysis based on NCAP stars
- Compatibility research
- Accident survey
- Dummies



New Facility

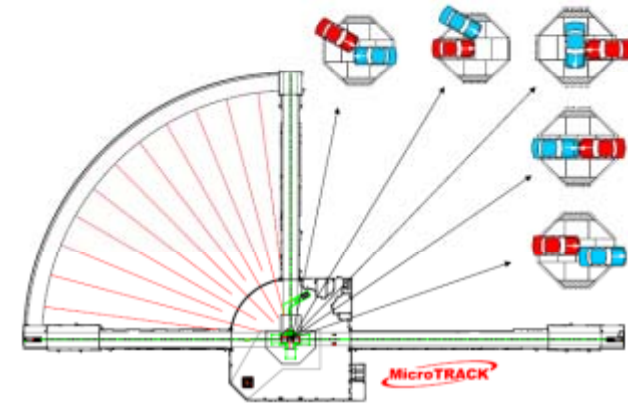
Car-to-Car angular crash test facility in Southwest China





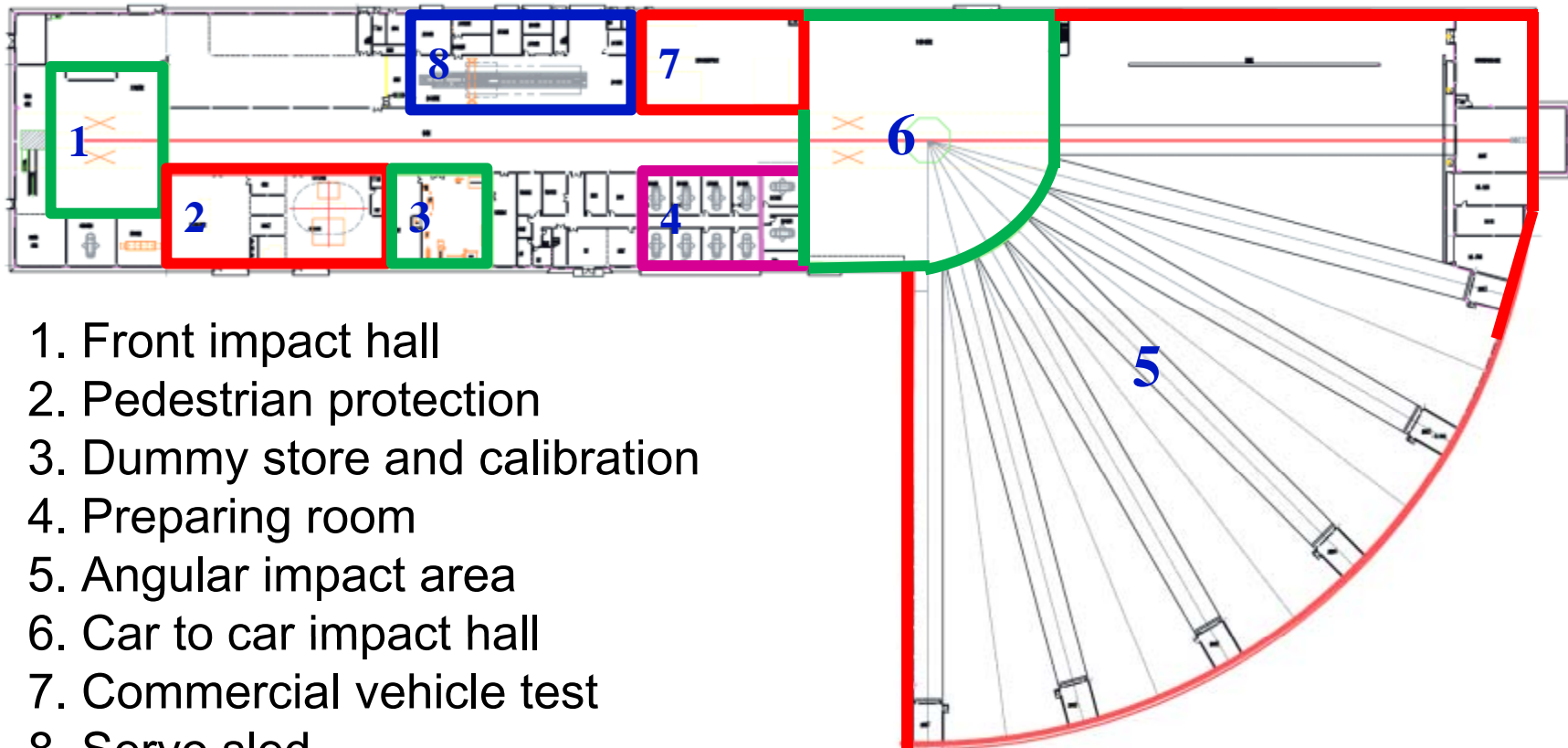
Capability for Full-vehicle Test

- 5 t 120 km/h, 25 t 80 km/h
- Crash test according to different regulation & NCAP
- Car to car angular test at arbitrary speed ratio
- Rollover test





