


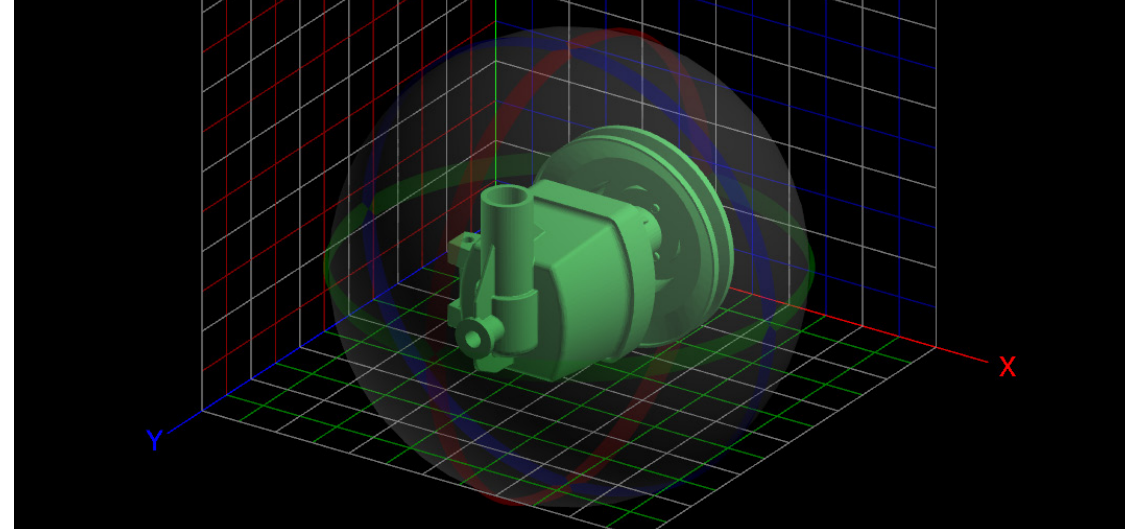


Fraunhofer
SCAI

A photograph of a large industrial warehouse or factory floor. In the foreground and middle ground, there are several rows of yellow metal shelving units. Each unit is filled with numerous blue and white plastic containers, likely for packaging. The ceiling is high and features a complex network of pipes, ducts, and industrial lighting fixtures. The overall scene is brightly lit and organized.

PackAssistant: Software for fast and optimal container load planning

Leading software for container load planning with complex identical parts



At a glance

Making the best use of container space can save transportation and storage costs. One simply needs to find the right way to arrange the objects to be packed in the available container space. Experienced packing planners usually spend a lot of time meticulously arranging and packing parts with complex shapes. Nevertheless, in most cases they will not achieve the same packing density as realized with PackAssistant.

The PackAssistant software calculates the optimal packing arrangement of identical parts in standard containers by using 3D designs (CAD). This also works for parts with complex shapes, as the software will identify and take the individual shape of the object into account.

Saving potential

PackAssistant saves time and money through

- optimal container utilization,
- avoiding time-consuming packing tests,
- allowing early-stage transport, container and storage planning and
- providing a key support tool for the creation of quotes and tenders.

Reduction of transport costs

PackAssistant users have improved the packing density of containers by up to 25 percent. This improvement also positively affects other areas in the logistics chain: fewer containers means reduced storage space needed and lower transportation and handling costs.

Save time by improved planning

PackAssistant not only enables you to improve packing densities but – by faster planning and due to its ease of use – it also helps you to save time.

PackAssistant needs on average 2-3 minutes for a calculation. After that you know

- the best possible container,
- the optimal container load and you receive
- a complete packing report including images.

How long do you take for all this?

- X % lower container cost
- X % lower storage cost
- X % lower transportation cost
- X % lower handling cost

Total of your cost savings?

Success stories

PackAssistant enormously simplifies the planning of logistics processes and the packing of industrial components.

