
OPEL

CORRELATION STUDIES FOR WORLDSID-50 AND Q10/Q6 CHILD DUMMIES IN LATEST OCCUPANT SIMULATIONS

Occupant Performance Astra K

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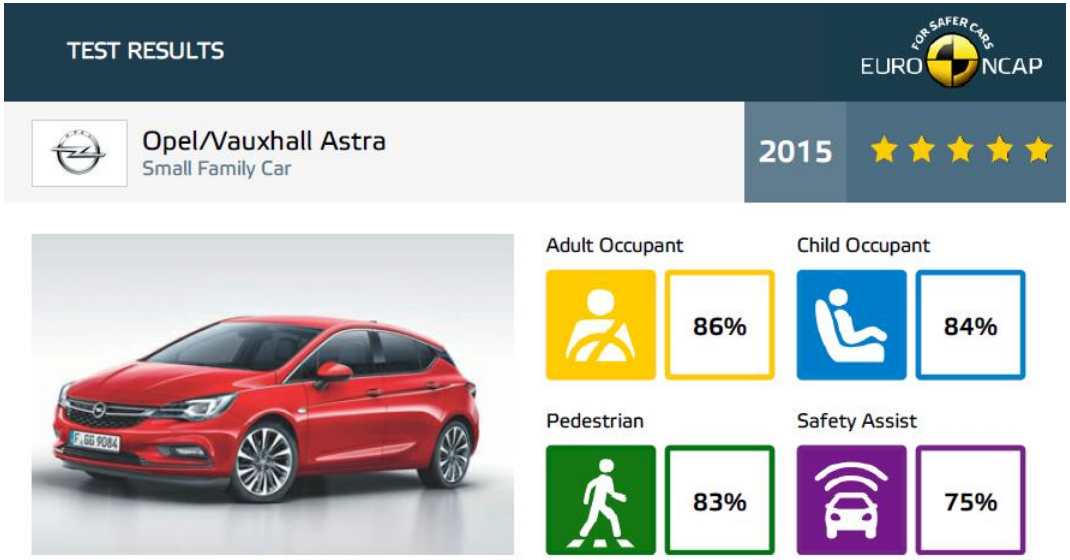
AGENDA

1. Model Content Interior focused areas for Occupant Protection

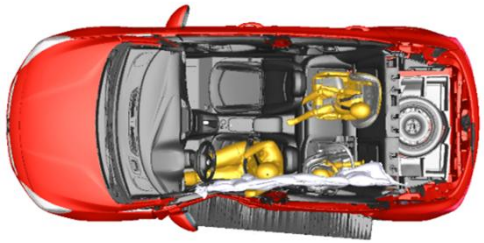
2. Opel Astra K Euro NCAP AE-MDB@50kph with WSID 50%
   - Dummy Arm Kinematic
   - Injury Criteria Assessment
   - Vehicle Kinematic
   - Dummy Kinematic
3. Opel Astra K Pole @32kph with WSID 50%
   - Injury Criteria Assessment
   - Vehicle Kinematic
   - Dummy Kinematic
4. Correlation Study Q10 / Q6 Child Dummies
   - Seat Model Development
   - Sled Test / Component Testing Correlation
   - Full Vehicle Model Correlation



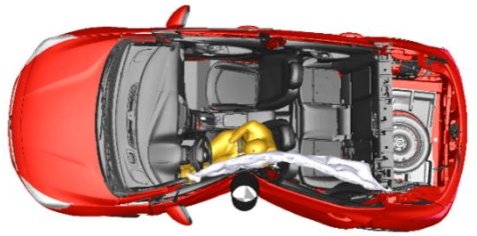
MODEL CONTENT AND LOAD CASES

- Target is CY2015 EuroNCAP 5* compliance
- 50 kph AE-MDB and 32 kph 75° pole impacts
- CAE driven integrated development of structural behavior & occupant protection (adult & child safety)
- Additional focus on integrity of interior parts (door and IP) for ECE compliance
- Almost identical behavior of full roof and sun roof versions achieved by a common roof bow #2

- AE-MDB 1300kg @50kph

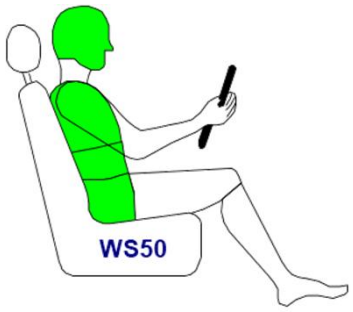


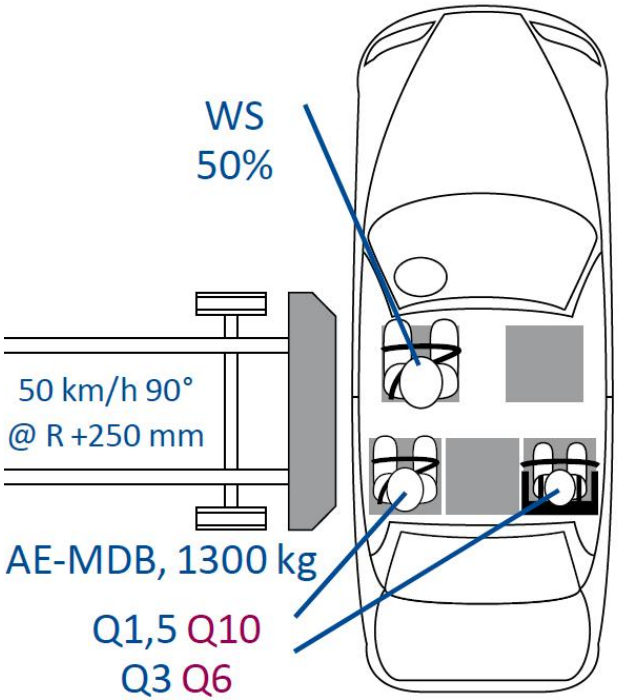
- 75° Pole @32kph

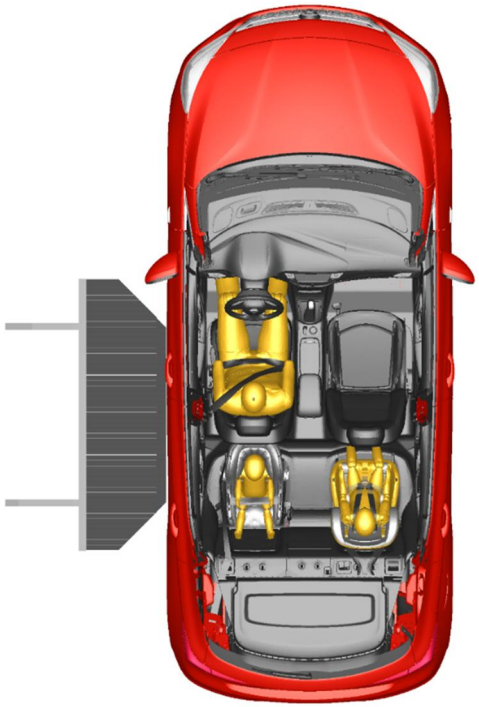


CORRELATION STUDY AE-MDB

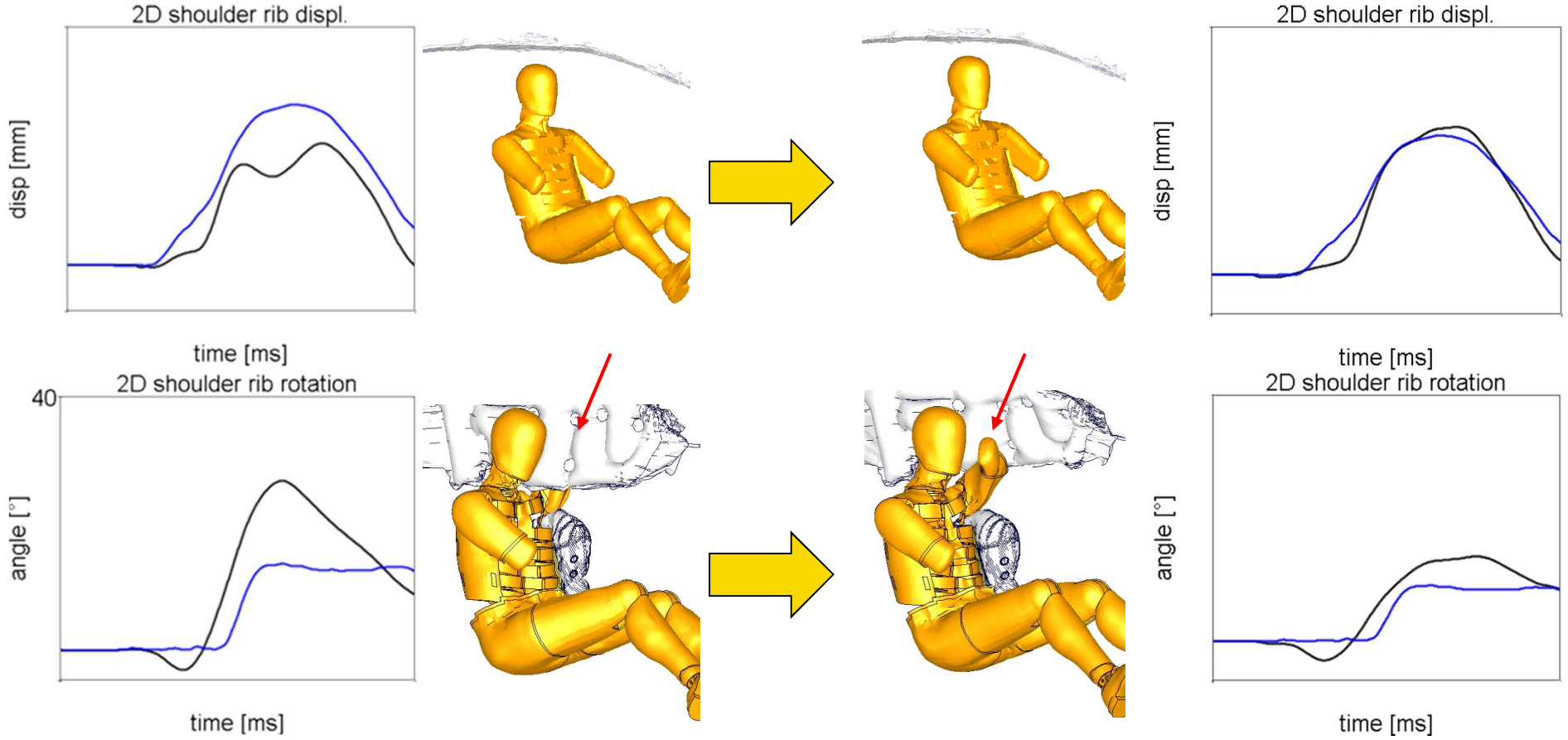
Astra K Euro NCAP 2015
Side Impact
- AE-MDB -







