



APROSYS FINAL EVENT

Integrated Project on Advanced Protection Systems



Classic Assessment and Test Tools

WorldSID 5th harmonised crash dummy

WorldSID 2D chest deflection sensors

FUNCTIONALITY

Increase and more realistic oblique sensitivity for WorldSID crash dummies.

EXPLOITATION

Enhanced oblique thorax sensitivity will further strengthen acceptance of the WorldSID dummy family and worldwide harmonisation of side impact dummies

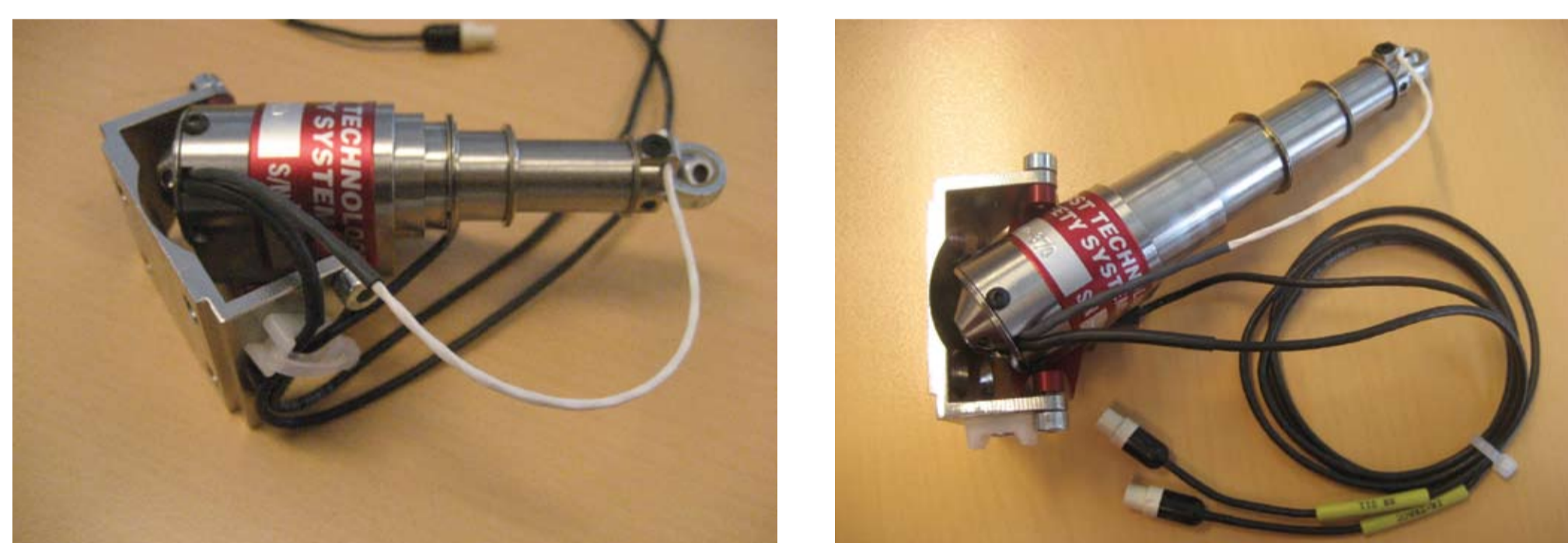
SOCIO-ECONOMIC IMPACT

Better assessment capability of oblique (lateral-frontal) impact and the injury will lead to development of better restraint systems, these will reduce fatalities and severe injuries in side impact accidents worldwide

