Informal document No. **GRSP-45-26**
(45th GRSP, 25-29 May 2009,
agenda item 4(a))

Transmitted by the expert from Japan

26th May 2009

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

Latest Flex-TEG Activities (8th Flex-TEG meeting)

8th Flex-TEG meeting
Date : 19th May 2009
Place: TUV Rheinland Group, Cologne, Germany

Attendances

A. Konosu（Chairperson/J-MLIT/JARI）
B. Been（Secretariat/FTSS-Europe）
O. Zander (BASt)
P. Lessmann (BGS)
O. Ries (ACEA/VW)
R. Fleischhacker (ACEA/Porsche)
T. Kinsky and B. Dreyer (ACEA/Opel)
A. Sipido (ACEA/Ford)
C. Hess and M. Netter (ACEA/Audi)
Y. Takahashi (JAMA/HONDA)
W. Liebers (TUV)
K. Wolff (Continental)
S. Mueller (MESSRING)
C. Roesch (Cellbond)
M. Burleigh (FTSS-Europe)

Total: 17 persons

Main Agenda of the 8th Flex-TEG meeting

5. Flex-GTR-prototype Technical Evaluation Test Results
- 5.1. Japan Reports (Technical Evaluation)
- 5.2. BASt and ACEA Reports (Technical Evaluation)
- 5.3. FTSS Reports (Electrical Parts Update Information)

6. Dynamic Calibration Method for Flex-GTR-prototype
- 6.1. JAMA-JARI Reports (Study for the Inverse Test)
- 6.2. BASt Reports (Tentative Corridor for the Inverse Test)

7. Injury Criteria and Thresholds
- 7.1. Review of Human Tibia Injury Threshold value
- 7.2. Review of Human MCL Injury Threshold value
- 7.3. Finalization for Injury Threshold Values for the Flex-GTR-prototype

8. Evaluation Test Schedule for the Flex-GTR-prototype

9. ISO MME code for Flex-PLI
- 9.1. Suggestion for the ISO MME code for Flex-PLI, MESSRING

10. DRAFT Proposal for gtr 9 amendments using Flex-PLI requirements
- 10.1. DRAFT Proposal for gtr 9 amendments by adding Flex-PLI requirements, Japan (voluntary activity)

11. Working schedule for the Flex-TEG

Latest Flex-TEG Activities (8th Flex-TEG meeting)

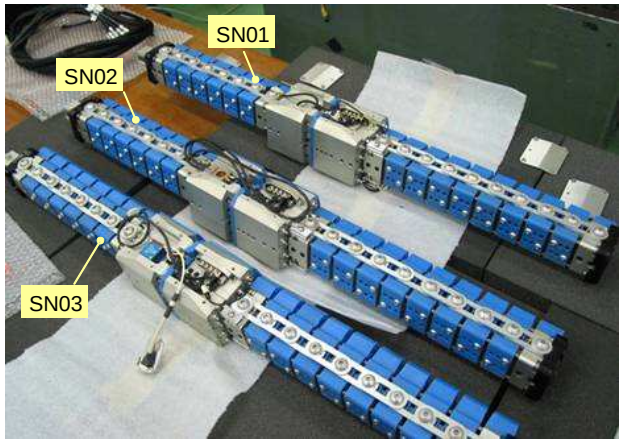
5. Flex-GTR-prototype Technical Evaluation Test Results

◆**Evaluation Results on the Flex-GTR-prototype regards to the Repeatability and Reproducibility were presented from Japan, ACEA and BASt.**

Repeatability and Reproducibility

- ***Pendulum Test***
  - ✓***Good and/or Acceptable Level, in general (Japan)***
- ***Inverse Test***
  - ✓***Good and/or Acceptable Level, in general (ACEA, BASt)***
- ***Simplified Car Test***
  - ✓***Good and/or Acceptable Level, in general (Japan)***
- ***Actual Car Test***
  - ✓***Good and/or Acceptable Level, in general (Japan)***
  - ✓***Good and/or Acceptable Level. However, not acceptable level (reproducibility) was also observed in some cases (ACEA, BASt)***

