RAMSIS Automotive

HUMAN SOLUTIONS ASSYST AVM

Digital ergonomics

Develop your vehicle interiors – without post-process changes

YOUR BUSINESS FIRST

Ergonomics and efficiency

When a customer gets into a new car model, that brand must redeem all its promises, especially those regarding comfort and safety. And the right interior layout can put you on the inside track even before the engine is up and running.

Space is at a premium in cars nowadays. Assistance and communication systems are increasingly being used to optimize driving and travel time for the occupants. RAMSIS helps to maximise comfort, reachability, visibility and operability inside your vehicle. The on-going development of this renowned ergonomics tool is carried out in collaboration with the German automotive industry and that's why the world's leading ergonomic software gives you optimal ergonomic vehicle functionality *and* greater efficiency in the development process. RAMSIS – helping you on your journey.

Your advantages

> Shorter development times
> Reduction of development costs
> Higher level of product maturity

INTERIOR DESIGN FOR CARS

Develop on the digital model

RAMSIS Automotive is a 3D manikin especially developed for the ergonomic analysis of passenger cars.

It allows you to design your vehicle exactly to DIN specifications, document your studies quickly, easily repeat procedures in a vehicle model and compare the ergonomic design of different models. RAMSIS makes all this possible because it combines scientifically-sound body dimension and human behavioral data with market-leading functionality for ergonomics analyses. And there's a reason behind this too: supplementing our own internal quality philosophy, an automotive industry user and steering committee also ensures the practical value of the data and the functionality of RAMSIS.

MANIKIN AND POSITIONING

Model structure

RAMSIS offers you a sophisticated ergonomic simulation environment. The software works with grid, shading and surface models, imaging the motions of the manikin – including physiological joint simulation. The starting point for positioning is the eye point.

Anthropometric database

With RAMSIS Automotive you can generate any target group and specify height, gender, population and age-specific characteristics. The elaborate model structure and comprehensive ergonomic international databases are derived from documented and replicable sources, including notable research projects and serial measurement surveys from European, North American, South American and Asian countries.

Automatic posture calculation

RAMSIS simulates statistically the most probable posture and movement behavior of vehicle occupants based on current research. Whether sitting or standing, the virtual test persons behave ultra-realistically, thanks to cutting-edge posture studies. And tasks can be interactively defined and quickly transmitted to more manikins by means of the simple fixation and orientation of body parts.

Animation and motion

RAMSIS motions can be recorded for the easy simulation of processes; here you can analyze spatial coordinates and joint angles. Typical examples are the translation/rotation of the manikin, joint movement and the self-running animation of freely-definable body part chains. Animations are carried out either interactively or numerically. Body part chains can also be interactively moved. To achieve this, RAMSIS provides you with standard animation and advanced animation functions. The motion sequences can also be exported to AVI.

ERGONOMIC ANALYSES

Health and comfort

With RAMSIS you can significantly increase the comfort of the vehicle. The degree of discomfort of postures, distances and posture angles for drivers, co-drivers and passengers can be measured, enabling conclusions to be quickly drawn for vehicle optimization. Ergonomic design has demonstrable benefits

Fig. 1: Layout and design of the entire vehicle

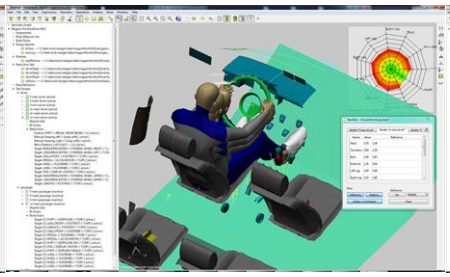

Fig. 2: Task analysis

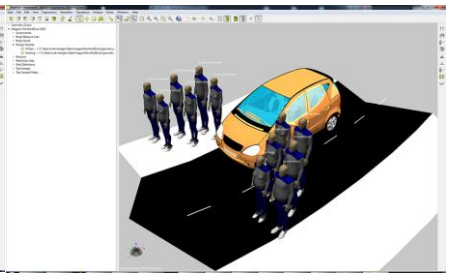

Fig. 3: Test collective

– if you want to determine the probable degree of fatigue, for example, or the orthopedic load on the spinal column in your vehicles. RAMSIS Ergonomic Expert and RAMSIS Standards & Regulations are additional modules for the integration of SAE standards into the development process.

Direct and indirect vision

A good field of vision for drivers has a huge impact on safety. In RAMSIS – even during the early concept phase – you can analyze the field of vision, both directly and via mirrors (planar/spherical), perform analyses in and outside the vehicle and ergonomically evaluate the existing fields of view. Eye movements, the position of the eyes including head and neck movements and the visual distance are all addressed. RAMSIS Cognitive is a supplementary module which evaluates visibility and objectively evaluates the perception of information.

Belt routing

The seat belt can already be optimally visualized on the digital model. RAMSIS calculates belt routing on the skin surface of the manikin and can also display the belt release points. This analysis can be performed for 2 and 3-point belts. RAMSIS Seat Belt Design is an add-on module which includes compliance with the eBTD guidelines, right up to BTD certification.

Reachability

To ensure optimal operation, RAMSIS lets you check if all the vehicle elements are within easy reach. RAMSIS also calculates reach envelopes and accessibility surfaces for definable body part chains.

Operating force

Operating elements can possibly be reached – but the amount of effort required to open the glove compartment from the driver's seat may be excessive. To verify this, RAMSIS lets you check posture-contingent force (hand-arm system). The relevant add-on module here is RAMSIS NEFA, NASA, NIOSH.

RAMSIS IN THE DEVELOPMENT PROCESS

Ergonomics conception

You can transfer study parameters to other car models to achieve an overall ergonomic line.

Physical test benches

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

RAMSIS in VR – additional module

RAMSIS can also be integrated into virtual reality systems for the realtime simulation of a product – so the real observer, together with his body geometry, movements and field of vision can be reproduced in the model and synchronized with the environment. This enables maximum interaction with the digital model. Some interesting advantages of VR integration are field of vision comparisons for different body heights, reach analyses and the recording of maintenance manuals. RAMSIS is available in DeltaGen (RTT).

Availability and platforms

RAMSIS is available as a stand-alone version for Windows and as a fully-integrated ergonomic tool in Catia V5. RAMSIS (or RAMSIS ergonomic data) can also be integrated straight into other established systems within the design environment. And the import and export of geometries is possible via various formats, such as IGES, VDA and SAT. We also offer CATIA V5 and JT interface as an optional add-on.

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