Presentation of Results

*Study on Type approval requirements for the general safety of motors vehicles*
Contents

- Introduction
- Tyre Pressure Monitoring Systems
- Low Rolling Resistance Tyres
- Tyre Wet Grip
- Safety
- CO₂ reduction
- Noise
- Eco-labelling
- Conclusions
Introduction

- Study report based on the questions raised by the European Parliament on the proposal for a Regulation concerning type approval requirements for the general safety of motor vehicles.

- Centred on mandatory safety devices, tyre requirements, and noise emissions. Safety and environmental objectives of the proposal.

- The study is based on a thorough literature review, as well as a full analysis of available tyre test reports. Complemented by a survey and feedback from different stakeholders most likely to be affected by type approval requirements.
Tyre Pressure Monitoring Systems

- Definition
- Types
  - Direct (Active)
    - Pressure (±0.1 bar), Temperature (± 2°C),
    - Detection almost real time,
    - Independent from tyre type
  - Indirect (Passive)
    - Only pressure (deviation 30%), Detection time at least 5 min,
    - Dependant on tyre type
- Costs
- Underinflation
  - Effect on vehicle: Aquaplaning, Endurance, External impacts, Tread wear, Rolling resistance, Rolling noise, Wet grip, Handling, Tyre Integrity, Fuel consumption, Stability
**CO₂ reduction**  

- **TPMS influence**

<table>
<thead>
<tr>
<th></th>
<th>Dutch Survey</th>
<th>French Survey</th>
<th>UK Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>P - 0.2 bar and more</td>
<td>64%</td>
<td>68%</td>
<td>75%</td>
</tr>
<tr>
<td>P - 0.3 bar and more</td>
<td>46%</td>
<td>56%</td>
<td>64%</td>
</tr>
<tr>
<td>P - 0.5 bar and more</td>
<td>18%</td>
<td>30%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Source: UN-ECE GRRF TPMS

% Tyre wear vs. Underinflation

Annual CO₂ emission reduction with "concept" inflation pressure maintenance.

Source: ETRMA

<table>
<thead>
<tr>
<th>Source</th>
<th>LAT</th>
<th>Stock 2005</th>
<th>Hakanen &amp; Jukka</th>
<th>GRRF TPMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPMS CO₂ benefit assuming 0.5 bar deflation avoided</td>
<td>2.50%</td>
<td>3%</td>
<td>3%</td>
<td>2.10%</td>
</tr>
</tbody>
</table>

Source: ETRMA
Noise

- TPMS
  - A tyre rolling with 0.5 bar underinflation produces a 1 dB(A) increase in rolling noise (sources TÜV and UN-ECE GRRF TPMS).

Diagram:

1. TPMS
2. Maintain Inflation
3. ↓ Noise emissions