Flex-GTR-prototype (SN01, SN02, SN03)



- **Repeatability and Reproducibility of the Flex-GTR-prototype were Good and/or Acceptable level, in non vehicle tests and in simplified car tests.**
- **However, in the actual car test, not acceptable level on the Reproducibility were found in some cases (ACEA, BASt).**
- **Japan stated that it is better to separate the Impactor effect and/or the other effects (test conditions, car parts, etc.) because other effects tend to be involved in the actual car test results.**
- **Sensitivity value of one of a gage (Tibia-3) of the Flex-GTR-prototype (SN03) was strange. It was recommended to re-obtain the value and/or replace to a new gage.**

Latest Flex-TEG Activities (8th Flex-TEG meeting)

5. Flex-GTR-prototype Technical Evaluation Test Results, contd.

◆Evaluation Results on Comparability between the Flex-GTR-prototype and Flex-GT were presented from Japan, ACEA and BASt.

Comparability between the Flex-GTR-prototype and Flex-GT

- ***In general, Flex-GTR-prototype outputs are higher than the Flex-GT ones. (Japan, ACEA and BASt)***

➢TEG members discussed a possible consideration of this difference into the threshold values for the Flex-GTR-prototype, also in the respective transformation equations from human thresholds to impactor criteria.

◆Evaluation Results on the Flex-GTR-prototype regards to the Comparability outputs between the Symmetric Left and Right bumper corner impact tests were presented from Japan, ACEA and BASt.

Comparability of the Flex-GTR-prototype outputs between the Symmetric Left and Right Bumper Corner Impact Test

- ***Simplified Car Test***

✓Good and/or Acceptable Level (Japan)

- ***Actual Car Test***

✓Some symmetries were observed (ACEA/BASt)

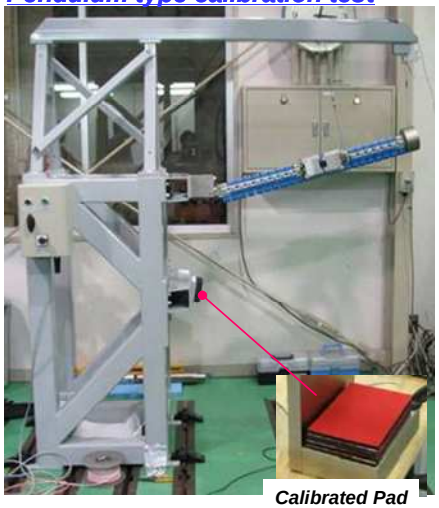
➢It is recommended to separate the Impactor effect and/or the other effects (test conditions, car parts, etc.) because other effects tend to be involved in the actual car test results.

Latest Flex-TEG Activities (8th Flex-TEG meeting)

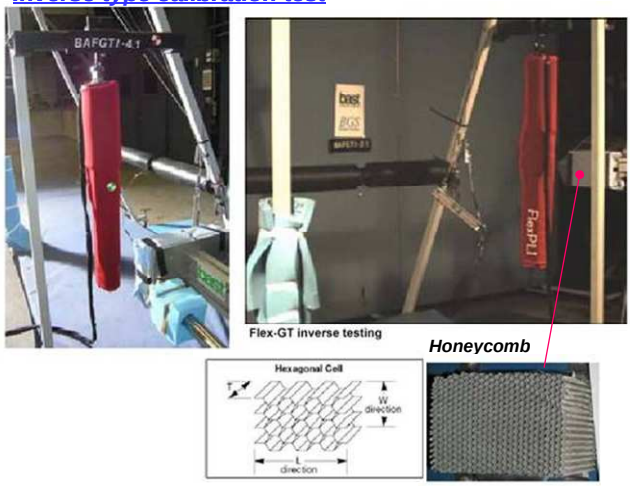
6. Dynamic Calibration Method for Flex-GTR-prototype

◆**Evaluation Results on the Inverse Test were presented by JAMA-JARI. From their point of view, it takes much time and costs compare to the pendulum test, besides it looks not to have so much merits compare to the pendulum test.**

