RAMSIS Seat Design

HUMANETICS

RAMSIS Seat Design

Target group-specific seat ergonomics in a package context

YOUR BUSINESS FIRST

Ergonomics analysis – seats in the digital vehicle

The seat makes the difference. Seat height and position have a significant impact on ergonomics in the vehicle – and for the first time, the new RAMSIS Seat Design module enables ergonomic seat design within the context of the vehicle.

RAMSIS shows how the customer wishes to sit in the vehicle – and RAMSIS Seat Design shows how the seat helps him to get his wish. Humanetics Digital Europe GmbH has combined package and complex seating properties in an ergonomics simulation – and that's another first. The suitability of a vehicle for the entire defined target group can be ensured at an early stage using detailed knowledge of the effects of seat positioning on comfort/discomfort, reachability and vision. This increases product maturity even at the early stage of the CAD model, further reducing the expense of physical test stands.

Your advantages

- Simulation of human-seat interaction in the context of the vehicle
- Ergonomic seat design in the early phase of CAD
- Automated integration of the seat into the digital ergonomic design process (no manual adjustment)
- Early clarification of seat-related ergonomic threshold values for predefined target groups

SEAT ANALYSIS WITH RAMSIS SEAT DESIGN

Comprehensive seat parameters

With RAMSIS Seat Design, the supporting properties of the seat are incorporated into the ergonomics analysis, expanding the existing seat design in RAMSIS by central parameters. The vehicle seat can be completely built from scratch in this new RAMSIS module. To achieve this, RAMSIS Seat Design addresses key parameters that influence ergonomic seat design, such as longitudinal and height adjustment, backrest angle, shape/circumference of the seat cushion, the degree of hardness of the cushion and seat attachments like headrests and belt anchorage systems. Seat settings can either be user-defined or made automatically within the package context. RAMSIS Seat Design also provides a material library for preselection.

Positioning of the seat and manikin

The selected RAMSIS manikin automatically assumes a suitable posture in the vehicle seat. This is done by combining the posture calculation for a given task with a sink-in simulation of the manikin into the CAD seat, based on the manikin's body weight and the properties of the seat material. Alternatively, the CAD seat can also be moved manually or automa-tically in RAMSIS Seat Design by means of sliders (within the mechanical possibilities in the later vehicle). The seat can then be placed in the desired position under the seated manikin.

Simulation of manikin-seat interaction

The seat analysis clarifies key vehicle use issues, such as sufficient adjustment options of cushion and backrest angles and the correct sizing of seat surfaces and headrests. RAMSIS Seat Design can even determine the distance from the body to hard metal parts in the seat and the influence of movable seat attachments like the belt anchorage. The percentiles in the threshold areas and the influence of above-average obesity can also be examined.

Fig. 1 RAMSIS Seat Design

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