Layout



1. Front impact hall
2. Pedestrian protection
3. Dummy store and calibration
4. Preparing room
5. Angular impact area
6. Car to car impact hall
7. Commercial vehicle test
8. Servo sled



Capability for Component Tests

❖ Component test lab includes:

- ❑ Commercial vehicle test
- ❑ Accelerating sled
- ❑ Pedestrian protection/linear impact
- ❑ Safety belt and others



Cab Test for Commercial Vehicle

Self D&M equipments

❖ Pendulum test

- ❑ Max energy : 80 kJ

❖ Static strength test

- ❑ Max load : 20t

- ❑ Close loop PID control

❖ Vehicle body strength test

- ❑ Max load : 25t

- ❑ Close loop PID control





Protection for Commercial Vehicle

- Series cab test for commercial vehicle :

- GB26512-2011

- ECE R29 (02 series.03 series)

- ECE R66

- VVFS 1994:22





Accelerating Sled

Seattle 3.1 MN Servo sled

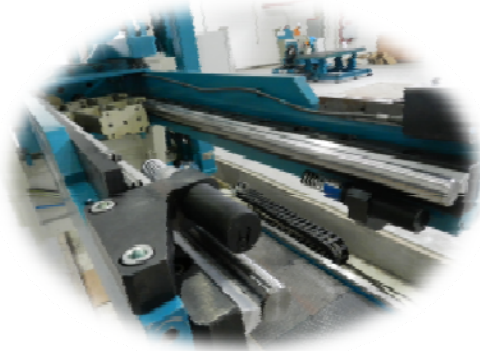
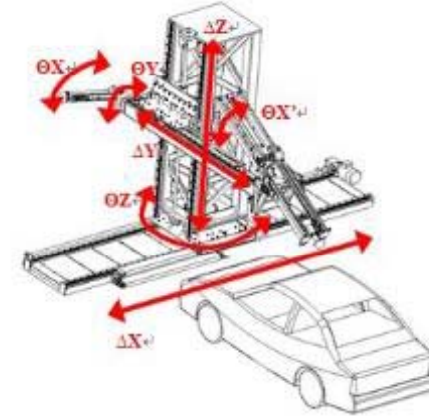
- ❑ Whiplash
- ❑ Restraint system
- ❑ Child seat
- ❑ Seat belt dynamic test
- ❑ Bus seat
- ❑ Luggage test
- ❑ CNG tank





Universal Impact Test System

- Pedestrian protection and Linear impact
- Rated Repeatability of velocity: $\pm 0.5\%$
- Max kinetic energy: 1400J
- Two different launchers
- Different Impactors



Launcher for pedestrian



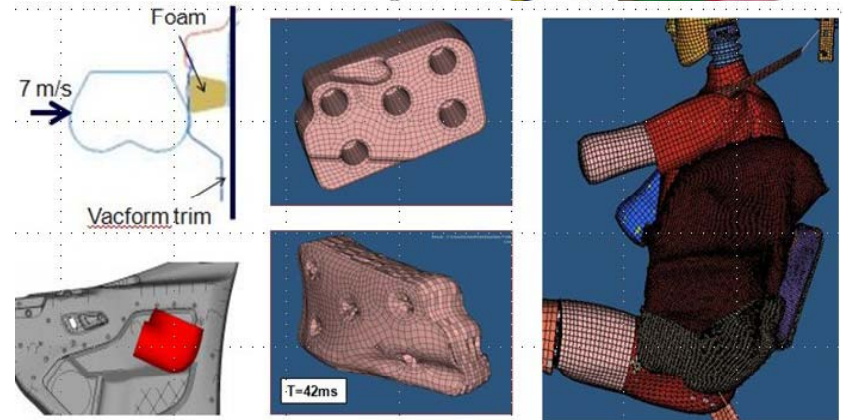
Launcher for FMH





CAE & Research

- CAE for different crash type
- Occupant response(MBS/FEA)
- NCAP star rating
- Lightweight of Automobile
- Material study