CORRELATION STUDY AE-MDB



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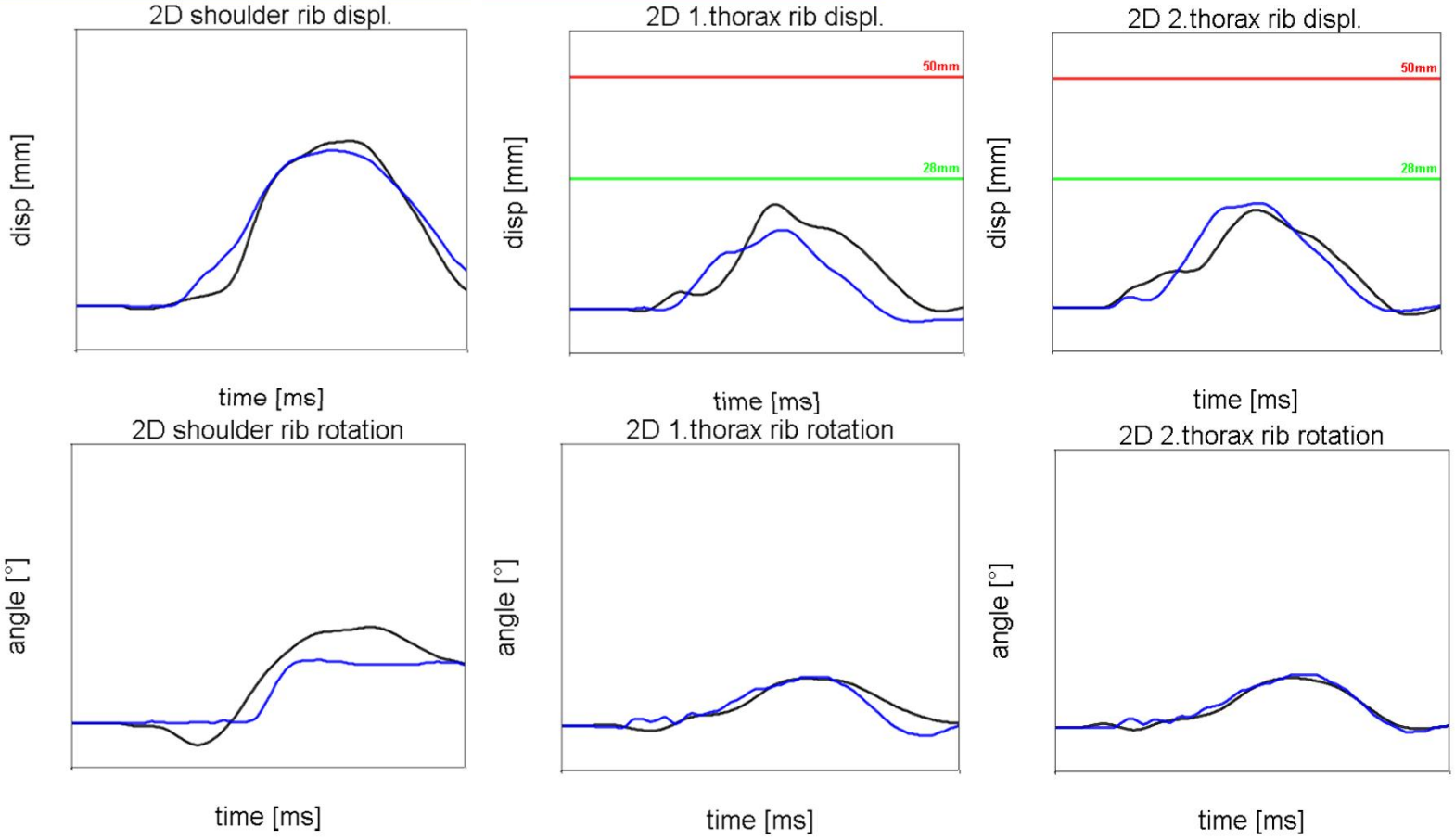
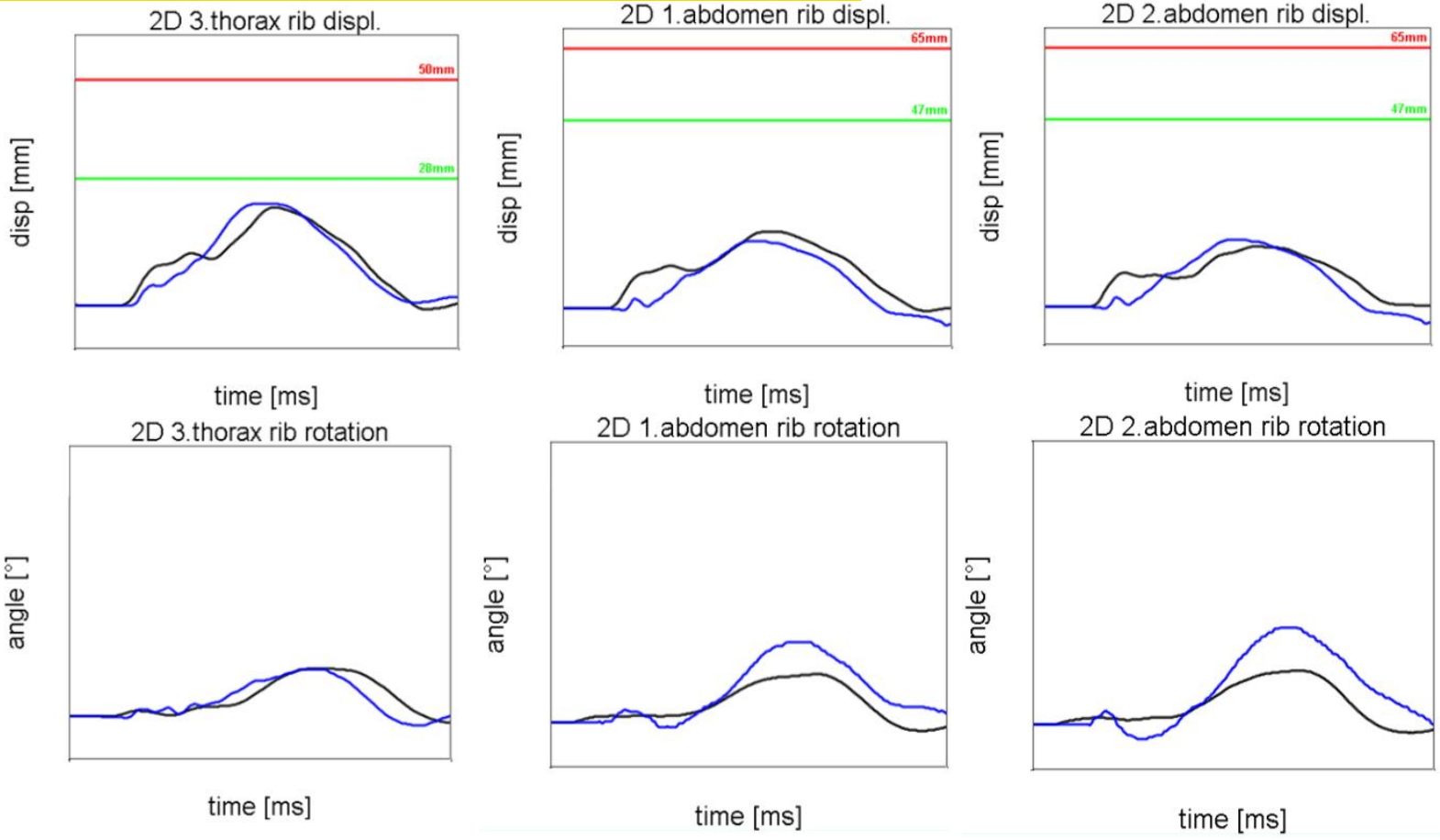