Audi AG

As one of the original development partners for PackAssistant, Audi AG has been working with the software for many years and particularly benefits from the software's rapid calculations in its cooperation with suppliers. The enormous potential savings that can be realized through optimal packing of parts in large quantities can be seen in the case of a rear light for an automobile:

Supplier's recommendation

36 parts per container



PackAssistant's calculation

45 parts per container



Reduction in transportation costs

57 T€ per year

KTM Power Sports AG

When setting up a production facility for the X-Bow sports car series production, KTM Power Sports AG used PackAssistant to plan container sizes and the optimal packing of 450 parts. Since neither real parts nor prototypes were available during the set-up phase, planning was carried out using CAD data for the parts. Strategic planning for the containers revolved around the future logistics processes, the flow of materials, and the production cycle within the plant.

With PackAssistant it was possible to shorten the times for planning and implementing new containers by more than 50 percent: compared with the industry standard of nine to twelve months, using PackAssistant KTM needed just four months. PackAssistant enabled a comparison of different packing types and container models. The KTM planners created a concept for each part and an overall plan for using both standard and specialized containers.

Testimonials and references

(Selection)

»This software makes many things easier since we no longer need samples but can immediately carry out packing tests using the existing CAD datasets.«

Thorsten Henschel – Audi AG

»If you look at the whole logistics chain, the container is just the beginning. Storage space can be saved, and fewer delivery cycles are needed to satisfy customer needs.«

Marco Rosensprung – GEDIA GmbH

»Only with a technology such as that offered by PackAssistant were we able to complete an optimal container planning for all 450 parts and define standardized containers.«

Franco Lanzoni – KTM Power Sports AG

References

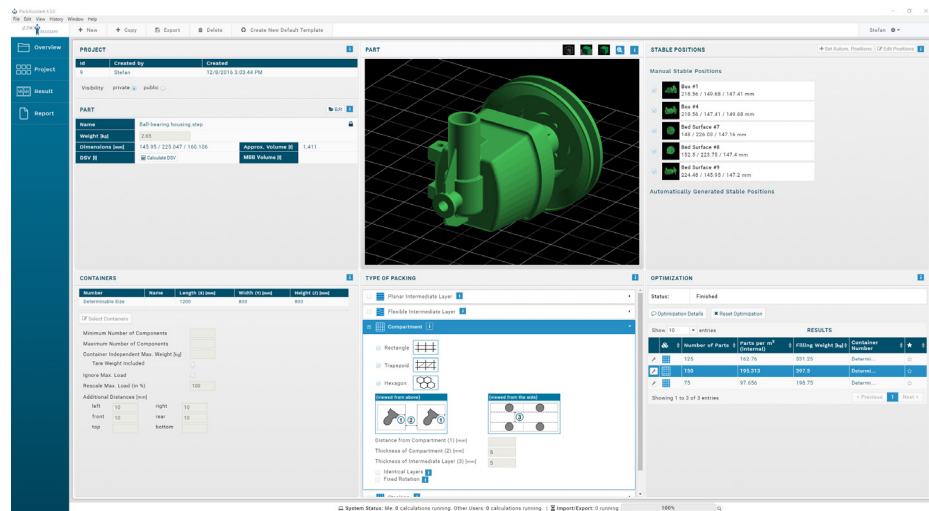
- Audi AG
- BMW Group
- Continental AG
- Gedia Gebrüder Dingerkus GmbH
- KTM Power Sports AG
- Playmobil
- Renault Group
- Schleich GmbH



KTM Power Sports AG

PackAssistant – intuitive user interface

Time-consuming packing attempts have become a thing of the past.



- The user interface is simplified, and the operation is intuitive.
- Efficient and easy-to-use 3D-Viewer for displaying parts and packing results.
- Help boxes (pop-ups) are provided for all functions throughout the system.
- PackAssistant is available in multiple languages.
- The user can adapt the interface to choose mm/inch and kg/pound settings.