Pendulum type calibration test



Inverse type calibration test



- **BASt and ACEA stated that main merit of the Inverse Test is impactor condition, i.e. impactor condition is identical in both the inverse test and the car test (free flight, fully assembled, maximum loads, traces, etc.). Better calibration for the impactor is possible.**
- **ACEA emphasized their long experience with the Inverse Testing for several years.**
- **Additionally, BASt proposed tentative certification corridors for the inverse certification.**
- **After the discussion, detailed investigations will be done by several TEG members, and then TEG will decide whether to accept the inverse test as the Flex-GTR-prototype calibration test method or not at the next (9th) TEG meeting.**

Latest Flex-TEG Activities (8th Flex-TEG meeting)

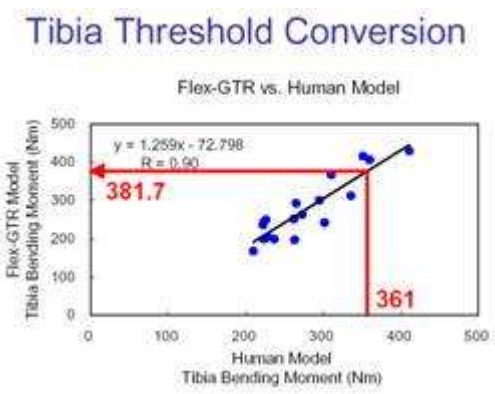
7. Injury Criteria and Thresholds

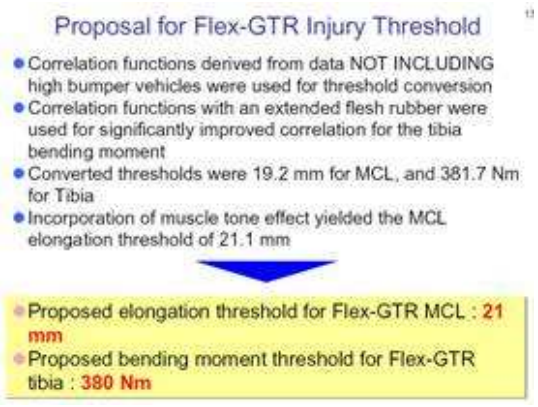
◆**Injury Criteria and Threshold values for the Flex-GTR-prototype were proposed by JAMA and BASt respectively.**

Proposal values for the Injury Criteria and Threshold values for the Flex-GTR-prototype

- ***MCL Elongation (for Flex-GTR-prototype)***
  - ✓ ***21 mm (JAMA proposal)***
- ***Tibia Bending Moment (for Flex-GTR-prototype)***
  - ✓ ***380 Nm (JAMA proposal)***
  - ✓ ***302 Nm (BASt proposal)***