Test

VS

Simulation

CORRELATION STUDY AE-MDB



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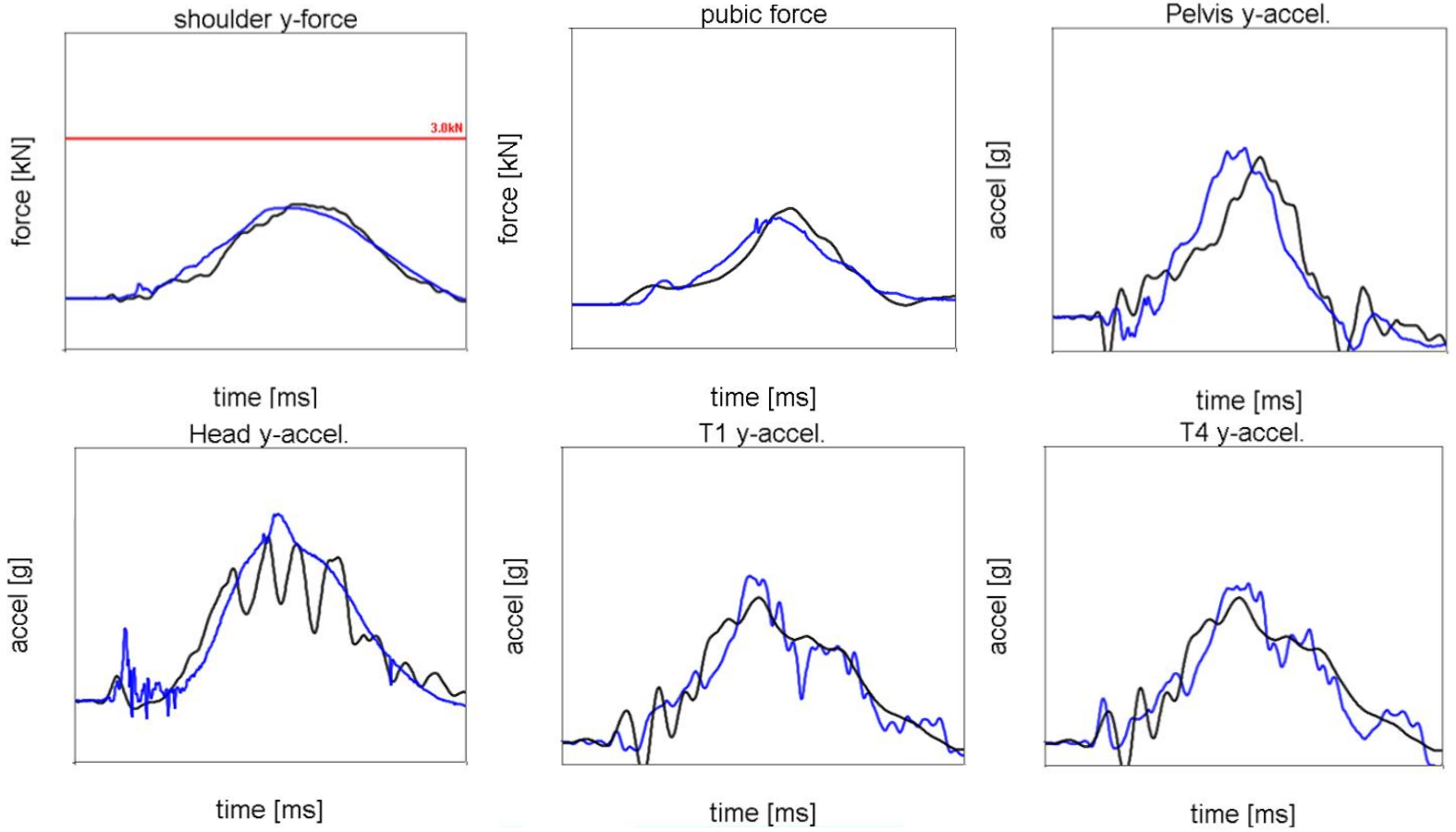

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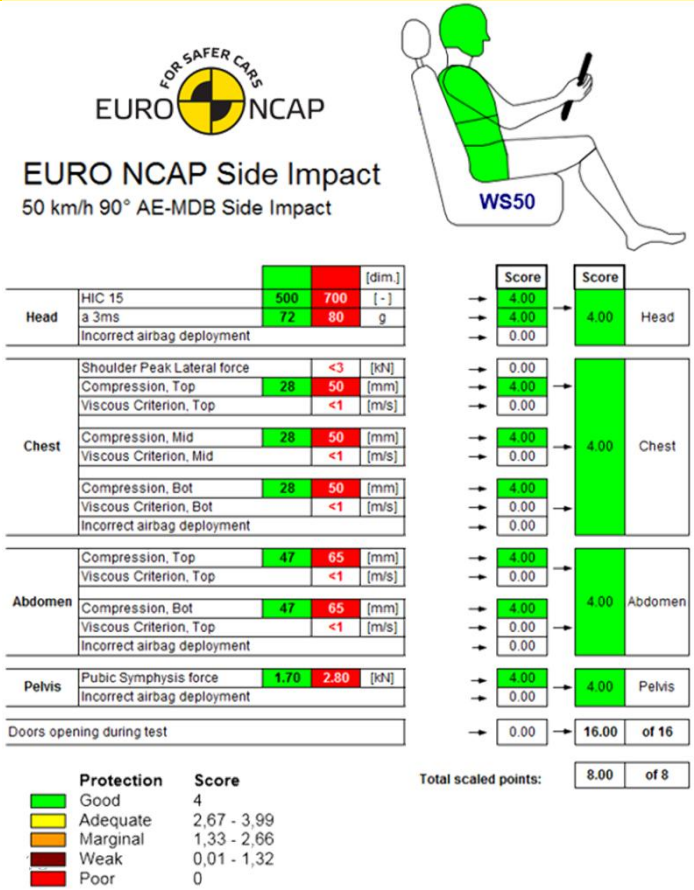
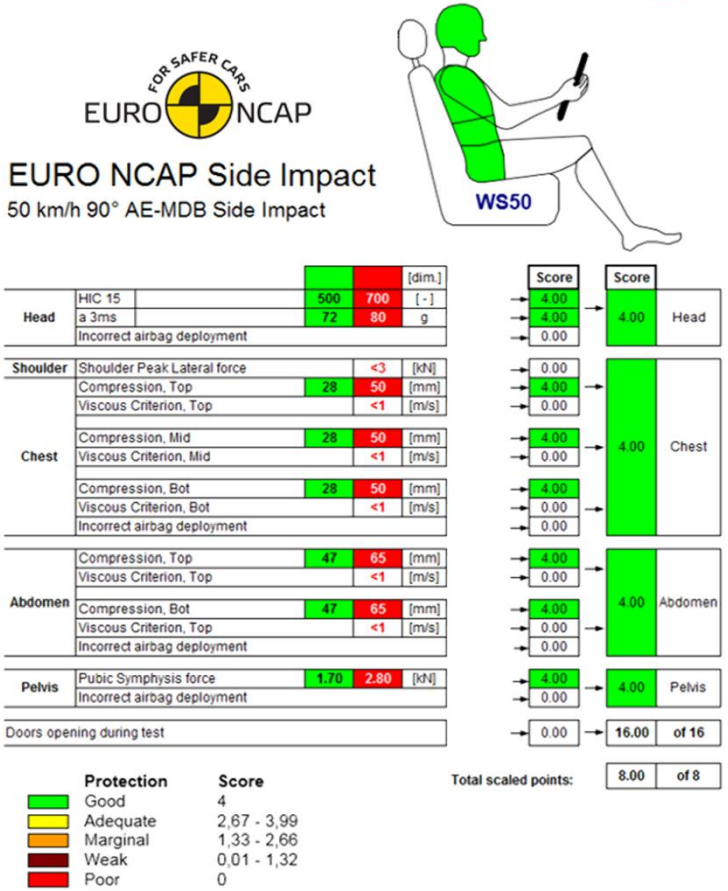


					Score	Score	
Head	HIC 15	500	700	[-]	4.00	4.00	Head
	a 3ms	72	80	g	4.00		
	Incorrect airbag deployment				0.00		
Chest	Shoulder Peak Lateral force		<3	[kN]	0.00	4.00	Chest
	Compression, Top	28	50	[mm]	4.00		
	Viscous Criterion, Top		<1	[m/s]	0.00		
	Compression, Mid	28	50	[mm]	4.00		
	Viscous Criterion, Mid		<1	[m/s]	0.00		
	Compression, Bot	28	50	[mm]	4.00		
	Viscous Criterion, Bot		<1	[m/s]	0.00		
	Incorrect airbag deployment				0.00		
Abdomen	Compression, Top	47	65	[mm]	4.00	4.00	Abdomen
	Viscous Criterion, Top		<1	[m/s]	0.00		
	Compression, Bot	47	65	[mm]	4.00		
	Viscous Criterion, Top		<1	[m/s]	0.00		
	Incorrect airbag deployment				0.00		
Pelvis	Pubic Symphysis force	1.70	2.80	[kN]	4.00	4.00	Pelvis
	Incorrect airbag deployment				0.00		
Doors opening during test					0.00	16.00	of 16
					Total scaled points:	8.00	of 8

