



RAMSIS INDUSTRIAL VEHICLES

Is the world's leading ergonomic CAD tool for ensuring

- » high safety levels for driver and environment
- » comfortable operation of construction and mining equipment
- » easy operation of controls
- » easy access for maintenance and repair activities

■ Benefit: ergonomics for construction and mining equipment

Drivers must be able to control and operate construction and mining equipment safely and effectively – even without much experience. If they can't, such machines pose a significant risk on the driver and the environment. Accidents, costly damage to the machine and non-productive repair time are the result. With RAMSIS, you can improve operator safety and comfort levels of your products and increase your customers' productivity.

■ Early integration of ergonomics shortens development cycles

RAMSIS Industrial Vehicles is a CAD human model for ergonomic design of construction and mining equipment in the early, concept design phase. Reachability of controls, visibility conditions for the driver and feasibility of maintenance and repair work can be optimized using only a CAD model of your vehicle. Before the final model freeze, RAMSIS helps to ensure high levels of driver comfort and safety.

The early and digital integration of ergonomics prevents costly design adjustments later on in the design process. Design errors are eliminated from the very start, design iterations reduced and the development cycle is shortened significantly.

In addition, RAMSIS helps your company to systematically build ergonomic competence. Analysis results can be applied quickly, objectively and efficiently. RAMSIS has the ergonomics knowledge that can be applied by your engineers. International standards can be considered. RAMSIS analyses can also be easily reproduced and shared, so that the tool can be used throughout your company – even if your design facilities are on different sides of the world.

What distinguishes RAMSIS ...

- Most comprehensive global anthropometry database
- Simulation of operator postures and motion based on state-of-the-art research
- Integration of standards
- Highly accurate and realistic appearance
- Easy and seamless integration in your CAD processes

■ Your first steps into the RAMSIS world

In today's market, the ergonomic qualities of your products contribute significantly to their economic success. Human Solutions offer various ways to fast and efficient usage of RAMSIS:

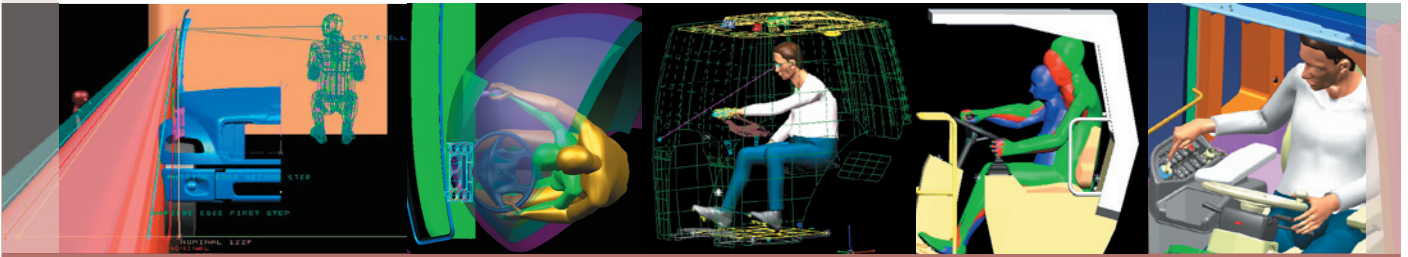
- » Human Solutions Benchmark Test: Ergonomic comparison between your products and the competition
- » Human Solutions Consulting: Ergonomics consulting on a project basis
- » Human Solutions Trainings: Individual integration of RAMSIS software in your product design process

■ Preferred ergonomics software

RAMSIS is distinguished by a unique combination of a sound scientific foundation and common-sense ergonomics and design functionality. For this reason, RAMSIS has long been and still is the preferred ergonomics software of the automotive and aerospace industry worldwide.

With RAMSIS you can:

- » **Simulate your (international) customer population** in terms of body size, gender, age and geography. RAMSIS' accurate representation of the human body and comprehensive, global anthropometry databases come from credible and well-documented sources. They are based on renowned research projects and anthropometry surveys in Europe, North- and South America, as well as China, Japan and Korea.
- » **Accurately simulate driver postures and behaviour.** Comprehensive studies on driver postures ensure accurate and realistic simulation of driver postures and motion in CAD.
- » **Answer all questions** related to comfort, safety and operability of your products. RAMSIS' large functional extent enables you to ensure proper spatial accommodation of your customer population, optimal direct and mirror vision, easy reach of instruments and feasible force levels required to operate controls.



RAMSIS: The world's leading ergonomics simulation software

With RAMSIS you can solve all ergonomics-related design problems

Vision Analysis: Direct Vision and Mirror Vision

Typical questions: Is the driver able to see persons or objects around the vehicle? Is the driver distracted by having to operate various controls?

Related functions in RAMSIS:

- » Eye motion is simulated as part of the automatic posture calculation
- » A realistic line-of-vision, head and neck rotation are calculated automatically, depending on the vision target
- » Visible areas can be assessed from an ergonomic point of view. The distance between subject and object is considered
- » Mirror view for planar and spherical mirrors can be simulated

Reach Analysis

Typical questions: Can controls and pedals be reached comfortably? Can mechanics access and reach parts for repair and maintenance activities?

Related functions in RAMSIS:

- » For extremities and other chains of body parts, reach envelopes can be created. For example, a reach envelope for the legs and feet indicates the best position for pedals, or a reach envelope for the fingers the optimal location of switches on the steering wheel.

Automatic posture calculation and spatial accommodation analysis

Typical questions: How comfortable or uncomfortable are various driver postures? Can short people easily access the cabin? Do very tall or corpulent drivers have sufficient space in the cabin? Are drivers from e.g. Europe, the USA and China properly accommodated?

Related functions in RAMSIS:

- » Analysis of body dimensions
- » Analysis of body mass
- » Fast and automatic calculation of realistic driver and mechanics postures
- » Easy manikin animation: tasks and postures can simulated interactively or by fixing/aligning of body parts
- » Tasks and postures can be easily transferred to other manikins
- » Simulations for entire test samples can be calculated in one step

Force Analysis

Typical question: Can the driver (or the mechanic), in his/her actual posture, generate sufficient force to operate the necessary controls?

Related functions in RAMSIS:

- » Automatic calculation of posture-dependent maximum operating forces

Availability

RAMSIS INDUSTRIAL VEHICLES is available as:

- » an integrated module in CATIA V5
- » a stand-alone package for HP, IBM, SUN, Windows

Import-/Export

- » Built-in IGES/VDA-translator
- » Interface with Motion Capture Systems
- » Export of motion sequences to AVI

Please find more information on www.human-solutions.de or contact us for a personal meeting at +49 (631) 303-5600.