

INTRODUCTION

The ESV Program originated over forty years ago under the North Atlantic Treaty Organization (NATO) Committee on the Challenges of Modern Society, and was implemented through a mutual agreement between the Governments of the United States, France, the Federal Republic of Germany, Italy, the United Kingdom, Japan, and Sweden. The participating nations agreed to develop experimental safety vehicles to advance the state-of-the-art technology in automotive safety engineering and to meet periodically to exchange information on their progress. Since its inception the number of international partners has grown to include the Governments of Canada, Australia, The Netherlands, Hungary, Poland, Republic of Korea, and two international organizations the European Enhanced Vehicle-safety Committee, and the European Commission. A representative from each country/organization serves as a Government Focal Point in support of the Program.

In the interest of information exchange, The National Highway Traffic Safety Administration, U.S. Department of Transportation, distributes this USB drive which contains the Proceedings of the 23rd International Technical Conference on the Enhanced Safety of Vehicles (ESV). The technical papers included in this publication detail safety research efforts underway worldwide, and share the common interest of reducing motor vehicle related fatalities and injuries. The opinions, findings, and conclusions expressed in the publications are those of the author(s) and not necessarily those of the U.S. Department of Transportation, National Highway Traffic Safety Administration. Final papers are accepted after the corresponding abstracts undergo technical review. The technical papers contained on this USB drive are the written work of the author(s). To enhance the technical content, fifteen papers were accepted for peer-review and are to be published in a special edition of *Traffic Injury Prevention* 14(S1), by Taylor and Francis Group. These papers will be available to the public on the *Traffic Injury Prevention* and www.NHTSA.gov websites in July 2013.

The Conference Organizers thank our international participants for their dedication and support of the 23rd ESV Conference and look forward to your future participation.

Donna E. Gilmore
ESV Technical Coordinator
DOT/NHTSA

23rdESV INTERNATIONAL PROGRAM DELEGATES

United States – 23rd ESV Conference Sponsor

THE HONORABLE RAY LAHOOD

Secretary
United States Department of Transportation

THE HONORABLE DAVID L. STRICKLAND

Administrator
National Highway Traffic Safety Administration

NATHANIEL BEUSE

Associate Administrator for Vehicle Safety Research
National Highway Traffic Safety Administration

DONNA E. GILMORE

ESV Technical Coordinator
National Highway Traffic Safety Administration

STEPHEN A. RIDELLA

Lead Technical Advisor
National Highway Traffic Safety Administration

Korea – 23rd ESV Conference Host

SUH SEOUNG-HWAN, Ph.D.

Minister
Ministry of Land, Infrastructure and Transport

KWON SOK-CHANG

Director General for Motor Vehicle Policy Bureau
Ministry of Land, Infrastructure and Transport

YOON JIN-HWAN

Director for Motor Vehicles Management Division
Ministry of Land, Infrastructure and Transport

WOO JUNGHOON

Senior Deputy Director for Motor Vehicles Management Division
Ministry of Land, Infrastructure and Transport

CHUNG IL-YOUNG, Ph.D.

President
Korea Transportation Safety Authority

23rd ESV CONFERENCE GOVERNMENT FOCAL POINT MEMBERS

COUNTRY	NAME / TITLE	AFFILIATION
 AUSTRALIA	Mr. Robert Hogan General Manager	Vehicle Safety Standards Department of Transport and Regional Services
 CANADA	Mr. Merz Rustom Director, Motor Vehicle Standards, Research and Development	Transport Canada
 EUROPEAN COMMISSION	Mr. Philippe Jean Acting Director	European Commission
 EUROPEAN ENHANCED VEHICLE-SAFETY COMMITTEE	Dr. Dominique Cesari Scientific Director	INRETS
 FEDERAL REPUBLIC OF GERMANY	Mr. Stefan Strick President and Professor	Federal Highway Research Institute (BAST)
 FRANCE	Mr. Bernard Gauvin Ingénieur général des mines	Ministère des transports
 HUNGARY	Mr. János Déak Head of the Technical Co-ordination Centre for EU and –UN-ECE Activities on Road Vehicles	KTI/Institute for Transport Sciences
 ITALY	Dott. Ing. Antonio Erario Head of Division I	International Regulation Affairs Ministry of Infrastructure and Transport Department for Transport
 JAPAN	Mr. Takao Onoda Director International Affairs Office, Engineering Policy Division, Road Transport Bureau	Ministry of Land Infrastructure Transport and Tourism (MLIT)
 POLAND	Mr. Wojciech Przybylski Director for Technology and International Cooperation	Motor Transport Institute (Instytut Transportu Samochodowego)
 REPUBLIC OF KOREA	Mr. Junghoon Woo Senior Deputy Director, Motor Vehicles Management Division	Ministry of Land, Infrastructure and Transport (MOLIT)
 SWEDEN	Mr. Anders Lie Specialist	Traffic Safety Division Trafikverket Swedish Transport Administration
 THE NETHERLANDS	Mr. Kees Doornheim Manager, Vehicle Standards Development	RDW
 UNITED KINGDOM	Mr. Bernie Frost Principal Engineer	Department for Transport
 UNITED STATES OF AMERICA	Mr. Nathaniel Beuse Associate Administrator for Vehicle Safety Research	National Highway Traffic Safety Administration