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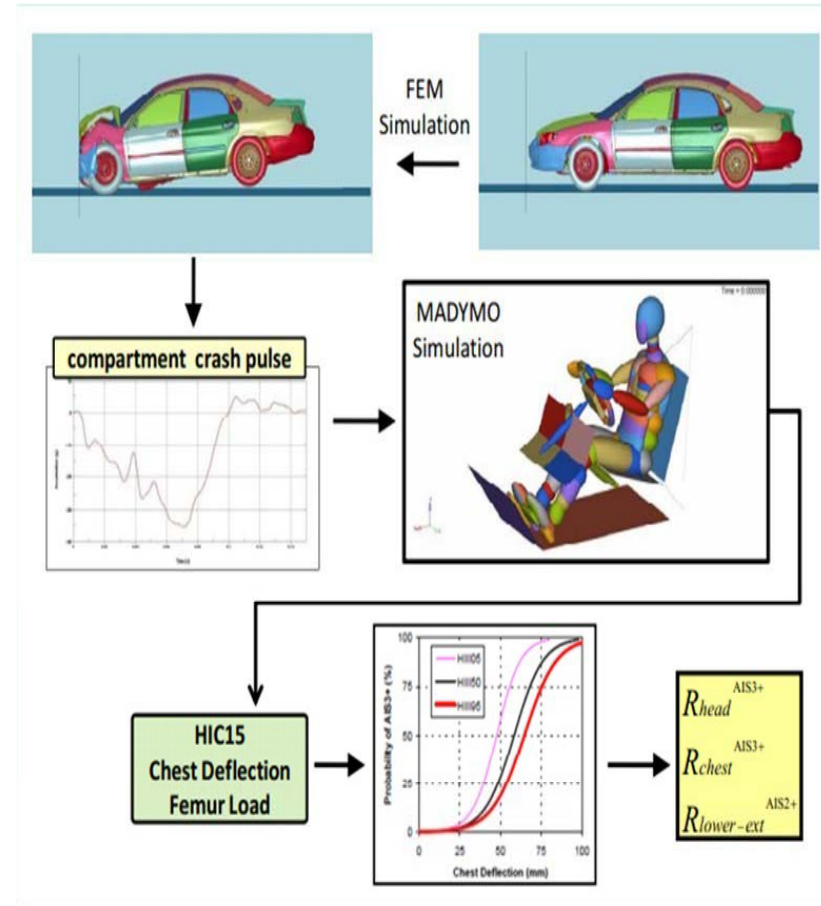
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Crash Compatibility

- Accidents data from urban area and highway
- Crash mode of different velocity and angle
- Vehicle structure/stiffness /geometry
- Occupant dynamic response





Crash Compatibility

- Car-Car 90 degree crash test
- Pickup-Bus 45 degree crash test with child dummies
- Car-Motorcycle crash test





Rollover Test Research

➤ Accident mode

Ramp rollover

Trip rollover

Corkscrew rollover

➤ Usage

Restriant system evaluation

for vehicle rollover

Study on trigger threshold





Commercial Vehicle Test Method

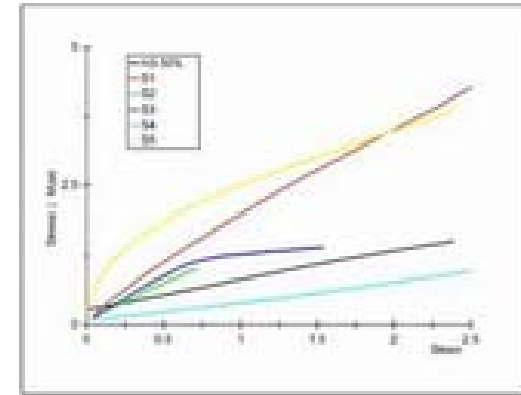
- Fatal accident data
- Crash test procedure
- Evaluating performance
- Standard & regulation





Dummy study

- Skin and muscle material
- Moment of inertia measurement system
- Dummy neck and ribs calibration
- Rib and chest performance Improvement





Next step

- Evaluating and consulting
- Study on vulnerable road user
- Safety device on commercial vehicle
- Test method on active safety



Thank you!