Pack&Strat®

Rapid packing using Stratoconception®

Innovation through Research and Development

CIRTES
recherche & developpement

The original patented concept

Professor Claude Barlier and his team have been working in France since the 80's on the international development of the now patented Stratoconception® process. A prototype that allows the continuous, rapid reproduction, layer by layer of an object from a digital file.

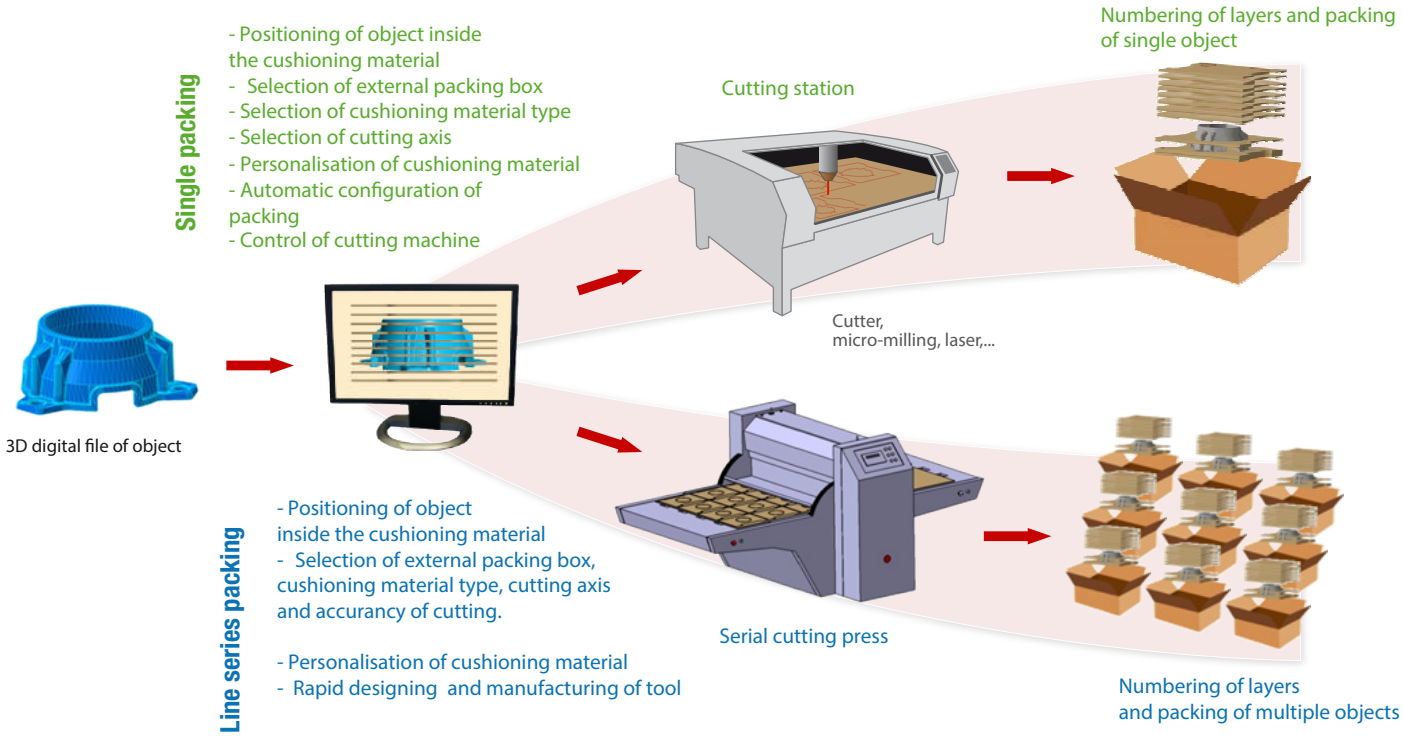
Pack&Strat® the latest innovation from the Research and Development team at CIRTES concentrates on the optimisation of the original Stratoconception® process by applying this technology to packing materials. The aim is to produce cushioning material in continuous layers which when assembled envelopes the product, providing the ultimate in packing protection.

Using a normal mapping program or a 3D CAD model the Pack&Strat® :
- Automatically configures the virtual platform that will best accommodate the product.
- The program automatically creates a 3D digital relief mould of the product which is then divided into layers which represent the layers of cushioning material.
- The program uses this information to identify the area to be removed from each layer of the cushioning material by the cutting machine, automatically generating the 2D or 3D cutting path in each slice of the chosen material.
- Once the different layers of cushioning material are reassembled the 'cut out' area inside the cushioning material will have the same original contours as the object. Once placed inside, the object will be completely enveloped inside the cushioning material.

The layers of cushioning material can be a continuous stack or split into several stacks depending on the complexity of the shape to be packed. Inserts are placed between the stacks of layered cushioning material to hold them securely in position. The Pack&Strat® programme automatically calculates the number of inserts required and their position. The use of inserts reduces the amount of cushioning material necessary without any loss in protection.

