Status Report on Flexible Pedestrian Legform Impactor Technical Evaluation Group (Flex-TEG) Activities

Atsuhiro Konosu
Chairperson of Flex-TEG, Japan
# Flex-TEG Overall Schedule

<table>
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<th>Overall Schedule of Flex-TEG</th>
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<td>2.2. Review of Injury Risk Functions**</td>
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* Usability, Repeatability, Reproducibility, Durability, and Comparison of those issues between the Flex-PLI and the TRL-LFI.

** Review and propose threshold values for Flex-PLI
*** Flex-GT-prototype tests

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### Notes:
- **Flex-G**
- **Flex-GT**
- **JAMA**
- **BASt/BGS**
- **J-MLIT**
- **Flex-GT-prototype**
- **Flex-GT (finalized)**
- **BASt/BGS***
- **ACEA***
- **JAMA, J-MLIT, NTSEL***
- **tentative values**

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### Graphical Elements:
- **1st**
- **2nd**
- **3rd**
- **4th**
- **38th**
- **39th**
- **40th**
- **41st**
- **42nd**

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### Additional Information:
- **42nd GRSP**
Latest Flex-TEG Activities (5<sup>th</sup> Flex-TEG meeting)

Participants of 5<sup>th</sup> Flex-TEG meeting (7 December 2007, BASt, Germany)

A. Konosu (Flex-TEG chairperson/J-MLIT/JARI)
B. Been (Flex-TEG secretariat/FTSS)
H. Inomata (J-MLIT/JASIC-Geneva)
O. Zander (BASt)
J. W. Lee (Korean Gov. (KOTSA)/KATRI)
T. Kinsky, M. Zeugner, B. Buenger (ACEA/GM-E)
O. Ries (ACEA/VW)
R. Fleischhacker (ACEA/Porsche)
H. Suzuki (JAMA/HONDA R&D)
D. Gehring (BGS)
K. Wolff (SRS)
J. Manning (TRL)
W. Liebers (TUV)
P. Becker (ACTS)
M. Burleigh (FTSS-UK)

Total: 17 persons
Latest Flex-TEG Activities (5th Flex-TEG meeting)

Main part of Agenda of the 5th Flex-TEG meeting (7 December 2007, BASt, Germany)

5. Report of the Flex-GT Technical Evaluation Results and Discussions
   5.1. ACEA/BASt Joint Project Report on Tests with the Flexible Pedestrian Legform Impactors Flex GT alpha and Flex GT
   5.2. BASt/ACEA Joint Project Preliminary Report on Evaluation of Flex-GT (Repeatability and Reproducibility Check)
   5.3. J-MLIT Flex-GT Simplified Car Test Results (Repeatability Check)
   5.4. ACEA Comments on the current development stage of Flex-PLI
   5.5. JAMA-JARI Answer for the ACEA Comments on the current development stage of Flex-PLI
   5.6. Flex-GT Full Calibration Test Procedures
   5.7. FTSS Report on Flex-GT Technical Review and Design Concept of Flex-GTR

6. Direction of the Flex-GTR based on the Flex-GT Technical Evaluation Results
   6.1. Specifications (Mass, Length, Bending characteristics)
   6.2. Usability
   6.3. Durability
   6.4. Repeatability
   6.5. Reproducibility
   6.6. Measurements

7. Discussion for the Injury threshold values for the Flex-PLI
   7.1. Review of Injury Criteria and Injury Thresholds for Flex-PLI

8. Evaluation of Pedestrian Lower Extremity Protection Level provided by the Flex-PLI
   8.1. Evaluation of Pedestrian Lower Extremity Protection Level provided by the Flex-PLI (for discussion)