Protection	Score
Good	4
Adequate	2,67 - 3,99
Marginal	1,33 - 2,66
Weak	0,01 - 1,32
Poor	0

Test
vs
Simulation



					Score	Score	
Head	HIC 15	500	700	[-]	4.00	4.00	Head
	a 3ms	72	80	g	4.00		
	Incorrect airbag deployment				0.00		
Shoulder	Shoulder Peak Lateral force		<3	[kN]	0.00	4.00	Chest
Chest	Compression, Top	28	50	[mm]	4.00		
	Viscous Criterion, Top		<1	[m/s]	0.00		
	Compression, Mid	28	50	[mm]	4.00		
	Viscous Criterion, Mid		<1	[m/s]	0.00		
	Compression, Bot	28	50	[mm]	4.00		
	Viscous Criterion, Bot		<1	[m/s]	0.00		
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Abdomen	Compression, Top	47	65	[mm]	4.00	4.00	Abdomen
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	Incorrect airbag deployment				0.00		
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CORRELATION STUDY AE-MDB

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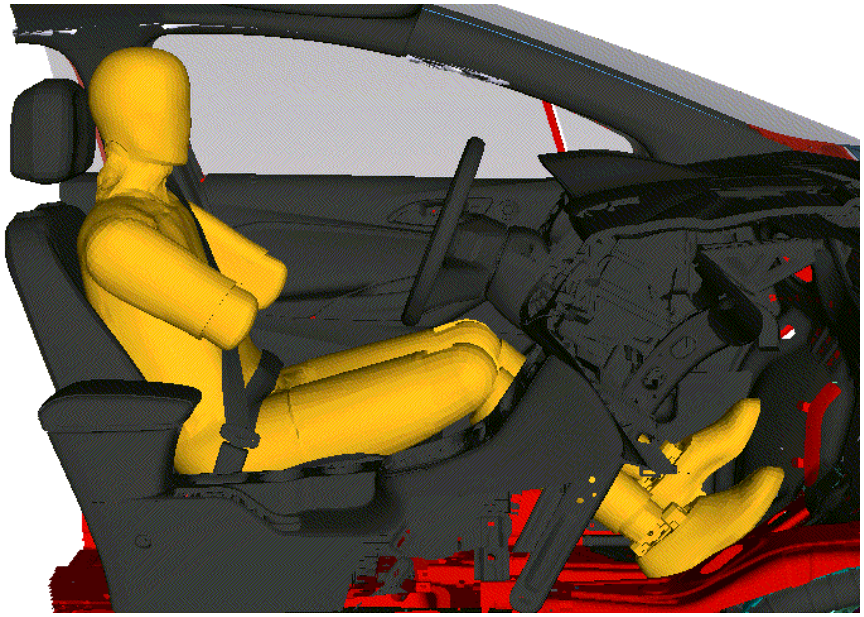
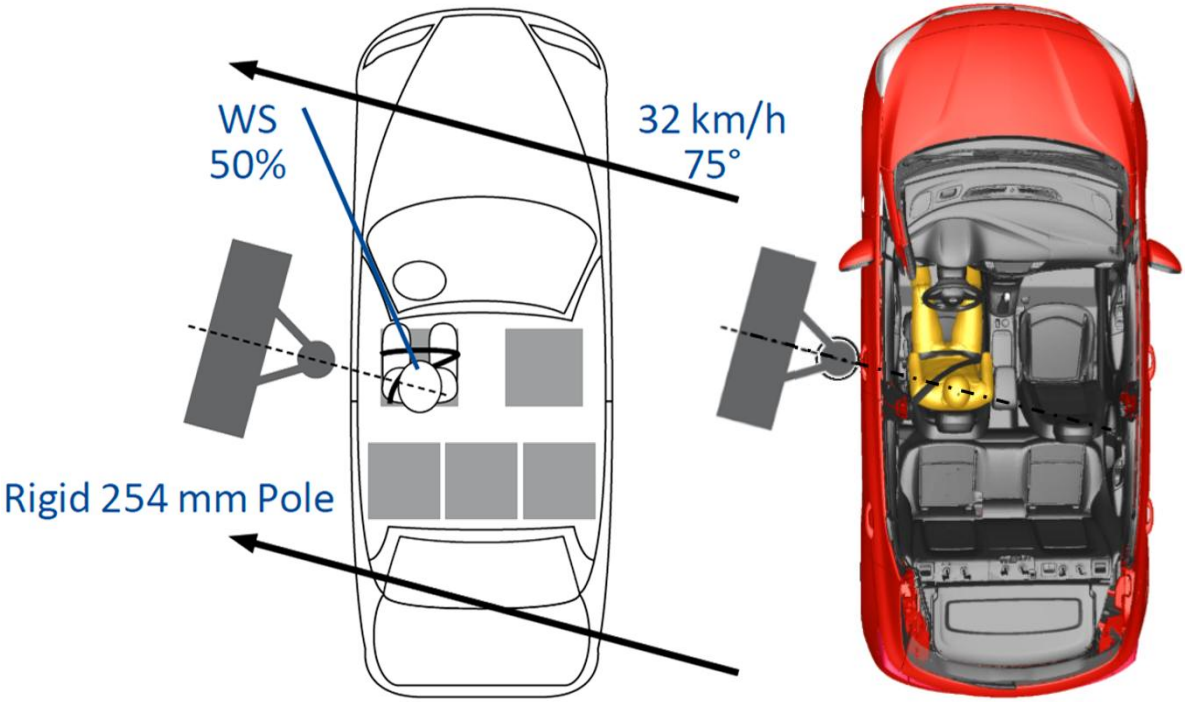
Test vs Simulation

