Activity Report of PIARC Committee TC 4.2
Road/Vehicle Interaction

Bjarne Schmidt (DRI-DK) - Chairman of TC 4.2
Strategic theme 4 – Quality of Road Infrastructure

- TC 4.1 Management of Road Infrastructure Assets
- TC 4.2 Road/Vehicle Interaction
- TC 4.3 Road Pavement
- TC 4.4 Roads, Bridges and Related Structures
- TC 4.5 Earthworks, Drainage and Subgrade
PIARC Technical Committee 4.2 - Surface Characteristics

2004 - 2007

47 Members, 8 Corresponding members, 14 Associate members
PIARC Technical Committee 4.2 - Surface Characteristics
2004 – 2007

French Representatives

Members
Michèle Cyna (Eurovia)
Jacques Munier (CG 61)
Michel Boulet (LCPC)

Associate Members
Michel Gothié (LRPC Lyon) : convener PIARC Test Tyres Group
Georges Dimitri (Michelin) : ETRTO Representative
## The meetings of TC 4.2

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<th>Location</th>
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<td>Paris (France)</td>
<td>4 – 5</td>
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<td>Toronto (Canada)</td>
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<td>Washington DC (USA)</td>
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<td>Rome (Italy)</td>
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<td>Bamako (Mali)</td>
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<td>Paris (France)</td>
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Liaisons of TC 4.2 and other organizations

- CEN/TC227/WG5 “Surface Characteristics”
- ASTM E17 “Road-Vehicle Interactions”
- ISO/TC43/SC1 “Acoustics”
- TRB/AFK90 “Road-Vehicle Interactions”
- TRB/AFD20 “Pavement Monitoring”
4.2.1 Having a 20 to 30-years vision of developments in vehicle and road pavement characteristics
Review the possible evolution in private cars and trucks and impact of these changes on desirable characteristics for pavements

4.2.2 Reducing road noise
Review new developments in vehicles, tyres, pavements and their interaction allowing to envisage a significant reduction in road noise
Harmonise methods to characterise road noise

4.2.3 Improving the description of pavement surface characteristics
Continue the work on texture and skid resistance
Continue the work on automated cracking survey devices
Review recent practices in the use of surface condition measurement for acceptance of road works
Work programme and organisation

**Working group A:**
Trends in vehicle-road interaction monitoring for design and management

**Working group B:**
Road Traffic Noise Emission

**Working group C:**
Continued Work on Texture, Skid Resistance and Evenness

**Working group D:**
Automated cracks measurement and unpaved road distress survey equipment

**Working group E:**
Advanced Road Works Acceptance Methods and Criteria

**Working group F:**
Organising the seminar for DC and CIT countries in Mali

23e Congrès mondial de la Route - Paris 2007
Working group A: Trends in vehicle-road interaction monitoring for design and management

Leader: Dr Francesca La Torre, Italy

The issue has been tackled focusing on two aspects:

- How are vehicles changing with respect to their influence on pavement design and management and where will they be in 20 to 30 years

- How can pavement managers keep track of these changes and consider them in pavement design and maintenance activities
Working group A: Trends in vehicle-road interaction monitoring for design and management

Working group A established two activities to address the different aspects

- For solving the issue on vehicle changes Working group A has organised a workshop, to be held on Thursday, September 20, involving vehicle, trucks and tyre manufactures, road managers, pavement designers and researchers.

- To have a clear picture of what are the tools and devices available or under development an inventory database has been set up by WGA.
Working group B: Road Traffic Noise Emission

Leader: Mr. Manfred Haider, Austria

- **Developments**
  Review the recent developments and future prospects in vehicles, tyres and pavements influencing road traffic noise emission.
  Establishing a state of the art of traffic noise reduction technologies at the source, identifying research needs, as well as identifying and recommending new promising global noise reduction strategies.

