



## IMMA contribution to 11/RESS

Edwin Bastiaensen

Secretary General

Issue raised by Japan on L5,L6,L7

# L5, L6, L7-requirements

- IMMA has been contributing to elaboration of L1-L7 requirements in IG RESS to date.
  - There is no justification for introducing passive safety tests for L5, L6, L7, There has been long experience in Europe with L5, L6, L7 vehicles and Europe did not consider passive safety tests necessary.
  - There are many different subcategories, only few are car-related concepts. Europe will study the possible need for one specific type of vehicle L7eA heavy quadricycles only to possibly be applicable beyond 2020.
  - IMMA recognises the need for special requirements for batteries of embodied vehicles or vehicles with passenger compartment.
- L1-L7 should be kept together in one regulation or amendment to R100.

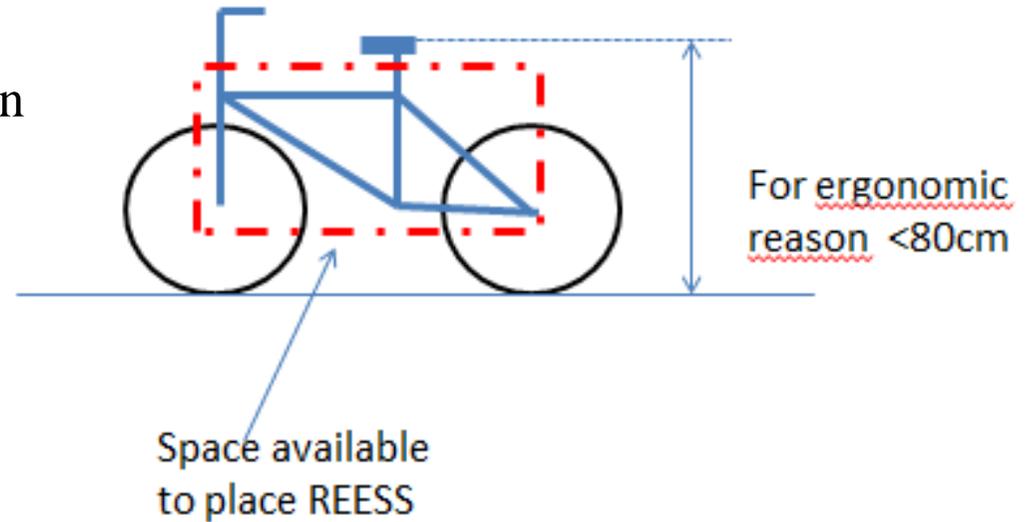
R100 Section 8 K  
'vehicle fall-down test'

# IMMA concerns on Vehicle Fall down test proposal by Japan

- Inclusion of new ECE ‘fall-down’ test for L-category vehicles (L1, L3) is redundant and may present significant acceptance obstacles among interested parties.
- The REESS pass/fail requirements of the ‘fall down test’ would be significantly less severe than the UN 38.3 test mechanical shock test for REESS.
- Currently there is no reference vehicle fall-down test that would be real world representative, a new fall-down test needs to be designed.
- The external projections of the vehicle hitting the ground (handle bar, footstep, mirrors...) during fall-down will significantly reduce the acceleration rate and impact load on the REESS, thus reducing the severity of the test.

# Vehicle fall-down use case

- Most important parameters having an impact on shock g on the REESS during fall-down scenario
  - Centre of gravity of vehicle,
  - Height of placement of the battery
  - Vehicle configuration/design