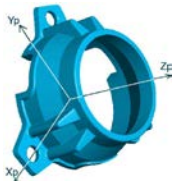
Pack&Strat® offers a cost effective protective packing solution with exceptional versatility. Pack&Strat® is particularly suitable for the packing and treatment of single, limited production or high added value products for example in the automotive, nautical, and medical sectors.

Process



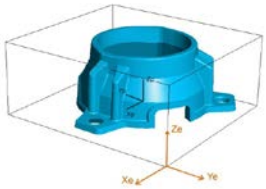
The different stages in the Pack&Strat® process

1



Import of the digital file from normal mapping or CAD software STL formated

2



Selection of the minimum volume of packing necessary to accommodate the product

3

Positioning / orientation of the product in the cushioning material in order to identify the minimum box volume possible

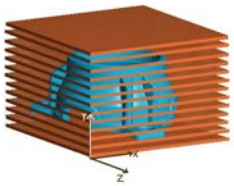
4

Selection of the box and the orientation and type of opening

5

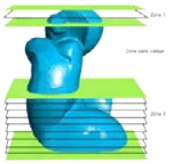
Selection of cushioning material from a wide range present in the database

6



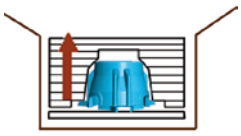
Selection of most appropriate slicing axis

7



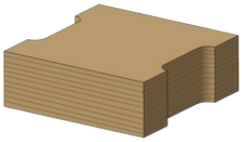
Selection of the stacking zone or multiple zones for complex parts

8



Identification of the most suitable unpacking method

9

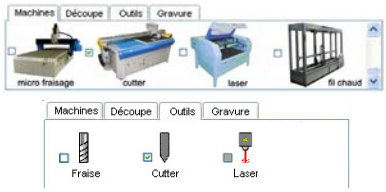


Addition of grips to facilitate the extraction of the cushioning material and product from the box

10

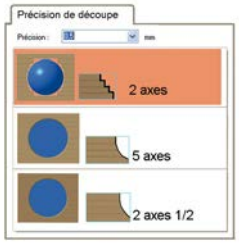
Marking : numbering of layers and addition of text and 2D images

11



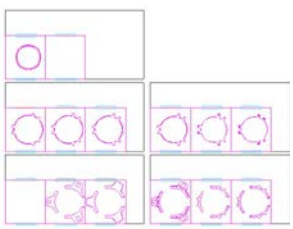
Choice of the machine and the cutting method

12



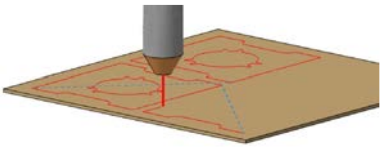
Selection of cutting accuracy

13



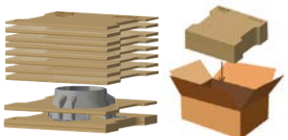
Automatic configuration of packing and calculation of cutting pathway

14



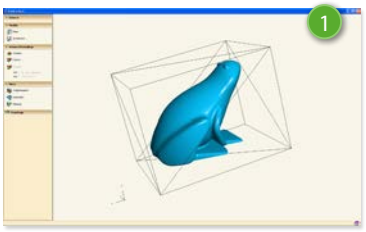
Automatic control of the direction of the cutting machine

15

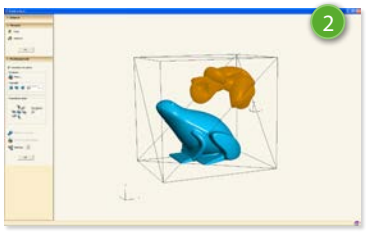


Configuration of cutting sequence and numbering of layers to facilitate assembly

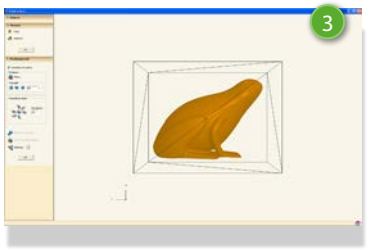
The Pack&Strat® Software



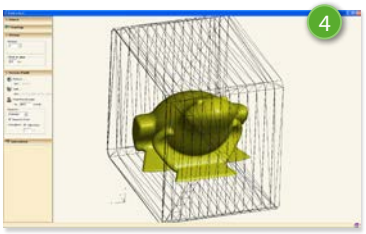
Import and visualisation of digital file



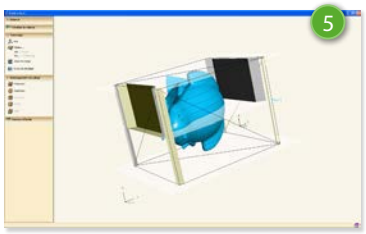
Identification of the packing configurations possible if several pieces in the same package



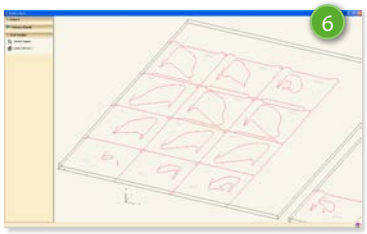
Position inside the cushioning material



Selection of material and orientation of cuts



Positioning of openings and grips to facilitate unpacking of item



Setting of range and machine code generation that will control the cutting machine

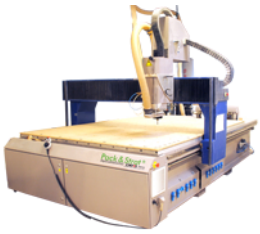
Integration into the cutting station

Integration into cutting machines including, micro milling, water jet, hot wire and laser.
The Pack&Strat® method has already been integrated into the following machines.

