

FRAUNHOFER INSTITUTE FOR ALGORITHMS
AND SCIENTIFIC COMPUTING SCAI

PACKASSISTANT: SOFTWARE FOR FAST AND OPTIMAL CONTAINER LOAD PLANNING

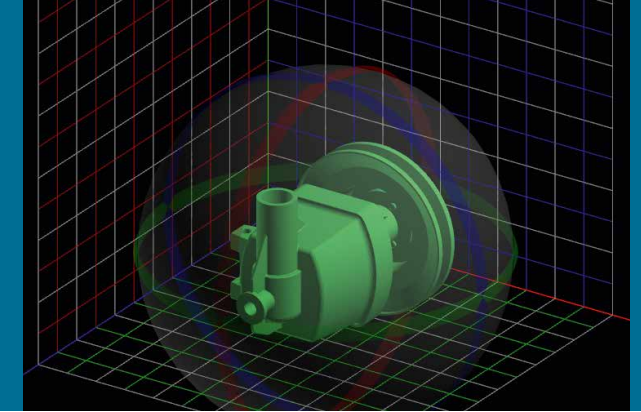


PACKASSISTANT

PackAssistant is the leading software for container load planning with complex identical parts

SAVING POTENTIAL

PackAssistant saves time and money



AT A GLANCE

Making the best use of container space can save both 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 but, 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,
- providing a key support tool for 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 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.

SAVE TIME BY IMPROVED PLANNING

PackAssistant not only enables you to improve packing densities, but – by faster planning – it also helps you to save time.

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

On average, it takes PackAssistant
25 minutes to:

- choose the best possible container
- work out the optimal container load
- produce a complete packing report incl. images.

How long do you take for all this?

Total of your cost savings?

SUCCESS STORIES

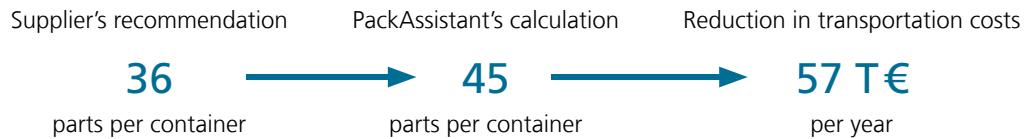
PackAssistant enormously simplifies the planning of logistics processes and the packing of industrial components.

TESTIMONIALS AND REFERENCES (Selection)



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 co-operation 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:



KTM POWER SPORTS AG

When setting up a production facility for the series production of the X-Bow sports car, 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, flow of materials and the production cycle within the plant.

With PackAssistant it was possible to shorten the times for planning and implementation of 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. This way, planners could generate a concept for each individual part before developing standard containers and special containers for each. The KTM planners were able to create a concept for each individual part and an overall plan for the use of both standard and specialized containers.

"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



BMW Group

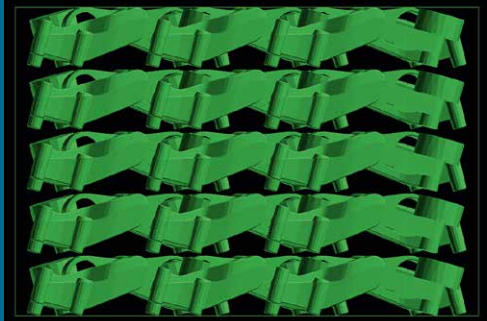


DAIMLER



Time-consuming packing attempts become a thing of the past

TYPES OF PACKAGING

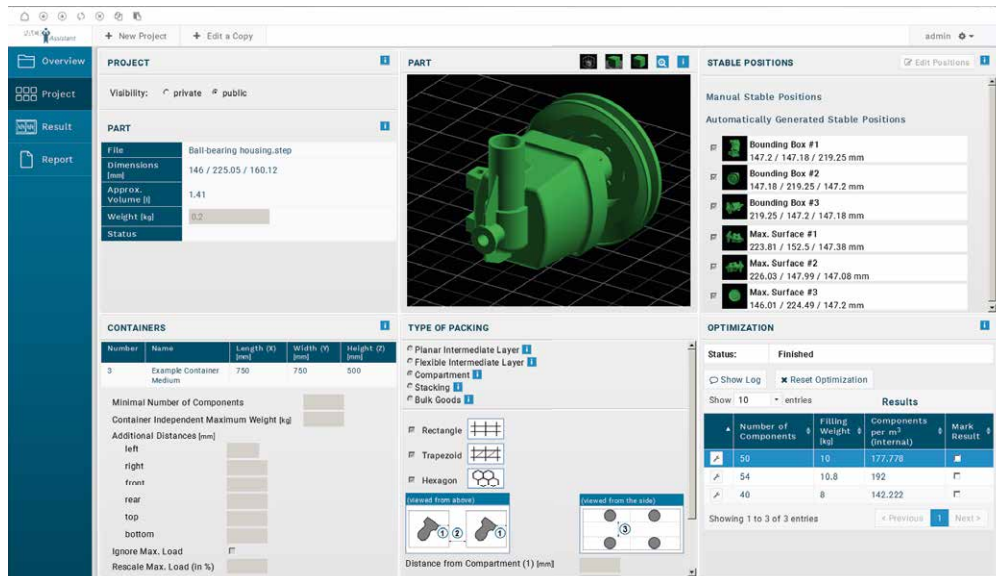


1

View from the side

PACKASSISTANT – INTUITIVE (GRAPHICAL) USER INTERFACE

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



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 and walls, compartments.
- Adherence to the maximum load of the container.
- In order to facilitate the stability of the container, 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.



