

# PERFECT 10

Using computer simulation to create the perfect, ergonomic cabin is becoming widespread throughout the off-highway industry. How high does your vehicle rank?

**A**round half of today's construction vehicle cabins are not developed and produced by the vehicle manufacturer itself, but by a specialised supplier. One of Europe's market leaders in this segment is the Fritzmeier Group. A family company founded in 1926, it manufactures cabins for construction machinery, forklifts and tractors, and boasts an impressive customer list.

This German cabin specialist provides everything from individual components to fully comprehensive services, from first design to complete assembly. With around 2,000 employees in Europe, the company has its HQ in Großhelfendorf in Bavaria,

Germany, with production facilities in Austria, the Czech Republic, France, Belgium, Romania, Brazil and Japan.

In order to maintain its competitive edge in the future, Fritzmeier has adopted a new strategy for attracting customers.

### Ergonomics as a sales argument

Global usage, an increasing number of occupational regulations and rising customer expectations with respect to comfort and safety force manufacturers of construction machines to put the operator at the centre of the design process.

To meet the demands of its existing and future customers, Fritzmeier will be



**Visibility analysis with Ramsis**

putting more emphasis on the ergonomic qualities of its cabins. Even at the early phase of the design process, the company wants to ensure that ergonomic guidelines are met and that future drivers will be able to reach levers, pedals and other operating elements comfortably and safely. Not only will Fritzmeier developers focus on the typical Central European operator, but there are also plans to properly accommodate other populations, for example, the Chinese and Japanese.

In order to demonstrate the benefit of ergonomically designed cabins to potential customers, even in the project acquisition stage, Fritzmeier will be using Ramsis simulation software.

Ramsis was developed by Human Solutions GmbH, based in Kaiserlautern, Germany, in co-operation with the collective German automotive industry. The modelling software is a so-called digital human model, a highly efficient CAD tool for driver simulation and ergonomic design of cabins, cockpits and interiors.

Construction machines and cabins are increasingly being designed with 3D CAD systems. Without an accurate representation of the human body in their CAD model, designers can only guess what the operator looks like, where he or she sits and what can be seen and reached. The consequences include costly corrections at a later stage in the design process, or worse – an unsuccessful product on the market.

The norms and regulations with respect to cabin design and ergonomics that are available today provide human templates, but these are static and two-dimensional and so do not represent the human body in its full complexity.



**Analysis of control elements with Ramsis**



**Ramsis inside Fritzmeier cabin**



**Reachability analysis being performed with Ramsis inside a Fritzmeier Systems cabin**

Ramsis allows designers to build cabins around the operator population from the very start of the design process. It provides them with a biomechanically correct CAD representation of the human body (manikin) that can be animated to simulate driver postures and behaviour. Manikins can be created from a number of up-to-date international anthropometry databases, including European, American and Asian populations. Based on the simulated interaction between the driver and the cabin, its design can be evaluated and improved with respect to visibility, reachability of operating controls, operating forces, clearances, adjustability of seats and much more. Proper accommodation of the future driver population right from the start of the design process results in increased cabin comfort and safety, prevents design corrections later on and reduces the need

for expensive and time-consuming physical experiments.

More than 70% of the world's major car manufacturers use Ramsis for ergonomic vehicle interior layout. While the automotive industry has long recognised the advantages of ergonomics software, manufacturers of construction machines have only recently begun to explore the possibilities of this technology.

Fritzmeier specialists will first carry out joint ergonomic analyses with Human Solutions' Ramsis experts, which will provide Fritzmeier's cabin designers with the necessary knowledge to exploit the many possibilities that the software has to offer. The medium-term plans are for Fritzmeier to take over all consultation services.

Uwe Rastel, managing director at Fritzmeier, commenting on the company's commitment, said: "Ergonomics will play

an increasingly important role in the future – and for industrial vehicles too. That's why we wish to actively approach our customers and show them the advantages that the early integration of ergonomic studies in cabin construction can bring.

"We intend to employ someone to specialise solely on ergonomics – and that shows just how seriously we're taking this. If anyone wants more information, they are welcome to come along to our booth at bauma 2007 where we'll be happy to show them the Ramsis world as we see it."

Human Solutions will be located at Fritzmeier's booth – No. 321/418 in Hall A6 at bauma 2007. **IVT**

✉ **Peter van der Meulen** is sales manager Ergonomic Simulation at Human Solutions



**Rear visibility can be evaluated with early design data**



**CONTACT**

[www.fritzmeier.com](http://www.fritzmeier.com)  
[www.human-solutions.com](http://www.human-solutions.com)

# The Perfect Solution.....

Fritzmeier specialists will carry out joint ergonomic analyses with Human Solutions RAMSIS

Meet us at Bauma 2007  
 Booth no. 321/418 in Hall A6

## HUMAN SOLUTIONS

**RAMSIS** is the 3D CAD manikin by Human Solutions which has been specially developed for the ergonomic design of drivers' workplaces. This 'state of the art' system enables the realistic reproduction of international body measurement data as well as analyses focusing on visibility, comfort and ergonomics.



**Fritzmeier Systems GmbH & Co. KG**  
 Großhelfendorf  
 Forststrasse 2  
 85655 Aying, Germany  
 P +49 8095 6 0  
 F +49 8095 6 254  
[www.fritzmeier.de](http://www.fritzmeier.de)



**Fritzmeier**, The German cabin specialist provides either individual components and services, or a fully comprehensive service, from first design to complete assembly. Great emphasis is placed on ergonomic simulation and analyses, and in order to demonstrate the advantages of this technology Fritzmeier will be using RAMSIS simulation software from project inception to completion.



**Human Solutions GmbH**  
 Europaallee 10  
 67657 Kaiserslautern  
 P +49 631 303 5600  
 F +49 631 303 5700  
 E [contact@human-solutions.com](mailto:contact@human-solutions.com)  
[www.human-solutions.com](http://www.human-solutions.com)