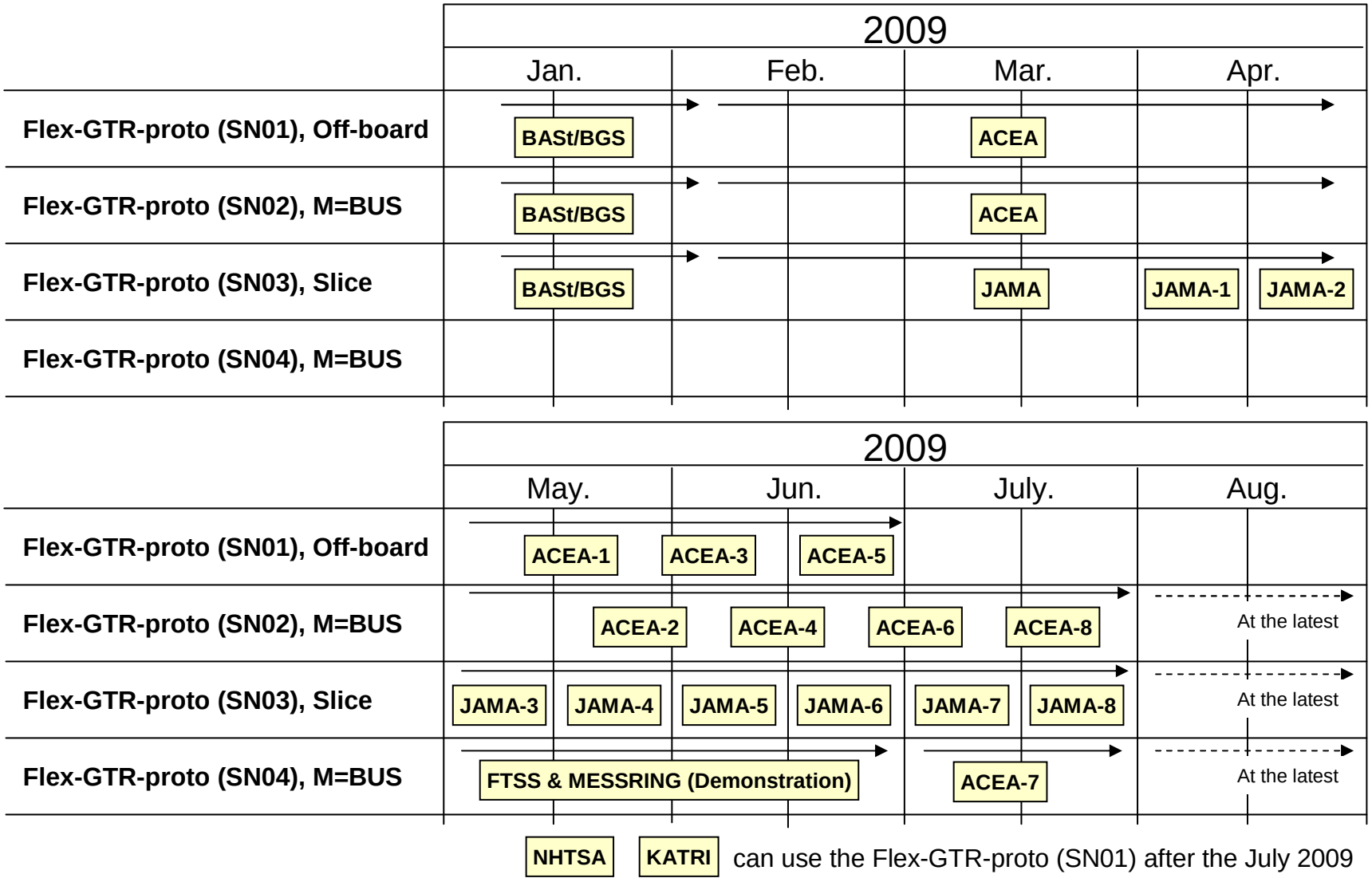
- ➢ **After the discussion, the JAMA proposed threshold value for the MCL was tentatively agreed.**
- ➢ **ACEA stressed that thresholds are directly linked to the discussion on technical feasibility (is part of the TOR of TEG)**
- ➢ **On the other hands, as for the threshold value for the Tibia was offered to conduct corroboration study by JAMA and BASt (+ experts) in order to propose one agreeable value by the next (9th) TEG meeting.**





Latest Flex-TEG Activities (8th Flex-TEG meeting)

8. Evaluation Test Schedule for the Flex-GTR-prototype



➢ **TEG member discussed and then agreed above technical evaluation tests schedule.**

Latest Flex-TEG Activities (8th Flex-TEG meeting)

9. ISO MME code for Flex-PLI

9.1. Suggestion for the ISO MME code for Flex-PLI, MESSRING

- **TEG discussed the ISO MEE code for Flex-PLI measurement items, which was suggested by MESSRING, and then TEG agreed the contents.**
- **The code is going to be submitted to ISO working group of MME code.**