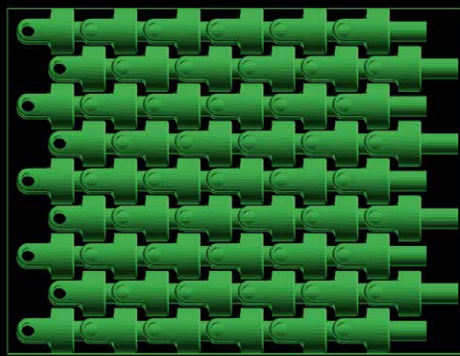
LOADING WITH PLANAR INTERMEDIATE LAYERS

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.



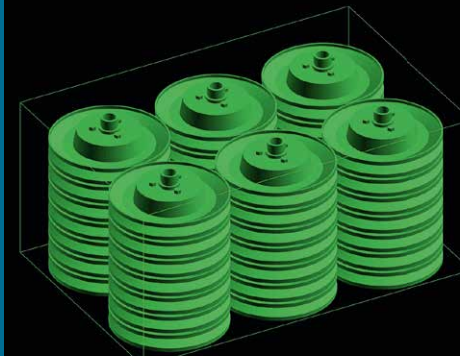
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View from the top



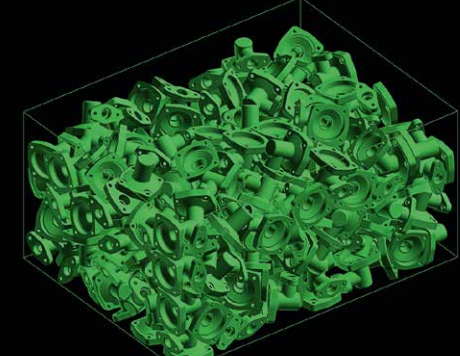
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View from the side



4

3D view



5

3D view



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 a lot of parts, the trapezoidal compartment, in particular, provides a much higher packing density, compared with rectangular compartments. The extra effort for design and handling of trapezoidal compartments is minimal.



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 a 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 millimetres. Should a material thickness of zero millimetres be specified, then PackAssistant will arrange the parts directly on top of one another.



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

Packing Report Created by PackAssistant									
Project									
Date	12/20/2016 10:20:31 AM	Length Unit	[mm]						
Planner		Weight Unit	[kg]						
Division		Volume Unit	[l]						
Phone		Type of Packing	Planar Intermediate Layer						
Fax		Thickness of Intermediate Layer	3						
Part									
File	hm2004_pr1_fixed.wrl			Volume	1,83438				
Length	218,091	Width	268,768	Weight	1				
Height	218,699								
Container									
Name	Gitterbox	Load Capacity	0						
Number	5	Tare	0						
Internal Dimension	External Dimension	left / right	Auxiliary Gaps						
Length	1220	front / rear	0						
Width	900	top / bottom	0						
Height	600		0						
Result									
Number of Components	125	Filling Weight	125						
Components per m³	192,901	Total Weight	125						
		Number of Layers / Stacks	5						
		Number of Layers / Stacking Types	1						

Layer-/Stacking Type:		of:	
Number of Layers / Stacks	5	Layer- / Stack Thickness	99,583
Components for Layer / Stacking Type	125	Compartment Shape	
Components per Layer / Stack	25	Compartment Geometry	
		Compartment Thickness	
		Distance to Compartment	

Front View

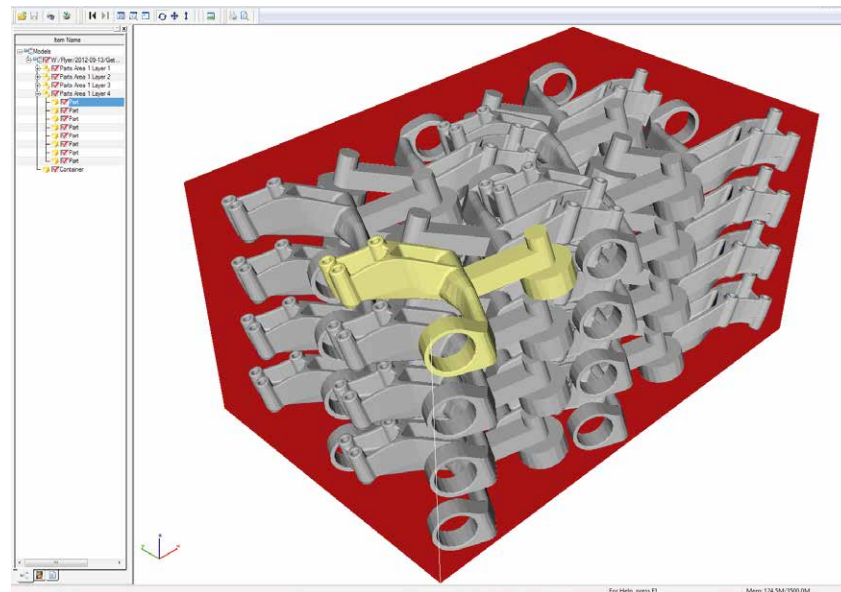
Side View

Top View

Detail View

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.

DISPLAY OF RESULTS AND 3D-CAD-OUTPUT

PackAssistant provides meaningful 3D images within a packing report, which in particular allows the ideal basis for the creation of 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 Word documents. You can adjust the layout of the document to the needs of your company. 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. A 3D-viewer software can show individual sections and views of the packing arrangement.

TECHNICAL SPECIFICATIONS

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

MORE INFORMATION

www.packassistant.com

DEVELOPMENT

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