

Tranzinfo HotTopic

Number 6 2006

Accident investigation and accident reconstruction

A selection of recent publications and resources on the investigation and reconstruction of road crashes.

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- 1. A common methodology for truck accident in-depth study**
Simon MC, Hermitte T, White P
Unterreihe Fahrzeugtechnik 2005 Number 55. Pages 44–56
Berichte der Bundesanstalt fuer Strassenwesen (BAST): Bergisch Gladbach, Germany
This paper describes the common methodology used to collect the information on the scene of the accident and to analyse the data so that the reconstruction of the crash events may be carried out. CEESAR proposes a methodology using its experience gained from over 10 years of accident data collection. Paper presented at 1st International ESAR Conference, 3–4 September 2004, Hannover, Germany.
- 2. A new method for the evaluation of the quality of accident reconstructions**
Alonzo F, Nguyen M, Verriest JP
Unterreihe Fahrzeugtechnik 2005 Number 55. Pages 57–69
Berichte der Bundesanstalt fuer Strassenwesen (BAST): Bergisch Gladbach, Germany
This paper presents a new tool aiming at better evaluating and validating accident reconstructions. It is based on statistical evaluation of vehicle deformations which gives weighing factors for every part of the car body structure finally leading to a specific Reconstruction Quality Score (RQS indicator). Furthermore, the reliability of this score, depending on the number of measured points, can be established. Paper presented at 1st International ESAR Conference, 3–4 September 2004, Hannover, Germany.
- 3. A proposal for a coordinated in-depth crash investigation programme in Spain**
Monclus J
Unterreihe Fahrzeugtechnik 2005 Number 55. Pages 204–206
Berichte der Bundesanstalt fuer Strassenwesen (BAST): Bergisch Gladbach, Germany
After reviewing on-going activities and programs in different countries, a framework for a nationwide crash investigation project is proposed: an organizational scheme is suggested as part of a future National Road Safety Strategic Plan; a map of investigation teams located in technological centres, universities and police agencies in Spain is presented; alternatives for several practical aspects such as team composition, deployment and operational budgets and project developmental stages are also discussed. Paper presented at 1st International ESAR Conference, 3–4 September 2004, Hannover, Germany.

- 4. Assisting your barrister: accident reconstruction case study**
Boyd J
Proceedings of the 18th Ingenium Annual Conference June, 2005, Nelson, New Zealand
Pages 30–36
Nelson City Council: Nelson, New Zealand:
Engineers are often asked to write reports on incidents or accidents. However, when it comes to assisting legal representatives in court they tend to be overlooked in favour of administrative or corporate staff. Their technical expertise as part of the team in a major case is essential in presenting the strongest possible defence against a claim. This paper presents a case study where expertise from Council's engineering staff made a significant contribution in the defence of a civil claim against Council.
- 5. Crash Investigations for active safety – meeting new demands on investigation methodology**
Sandin J, Ljung M
Unterreihe Fahrzeugtechnik 2005 Number 55. Pages 216–224
Berichte der Bundesanstalt fuer Strassenwesen (BAST): Bergisch Gladbach, Germany
The Swedish project FICA (Factors Influencing the Causation of Accidents and Incidents), is an accident investigation methodology suitable for active safety is developed. In-depth accident investigations following this methodology are carried out on-scene. A preliminary aggregated analysis of different cases shows that the methodology developed is adequate for pointing out common contributing factors and devising principal countermeasures. Paper presented at 1st International ESAR Conference, 3–4 September 2004, Hannover, Germany.
- 6. Detailed investigation and reconstructions of real accidents involving vulnerable road users**
Serre T, Bohn M, Llari M, Cavallero C, Perrin F
Unterreihe Fahrzeugtechnik 2005 Number 55. Pages 114–124
Berichte der Bundesanstalt fuer Strassenwesen (BAST): Bergisch Gladbach, Germany
The aim of this research is to improve knowledge about vulnerable road users accidents and more specifically pedestrians or cyclists. Effects of some parameters such as car velocity or victim position at impact have been numerically studied in order to find the best correlations with all indications produced by the in-depth analysis. Paper presented at 1st International ESAR Conference, 3–4 September 2004, Hannover, Germany.
- 7. Fifty years of at-scene crash investigations: methodological considerations**
McLean J
Proceedings of the Australasian Road Safety Research Policing Education Conference 2005, Wellington, New Zealand
10 pages
Ministry of Transport: Wellington, New Zealand
This paper provides a brief review of at-scene crash investigation over the past 50 years, noting methodological lessons that have been learnt and, in some instances, forgotten. It concentrates on research conducted in the United States and Australia.
Item online (accessed 27 July 2006): [Click here](#)
- 8. Full crash test reconstruction and analysis of four real-world impacts**
Franklyn F, Logan D, Hillard P, Fildes B
Proceedings of the Australasian Road Safety Research Policing Education Conference 2005, Wellington, New Zealand
12 pages
Ministry of Transport: Wellington, New Zealand
This paper describes physical crash test reconstructions of four real-world crashes. For each case, a comparison of crash test damage between the real-world and crashed vehicles was performed, and injury parameters from the anthropomorphic test devices were evaluated against the actual injuries sustained by the real-world occupants. The results demonstrated that the crash damage profiles produced, despite some variation, were a reasonable replication of the real-world damage, with some over or underestimation of the damage in each case.
Item online (accessed 27 July 2006): [Click here](#)

