First Experiences of a Manufacturer with FlexPLI

Background

• Tests conducted in-house in late March 2009
• Tests were part of the round robin testing between European manufacturers
• Legform: FlexPLI version GTR, prototype no 1 (conventional data acquisition system with cables for data transfer)
• Test series had to be stopped due to impactor failure (lab-caused)
Vehicle meets the criteria of the LFI to bumper test according to existing legislation.

Vehicle was rated completely green in the LFI to bumper tests of Euro NCAP.

Vehicle is considered to be “pedestrian friendly” in this area.
Lower Leg Performance with FlexPLI Version GTR – Set-Up

Assessment Criteria
(preliminary agreed during the 7th TEG meeting)

MCL elongation max. 23 mm

Tibia Moments
- A1
- A2
- A3
- A4 max. 318 Nm

Reference: P. Lessmann, BGS Boehme & Gehring
### Lower Leg Performance with FlexPLI Version GTR – Results

<table>
<thead>
<tr>
<th>Test No</th>
<th>Position</th>
<th>Test speed (km/h)</th>
<th>MCL</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Acc. to thresholds as pre-liminary agreed in 7th TEG meeting.

- **MCL**
  - > 23 mm
  - 18.4 – 23 mm
  - < 18.4 mm

- **Tibia A1 – A4**
  - > 318 Nm
  - 254.4 – 318 Nm
  - < 254.4 Nm

Considering 20% “safety margin”.
Double-Checking vs. TEG ToR

3. Confirmation of TOR for this group

3.2 Task

Task 1: **Evaluation** and **Modification** of the **usability, repeatability, reproducibility, and durability** of Flex-PLI as a tool for GTR/PS legform test. And shows the comparison results of all the above issue between the TRL-LFI and Flex-PLI.

- Usability
- Repeatability (component level and assembly level)
- Reproducibility (component level and assembly level)
- Durability (at least until threshold level durability is needed)
- Comparison between TRL-LFI and Flex-PLI for all above issue

Task 2: Review for the Injury Risk Function

Task 3: **Technical Feasibility**

- Can develop a car which complies the new threshold/requirement
- Evaluation of vehicle design and Evaluation of design process

Task 4: Evaluation of Protection Level provided by the Flex threshold values

NO answer can be given on ToR Task 3 so far.
Conclusions

• Test lab is satisfied with the handling (easy, no wear parts necessary, robust tool)
• Some improvements on design are wished for (no sharp edges, better cable strain-relief)
• Documentation is still missing (manual, repairing instructions)
• Open questions on wear, aging etc.
• So far, no answers can be given on possible design solutions to meet the proposed requirements
• More tests necessary (long-time experience)
• Results can not be generalized so far - experiences of other manufacturers need to be awaited

➢ Amendment of legislation seems too premature