



Competence for ergonomics

Impetus, ideas and manpower
for leading ergonomics products

YOUR BUSINESS FIRST

Make ergonomics your biggest competitive advantage

Market-leading products have high quality standards in terms of usability, comfort and safety. Demographic developments, increasing consumer demands and price pressure require an effective strategy and high-performance implementation – and we can achieve this for you and with you.

As proven experts for ergonomics and ergonomics simulation, we will support you in your projects, take over the implementation of the complete ergonomic studies and help you to establish ergonomics in your organization for the long term. Our experience in highly complex vehicle development also qualifies us for the ergonomic testing and design of other products – and we have proven this in many projects.

Your advantages:

- > A high level of product maturity within a short timeframe
- > Innovative ideas and comprehensive knowledge for ergonomic product design
- > Immediate availability of skills and resources

ERGONOMICS FOR YOUR DEVELOPMENT

Best-practice and skills

Humanetics Digital Europe GmbH offers you practical experience in all vehicle segments as well as in industrial workplace design including long-standing cooperation with companies such as Airbus, Eurocopter, BMW, Daimler or Ford. Our customers appreciate the profound experience of our team in the field of ergonomics, in field studies and in ergonomics simulation. This enables us to make the best decisions for your product with regard to productivity, the validity of your results and cost efficiency.



1. FULL-SERVICE ERGONOMICS

Digital ergonomics studies

We will take over the entire implementation of ergonomic studies, from planning to the transfer of results, providing your organization with innovative ideas in your product design. If required, we use third-party studies to supplement the ergonomics simulation with RAMSIS. You will receive your study results fully documented and comprehensibly prepared:

- **Ergonomics analysis** on the CAD model
- **Evaluation and transfer** of the studies and preparation of design recommendations

2. ERGONOMICS ON DEMAND

Project work with your team

If you wish to increase your skills and productivity, we will support you exactly as required with experience and manpower on a project basis or within the framework of work contracts in all areas of ergonomic product design:

- **Preparation:** data preparation and construction of prototypes and test facilities for ergonomic studies
- **Serial measurement surveys:** development, examination and review of new procedures and ergonomic methods
- **Studies** on various vehicle-specific topics, packages, standards, etc.

3. ORGANIZATION/PROCESS SETUP

Guidance in ergonomics processes

In order to integrate ergonomic requirements sustainably into your development process from strategy to series maturity, we can quickly create and establish solidly-founded ergonomics guidelines for virtual and real validation. This also includes the development, analysis and review of new procedures and ergonomic methods:

- **Concept** for the layout of corporate requirements
- **Distribution of tasks** during product development
- **Preparation** of requirement and functional specifications



Fig. 1: eBTD certification

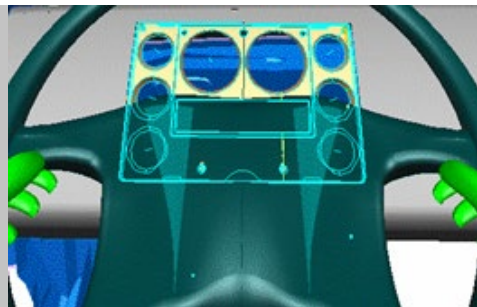


Fig. 2: Cockpit design



Fig. 3: Testing the external visual field

YOUR PROJECTS WITH HUMANETICS DIGITAL EUROPE GMBH

Benchmark product ergonomics

In the Usability Laboratory the ergonomic quality of the operability of products and product elements (such as displays and steering wheels) is compared through observation of test subjects and by using questionnaires. This is based on jointly developed requirement definitions as well as interface design and evaluation with VDI 2222.

Virtual and real test collective

Your test collectives must match your target groups perfectly. You can create virtual test collectives from more than 14 countries/world regions and use them digitally or as a guideline for the selection of real test persons. If you wish to collect exact data of your target group, we will carry out a serial measurement survey for you by using 3D body scanners. The result will be your final test collective either embedded in RAMSIS or to be used in combination with another simulation system or in the form of a real test group.

Operability analysis

360° vehicle ergonomics. By virtually testing a vehicle using RAMSIS with regard to driver, passenger, rear seat, loading, ingress/egress and standards, you will get an exact overview of the ergonomic quality and ergonomic improvement potential of your products. This analysis is also possible in comparison with several vehicles.

Analysis of visual standards

Compliance with visual standards is ensured on the digital model at a very early stage of the development process.

Belt analyses

The analysis of belt routings can also be ensured on the CAD model using manikins and test devices (e.g. Gabarit, Hybrid III, Q-Dummy). Alternatively, validation with a real test collective in a real vehicle is also possible.

Virtual aging

Drivers, passengers and employees are getting older. How do ergonomic requirements change with increasing age? Products and processes can be assessed for specific age groups by checking vision, anthropometry, mobility and force.

Forces & moment analyses

Operability is also a question of force. Loading and lifting activities can be digitally evaluated. We will analyse for you the loading and the service activities around the vehicle and calculate the maximum force. It is also possible to calculate torques in the neck area, e.g. during extreme flight manoeuvres with and without a helmet.

Ingress/Egress analyses

Which phases are critical during ingress and egress? Observation and analysis of the ingress process with real test subjects and the performance of serial measurement surveys for entry and exit under laboratory conditions bring clarity to this issue. The animation of movement in the virtual world quickly shows you what can be improved on the vehicle.

SAE package and seat testing

We check seat length and width, backrest height, seat contours, lateral support and operability by using physical test benches and simulations. We also define the basic ergonomic reference points.

Vision in the vehicle

Head-up displays, complex traffic situations and more sophisticated displays on the dashboard increase requirements on vehicle ergonomics. We will support you e.g. with the digital analysis of the external view taking into account the obscurations caused by A-B- and C-pillars. We will help you to define the visual quality when looking at instruments or to calculate the required gaze aversion times so that you will be able to draw the right conclusions from the study results.

TALK TO US

We'll be happy to show you what we can achieve in your organization and offer you tailor-made consulting. Please arrange an appointment for a no-obligation initial conversation!

Humanetics Digital Europe GmbH

Europaallee 10

D-67657 Kaiserslautern, Germany

P +49 631 343593-00

F +49 631 343593-10

www.humaneticsgroup.com