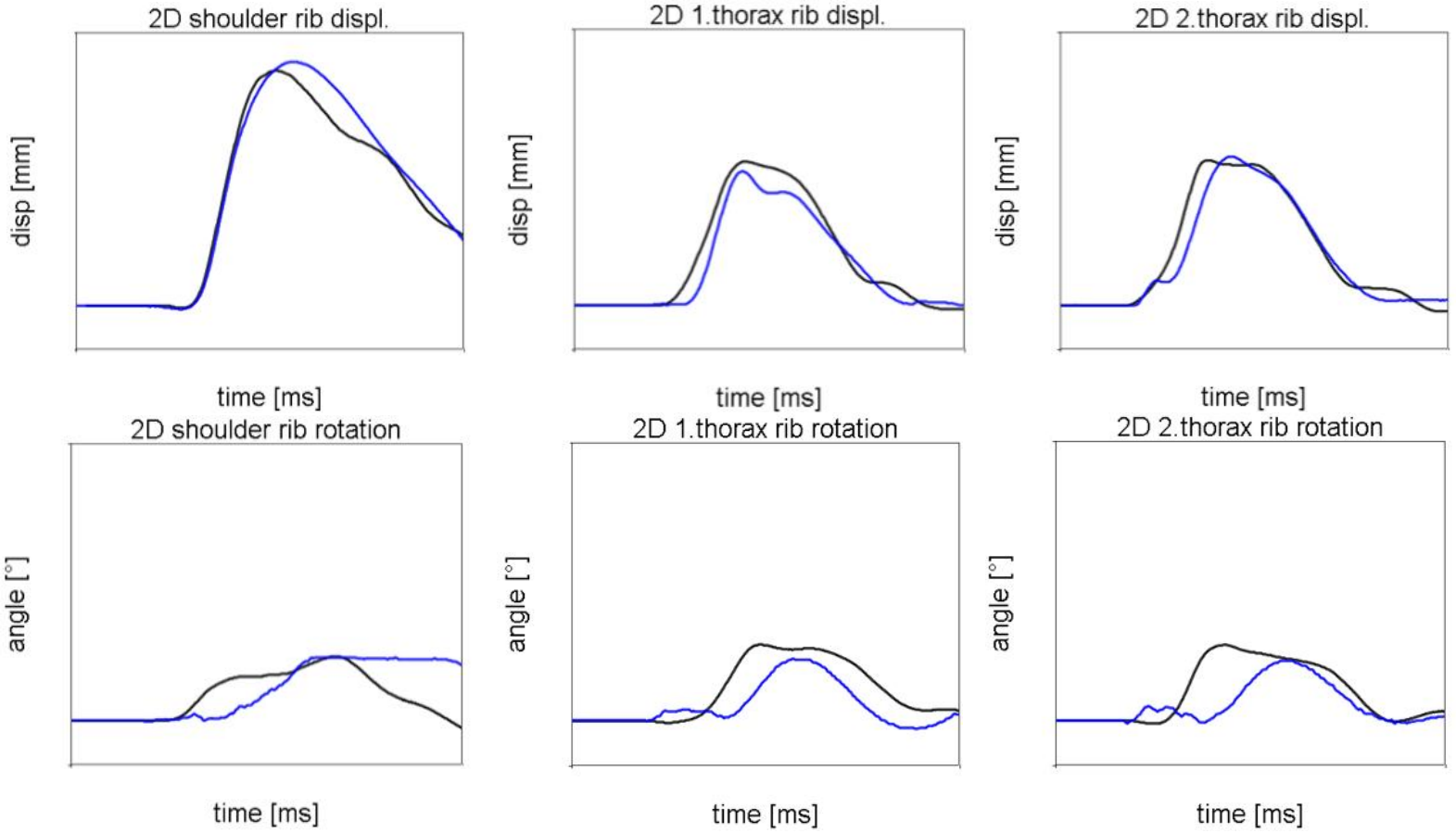


CORRELATION STUDY POLE

Astra K Euro NCAP 2015
Side Impact
- AE-MDB -



CORRELATION STUDY POLE

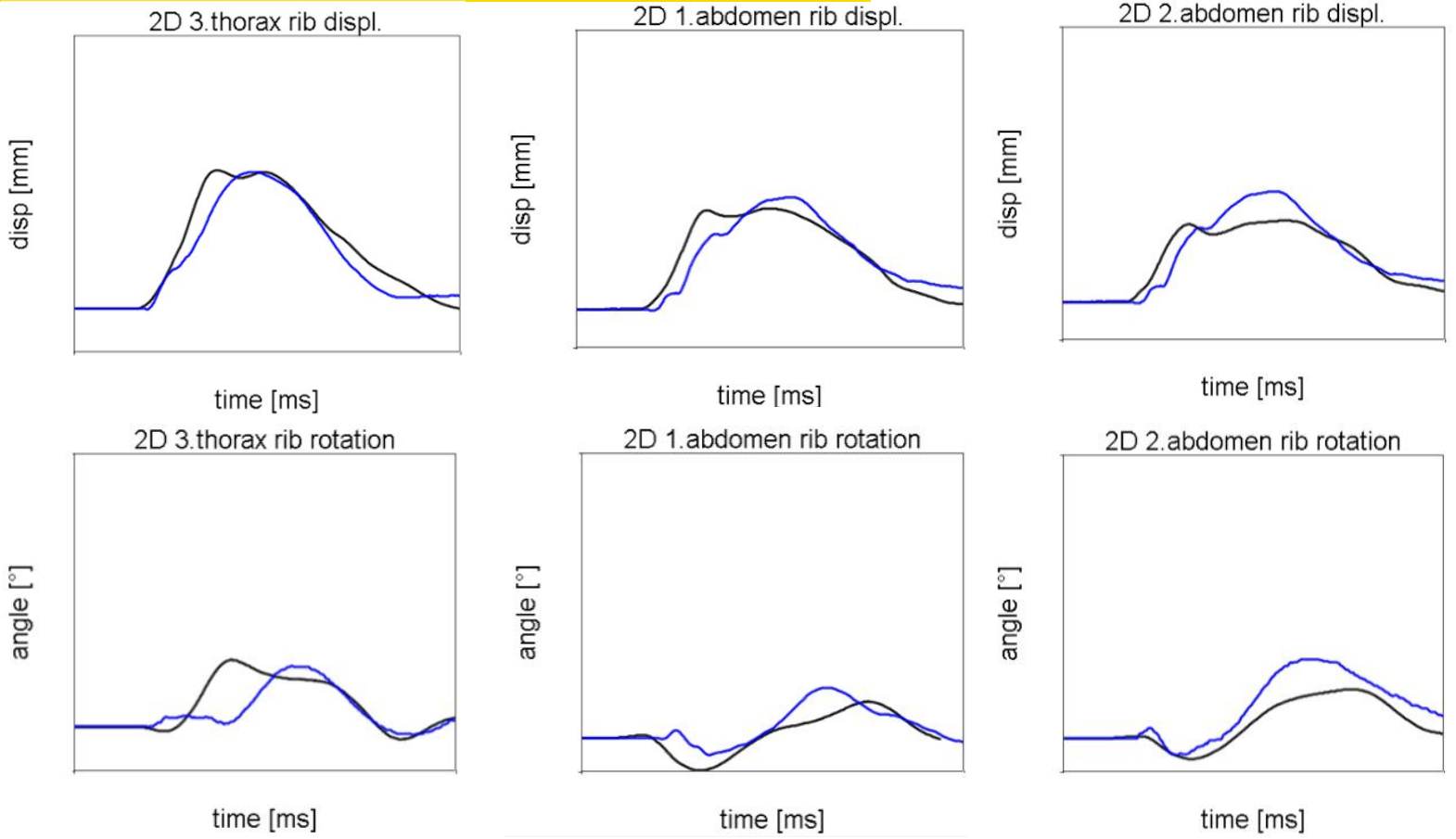


Test

vs

Simulation

CORRELATION STUDY POLE

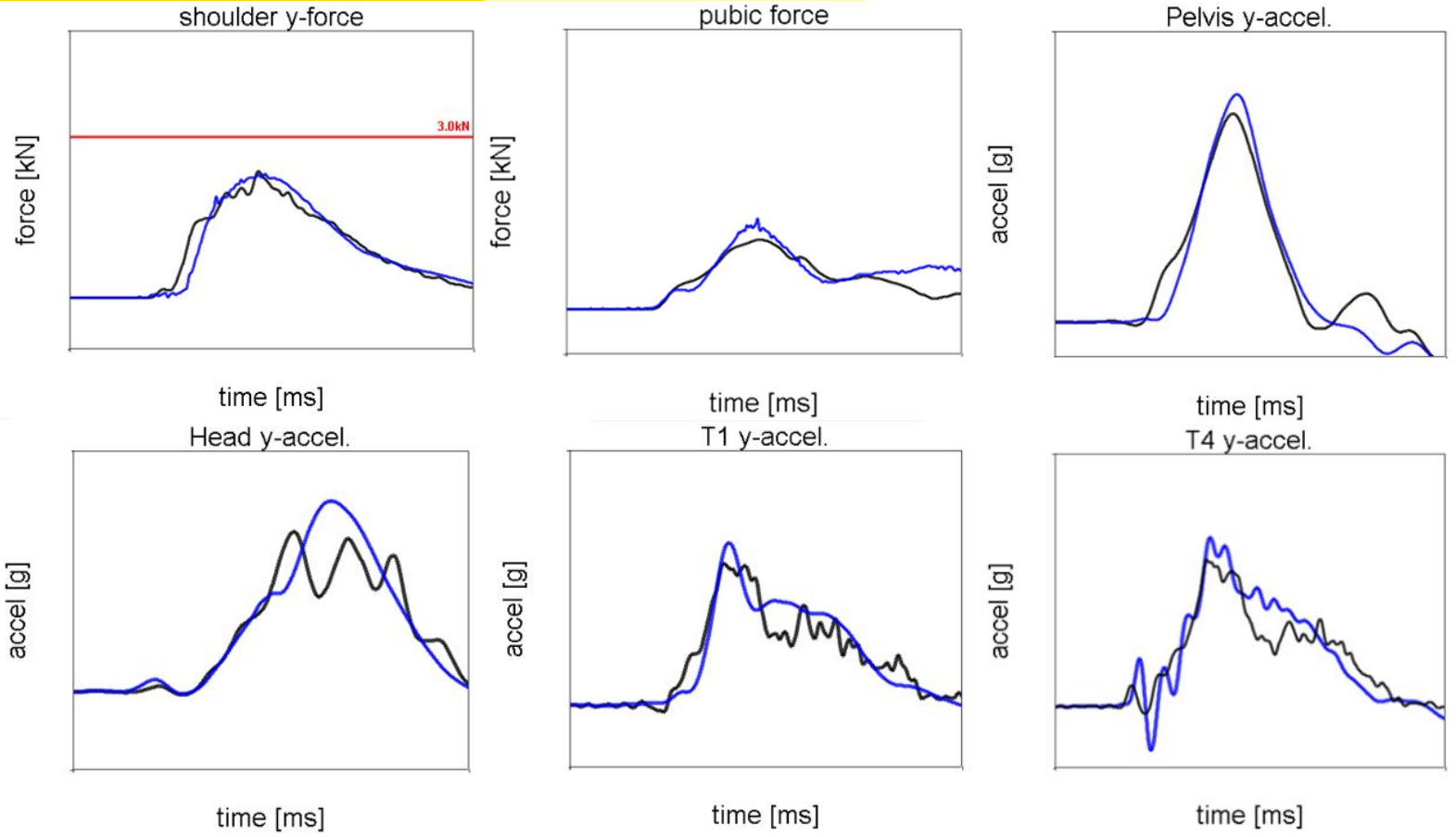


Test

VS

Simulation

CORRELATION STUDY POLE



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Simulation

