International Symposium on Sophisticated Car Occupant Safety Systems

November 2nd/3rd, 1992
Karlsruhe, Congress Center
Stadthalle, Weinbrenner-Saal
Germany

- Legislation framework
- Traffic safety development
- Occupant risks
- Technology and technical trends
- Case studies
- Processing and testing
- Environmental awareness
- Marketing
- Future Trends

FRAUNHOFER-INSTITUT FÜR CHEMISCHE TECHNOLOGIE
Table of contents

1. SESSION: STRATEGIES AND TRENDS
Chairman: Dr. Karl-Friedrich Ziegahn, Fraunhofer-Gesellschaft (ICT)

1 INAUGURAL LECTURE
Prof. Dr. Hiltmar Schubert, Fraunhofer-Gesellschaft (ICT)

2 EUROPEAN LEGISLATION FRAMEWORK
ON CAR OCCUPANT SAFETY
Anthony Reynolds, EC Commission DG III

3 GERMAN GOVERNMENT POINT OF VIEW
Reg.Dir. Dipl.-Ing. Herbert Löffelholz, Min.Dir. Dr. Hubert Schmitt,
Bundesminister für Verkehr

4 TRAFFIC SAFETY: FACTS AND TRENDS IN USA
Daniel Cohen, National Highway Traffic Safety Administration (NHTSA),
Washington D. C., USA
(Manuscript not available)

2. SESSION: ROAD TRAFFIC SAFETY AND RISKS
Chairman: Dipl.-Ing. Ingo Kallina, Mercedes-Benz AG

5 DEVELOPMENT OF ROAD TRAFFIC
AND ROAD TRAFFIC SAFETY IN GERMANY
Direktor und Professor Dr.-Ing. Karl-Heinz Lenz, Bundesanstalt für
Straßenwesen (BASl)

6 PASSIVE SAFETY AND OCCUPANT INJURIES -
PRESENT STATUS AND FUTURE PRIORITIES
Dr.-Ing. Klaus Langwieder, HUK-Verband

7 ACCIDENT INJURIES, MEDICAL ASPECTS,
PROTECTION MEASURES
Prof. Dr. med. Rainer Mattern, Universität Heidelberg
### 3. SESSION: ACTUAL ASPECTS OF AIRBAG TECHNOLOGY

Chairman: Dipl.-Ing. Elmar Vollmer, Audi AG

8 NUMERICAL SIMULATION IN AIRBAG DEVELOPMENT -  
STATE OF THE ART, DEVELOPMENTS, TRENDS  
Dr.-Ing. Rodolfo Schöneburg, Audi AG

9 AIRBAG SYSTEMS  
RELATED TO DIFFERENT PASSENGER SEATING POSITIONS  
Dipl.-Ing. Ulrich E. Wezel, Porsche AG

10 UTILIZATION OF USED CAR COMPONENTS - EXAMPLE AIRBAG  
Dipl.-Ing. Reinhard Hoock, Dipl.-Ing. Klaus Kompaß,  
BMW AG

11 QUALIFICATION OF AIRBAG SYSTEMS -  
TAILORED TO THE AUTOMOBILE ENVIRONMENT  
Dr.-Ing. Karl-Friedrich Ziegahn, Fraunhofer-Gesellschaft (ICT)

### 4. SESSION: GAS GENERATORS

Chairman: Dr.-Ing. Luigi Brambilla, Mercedes-Benz AG

12 OVERVIEW: GAS GENERATORS FOR AIRBAG SYSTEMS  
Dipl.-Ing. Peter Klotzbücher, TRW Repa

13 ALTERNATIVE CONCEPTS OF NEW GAS GENERATORS  
Dr. Joachim Franz, Dipl.-Ing. Rainer Hoffmann, Dipl.-Ing. Chuck Bosio,  
Dipl.-Ing. Dieter Fahrländer, Dr. W. Schiek,  
PARS GmbH

