RAMSIS MODUL BUS & TRUCK

HUMANETICS

Digital ergonomics in buses & trucks

Modern concepts for relaxed performance efficiency

Relief & driving safety for professional drivers

Truck and bus drivers are under constant pressure on the road – they have to stay alert and be able to react rapidly. Optimum ergonomics in the vehicle make all the difference here.

A good ergonomic concept reduces fatigue, provides a clear view and minimizes distractions when reading displays. The ergonomics analysis of the RAMSIS Bus & Truck module addresses requirements in the development of buses and trucks, thanks to a special anthropometric database and cutting-edge functions for optimizing the attention level, comfort and safety of professional drivers. This results in highly efficient vehicles that meet modern road requirements perfectly – your vehicles will always perform efficiently with RAMSIS.

Your advantages:
> specialized anthropometric data for truck and bus drivers
> posture models and calculations for corpulent drivers
> special functionality for analysis of attention, perceptibility and energy expenditure

INTERIOR DESIGN FOR TRUCKS AND PASSENGER CARS

Highly efficient development – on the digital model

The Bus & Truck module optimally adapts the 3D manikin RAMSIS to the ergonomic analysis of trucks and buses. You can design your vehicles exactly according to norm specifications, quickly document your studies and easily repeat them within a vehicle model or transfer them to other vehicle models. Thanks to standardization with RAMSIS, the results of different studies can also be directly compared.

THE MANIKIN AND ITS POSITIONING

Model structure

RAMSIS gives you a sophisticated ergonomic simulation environment – the software works with grid, shading and surface models, imaging the motions of human beings with physiological joint simulation. The starting point for positioning is the H point.

Anthropometric data for truck drivers

In addition to a globally unique anthropometric database, RAMSIS also has a detailed NIOSH truck driver database. With RAMSIS, you can generate any target group and specify height, gender and population & age-specific characteristics. RAMSIS also offers a detailed hand geometry.

Automatic posture calculation – also XXL

RAMSIS simulates the most probable posture and movement behavior for driver tasks in truck environments. The truck posture model XXL and the normal model is available for RAMSIS posture calculation. In addition to seated models, RAMSIS also has two models in supine positions. The standard H point can be adjusted for obese people to calculate seated postures. Thanks to ultra-modern posture studies, the virtual test persons behave realistically, whether sitting or standing. Tasks can be interactively defined and quickly transmitted to more manikins by means of the simple fixation and orientation of body parts.

Individual posture calculation

RAMSIS offers you free space for posture calculation. You can change the torso angle, for example, but keep the hand position constant. The calculated posture can be saved as a user-defined posture model and used for further work.

Balance (equilibrium)

When analyzing activities, RAMSIS also shows you whether or not a posture is stable, i.e. whether balance can be maintained during an activity.

ERGONOMIC ANALYSIS

Comfort and safety

With RAMSIS, you can significantly increase the comfort of the vehicle – and the driver's attention level as a result. On the one hand the discomfort of postures in drivers is measured, and on the other, vision, instrument readability and the duration of the change of gaze. Conclusions for vehicle optimization can be drawn quickly from this. Ergonomic design has demonstrable benefits – if you want to determine the probable degree of fatigue, for example, or the orthopedic load on the spinal column when your vehicles are being used.

RAMSIS BUS & TRUCK MODULE

Fig. 1: Additional supine posture model

Fig. 2: Vehicle entry

Fig. 3: Posture simulation for corpulent drivers

Direct/indirect vision/reflection

Visual freedom has a massive influence on safety. In RAMSIS – even during the early concept phase – you can analyze the visual field, both directly and via mirrors (planar/spherical), perform analyses in and outside the vehicle, and ergonomically evaluate the existing visual fields. Eye movements, the position of the eyes including the head and neck movements and the visual distance are all addressed – and extended visual field limits can also be determined using visual aids.

Coupling of posture calculation and visual analysis

Within the framework of RAMSIS posture calculation, postures can be determined on the basis of extended visual tasks. You can specify, for example, that the manikin looks through a window or over the engine hood.

Readability/recording time for displays and head-up displays

The positioning of display elements is one of the main elements in development. With RAMSIS, you can optimally position the visibility and readability of displays in terms of font size, contrast and reflection on smooth surfaces, keeping the timeframe required for recording information as short as possible. You also receive information on the minimum visual range. The analysis is carried out in day and night situations.

Analysis of vehicle entry

The average body weight of truck drivers is increasing – and vehicles are getting higher at the same time. The effort required to enter a vehicle is increasing. To check the digital model at an early stage, RAMSIS simulates the entry of a truck driver into or onto a vehicle from the left, right, front or rear. The focus here is on the analysis of joint loads on the arms, legs and torso, as well as the determination of the maximum load in critical support postures during vehicle entry.

Reachability and passive balance

To ensure the best possible operation, RAMSIS allows you to calculate reachability envelopes and reachability areas for definable body part chains – and the stability of specific postures is also checked.

Operating force

Operating elements can possibly be reached – but the amount of effort required to open the door from the driver's seat may be excessive. To check this, RAMSIS lets you check posture-contingent maximum force.

RAMSIS IN THE DEVELOPMENT PROCESS

Integration of field studies

RAMSIS can integrate the data of individual test persons – and can be used for defining the test persons pool. The software can also be expanded for individual projects, enabling the incorporation of the results from specific ergonomics evaluation studies.

Availability and platforms

RAMSIS Bus & Truck is a module for RAMSIS Automotive and is available via this platform as a stand-alone version for Windows. It is also available as a fully integrated ergonomics tool in Catia V5, 3DExperience and Siemens NX. The import and export of geometries is also possible via various formats like IGES, VDA & SAT – and additional modules can also be used to import and export JT and Catia files.