



1 *PLAYMOBIL figure: construction worker*

2 *Demonstration of a packing solution for the hammerhead shark figure*

PACKASSISTANT... IT'S CHILD'S PLAY!

Fraunhofer Institute for Algorithms and Scientific Computing SCAI

Schloss Birlinghoven
53754 Sankt Augustin, Germany
www.scai.fraunhofer.de

MVI SOLVE-IT GmbH
Moosacher Str. 58, 80809 München
www.solve-it-mvi.com

Licenses
scapos AG, Phone 02241 14-2819
www.scapos.com

www.packassistant.de
info@packassistant.de

Requirements

The geobra Brandstätter Stiftung & Co. KG, manufacturer of the PLAYMOBIL figures, uses about 18 000 different injection molding tools to produce plastic parts for a large variety of »play worlds«. For the products introduced in 2015 this involved 1 000 new parts. The packaging of the parts has to be planned in order to estimate and optimize logistics costs.

Solution: PackAssistant

PackAssistant significantly simplifies the planning tasks for industrial packing. The software identifies the optimal filling of standard containers (for example iron-barred boxes) with identical parts.

The utilization of (storage or transport) containers based on the filling schemes computed by PackAssistant is far higher

than solutions realized by even experienced packing designers. Since the software can already be applied while the prototype is still under construction in the CAD-system, transport and storage can be planned early, fast and reliably.

The software enables the user to handle different types of packaging. These include packing with solid or flexible intermediate layers, with compartments or in stacks, and the simulation of loose goods. In addition, parameters for customer-specific packing solutions are available:

- Possibility to select the minimum distance between parts, the container base and walls, and compartments. Compartments are particularly important to protect plastic objects from scratching.
- In order to facilitate the stability of the container, it is possible to define stable positions for the parts.





3 Injection molded articles are taken from the conveyor belt for packing.

- Adherence to the maximum load of the container.
- Compute the minimum volume bounding box of a single part.
- Automatic choice of an appropriate container from a list. For PLAYMOBIL, six different container sizes are used.

Loading in Stacks

In addition to arranging objects in layers, PackAssistant can also load them in stacks. This is particularly suitable for thin-walled objects, whereby stacking can be vertical or slanted. The Brandstätter group produces about 2 500 injection molded objects, which are packed in stacks.

Filling with Loose Goods

Small parts are often not put into a container in an orderly fashion but are simply allowed to fall from a conveyor belt into a container. PackAssistant can estimate how many parts fit into a container by simulating the physical behavior of each

part, i.e. by simulating gravity, velocity and collision among parts.

Advantages

PackAssistant users have improved the packing density of containers by up to 25 percent. This improvement also has a positive effect on other areas in the whole logistic chain: fewer containers means reduced storage space needed and lower transportation and handling costs.

Moreover, PackAssistant makes an early calculation of the packaging data possible because the software uses the CAD-models of the objects, which are available before the first object has been manufactured.

4 More than 450 injection molding machines produce different objects in the production centre in Dietenhofen, Germany.

About PLAYMOBIL and the geobra Brandstätter Stiftung & Co. KG

geobra Brandstätter Stiftung & Co.KG – headquartered in Zirndorf, Germany – is the producer of PLAYMOBIL and known for premium toy quality »made in Europe«.

The 7.5 cm tall PLAYMOBIL figure is the cornerstone of this creative toy system, and is an internationally award-winning product. The imaginative role play opportunities, integrated with a variety of historical and modern play themes is fascinating to children and highly valued by parents and educational practitioners alike. Since its launch in 1974, 2.8 billion PLAYMOBIL figures have been produced. The company distributes its toy system, consisting of around 30 different play themes, in more than 100 countries and employs more than 4,100 people. Worldwide turnover for the Brandstätter Group reached 595 million Euros in 2014. PLAYMOBIL's certified high quality is guaranteed by using company owned European production sites in Germany, Malta, the Czech Republic and Spain. Since 2000, the innovative company has also been producing the LECHUZA brand of high-quality plastic planters with sub-irrigation system.

»Only by use of the PackAssistant technology could we get all relevant packaging data before the primary production. Thus, time-consuming packing tests could be avoided.«

Karina Freund, Department REFA, geobra Brandstätter Stiftung & Co. KG

More information:
www.playmobil.com