9. Future action plans
Latest Flex-TEG Activities (5th Flex-TEG meeting)

5. Report of the Flex-GT Technical Evaluation Results and Discussions

5.1. ACEA/BAST Joint Project Report on Tests with the Flexible Pedestrian Legform Impactors Flex GT alpha and Flex GT
5.2. BAST/ACEA Joint Project Preliminary Report on Evaluation of Flex-GT (Repeatability and Reproducibility Check)
5.3. J-MLIT Flex-GT Simplified Car Test Results (Repeatability Check)
5.4. ACEA Comments on the current development stage of Flex-PLI
5.5. JAMA-JARI Answer for the ACEA Comments on the current development stage of Flex-PLI
5.6. Flex-GT Full Calibration Test Procedures
5.7. FTSS Report on Flex-GT Technical Review and Design Concept of Flex-GTR

• Flex-GT tends to have a good repeatability and reproducibility especially for Femur, Tibia and Knee-MCL outputs.
• The assessment of the reproducibility was based on dynamic certification tests, inverse tests and tests on a test rig. Real car test results are needed.
• Further assessment of reproducibility is needed with more impactors and results of round robin tests.
• Human-like asymmetric knee joint construction has a chance to generates some degrees of deviation on the Knee-ACL, and Knee-PCL outputs.
• Main specifications (Mass, Length, Bending characteristics) shall not be change from that of the Flex-GT ones, however, better measurement cable wiring system and/or inside DAS system is/are recommended.
• Improvements on the calibration methods are also preferable.
Latest Flex-TEG Activities (5th Flex-TEG meeting)

6. Direction of the Flex-GTR based on the Flex-GT Technical Evaluation Results

6.1. Specifications (Mass, Length, Bending characteristics)
6.2. Usability
6.3. Durability
6.4. Repeatability
6.5. Reproducibility
6.6. Measurements

• Main specifications (Mass, Length, Bending characteristics) shall not be changed from that of the Flex-GT ones in the Flex-GTR developments.
• Better measurement cable wiring system and/or inside DAS system shall be addressed in the Flex-GTR developments.
• Improvements on the calibration methods are recommended.

• December 2007 – March 2008: Conducts additional Flex-GT evaluation tests and will fix the Flex-GTR Design.
• April 2008 – October 2008: Manufacturing and Technical Evaluations on Flex-GTR by Developer.
• November 2008 – April 2009: Flex-GTR Initial Technical Evaluation by Main Flex-TEG members.
• After May 2009: Final Technical Evaluation by Main Flex-TEG members.

Flex-GTR Technical Evaluation phase will be separated as follows,
Phase 1: Main Flex-TEG members, Phase 2: All of the interests GTR member countries
Latest Flex-TEG Activities (5th Flex-TEG meeting)

7. Discussion for the Injury threshold values for the Flex-PLI

7.1. Review of Injury Criteria and Injury Thresholds for Flex-PLI

• JAMA-JARI explained their using Injury Criteria (Tibia Bending Moment, Knee-MCL Elongation) and Tentative Threshold Values.
• Flex-TEG will discuss and finalize this issues by the end of Flex-TEG activities.
8. Evaluation of Pedestrian Lower Extremity Protection Level provided by the Flex-PLI (for discussion)

- JAMA-JARI explained their calculation method (base method: NHTSA one) for the evaluation of pedestrian lower extremity protection level provided by the Flex-PLI.
- Flex-TEG will discuss and finalize this issue by the end of Flex-TEG activities.
Latest Flex-TEG Activities (5\textsuperscript{th} Flex-TEG meeting)

9. Future action plans

- Flex-TEG proposed following activity schedules;

- December 2007 – March 2008: Conducts additional Flex-GT evaluation tests and will fix the Flex-GTR Design.
- November 2008 – April 2009: Conducts Flex-GTR Initial Evaluation Tests by Main Flex-TEG members.
- Injury Criteria and Threshold values will be discussed and finalized by the end of Flex-TEG activities.
- Evaluation of Pedestrian Lower Extremity Protection Level provided by the Flex-PLI will be discussed and finalized by the end of Flex-TEG activities.
- Documentation Activities (Preamble and Test Method making) will be addressed as a New Work Item of the Flex-TEG.
Thank you for your attentions!