- 9. Investigation of fatigue related motorcycle crashes: literature review**
Haworth N, Rowden P
45 pages
Queensland University of Technology, Centre for Accident Research and Road Safety (CARRS-Q): Brisbane, Queensland
This Australian review of the role of fatigue in motorcycle crashes discusses both published literature and potential sources of data. Data sources examined include police reports, coronial files, hospital data and in-depth crash investigation studies.
Item online (accessed 27 July 2006): [Click here](#)
- 10. Keynote lecture: The evolution of accident research**
Mackay M
Unterreihe Fahrzeugtechnik 2005 Number 55. Pages 15-22
Berichte der Bundesanstalt fuer Strassenwesen (BAST): Bergisch Gladbach, Germany
This paper briefly reviews the evolution of the investigation of transport accidents from the early beginnings when individual events were studied but systematic data was not collected. It is proposed that the most important area for current research to address is the effect of population variations on injury outcomes. Keynote lecture presented at 1st International ESAR Conference, 3-4 September 2004, Hannover, Germany.
- 11. Latest advances in road incident investigation, reconstruction and simulation**
Marsh F
Proceedings of the 5th Institute of Public Works (IPWEA) New South Wales Division Conference 2005, Sydney
7 pages
Institute of Public Works (IPWEA) New South Wales Division: Sydney
This paper describes work by the Investigations and Risk Management Group of TRL Limited and their research and development in the area of 3D laser scanning and computer simulation. Includes discussion of the use of laser scanning systems at incident scenes and presents examples of complex vehicle dynamics simulations and animated incident sequences.
- 12. Special aspects in accident reconstruction in the accident investigation department of Volkswagen**
Jungmichel M, Stanzel M, Zobel R
Impact 2005
Volume 14, Number 1, pages 14-21
Institute of Traffic Investigators: Derby, United Kingdom
One of the assignments of the Volkswagen Accident Research Unit is to interpret global statistics, as well as to study single cases in order to come up with strategies for collision avoidance or mitigation. This paper describes their current focus, active vehicle safety by researching vehicle behaviour in the pre-crash phase.
- 13. MAIDS: in-depth investigations of accidents involving powered two wheelers:**
Association des Constructeurs Europeens de Motocycles ACEM: Brussels, 2004
Website reporting the results of three years of motorcycle crash investigation, encompassing over 900 crashes in 5 European countries. Registration required to view full report.
Item online (accessed 27 July 2006): [Click here](#)

14. In-depth studies of fatal accidents save lives

6 pages

Swedish Road Administration: Sweden, 2005

Short booklet from Sweden outlining in-depth road crash investigation procedures and the safety improvements that can result from such research.

Item online (accessed 27 July 2006): [Click here](#)

15. Report to congress on the large truck crash causation study

20 pages

Federal Motor Carrier Safety Administration: Washington D.C., 2006

Reporting of the findings of an investigation in the United States into over 960 casualty crashes. Each crash involved at least one truck and were spread across 24 sites in 17 States.

Item online (accessed 27 July 2006): [Click here](#)

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