The TYROSAFE project: Towards safe and green road transport

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Project information

- FP7 Coordination Action founded by the EC
- Consortium:
  AIT (Austria)
  BAS (Germany)
  LCPC (France)
  RWS-DVS (The Netherlands)
  TRL (UK)
  ZAG (Slovenia)
  FEHRL (Belgium)
- Duration: 2 years
- Starting date: 1st July 2008
- Approximately 1.1m EUR total
- Webpage: [http://tyrosafe.fehrl.org](http://tyrosafe.fehrl.org)
Background

Skid resistance (safety)
Rolling resistance (energy)
Noise emission (health)

Interdependencies ??

different …
- measuring policies
- measuring methods
- measured parameters
Concept

Identify best practice(s)

Knowledge sharing & awareness raising

Development of new solutions & technologies

Adoption & harmonisation

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Objectives

- Raise awareness, coordinate and prepare for European harmonisation
- Optimisation of the assessment and management of essential tyre/road interaction parameters
- Increase road safety and support greening of European road transport
Work structure

WP1 Policies of EU countries of skid resistance, rolling resistance and noise emissions

WP2 Harmonisation of skid-resistance test methods and choice of reference surfaces

WP3 Road surface properties – skid resistance, rolling resistance, noise emissions

WP4 Environmental effects and impact of climatic change – skid resistance, rolling resistance, noise emissions

WP5 Dissemination and raising awareness
Expected output and impact

• **Expected output and impact:**
  – Recommendations for common European policies and approaches concerning the tyre/road interaction effects

• **Improved Road Safety**
  – Reduction of accidents due to safer, comparable roads (better skid resistance)
  – Safer roads allow for increased mobility
  – Comparable road behaviour on European Roads decreases level of human error

• **Greening of Surface Transport**
  – Recommendations for optimising road surfaces and tyres towards low rolling resistance (reduced CO2 production) and noise emission
Project deliverables - highlights

• WP1:
  – D06: Report on policies and standards of all EU countries concerning skid resistance, rolling resistance and noise emissions
  – D08: Recommendations for future harmonised EU policy on skid resistance, rolling resistance and noise emissions

• WP2:
  – D05: Report on analysis and findings of previous skid resistance harmonisation research projects
  – D09: Roadmaps and implementation plan for harmonised skid resistance measurement methods
Project deliverables - highlights

**WP3:**
- D14: Interdependencies of parameters influencing skid resistance, rolling resistance and noise emissions
- D15: Report on knowledge gaps and proposals for future research concerning optimisation of road surfaces and tyres for skid resistance, rolling resistance and noise emission

**WP4:**
- D12: Report on future research areas for environmental effects
- D16: Report on possible impact of climatic change on road surfaces and tyres with regard to skid resistance, rolling resistance and noise emission
WP5 - Dissemination and raising awareness

- Dissemination of project and related research activities
- Raising of awareness of the project topics and activities to
  - general public
  - public officials
  - interested experts
- Demonstrate the importance of EC research in the field of tyre/road interaction for road safety and environment
- Organisation and management of stakeholder reference group
WP1 - Policies and standards

Skid resistance:
More and higher level policies for high-level roads

![Bar chart showing the number of EU countries with different legal statuses for different types of roads (Motorways, Primary Roads, Secondary Roads, Tertiary Roads, Urban Roads). The categories are Legally enforceable, Represent best practice, Other legal status, Unknown.](chart)
WP1 - Policies and standards

Skid resistance: Large variety of measurement devices
WP1 - Policies and standards

Noise emission: 2 complementary standardized measurement methods (SPB, CPX)
WP1 - Policies and standards

Rolling resistance: Some measurement devices, no policies
WP2 – Harmonisation of skid resistance test methods

Current situation:
- Different technical approaches
- Different measured properties
WP2 – Harmonisation of skid resistance test methods

**Route**

- **F** Optional use of Common Scale for comparisons where a linked national device is available.
- **D** Common Scale using one specified machine as the reference device.
- **C** Common Scale harmonising by reference to average of a group of machines of a single device type.
- **B** Common Scale harmonising by reference to the average of a group of machines from different device types but of similar operating principle.
- **A** Common Scale harmonising by reference to the average of all device types in use that have a defined technical specification.

**Determination of the Common Scale**

**National implementation**

[Diagram showing routes A to F with descriptions and steps for harmonisation process]
WP3 – Road surface properties

Figure 3.1: Parameters influencing the three surface properties (skid resistance, rolling resistance and noise emission) from the perspective of the road surface.
Figure 4.1: Parameters influencing the three surface properties (skid resistance, rolling resistance, and noise emission) from the perspective of the tyre.
WP3 – Road surface properties
WP4 – Climate change

Potential impacts – selection

Higher temperatures could result in:

– More fattening up in asphalt pavements which would reduce skid resistance
– More rutting in asphalt pavements, which consequently fill up with water during rainfall causing hazards
– Less freeze/thaw damage, but less restoration of skid resistance from winter weathering
– Less ice and snow; increasing skid resistance
– Less winter salting and use of studded tyres
Potential impacts – selection

• More frequent drought could result in:
  – Increased summer polishing
  – Build-up of contamination
  – Viscous aquaplaning during first flush
  – Water pollution from run-off

• More periods of intense rain could cause:
  – Aquaplaning
  – More tyre noise;
  – Increased rolling resistance.

• Change in seasonal patterns could cause:
  – Changes to the seasonal variation to skid resistance, e.g. less restoration of skid resistance during winter.
WP4 – Climate change

Research topics - selection

- Tyre/road surface interaction of electric vehicles
- Monitoring the changes that are occurring with seasonal skid resistance variation due to climate change
- Changes of tyre/road surface noise and rolling resistance in wet conditions
- The impact of climate change on surface durability and the implications for tyre/road surface interaction
- Changes to winter salting and studded tyre use as a result of climate change
- Methods of making better use of high quality PSV aggregates to minimise levels of consumption
WP5 – Project highlights

- Management of the project website and internal communication
- Management of the Stakeholder Reference Group (SRG)
- Project newsletters, project leaflet, and poster
- Dissemination at conferences and events:
  - SURF 2008 in Portoroz
  - Seminar on Pavement Surface Characteristics 2008
  - TRB 2009 and 2010
  - Tire Technology Expo and Conference 2009 and 2010
  - Aula Ineco 2009 in Barcelona
  - TRA 2010, IRF 2010
- Link to other projects
- Organisation of 6 technical workshops (in Portoroz, Brussels, Cologne, and London)
Project website

- All public deliverables under the link:
  http://tyrosafe.fehrl.org/index.php?m=49&id_directory=977
- Workshop presentations under the link:
  http://tyrosafe.fehrl.org/index.php?m=49&id_directory=806
- Newsletters under the public link:
  http://tyrosafe.fehrl.org/index.php?m=49&id_directory=1034

- Please take part in the **TYROSAFE final event on 10th of June at TRA2010**, please register you under the following link:
On behalf of the TYROSAFE team
we kindly invite you to join the

TYROSAFE final event
during TRA2010
10th of June 2010
SQUARE Brussels Meeting Centre”, Glass Entrance,
rue Mont des Arts, 1000 Brussels
Presentations and discussions
14:00 -17:30

Followed by
Joint TYROSAFE cocktail with SHRP2 – FEHRL – NTUA
17:30 - 20:00

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