Suggestion

ISO-MME-Codes for FlexGTR

TEG-073-Rev.1

27 Feb. 2009

MESSRING

No.	Location (Description)	Category	Test Object	Position	Transd. Main Location	Fine Location 1	Fine Location 2	Fine Location 3	Physical Dimension	Direction	Filter Class
1	Femur Moment 3 Upper, X	standard	0	0	FEMR	UP	00	PF	MO	X	C
2	Femur Moment 2 Middle, X	standard	0	0	FEMR	MI	00	PF	MO	X	C
3	Femur Moment 1 Lower, X	standard	0	0	FEMR	LO	00	PF	MO	X	C
4	Knee LCL Elongation	standard	0	0	KNEE	LC	00	PF	DS	Z	C
5	Knee ACL Elongation	standard	0	0	KNEE	AC	00	PF	DS	Z	C
6	Knee PCL Elongation	standard	0	0	KNEE	PC	00	PF	DS	Z	C
7	Knee MCL Elongation	standard	0	0	KNEE	MC	00	PF	DS	Z	C
8	Tibia Moment 1 Upper, X	standard	0	0	TIBI	UP	00	PF	MO	X	C
9	Tibia Moment 2 Middle Upper, X	standard	0	0	TIBI	MI	UP	PF	MO	X	C
10	Tibia Moment 3 Middle Lower, X	standard	0	0	TIBI	MI	LO	PF	MO	X	C
11	Tibia Moment 4 Lower, X	standard	0	0	TIBI	LO	00	PF	MO	X	C
12	Knee Bottom Acceleration, Y	optional	0	0	KNEE	BO	00	PF	AC	Y	C

Latest Flex-TEG Activities (8th Flex-TEG meeting)

10. DRAFT Proposal for gtr 9 amendments using Flex-PLI requirements

10.1. DRAFT Proposal for gtr 9 amendments by adding Flex-PLI requirements, Japan (voluntary activity)

- **Japanese DRAFT Proposal for gtr 9 amendments adding Flex-PLI requirements was explained.**
- **The draft is going to be submitted to 45th GRSP by J-MLIT.**
- **In order to finalize the draft contents by Sep. 2009, chairperson offered to all of the TEG members to review the technical part of the contents.**

Transmitted by the expert from Japan

Informal document No. **GRSP-45-09**
(45th GRSP, 25-29 May 2009,
agenda item 4(a))

PROPOSAL FOR DRAFT AMENDMENTS TO THE GTR ON PEDESTRIAN PROTECTION
(gtr No. 9)
(Document ECE/TRANS/180/Add.9)

The modifications to the current text of the gtr on Pedestrian protection (gtr No.9) are marked in bold or strikethrough characters.

A. STATEMENT OF TECHNICAL RATIONALE AND JUSTIFICATION

Paragraph 64., amend to read:

"... TEG will also consider a transitional period during which the FlexPLI and the rigid lower legform impactor can be used as alternatives. **Several years passed after the above situation, then the TEG finalised their technical evaluation on the FlexPLI by a majority of the TEG members in [2009], therefore, this gtr also includes the FlexPLI requirements as well as the RIGID/TRL legform impactor requirements.**"

Insert a new Figure 13 to Figure 17., to read:

"

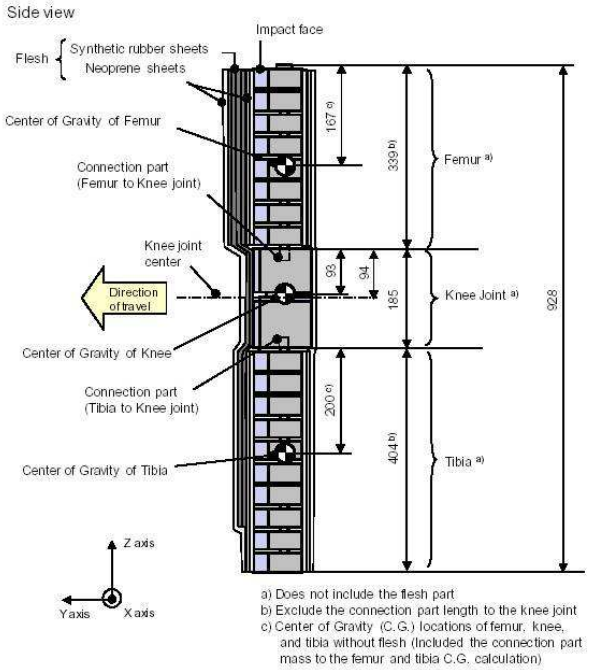


Figure 13: Flex-PLI; Dimensions and C.G. locations of femur, knee joint, and tibia (Side view)

Informal documents of 45th GRSP from Japan (GRSP-45-8 to GRSP-45-11)
http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/grspinf45.html

