



SafetySpeak

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From the editor's desk...

First of all, I would like to wish all the readers a Happy New Year! I hope you all will have a wonderful, prosperous, and *safe* 2008. The events of this last year helped us to better understand and study the explosion of the automotive industry in India, and we are as committed as ever to continuing our contributions to its safe growth. We conducted another seminar with esteemed speakers and were excited to receive valuable feedback on directions we need to head in the future.

One of the groundbreaking offerings of the 2007 seminar was the series of practical demonstrations on how to conduct an accident investigation. We realized how crucial it was to provide some basic training on looking at a crashed vehicle and identifying injury mechanisms, vehicle damage, and principal direction of force (PDOF). Participants not only loved the new hands-on element, but quickly learned that interactive sessions with a bunch of highly technical, intelligent car guys are NEVER boring! It was also refreshing to see medically trained personnel and insurance company representatives participating in the seminar. We were very happy that we could get all these disciplines in one room to discuss automotive safety issues.

I would like to personally thank ARAI for providing the support and infrastructure to make this seminar a huge success, and we look forward with great anticipation to see what possibilities the future may bring for further collaborative efforts.

—Jeya

JP Research Seminar 2007

JP Research, Inc. is proud to announce that the **Biomechanics, Vehicle Safety and Accident Analysis** seminar — which was jointly conducted by JP Research and the Automotive Research Association of India (ARAI) on 4th and 5th of December, 2007, in Pune — was a grand success.

The seminar was attended by representatives from auto companies, the insurance sector, the local transport authority, and the medical community who assembled in Pune for two days from all parts of the country.



The talks were enlightening ...

World-renowned speakers Dr. Murray Mackay, Dr. Ali Hassan, Ms. Elaine Wodzin, and Ms. Jeya Padmanaban spoke on a wide range of topics. The topics included examination of crash-damaged vehicles, injury data sources, injury scaling, basic anatomy issues, injury mechanisms, injury criterion for the main body regions, dummies used in testing, and modeling issues.



... but the cars were the stars of the seminar.

Using actual crashed vehicles as his lectern, Dr Ali Hassan gave practical demonstrations of the steps involved in an accident analysis. Participants learned to calculate Collision Deformation Classifications (CDCs), analyze the vehicle intrusions, and identify injury mechanisms.



We are very thankful to all the participants and their sponsoring companies who helped make this event a success.

PARTICIPATING ORGANIZATIONS

Automotive Manufacturers

TATA Motors Ltd.	Maruti Suzuki
Ashok Leyland	General Motors
Volvo	Bajaj Auto
Mahindra & Mahindra	Reva Electric
Daimler Chrysler	Hindustan Motors
Honda Sael	Piaggio
Nissan Motors	Hyundai
Swaraj Mazda	TVS Motors
Force Motors	

Component Manufacturers/Consultants

Tesscom Systems	Minda Autogas	Panatech Asia
Fiem Industries	Zen Microsystems	Vanaz
TACO		

Insurance Companies

Bharati Axa	TATA AIG	Bajaj Allianz
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R&D and Testing

GM Technical Center	ICAT, Gurgaon
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Government Organizations

Sassoon Hospital	Office of the Deputy Transport Commissioner, Mumbai
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IT'S TIME TO CLOSE THE LOOP!

Last year saw a rapid increase in the number of new car registrations and the competition in the midsize and luxury car markets. This year promises to be even more exciting with lots of competition in the budget/small car market, especially with the unveiling of the eagerly awaited 1-lakh car from Tata. The number of vehicles on the road is bound to leap up, and with that comes the increased risk and safety concerns to all road users.

Times are changing. The purchasing power of people living in the cities is increasing and the demand for personal mobility growing. But are we ready for the numerous problems and hurdles this is going to raise?

Areas of Grave Concern

Infrastructure development is still lagging far behind need. While on one side we are trying to expand our road network and increase accessibility to numerous towns and villages, on the other side citizens are crying out, loudly, about the deteriorating conditions of the existing infrastructure.

A notable lack of **road discipline** has been attributed to relaxed law enforcement and lack of awareness and proper training on the part of road users. As the number of road users and vehicles grow, the current "chalta hai" (it's fine) attitude will only make conditions worse.

The absence of a strong commitment to **safety** is very visible now, too. Safety features are still offered as optional items on most cars sold today. Roads lack proper planning, road signs and traffic control devices to ensure that traffic flows smoothly and safely.

...a feedback loop is always required to keep check on the system and rectify errors, and such is also the case here.

Lack of **good governance** has always been considered a root cause for all these problems. All the above problems not only reduce the quality of life, but also reflect the importance we give to the value of life.

The Challenges Ahead

We cannot be silent spectators to this menace and wait for the bad phase to pass. Without action, this phase will never end and will only become worse. There is an urgent need to control this menace. But we must also carefully consider the challenges to enforcing road safety that we face today.

These include the need to:

1. Understand and influence the mindset of people at all levels.
2. Develop effective methods for clear dissemination of information to the masses.
3. Undertake research to establish safety technologies and practices that are not simply borrowed from other countries but specifically tailored for Indian conditions.
4. Write regulations and standards for road users, vehicles, and infrastructure to ensure that there is uniformity throughout the country.
5. Encourage collaborations between various parties involved to improve transportation.