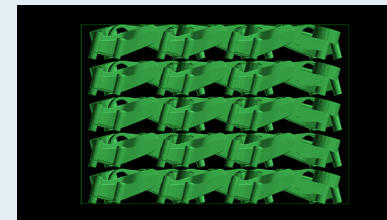
Types of packaging

One software – many options

PackAssistant enables the user to handle different types of packaging explained in the following sections. In addition, parameters for customer-specific packing solutions are available:

- Possibility to select the minimum distance between parts, the container base, walls, and compartments.

- Adherence to the maximum load of the container.
- To facilitate the container's stability, it is possible to define stable positions for the parts.
- Compute the minimum volume bounding box of a single part.
- Automatic choice of an appropriate container from a list.



View from the side

Loading with planar intermediate layers

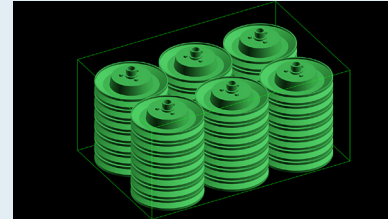
PackAssistant arranges the parts in layers with planar intermediate layers. The parts can be arranged in two ways: with or without overlap in the direction in which the parts will be taken out of the container. The software ensures that in either case, the arrangement of the parts is as regular as possible to allow easy loading and unloading. The exact selection of the minimum distance between the parts enables a realistic and case-specific solution.

Loading with compartments

PackAssistant arranges the parts in layers – as before – and additionally in compartments. The software allows for standard rectangular, trapezoidal, and hexagonal compartments. With many parts, the trapezoidal compartment, in particular, provides a much higher packing density, than rectangular compartments. The extra effort in the design and handling of trapezoidal compartments is minimal.



View from the top



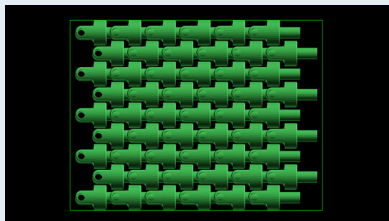
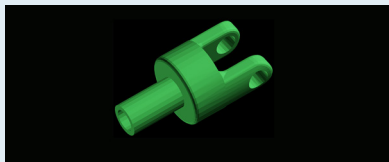
3D view

Loading in stacks

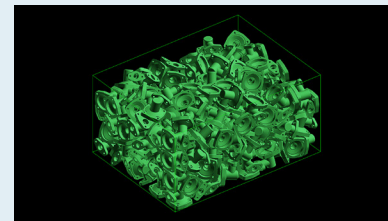
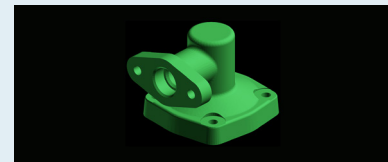
In addition to arranging objects in layers, PackAssistant can also load them in stacks. This is particularly suitable for thin-walled objects, whereby stacking can be vertical or slanted. The example above shows vertical stacking.

Loading with flexible or without intermediate layers

In addition to the case of rigid dividers between layers (described above), PackAssistant can also handle the use of flexible separators. Such intermediate layers are typically foam package or are made from plastic foils or fleece materials, and their thickness can be specified in millimeters. Should a material thickness of zero millimeters be specified, PackAssistant will arrange the parts directly on top of one another.



View from the side



3D view

Filling with bulk 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.