14 ANALYTICAL MODELLING OF PYROTECHNIC AIRBAG INFLATORS  
Peter Materna, Breed Automotive, USA
### Table of contents

#### 6. SESSION: SENSING DEVICES
Chairman: Dipl.-Ing. Siegfried Heyden, Becker Autoradio GmbH

15 SINGLE POINT SENSING DEVICE FOR AUTOMATIC RESTRAINT SYSTEMS: PROVED AND ECONOMIC SOLUTION FOR CRASH DETECTION AND SYSTEMS DIAGNOSTICS  
Dr.-Ing. Luigi Brambilla, Mercedes-Benz AG

16 SENSING CONSIDERATIONS AND TRADEOFFS FOR SINGLE POINT SENSING  
Jon P. Kelley, Delco Electronics, USA

17 SENSOR TECHNOLOGY AND COMPUTATION ALGORITHMS FOR THE FUTURE  
Hans Spies, MBB Airbag - Systeme

#### 7. SESSION: PRODUCTION AND MARKETING
Chairman: Min. Rat Dr. Horst Autzen, Ministry of Economic Affairs, Baden-Württemberg

18 PRODUCTION OF EXPLOSIVES FOR AIRBAGS: AN OVERVIEW ON SPECIAL ISSUES LIKE SAFETY, HANDLING, AND RISKS  
Dr. Klaus Menke, Dr. F. Volk, Dr. K. M. Bucerius, H. Schmid, Fraunhofer-Gesellschaft (ICT)

19 POLITICAL ASPECTS IN THE RELATION BETWEEN CAR MANUFACTURER AND COMPONENT SUPPLIER  
Min. Rat Dipl.-Ing. Alfred Koepppe, Ministry of Economic Affairs, Baden-Württemberg

20 AIRBAG: PRODUCT LIABILITY AND THE INSURANCE POINT OF VIEW  
Hanns-Werner Kern, Colonia Versicherung AG

21 MARKETING FOR AIRBAG SYSTEMS  
Berthold Krüger, VW AG
22 VISION: OCCUPANT SAFETY 2000
Prof. Dr. Ulrich Seiffert, Vorstandsmitglied VW AG

5. SESSION: POSTER PRESENTATION
Chairman: Dipl.-Ing. Peter Klotzbücher, TRW Repa

23 NON-TOXIC GAS GENERATORS WHICH HAVE STORAGE STABILITY
A. Hafstrand, J. Sandström, P. Sjöberg,
Bofors Explosives AB, S

24 HYBRID AIRBAG INFLATOR TECHNOLOGY
R. L. Frantom, Allied-Signal, Bendix Safety Restraints Group, USA

25 OPTICAL, PYROMETRIC AND SPECTROSCOPIC ANALYSIS OF GAS GENERATOR COMBUSTION
W. Eckl, V. Gröbel, V. Weiser, H. Schneider, N. Eisenreich,
Fraunhofer-Gesellschaft (ICT)

26 IMPROVING CRASH SENSOR TESTING BUT CRASHING FEWER CARS
G. Turgoose, Ling Dynamic Systems, UK

27 BEITRAG ZUR BEURTEILUNG DES LANGZEITVERHALTENS UNBESCHICHTETER AIRBAG-GEWEBE
P. Ehrler, W. Gündisch, G. Schmeer-Lioe, H. Schreiber,
Institut für Textil- und Verfahrenstechnik

28 THE FULLY INTEGRATED AIRBAG SYSTEM OF THE RENAULT 19
G. Stcherbatcheff Renault SA, F
M. Kozyreff, Electrolux Autoliv Klippan, F