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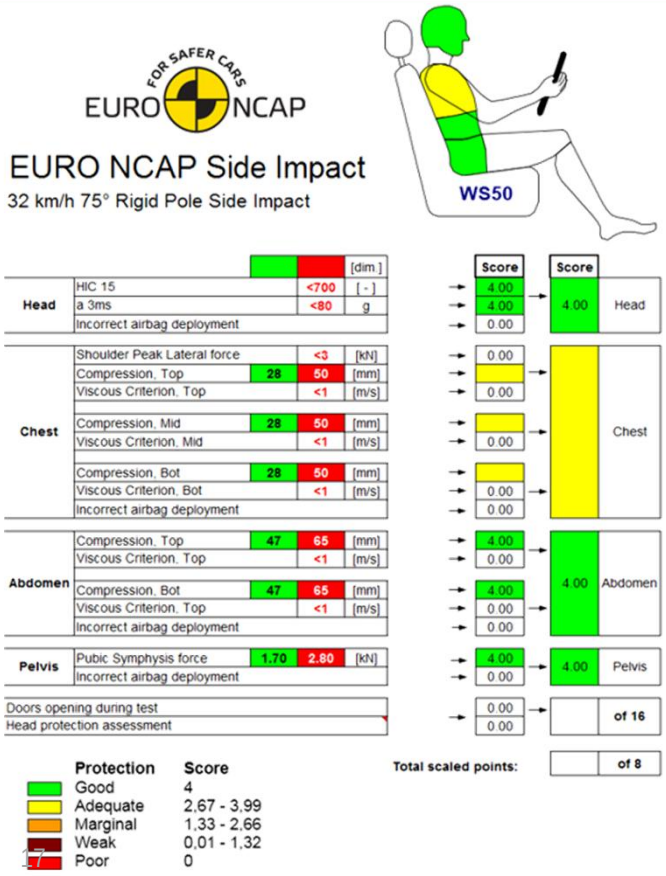
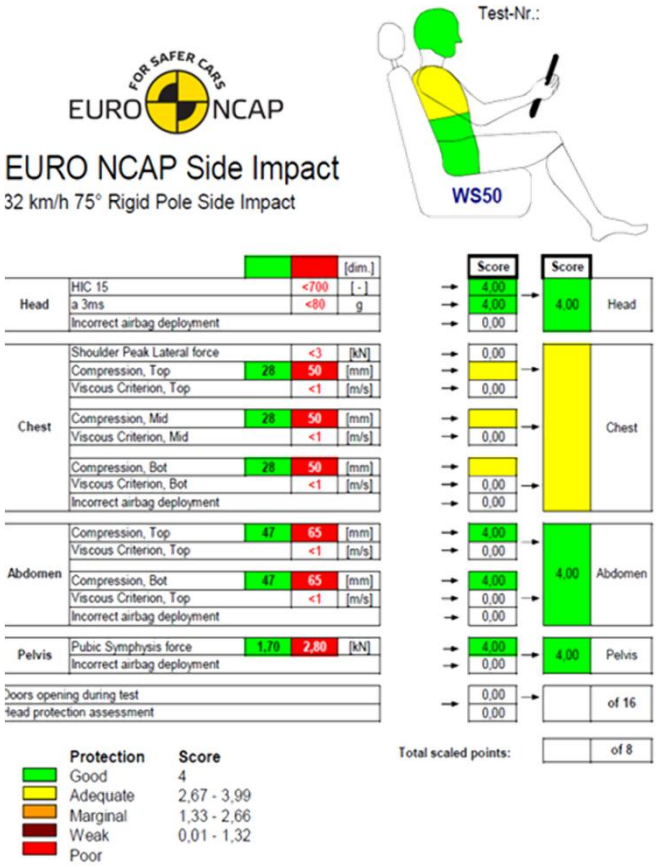


Test

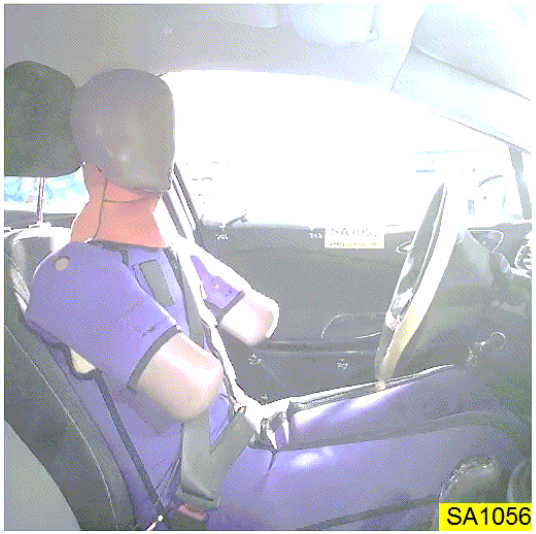
vs

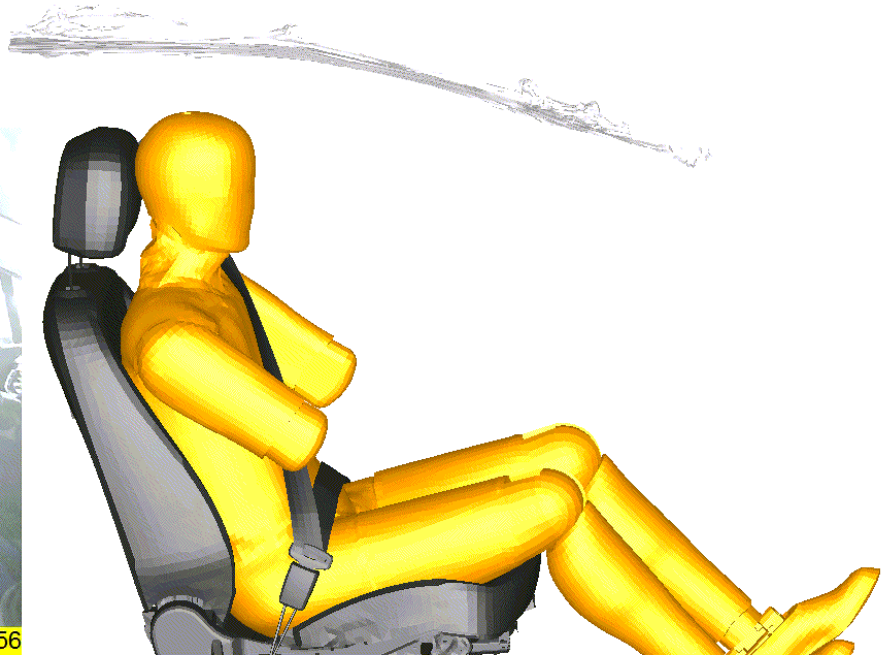
Simulation



CORRELATION STUDY AE-MDB

Test vs Simulation





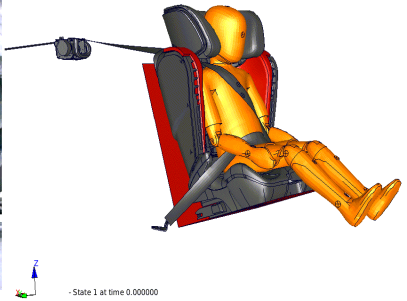
CHILD SEAT DEVELOPMENT (Q10/Q6)

