

## Hannover Messe: Loyal Errand Boy and Virtual Excavator

KIT at the Research and Technology Trade Fair, Hall 2, Booth B16: Transport Vehicle for Intralogistics – Virtual Excavator – Industry 4.0 – Technology Market (April 13 – 17, 2015)



FiFi supports intralogistics and transports small objects. (Photo: Andrea Fabry)

At this year's Hannover Messe, Karlsruhe Institute of Technology (KIT) will have a special helper at its booth: FiFi, an electric errand boy follows its operator loyally like a well-trained dog and even carries his loads. Visitors may test FiFi - a gesture-controlled transport vehicle – at the main booth of KIT (hall 2, booth B16) and make it carry handbags or suitcases. In addition, visitors are invited to dig holes into the KIT booth with an excavator and to have a look at future production processes, virtually at least.

Background information, videos, and photos can be found in the digital press kit: [www.pkm.kit.edu/english/hannovermesse2015](http://www.pkm.kit.edu/english/hannovermesse2015)

### Intralogistics: FiFi Obeys Gestures

For in-house goods transportation, scientists of Karlsruhe Institute of Technology (KIT) developed a transport vehicle that can be controlled by natural gestures: FiFi acquires its environment by means of a 3D camera, follows its user, recognizes gestures, and executes the corresponding commands. By facilitating goods transport, FiFi

Monika Landgraf  
Chief Press Officer

Kaiserstraße 12  
76131 Karlsruhe, Germany  
Phone: +49 721 608-47414  
Fax: +49 721 608-43658  
E-mail: [presse@kit.edu](mailto:presse@kit.edu)

For further information,  
please contact:

Simon Scheuerle  
KIT  
Press Officer  
Phone: +49 721 608-48761  
[simon.scheuerle@kit.edu](mailto:simon.scheuerle@kit.edu)

makes processes more efficient and work easier for the operators. "With FiFi, we have developed a user interface that is much more intuitive and natural than conventional systems in the branch," Kai Furmans, Head of Institute of Material Handling and Logistics, explains. "It is our objective to make technology easy to handle". The user has no direct contact to the vehicle, an integrated camera generates a 3D image of the environment. From it, 3D image processing algorithms generate a skeleton of the user and his hands. By means of a gesture vocabulary, FiFi interprets changes of the skeleton and sends the corresponding control commands to the carriage and lifting gear.

### **Virtual Reality: Excavator Demonstrates Technical Processes**

Visitors of the KIT booth may test all control levers in a real cab of an excavator and dig holes into the floor or bar the way of passers-by by sand heaps – without any danger: The software platform Cross Connected of the KIT spinoff Rüdener 3D Technology GmbH simulates the real behavior of the excavator in real time and interactively visualizes it in three dimensions. In this way, the excavator may be experienced at the booth by visitors wearing virtual reality glasses. Cross Connected does not only simulate the movement of the excavator, but all mechatronic, i.e. mechanical and hydraulic, processes. On monitors in front of the real excavator, the audience can observe how the engine behaves when the operator steps on the gas pedal or how the pressure in the lines of the bucket increases when it is lifted. "Currently, there is no system on the market that offers the same functionality as Cross Connected", Andreas Rüdener, company founder and former staff member of the KIT Chair of Mobile Machines, says.

### **Virtual Reality: Experiencing Industry 4.0 in a Virtual Factory**

Industry 4.0 requires novel concepts and IT infrastructure to build up virtual factories. Researchers at KIT work at the "Industrie 4.0 Collaboration Lab" in cooperation with Bechtle IT System House Karlsruhe and the SolidLine AG on generic interfaces to allow a flexible and efficient virtualization of production lines. The KIT booth immerses the visitors in an interactive factory model that can be interactively explored. The vision is one day to generate a virtual sibling of any factory or production line, and that fully automated. The virtual factory is ideal for factory and production planning, virtual commissioning and production monitoring as well as training. Challenges are the automated workflows to integrate big amounts of heterogeneous data for real time applications, as well as the flexible enrichment with semantic meta information.

## **Microcomponents, Metal-organic Frameworks, and Technology Market**

Other exhibits at the booth demonstrate processes for the highly precise manufacture of microcomponents with high aspect ratios that may be applied in modern microoptical and X-ray optical systems in particular.

In addition, the KIT presents surface-anchored metal-organic frameworks (SURMOFs), a new class of highly porous materials, whose pore size and chemical properties can be adjusted. This material platform has huge application potential in various areas of engineering and science, such as in sensor technology, catalysis, solar cell technology, as well as in the pharmaceutical and biological sectors.

The KIT technology market RESEARCH TO BUSINESS presents latest technology offers for further development to marketable products.

### **KIT Participation at Other Booths**

- Hall 2, A01 - Bionics
- Hall 2, C09/3 – Helmholtz Association
- Hall 2, C40 - VDI/TU9
- Hall 3, E06 - NanoMat
- Hall 6, D44 - KA-RaceIng
- Hall 17, C18 - SkillPro

Further information can be found in the digital press kit:

<http://www.pkm.kit.edu/english/hannovermesse2015>

**Karlsruhe Institute of Technology (KIT) is a public corporation pursuing the tasks of a state university of Baden-Württemberg and of a national research center of the Helmholtz Association. The KIT mission combines the three strategic lines of activity of research, higher education, and innovation. With about 9,400 employees and 24,500 students, KIT is one of the big institutions of research and higher education in natural sciences and engineering in Europe.**

KIT has been certified as a family-friendly university since 2010.

This press release is available on the internet at [www.kit.edu](http://www.kit.edu).

The photo of printing quality may be downloaded under [www.kit.edu](http://www.kit.edu) or requested by mail to [presse@kit.edu](mailto:presse@kit.edu) or phone +49 721 608-47414. The photo may be used in the context given above exclusively.