29 ENVIRONMENTAL QUALIFICATION OF AIRBAG SYSTEMS - DEFINITION OF TEST SPECTRA FOR VIBRATION TESTS
U. Braunmiller, Fraunhofer-Gesellschaft (ICT)
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>LOW COST, COMBINATION RADIO FREQUENCY (RF) AND ELECTROSTATIC PROTECTION DEVICES FOR AUTOMOBILE AIR BAG IGNITERS</td>
<td>R. L. Dow, Attenuation Technology Inc., USA</td>
</tr>
<tr>
<td>31</td>
<td>AIR-BAGS &amp; SEAT-BELT TENSIONERS - THE NEED FOR UNIFIED LEGISLATION</td>
<td>A. F. Charles, Consultant, UK</td>
</tr>
<tr>
<td>32</td>
<td>ENTWICKLUNGEN IN DER NUMERISCHEN CRASH-SIMULATION</td>
<td>N. Schulte-Frankenfeld, P. Ullrich, R. Schöneburg, Audi AG</td>
</tr>
<tr>
<td>33</td>
<td>RISK FUNCTION FOR OCCUPANTS OF PASSENGER CARS AS A RESULT OF THE CORRELATION OF ACCIDENT INVESTIGATION DATA WITH COMPUTER SIMULATION RESULTS</td>
<td>F. Kramer, TRW Repa GmbH</td>
</tr>
<tr>
<td>34</td>
<td>GS (MIGRAD) PYROTECHNIC PROCESSING SYSTEM FOR AIRBAG PROPELLANTS</td>
<td>J. E. Kowalczyk, APV Chemical Machinery Inc., USA</td>
</tr>
<tr>
<td>35</td>
<td>CONTINUOUS PROCESSING OF AIRBAG PROPELLANT</td>
<td>K. E. Deming, J. E. Kowalczyk, J. W. Jones, APV Chemical Machinery Inc., USA</td>
</tr>
<tr>
<td>36</td>
<td>EFFECTS OF AIR POLLUTANTS ON AGEING AND DEGRADATION OF POLYMERIC MATERIALS AND ELECTRICAL EQUIPMENT</td>
<td>T. Reichert, K.-F. Ziegahn, Fraunhofer-Gesellschaft (ICT)</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>38</td>
<td>LIFE-CYCLE-ANALYSIS OF AIRBAG SYSTEMS</td>
<td>K.-F. Ziegahn, D. Schmitt</td>
</tr>
<tr>
<td>39</td>
<td>AIRALL - AIRBAG BASED PROTECTION OVERALL</td>
<td>W. Jakobus</td>
</tr>
<tr>
<td>40</td>
<td>NEW STABLE NITROGEN-RICH COMPOUNDS AS SODIUM AZIDE ALTERNATIVE</td>
<td>K. M. Bucerius, H. Schmid</td>
</tr>
<tr>
<td>41</td>
<td>INJECTION MOLDING OF METAL AND CERAMIC POWDERS - A PRODUCTION TECHNOLOGY FOR MECHANIC PARTS IN AIRBAG SYSTEMS</td>
<td>L. Merz, J. Böhnlein-Mauß, K. Menke</td>
</tr>
<tr>
<td>42</td>
<td>SILIKON CAPACITIVE ACCELEROMETERS FOR AIRBAGS</td>
<td>U. Meriheinä</td>
</tr>
<tr>
<td>43</td>
<td>AIRBAGENTWICKLUNG BEI AUDI</td>
<td>E. Vollmer</td>
</tr>
<tr>
<td>44</td>
<td>CORROSION IN HOT GASSES STUDIED BY MEANS OF X-RAY DIFFRACTION</td>
<td>V. Kolarik, M. Juez-Lorenzo, W. Engel, N. Eisenreich</td>
</tr>
<tr>
<td>45</td>
<td>QUALITÄTS- UND SICHERHEITSBEWERTUNG VON TREIBMITTELN MIT MOLMASSEN- UND STABILISATORGEHALTBESTIMMUNG, WÄRMEENTWICKLUNG UND ADIABATISCHER SELBSTAUFHEIZUNG</td>
<td>M. A. Bohn, F. Volk</td>
</tr>
</tbody>
</table>