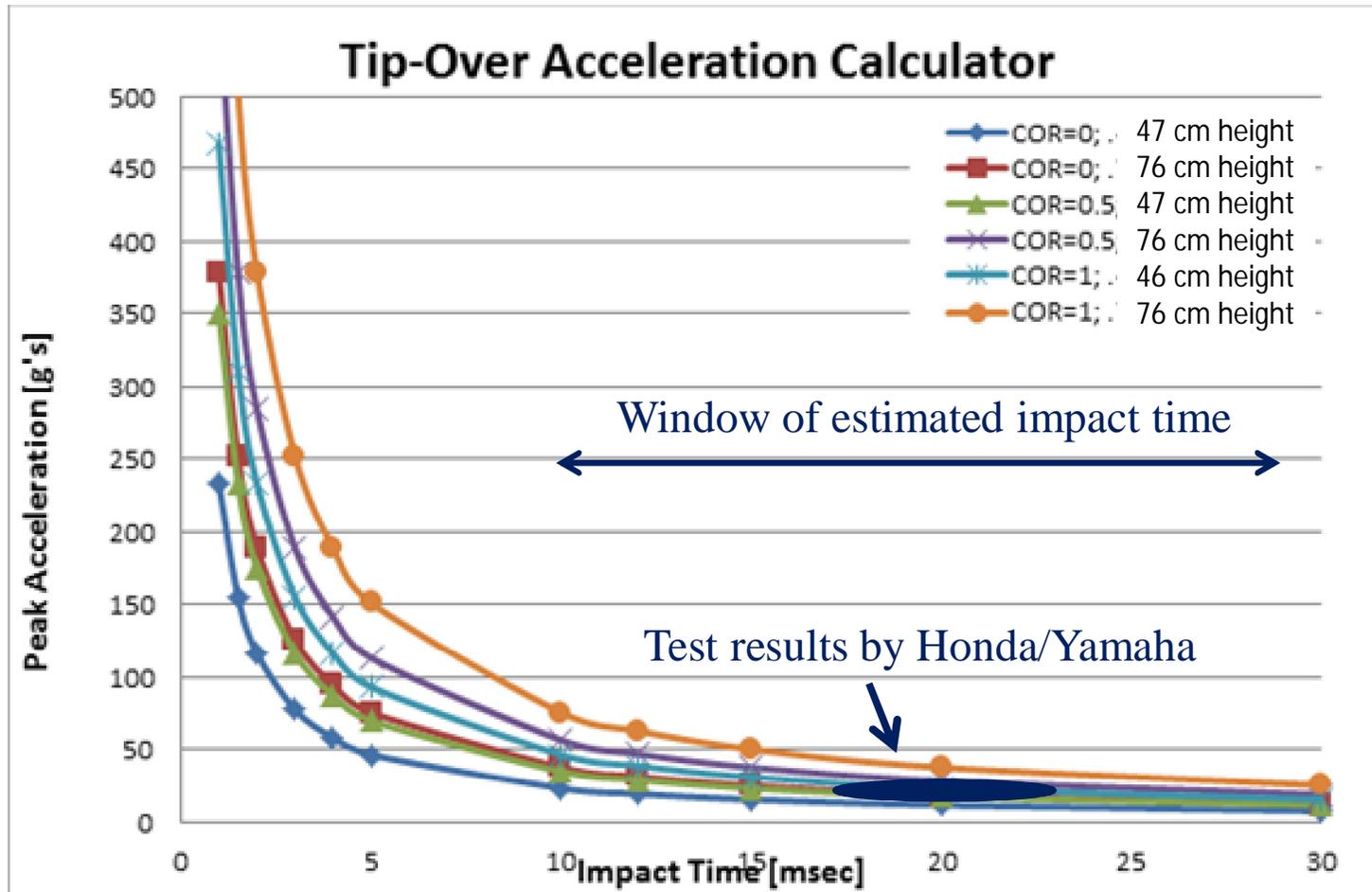


## Impact acceleration shock tests fall-down from stationary position.

- Aim: to measure the ground contact impact time and measure the max impact acceleration shock 'g'.
- Yamaha vehicle: subjected to 8 repeated fall down tests. Measured values of g were below 25 gn (REESS weight 7 Kg)
- Honda vehicle: subjected to 4 repeated fall down tests. Measured values of g were below 20 gn (REESS weight 21 Kg)
  - Vehicle configuration/design has a strong impact on the point that hits the ground first and this will dampen the impact.



# Simulation impact acceleration



Trend: short time to impact: high g-force, long: lower g-force)

## Conclusion: IMMA propose to apply Mechanical Shock UN38.3 alternative to fall-down use case

- UN38.3 is widely used by manufacturers.
- UN38.3 Mechanical Shock test is severe:
  - Peak acceleration rates with g-values 50g (above 12 Kg) and 150g (below 12Kg), simulating heavy shocks for batteries of different weight.
  - The simulation shows that above values are more severe than peak values in fall down use case.
- UN38.3 is well-established for years, established by experts and mandatory.
- UN38.3 is repeatable and controllable