From Lab

Disassembly

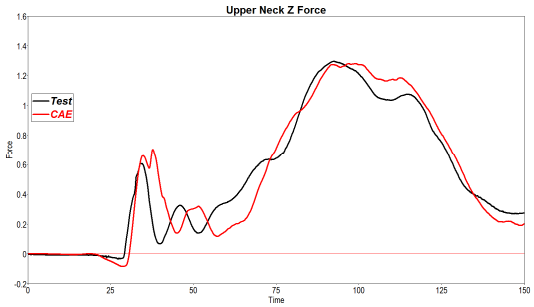
Scanning

To Computer



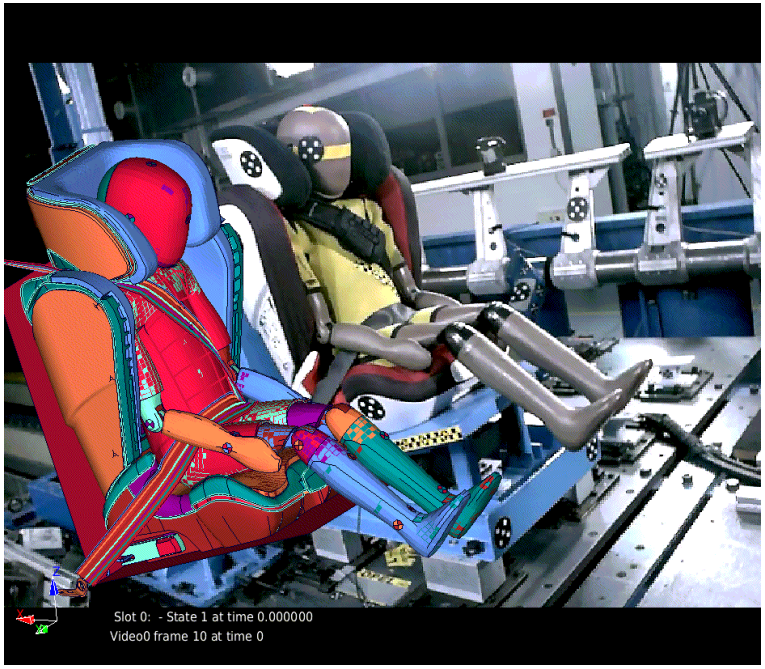
Correlation simulation

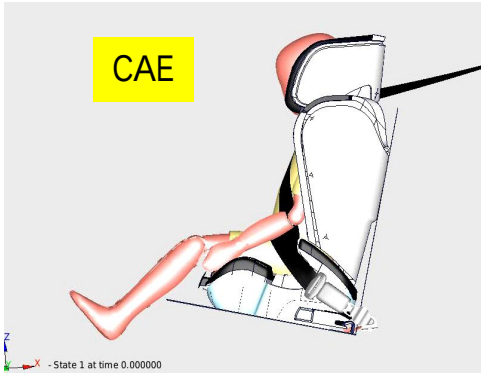
Testing

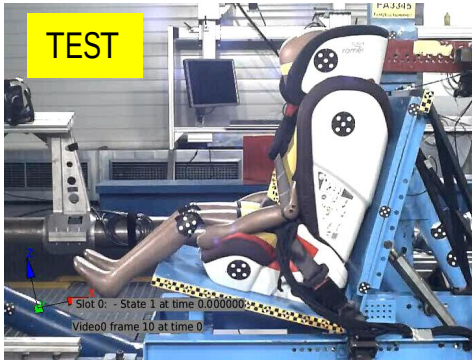


Correlation

Q6 CORRELATION STUDY





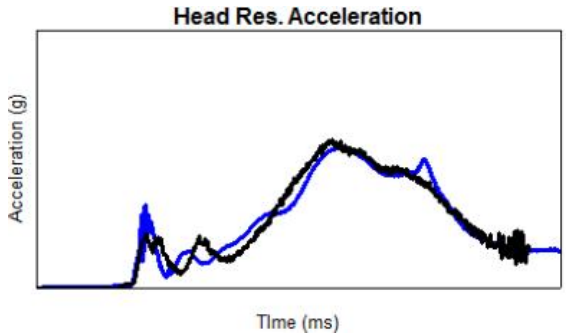


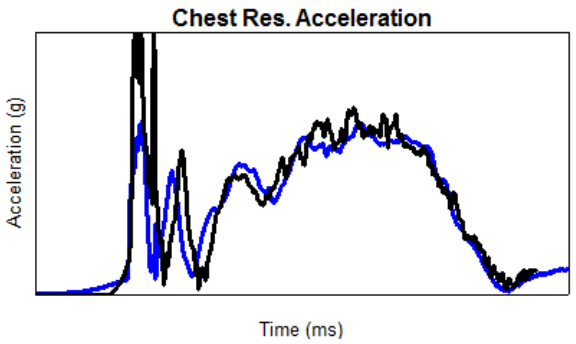
Rigid fixture test with generic pulse:

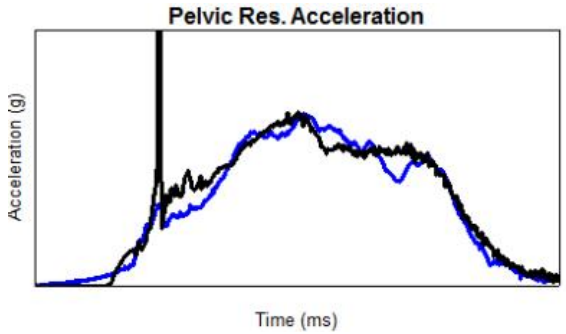
Dummy:Humanetics_Q6_V2.0.3_S3

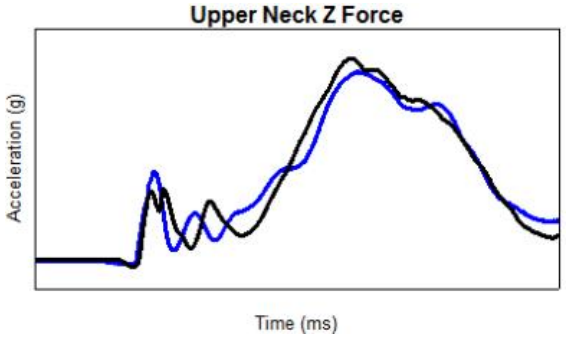
CRS: Römer Kidfix XP

Q6 CORRELATION STUDY





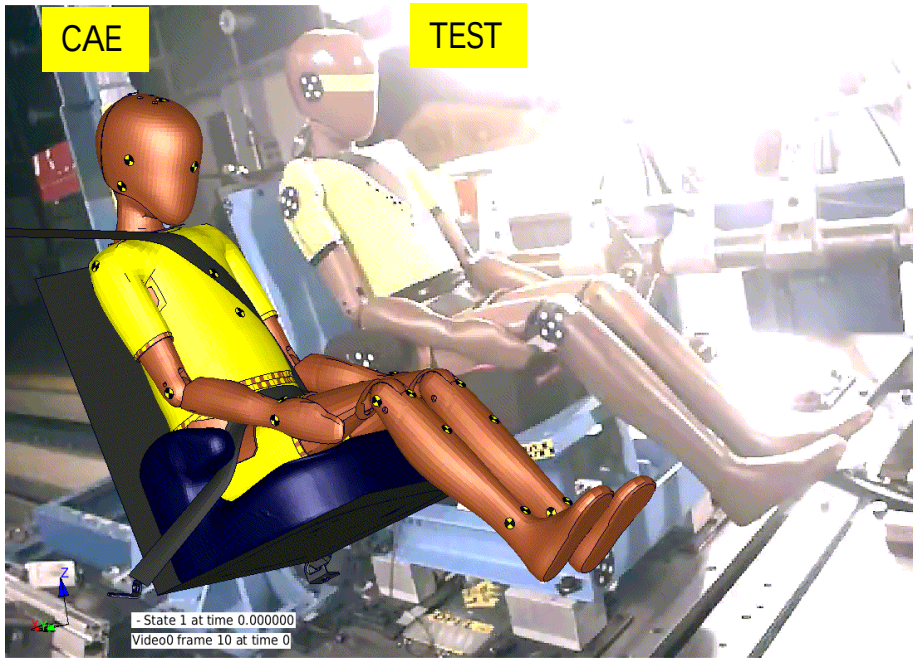


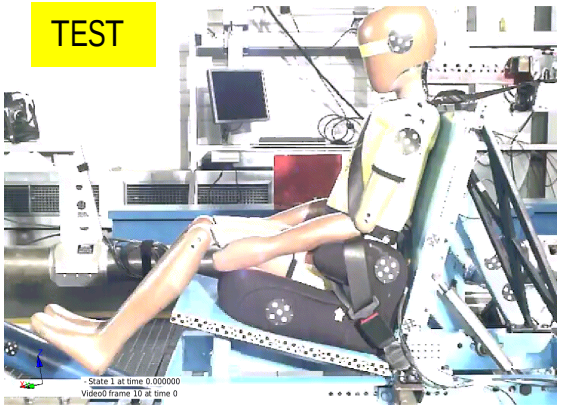


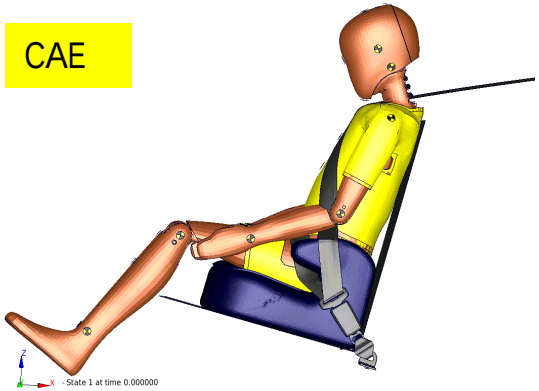
Test
VS
Simulation

Rigid fixture test with generic pulse:
Dummy:Humanetics_Q6_V2.0.3_S3
CRS: Römer Kidfix XP

Q10 CORRELATION STUDY

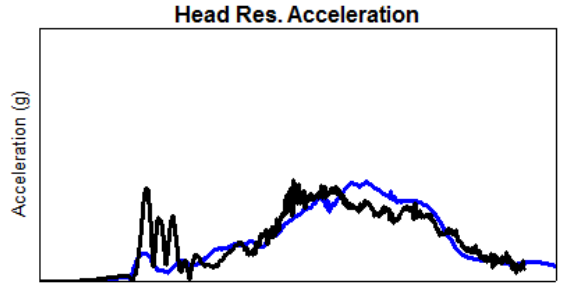


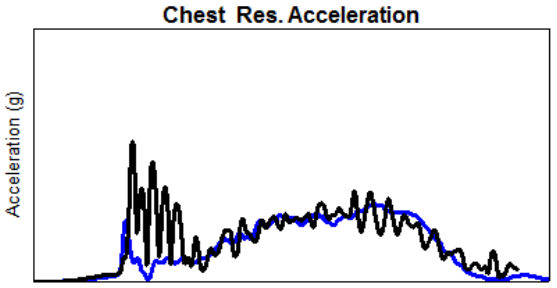


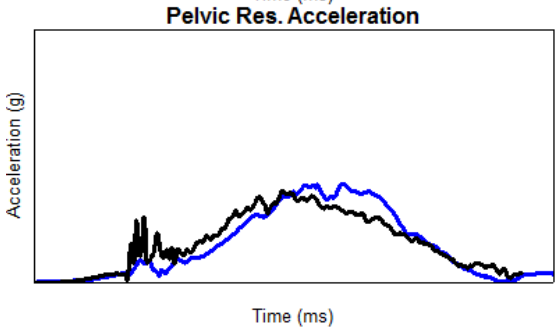


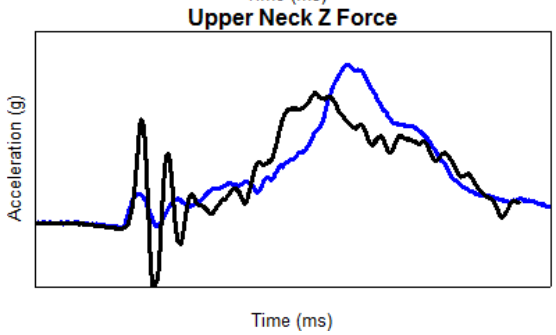
Rigid fixture test with generic pulse:
Dummy:Humanetics_Q10_V1.5_S3
CRS: Fisher Price