Output of results and technical specifications

Display of results and 3D-CAD-output

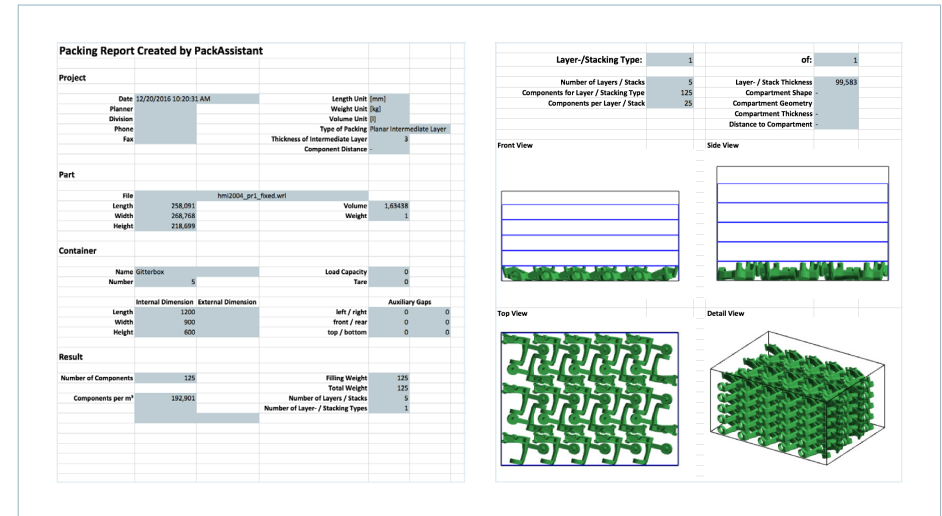
PackAssistant provides meaningful 3D images within a packing report, which in particular, allows the ideal basis for creating specific commercial quotes. The customer can see straightaway how the objects should be arranged in the available space. Until now, this had to be done by laborious drawings or graphs.

Packing reports are generated as Microsoft Excel/Word documents. You can adjust the document's layout to your company's needs.

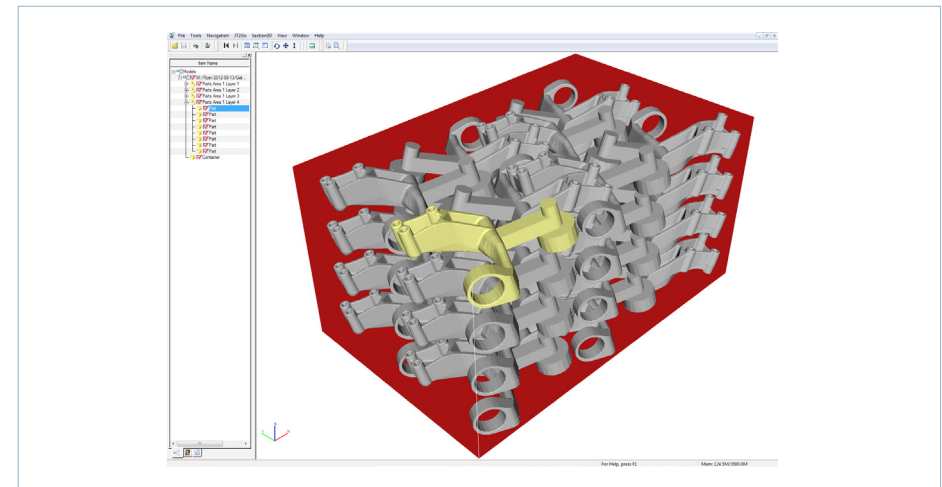
Additionally, the results can be exported as CAD datasets in the formats JT, STEP, and VRML. This allows a more descriptive representation of the packing arrangement to be created, which can, when desired, also be included within the packing report. With a 3D viewer software that is independent of PackAssistant, you can create individual sections and views of the packing arrangement.

Technical specifications

- PackAssistant is offered as a floating licence.
- FlexNet Publisher is used for software licensing.
- PackAssistant runs on any standard PC with Windows.
- The parts can be imported in any of the following formats: JT (*.jt), STEP (*.stp, *.step), IGES (*.igs, *.iges), VRML (*.wrl) and STL (*.stl).
- Results can be exported as packing reports in Microsoft Excel/Word or as CAD data in the formats JT, STEP and VRML.



Packing reports are generated as Microsoft Excel/Word documents. Detailed images make it easy for the user to put the suggested packing instructions into practice.



The results can be exported as CAD datasets in various formats.

Development

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