

**Japanese comments on proposed amendments to the gtr on PEDESTRIAN
PROTECTION (Global Technical Regulation No. 9)**

1. Technical Evaluation Group (TEG) Task

It is specified in Global technical regulation No. 9

64. The lower legform impactor currently used for testing in Europe was designed by the Transport Research Laboratory (TRL) in the United Kingdom. However, it is known to also have certain limitations regarding the biofidelity and the repeatability of the test results. Therefore, Japan proposed to use a completely new legform, the so-called Flexible Pedestrian Legform Impactor (FlexPLI). As the FlexPLI legform is considered by some to have high biofidelity and an excellent ability to assess potential leg injuries, the FlexPLI should be considered to replace the TRL lower legform impactor in the future. However, because of the lack of experience in using the FlexPLI as a certification tool, a further confirmation process is needed. Therefore, **a Technical Evaluation Group (TEG)** was established **to evaluate the reliability of the FlexPLI as a certification tool** (TRANS/WP.29/GRSP/36). The TEG is currently assessing the FlexPLI and will advise GRSP by the end of 2007 as to **the suitability of the FlexPLI for testing and compliance verification purposes** (TRANS/WP.29/GRSP/37). The TEG is also expected **to provide its recommendation as to the effective date of entry into force and the date on which the FlexPLI could replace the rigid lower legform impactor**. TEG will also **consider a transitional period during which the FlexPLI and the rigid lower legform impactor can be used as alternatives**.

2. Technical Evaluation Group (TEG) Activities and Results [P]

Activities

In 2005, the Technical Evaluation Group (TEG) was settled under the UN/ECE/WP29/GRSP/Informal Group on Pedestrian Safety in order to evaluate its performance to adopt the impactor as a regulatory purpose test tool for a Global Technical Regulation on Pedestrian Safety (gtr 9). The Ministry of Land, Infrastructure, Transport, and Tourism of Japan (J-MLIT) has been supporting this Flex-TEG activity, taking a task of a chair country of the TEG

After the settlement of the TEG, the FlexPLI was evaluated and improved its performance under the TEG. Besides, injury threshold values, technical feasibility on the car development with the FlexPLI requirements, and protection level provided by the FlexPLI with TEG proposed threshold values were also evaluated.

In April 2008, FlexPLI design of the final version, type GTR (Flex-GTR), was agreed by the TEG members, and its prototype (Flex-GTR-proto) was released in November 2008. Its evaluation have been conducted by the TEG members, and the results will be gathered in the 8th TEG meeting in May 2009.

Results

The TEG finalized their evaluation activities in [2009], and then provided its recommendation to introduce the FlexPLI requirements into the each contracting party's regulations as follows, in order to introduce the new legform impactor smoothly;

(1) Effective date of entry into force

After the date when this gtr is adapted by the WP29. The exact date can be selected by the each contracting party.

(2) Transitional period

TEG also proposed to finish the period of alternative using impactors of RIGID/TRL lower legform impactor or FlexPLI by [20XX] [[XX] months after the date of entry into force].

(3) others: Injury criteria and threshold values

Injury criteria and threshold values for the FlexPLI were selected as follows, based on the consideration of the technical feasibility for developing a car with FlexPLI requireimets. The selected threshold values are basically fifty percent of injury risk for fifty percentile of American adult Male (i.e. AM50), and these values are not too severe requirements compare to the current gtr9 requirements, i.e. RIGID lower legform impactor requirements, in order to introduce the new legform impactor smoothly. [For feasibility reasons, similar to the relaxation of acceleration limit for the RIGID lower legform impactor, TEG proposed to allow manufacturers to nominate bumper test widths up to 264 mm in total where the tibia bending moment of the FlexPLI shall not exceed TBD Nm and the MCL elongation of the FlexPLI shall not exceed TBD mm].

Maximum MCL elongation \leq [20] mm;

Maximum Tiba bending moment \leq [312] Nm;

Maximum ACL and PCL elongation \leq [12.7] mm only for monitoring purposes.