The CIRTES team propose:

- Feasibility studies into the integration of Pack&Strat® with any other type of automated cutting machine.
- Realisation of any training in using Pack&Strat®.
- Supply of tailor-made equipment for organisation,storage and assembly of packing.

Cutter

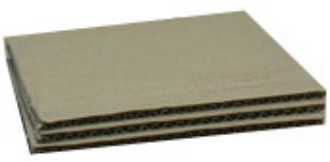


Micro-milling

Hot wire

Laser

The Pack&Strat® method offers an innovative, ecological and versatile packing solution that can be applied to many materials



2D cutting material:
corrugated cardboard, honeycomb carton, cork, wood, foam,…

3D cutting material:
Cork, wood, foam, polystyrene and polyethylene,…

Pack&Strat® A Patented Innovative Rapid Packing Process

Pack&Strat® is the first certified application of Stratoconception® to the production of 3D packing in layers that offers the ultimate in protection during transport. With Pack&Strat® the presentation of products in the packing can also be enhanced by the customisation of the cushioning material.

A French Innovation!

Pack&Strat®: Process and software entirely developed and patented by the French Research and Development team at The CIRTES Centre for Research and Development situated in the heart of the Vosges.

Packing versatile enough to cope with any shape !

Pack&Strat® is digitally produced 3D packing that corresponds perfectly to the contours of the piece to be packed providing the best protection possible. The packing can even be custom designed and is versatile enough to accept any shape.

Fast custom made packing!

Pack&Strat® designs and manufactures custom made packing in record time from a single digital file. You can optimise the dimensions of the exterior packing box to accommodate the product and the cushioning material exactly, using a database specially configured for industry standards.

A solution for both singular packing or production line series packing !

Pack&Strat® is particularly suitable for the packing of single, high added value and mass-produced products. With a huge variety of applications in all business activities including the, automotive, aerospace, medical, art and design industries. Pack&Strat® can also be used with serial cutting presses to create packing for mass produced objects.

A low cost packing solution !

Pack&Strat® offers a low cost, versatile packing solution without the need for expensive additional equipment. The program can be used with any existing cutting machine.

An environmentally sustainable packing solution!

Pack&Strat® can use various recyclable cushioning materials such as cardboard, wood, cork and recyclable materials made from natural fibres. It is also possible to apply the process to polystyrene and polyethylene.

A real industrial solution!

Pack&Strat® is an industrial software programme that can be installed on existing machines, incorporated into new stations or used to create custom made solutions. It automatically configures and controls the existing cutting process and is certified for use with cutter, micro milling ,hot wire, laser…

Applications of Pack&Strat®

References

La Poste, Bugatti Automobiles, Seco Tools, Nefab, Numalliance, Ventana, Polles, Réalméca, Mécachrome, Iconic Retail Design, Recaero, 3DProd, Novall, Atelier Thierry Dreyfus…

CIRTES, the French Centre for Rapid Product Development in Europe

CIRTES, European Centre for Additive Manufacturing and Advanced Machining, located in the heart of the Saint-Die-des-Vosges Industrial Area since 1991. CIRTES also has a branch in Carmaux in South West France.
Equipped with the most efficient industrial scanning systems, CAD-CAM, 3D Sculpture, Prototyping, Rapid Tooling, Rapid Manufacturing, Rapid Machining of 5-axis and three-dimensional measurements, the CIRTES Research and Technology Transfer teams collaborate with Industries to discover new and innovative rapid product development processes.

CIRTES, innovation through Research and Development

A Contract Research Company, CIRTES aims to carry out research and development projects around its two areas of focus: Prototyping and Rapid Tooling using its patented Stratoconception® process and ACTARUS® its patented machining monitoring process.
CIRTES R & D contracts concern various sectors of activity. Current CIRTES contracts included PSA, MECACHROME, BUGATTI for automotive, DAUM and BACCARAT for the crystal, Saint-Gobain PAM for pipes, AIRBUS and CEA DAM for aeronautics and armaments, AREVA for energy, ALCAN for parts and tooling aluminium ...

INORI, Innovation Platform

INORI has an industrial pilot Pack&Strat®
INORI offers feasibility studies and preproduction manufacturing packaging.

More than 600 Stratoconception® solutions CIRTES around the world

www.cirtes.fr

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