- **Harmonized measurement methods**
  Review the current noise measurement methods,
  Recommendation on strategies for their harmonisation
  Support the integration of methods to achieve a standardised set of tools to characterize road traffic noise.
The work of Working group B raised the following questions

- International comparable acoustic road surface classifications
- Long-Term performance of low-noise road surfaces
- Adaptation of low-noise road surfaces to specify tyre and vehicle types
- Impact of noise emission reduction on the overall noise pollution as shown by noise maps
- Integration of acoustic parameters into road monitoring, maintenance and management
Working group C: Continued work on Texture, Skid resistance and Evenness

Leader: Mr Ramesh Sinhal, United Kingdom

- PIARC tyre specification
  To secure the availability, reproducibility and proper use of the PIARC reference tyre for skid resistance testing

- Skid resistance and texture
  To provide guidance on managing skid resistance: equipment comparisons, calibration methods, interpretation and use of results

- Evenness
  To provide guidance on longitudinal and transverse evenness measurements and assessment
PIARC tyre specification

1) Procedures to be followed prior to using a new tyre
2) Precautions to be taken when storing the tyres

The work of securing the quality of the PIARC test tyres are done by a special user group set up by TC 4.2. The user group has met 6 times during this term.

Skid resistance and texture

For skid resistance and texture, strategies for managing surface condition to limit skidding accident, measurement techniques, relationship between skid resistance and accident, treatment options, cost effectiveness

Evenness

For evenness, strategies for managing evenness, influence of evenness, measuring techniques, interpretation and indices, treatment options, cost and benefits of managing evenness

23e Congrès mondial de la Route - Paris 2007
Working group D: Distress measurements

Leader: Mr Michel Boulet, France

- Inventory of the methods to detect, to identify and to precisely describe roads cracks etc. with the aim to increase the reproducibility of their measurements
- Setting up a method or procedure to assess and to clarify the crack automated measuring devices with respect to their reliability (bias and repeatability)
- Inventory of the methods to characterise and to record surface distresses on unpaved roads, and of the appropriate survey equipment
Working group D: Distress measurements
Automated crack detection two reports from TC 4.2 WGD

ÉQUIPEMENTS AUTOMATISÉS DE RELEVÉ DE LA FISSURATION DES CHAUSSEES - ÉTAT D’AVANCEMENT DANS LE MONDE

Automated Pavement Cracking Assessment Equipment - State of the Art

Yet to be published

Evaluating the performance of automated pavement cracking equipment

Can be downloaded from PIARC web site

23e Congrès mondial de la Route - Paris 2007
WG-D Methods and equipment for inspecting unpaved roads

Report: Survey of monitoring methods for unpaved roads

- Far most commonly road of the world
- Often serve as primary roads between countries
- Primary routes for global commerce

However:
They do not always receive the attention they deserve from decision-makers
WG-E Advanced Road Works Acceptance Methods and Criteria

Leader: Dr. John Emery, Canada

- Review of current practice
- Performance-based surface condition measurements
- Acceptance of road works and monitoring
Focus has been:
Performance-related surface condition measurements for parameters typically used for acceptance of road construction and maintenance, both short term and long term as Performance based contracts.
It includes measuring methods, methodology, quality and reporting.
Symposia and seminars

Fifth International Symposium on Surface Characteristics June 6. to 11. 2004 in Toronto Canada

196 participants from 32 different countries

93 papers and presentations were given

Key issues:

Surfacing, Tyre/pavement response, achieving evenness, porous asphalts, airport pavements, making the best use of PIARC second international experiment EVEN

A preprint CD is still available from Jemery@jegel.com
Symposia and seminars


Monitoring and Managing Paved and Unpaved Roads

100+ participants from Africa, Asia, North America and Europe

The program included:
Paved Roads
Unpaved Roads
A discussion workshop
Symposia and seminars

International workshop on automated detection of pavement cracking

Laval University, Québec Canada, August 13

44 participants from 22 countries

The program included 13 presentations covering the following topic areas:

- Methods for detecting and quantifying cracks and other distresses from a standard perspective
- Current development in processing and analysis technologies – from the designer’s
- Evaluation and qualification procedures for measuring systems
Symposia and seminars

WORKSHOP DURING THE WORLD ROAD CONGRESS

Impact of Emerging Vehicle, Pavement and Monitoring Technologies on Road Vehicle Interaction: where will we be in 30 years?

Thursday 20th September 2007, ROOM 343

The workshop is in two parts:

From 9:00 – 12:00 – a closed session for invited experts
From 14:30 – 17:30 – an open session for WRC attendees

The issues to be discussed are:

• Effect on design and loading
• Effects on safety and road/vehicle communication
• Effects on pavement management and monitoring
Symposia and seminars

Coming up in October 2008 in Slovenia:

http://www.surf2008.si/
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<td>5th Symposium on Pavement Surface Characteristics</td>
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<td>Inventory of monitoring techniques for loading, speed, stress in</td>
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<td>Review of UK skid resistance Policy</td>
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