

MADYMO for Aerospace

Certification by Simulation

MADYMO from TASS International delivers multibody occupant models in a finite element environment to analyze and improve seat layout and seat design with the aim to maximize passenger capacity without the need for costly testing.

Each new seat layout requires demonstration to prove no head impact conditions exist or that any head impacts result in HIC values below 1000, traditionally accomplished through testing. Testing for head impact conditions for each new seat layout is costly and is often significantly reduced by using MADYMO in support of or in lieu of testing.



“By using Madymo, Embraer not only saves time and cost in developing and certifying new seat layouts for our Regional Jets but also saves time and costs while reducing risks on seat installation for new Programs.”

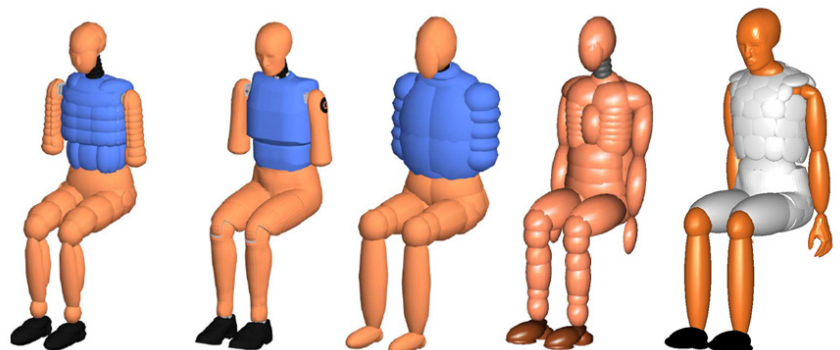
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Leader, Structures and
Interiors

Solution Highlights

- World-class occupant model portfolio including both Hybrid II and Hybrid III FAA (scalable) models that allow to analyze the Human Survivability Requirements in Aircraft Accidents defined in the Federal Aviation Regulations, i.e. Maintain Survivable Volume, Restrain Occupants Within Survivable Volume and Limit Occupant Loads
- Ability to provide a value metric to compare discrepancies between physical test-to-physical tests or physical test-to-numerical models using the Objective Rating tool which provides the FAA-accepted Sprague and Geers metric.

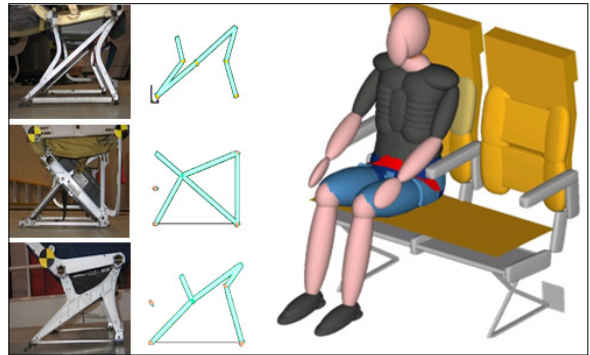
Aviation Dummy Models

- Hybrid-II 50th percentile Part 572B dummy
- Hybrid-III 50th percentile FAA dummy
- Hybrid-III 50th percentile FAA scalable
- US DoT-SID side impact dummy (572F)
- ES-2re (left & Right) side impact dummy



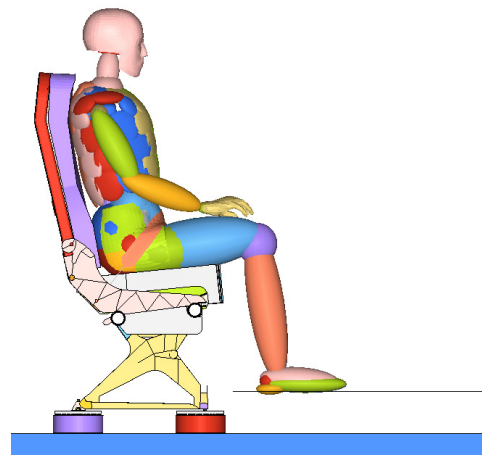
Aerospace Capabilities

- Conduct optimization studies for seat safety development by conceptual structural design
- Conduct interior configuration studies to improve seat layout to maximize passenger capacity
- Study the complex interactions between occupant response, seat response, restraint system performance, airframe response, impact surface and flight conditions at impact and develop innovative restraint concepts



General Capabilities

- Fast and Accurate solvers for multibody, finite element and gas dynamics
- World's most extensive Dummy and human models database
- Pre- and Postprocessing tools including for example automated belt fitting and load path visualization
- Flexible licensing with separate modules and tokens



Interface

- Ideal tool for DOE & Optimization with HyperStudy
- Coupling to third party Finite Element codes like RADIOSS
- MATLAB coupling
- User-programmable Python-based model checker

Design Iteration Loop