TECHNICAL DESCRIPTION

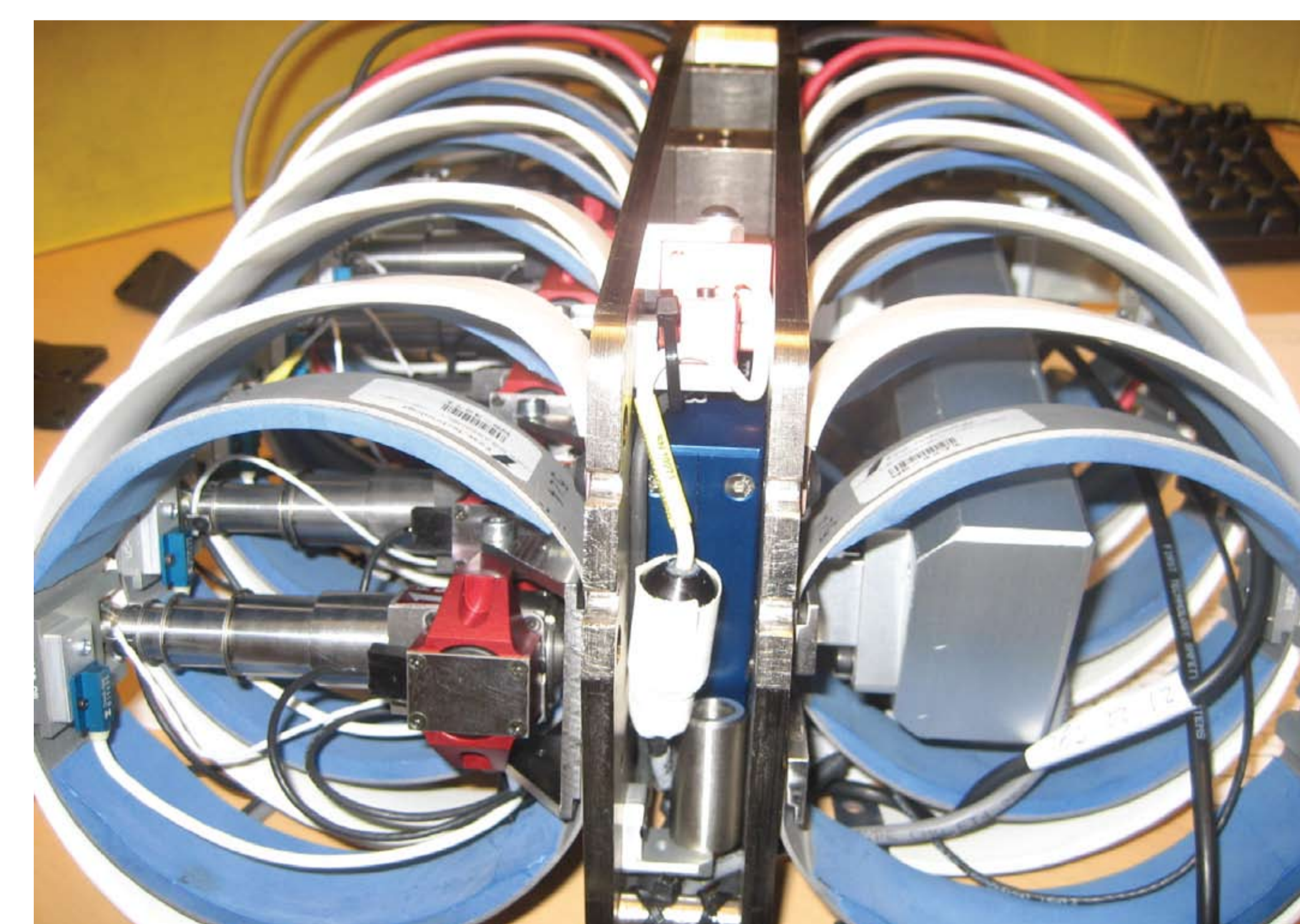
Objective

Worldwide approximately one-third of all passenger vehicle deaths and serious injuries are attributed to side collisions. The head and chest represent the two most frequently injured body regions. The objective of this work is to address the oblique sensitivity of the WorldSID 5th.



Approach

It is generally accepted that the WorldSID dummy is superior in thorax biofidelity. WorldSID exhibits most probably more human like behaviour also in oblique impact condition, although current biomechanical knowledge limits assessment of oblique chest response. To address the oblique sensitivity a 2-dimensional chest deflection sensor was developed based on IR-tracc and an angular position sensor. The 2D IR-tracc measures the position of the most lateral rib segment in the transversal plane (anterior-posterior-lateral). The 2D chest deflection sensors was evaluated under various lateral and oblique impact test conditions to assess its sensitivity. The experiments serve as a basis to better understand oblique thorax impact behaviour of the WorldSID dummy family and for further development of an injury criterion based on the 2D chest deflection sensor



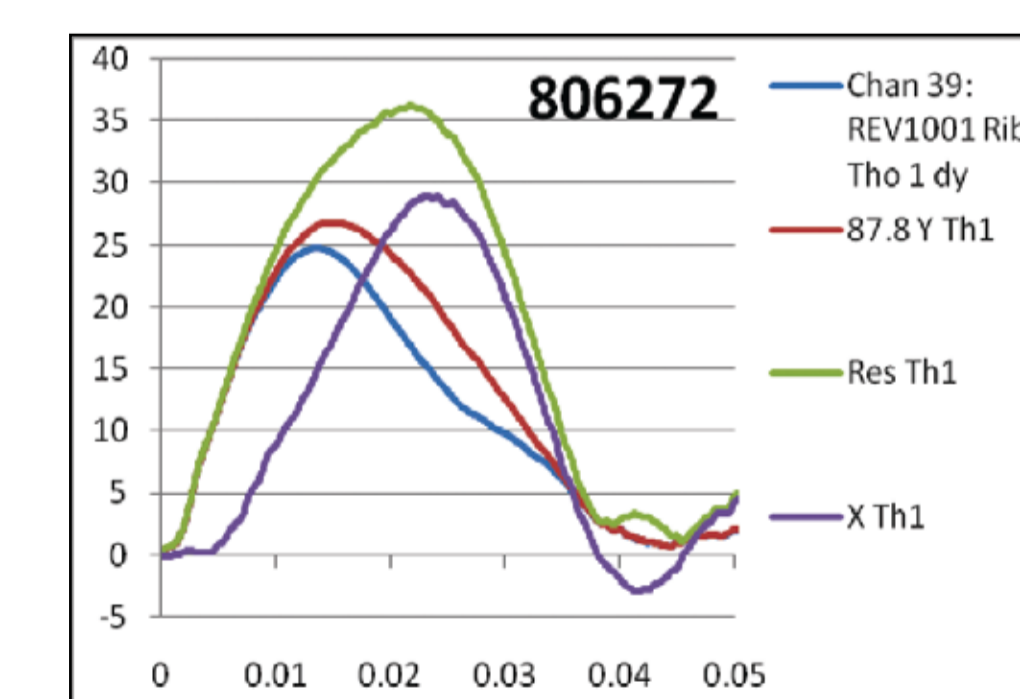
Conclusions

The 2D chest deflection, 2D IR-tracc, is developed for the small female WorldSID dummy and may be up-scaled for use in the midsize male WorldSID dummy.

The 2D IR-tracc enables development of injury criteria under more than pure lateral impact conditions



compressed IR tracc
(updated bracket shown)



4.3m/s pendulum thorax top rib (1) IR tracc dy and calculated X and Y and resultant rib displacements

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