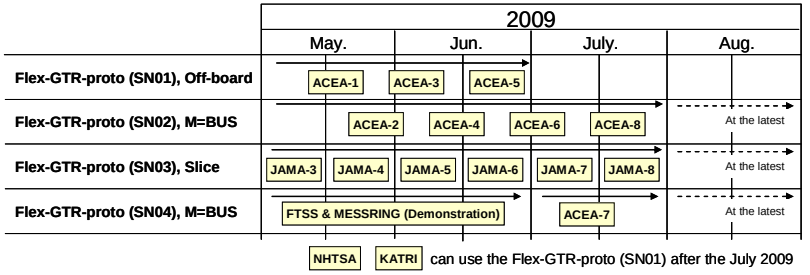
Latest Flex-TEG Activities (8th Flex-TEG meeting)

11. Working schedule for the Flex-TEG

By the end of August, 2009 (at the latest)

Technical Evaluations: finalization

◆**TEG members are going to continue their technical evaluation tests on the Flex-GTR-prototype.**



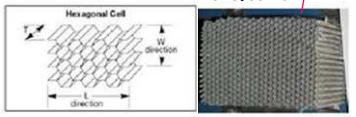
Inverse Test: finalization

◆**Flex-TEG members are going to investigate details of the inverse test in order to decide on the acceptance the test for the calibration test.**

Inverse type calibration test

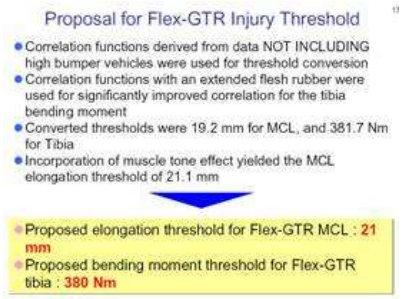
Flex-GT inverse testing

Honeycomb



Tibia Threshold Values: finalization

◆**JAMA and BASt (+ experts) are going to collaborate to make one agreeable Tibia Threshold Value for the Flex-GTR-prototype.**

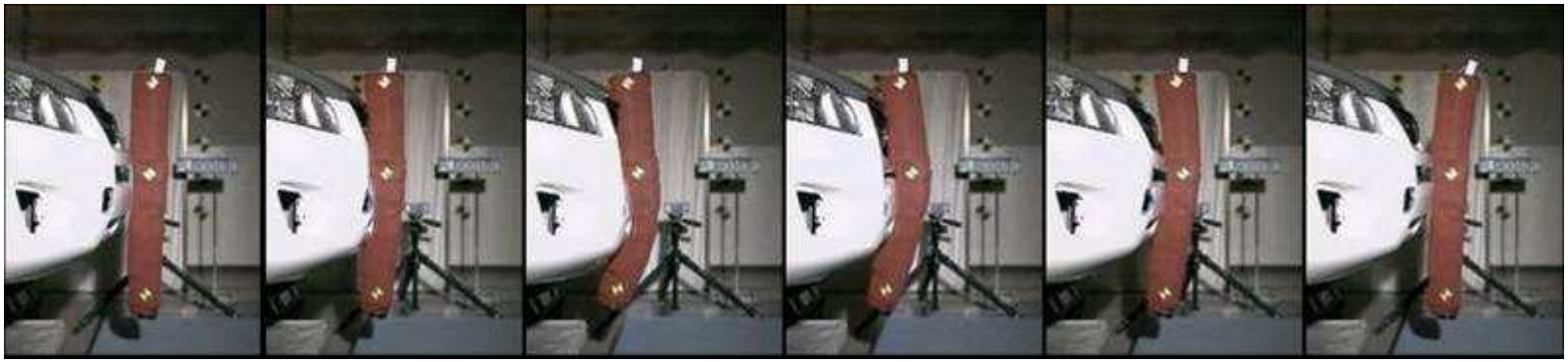


◆**Review of the TOR of the TEG activities**

Early September, 2009

☆**9th Flex-TEG meeting**

➢**TEG discussed and then agreed the above TEG working plan and schedule.**



Thank you for your attentions!