A Control System Approach

The Indian traffic scenario can be considered as one large open system — in which road users, manufacturers, insurance companies, regulatory authorities, civil services and development authorities, and all transportation associated agencies run the process of transportation — with the singular aim of transporting humans and materials from point A to point B safely, conveniently, and efficiently.

As we know from the basics of control systems, a feedback loop is always required to keep check on the system and rectify errors, and such is also the case here. But what is the variable to be checked? **Public safety**, of course. This requires studying traffic accidents in real time, understanding where things are going wrong, and then controlling the system by using remedial measures.

Enter... JP Research India

To develop an effective feedback control and to close the loop for the Indian traffic scenario is exactly what JP Research India is working towards. The revolution has begun with the recent seminar aimed at introducing accident investigation.

As we try to come up with innovative solutions to close the loop, we will seek the active participation of parties involved in the transportation business in making Indian roads safer to travel on. We look forward to your support in this endeavor.

A DUMMY'S GUIDE TO THE DUMMY



Whose family is this?

Recently, there has been a lot of interest in using crash test dummies in India. Since dummies have been conceived and created predominantly in the western world, there is not much knowledge about them in the general population. Here we try to give a layman's view of a dummy and reasons why they cost more than "an arm and a leg".

What makes a crash test dummy?

A dummy is made of metals and non-metals that are constructed and engineered in such a way as to replicate human response to impacts in certain specific regions of the body. To read the responses, the dummy is fitted with sensors (accelerometers, load cells, linear and rotary potentiometers) in specific positions. For example, a chest potentiometer will measure the chest deflection during an impact to the chest. This makes them cost more than "an arm and a leg".

How are dummies made to respond like humans?

Over the past century, scientists and researchers across the world have carried out many tests on cadavers and found out how the body responds to loads and accelerations. Also injury limits were established to specify that a harmful or decapitating injury will occur. Injury scales were also created to classify injuries on the basis of severity.

Based on the above studies, dummies are created so as to behave just the way a human body is found to behave when a load or acceleration is applied.

What about the size of dummies?

Since the dummies have been created mainly by and for use in the western world, the dummy size, too, is influenced by the demographics of the western world.

During the 1970s, data on the size and mass of the general population in the US was collected and studied to give an idea about the population. This data was used to create the percentile figures we generally hear of with a dummy. A 95th percentile male dummy indicates that the dummy is taller and heavier than 95% of the males. This is a highly debated area as size characteristics in the US have changed over the years; currently these percentiles are not only not representative of other countries, but not of the US, either.

How difficult is it to measure the dummy responses and interpret results?

The sensors in the dummy are strategically placed to give us the best idea of the variable being measured. They give us data about the response of the dummy at and after impact. This response data is then collected and compared to the injury limits (after suitably conditioning and filtering the data), and the results are then interpreted based on the injury limits defined.

How do we ensure that the sensors do not lie?

First the sensors are properly calibrated, using electronic test equipment, so that they give us exactly what they measure. Secondly, the dummy is calibrated so that it responds the way it should.

Dummy calibration is done by subjecting the dummy to certain specified impact loads for which the dummy response is already known. Test equipment for performing these tests can be provided to you by the dummy manufacturer, or you can have them do the calibration for you. There are specific requirements (time limits/number of tests) for how the calibration should be done.

What kind of environment is usually required to be maintained?

The dummy labs are usually required to maintain an environment where the temperature is between 18 to 26 degrees Centigrade and the relative humidity lies between 10 and 70 percent.

How many types of dummies are used?

Denton and First Technology Safety Systems (FTSS) are the major global dummy manufacturers and suppliers. A few common dummies used in testing are listed below:

Hybrid-III –

Used in vehicle frontal impact tests.

SID-IIIs or EuroSID –

Used in vehicle side-impact tests.

BioRID –

Used for rear-impact and seat head-restraint studies.

Research is ongoing to make new dummies that behave more like humans. The THOR and CRABI dummies are a result of such research.

What's hot today in dummy technology?

Your phone and laptop aren't the only things going wireless — so are dummies. A new generation of dummies, called i-dummies, with data acquisition systems integrated inside them are now becoming popular. This reduces the number and complexity of wires running from the dummies and hence makes them easier to handle and reduces risks and errors while running crash tests.

Need more info?

The following websites give more general and specific information you may like to know.

http://en.wikipedia.org/wiki/Crash_test_dummy
www.crash-network.com

Upcoming National & International Conferences

- **9th Auto Expo 2008**
 10-17 January 2008 • New Delhi
www.autoexpo.in
- **SAEINDIA**
 9-11 January 2008 • 5th International Mobility Conference on Emerging Automotive Technologies Global and Indian Perspective, New Delhi
<http://www.saeindia.org/eventsframe.html>
- **The European Intelligent Vehicle Safety Summit 2008**

11-12 March 2008 • The Courtyard Marriott Hotel, Frankfurt, Germany
<http://www.telematicsupdate.com/ivseurope/>

- **SAE 2008 World Congress**
 14-17 April 2008 • Cobo Center, Detroit, Michigan, USA
<http://www.iaqg.org/congress/>
- **Lifesavers Conferences**
 13-15 April 2008 • Oregon Convention Center Portland, Oregon, USA
<http://www.lifesaversconference.org/>

In a lighter vein!



**“Road marking is important...
 ...no matter what gets in the way”**

Contact Us

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