Q10 CORRELATION STUDY









Test

VS

Simulation

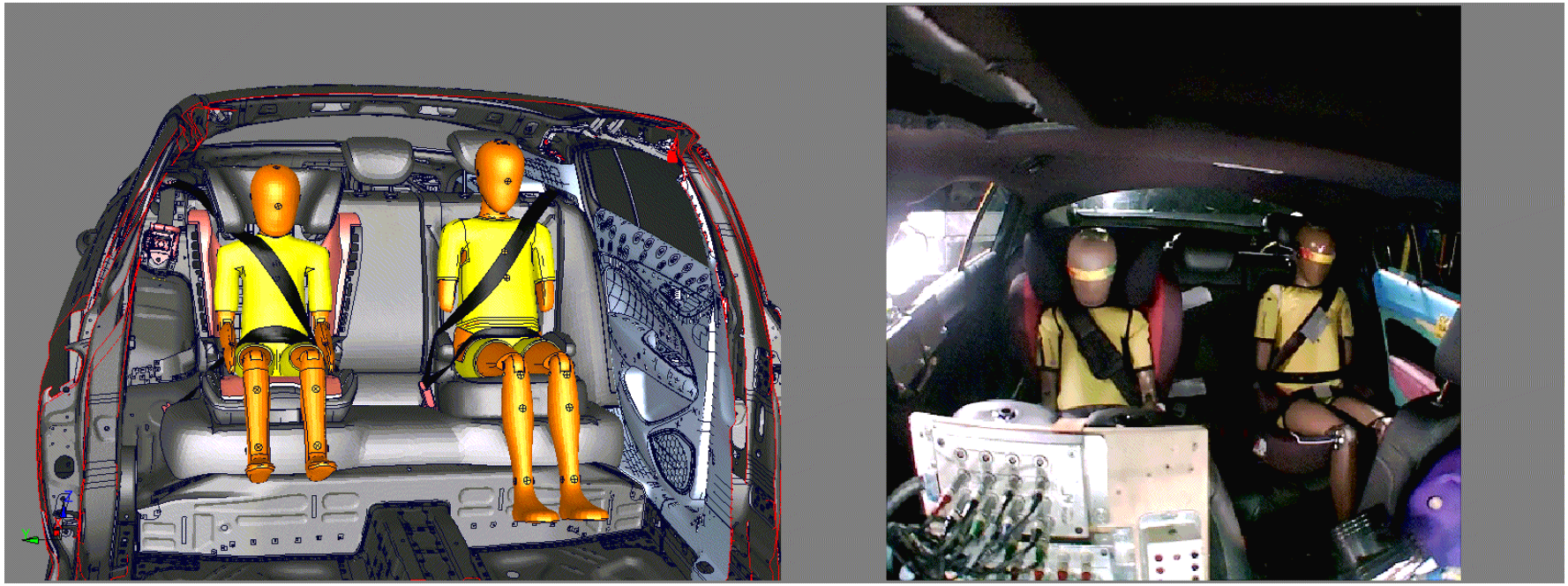
Rigid fixture test with generic pulse:

Dummy:Humanetics_Q10_V1.5_S3

CRS: Fisher Price

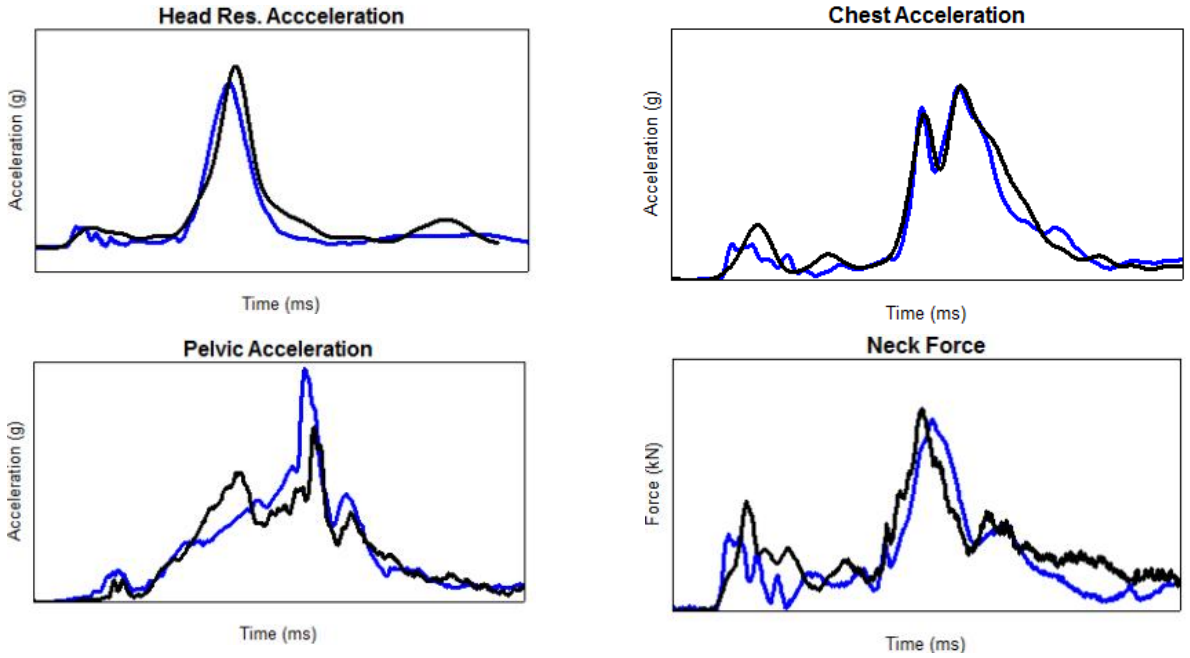
CORRELATION STUDY AE-MDB

Simulation vs Test



CORRELATION STUDY AE-MDB

Q10 Dummy



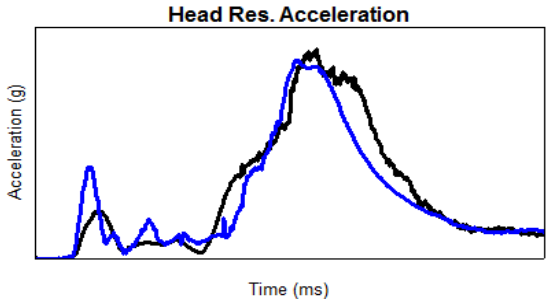
Test

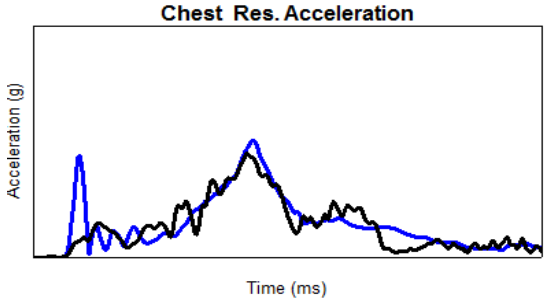
VS

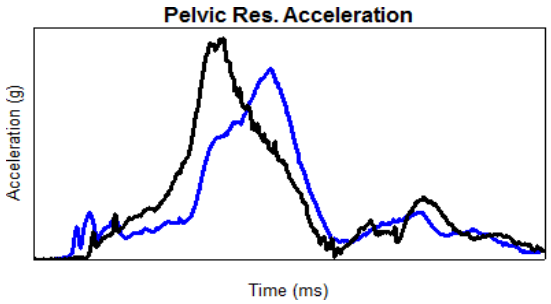
Simulation

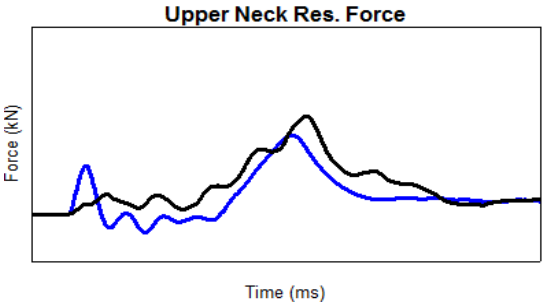
CORRELATION STUDY AE-MDB

Q6 Dummy









Test
VS
Simulation


Thomas Kotucha
THANK YOU
GG GV 120