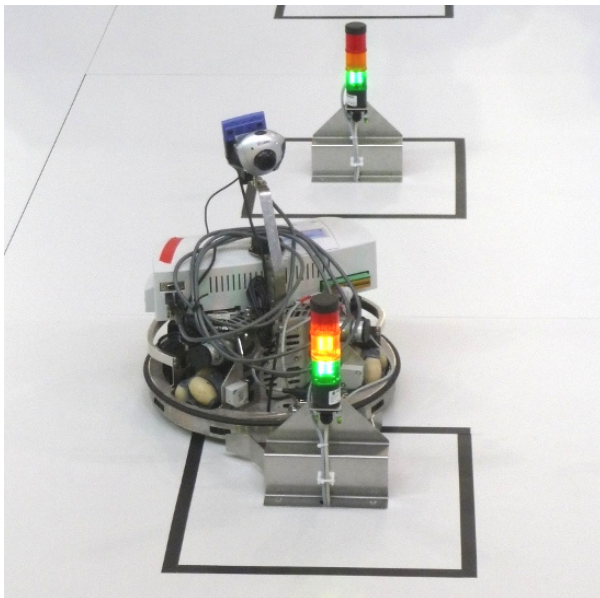


Festo Logistic League as part of RoboCup 2011

German Open Magdeburg (03/31/11-04/03/11) and RoboCup 2011 Istanbul (07/04/11-07/10/11)

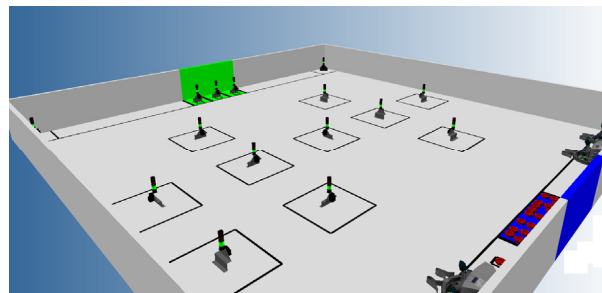
With the additional section called RoboCup@work the RoboCup Federation creates a new approach in competitive Robotics, featuring the implementation of industrial applications into scientific competitions. As the first of its kind discipline, the Festo Logistics Competition was introduced in 2010, showing the potential of this new core area and the fascination for students competing in this all new approach. In 2011 the industrial application will impact the main task even more.



The Robotino® producing goods

The Challenge

- **Autonomous, guided vehicles (AGV)** reacting in a flexible yet precise way to an unknown production situation, solving a broad variety of tasks without in-game administration in a way that bears a resemblance to Artificial Intelligence.
- The competing teams solve the task on their own, rewarding the most efficient solution. They supply their 3 Robotinos® with the hard- and software to solve the task as an autonomous team.
- The development of the solution is the most compelling task, the choice of platform and programming language the first crucial decision.
- Developing and contributing to the most efficient intelligence that enables the logistic processes, is the core task of all participants. Just like working in the real world, this task requires **interdisciplinary engagement** of all team members. A typical team should supply enough creative minds to meet and hopefully broaden the requirements for **Robotics, Informatics and Logistics**.



The 2011 competition area

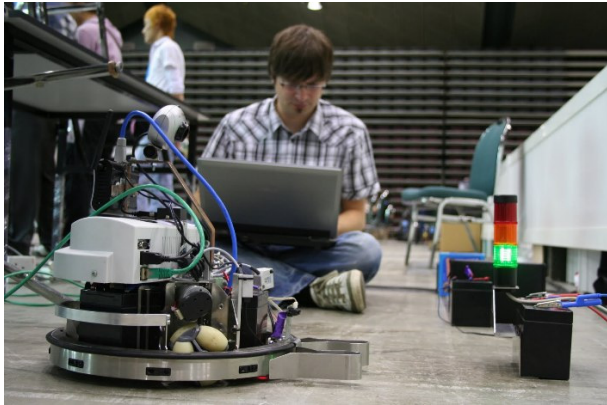
Festo Logistics Competition RoboCup

FESTO



Robotino® powered AGV-Simulation on University level

The competition Environment



The 5.6 times 5.6 meter large competition area provides the fictional production hall for each team. With incoming goods department and delivery zone the surrounded production machines will be used to solve the task, but failure is possible, a machine can turn out of order by surprise.

The Competition

Two teams running against the clock. Their three Robotinos®, in a full autonomic state, discovering the production and the identity of the unknown machines.

With the official start, there can be no human interaction. Therefore the robots identify and share tasks and results with its fellow robots and, best case, do not crash on the way to solve them. Mounting the resources, transporting them to the right machine, at the correct time, supplying the correct materials to fulfill the work order at hand and finally delivering the final product to the designated delivery zone. This is the fascination behind of the Festo Logistics Competition. Teams get rewarded for their accomplishments on the way towards a fluid and precise process, balancing system manipulations and random errors.



This year's competition is designed to enable an answerable task with the outlook of implementing dynamic obstacles in future iterations. The competition will continue its approach on the way to truly simulate the industrial application.

„En Detail“

20 pallet carriers containing raw material are placed inside the incoming goods department of the production hall. This raw material is called „S0“ and is personated by a hockey puck loaded with a RFID tag. Stored on this tag, invisible to the participants, are the part number and its current production state. The only way to get information about the loading equipment is by observing the machines and their optical reaction when a puck gets mounted.

Distributed throughout the factory are 14 machines, the RFID devices that consume, process, read or recycle the loading equipment. The 10 machines of the three staged production cycle is divided into:

- **5 Machines M1** that process raw material S0(wood) to Subassembly 1 (Shelves)
- **3 Machines M2** that consume S0 and process S1 to S2 (wooden frame). Recycling the consumed S0 is optional, yet rewarded.
- **2 Machines M3** that produce the final product P (wooden rack) by consuming S0 and S1 and processing S2. Again the consumed loading equipment should be recycled.
- Finally the product P has to be delivered to the correct one of three delivery gates that is designated by the system and properly marked.

Each match features two teams starting their autonomous processes at the same time, to show off which approach is more efficient and...or successful.

The challenge includes, but is not limited to, the precise mounting and dismounting of the loading equipment, the flexible creation and processing of work batches and the efficient deployment of the usable machines. In this way Robotinos® can prove their versatile applicability towards the tasks at hand in order to properly work as an AGV within this educational model.

Further Information

Festo Didactic GmbH & Co. KG

D-73770 Denkendorf

Dirk Zitzmann

Tel: +49 711/3467-1420

Mobil: +49 172 511 09 33

E-Mail: robocup@festo.com