23rdESV TECHNICAL SESSION CHAIRPERSONS/CO-CHAIRPERSONS

Technical Session Topics	Chair	Country	Co-Chair	Country
Biomechanics #1: Crash Injury Mechanisms and Human Modeling	Philippe Vezin	France	Matthew Craig	United States
Testing and Modeling of Structural Performance in Frontal Crashes	Stephen Summers	United States	Suzanne Tylko	Canada
Crash Avoidance #1: Safety Performance and Effectiveness of Driver Assistance Technologies, Test & Evaluation Procedures, Benefits Assessment	Anders Lie	Sweden	John Harding	United States
Biomechanics #2: Advances in Crash Test Dummies, Instrumentation and Data Analysis	Kevin Moorhouse	United States	Koshiro Ono	Japan
Performance of Protection Systems for Children and Pedestrians	Jongsoo Kim	Korea	Bernie Frost	United Kingdom
Crash Avoidance #2: Human Factors and Driver/Occupant Behavior Analysis	Bernd Lorenz	Germany	Peter Burns	Canada
Testing and Modeling of Structural Performance in Side Impact and Rollover Crashes	Mark Terrell	Australia	Byungkee Han	Korea
Crash Avoidance #3: Vehicle Electronic System Safety: Controls, Cybersecurity and Automated Vehicles	Bernie Frost	United Kingdom	Tim Johnson	United States
Restraint System Design and Performance Challenges: Addressing the needs of diverse populations (age, gender, stature)	Lex van Rooij	The Netherlands	Jaewan Lee	Korea
Electric Vehicle, Battery and Fuel Cell Safety	Kwangbum Lee	Korea	Patrick Seiniger	Germany
NCAP and Non-Regulatory Approaches for Improving Safety	Claes Tingvall	Sweden	Jenny Dang	United States
Heavy Truck, Bus and Motorcycle Safety	Jac Wismans	The Netherlands	Kyongsu Yi	Korea
Assessment of New and Improved Field Data Collection, Analysis and Benefits Assessment Methods	Andre Seeck	Germany	Augustus (Chip) Chidester	United States

ESV 2013 U.S. GOVERNMENT AWARD RECIPIENTS

SAFETY ENGINEERING EXCELLENCE

In recognition of and appreciation for exceptional scientific contributions in the field of motor vehicle safety engineering and for distinguished service to the motoring public

Klaus Kompass, Germany

Ryoichi Yoshida, Japan

Younghan Youn, Ph.D., Korea

Oul-Seog Ko, Korea

Rikard Fredriksson, Ph.D., Sweden

SPECIAL AWARD OF APPRECIATION

In recognition of and appreciation for outstanding leadership and special contributions in the field of motor vehicle safety

Dr. Wilfried Klanner, Germany

Jongsoo Kim, Korea

Dongseok Kim, Ph.D., Korea

Anders L. Eugensson, Sweden

Douglas P. Campbell, United States

ESV 2013 INTERNATIONAL STUDENT SAFETY TECHNOLOGY DESIGN COMPETITION FINALISTS

ASIA PACIFIC – JAPAN, REGION 1

REGIONAL COORDINATOR: MR. KAZURO IWATA, JSAE, JAPAN

The University of Tokyo

"Parachute Braking System Proposal"

Tokyo City University

"Development of Side-Impact Test Method for CRS"

Nihon University, College of Engineering, Koriyama city, Fukushima

"Development of advanced helmet for personal mobility"

ASIA PACIFIC – KOREA, REGION 1

REGIONAL COORDINATOR: PROF. YOUNG HAN YOON

Korea University of Technology and Education, KOREA

Seoul National University, Korea

"Development of a Smart Co-driver System"

Korea University of Technology and Education

"Rear Seat Old Child Protection with Automatic Re-directing Side Curtain Airbag deployment"

NORTH AMERICA, REGION 3

REGIONAL COORDINATOR: ARTHUR CARTER, NHTSA UNITED STATES

University of Maryland

"Flexible Incident Notification System"

California Polytechnic State University

"Automatic Crash Avoidance Sensor Development and Scale Vehicle Demonstration"