

Pack & Strat[®]

Original patented process **CIRTES** France

The 3D rapid packaging process
by Stratoconception[®] (Additive Manufacturing)

FULL RANGE OF PRODUCTS AND SERVICES

CATALOG 2021

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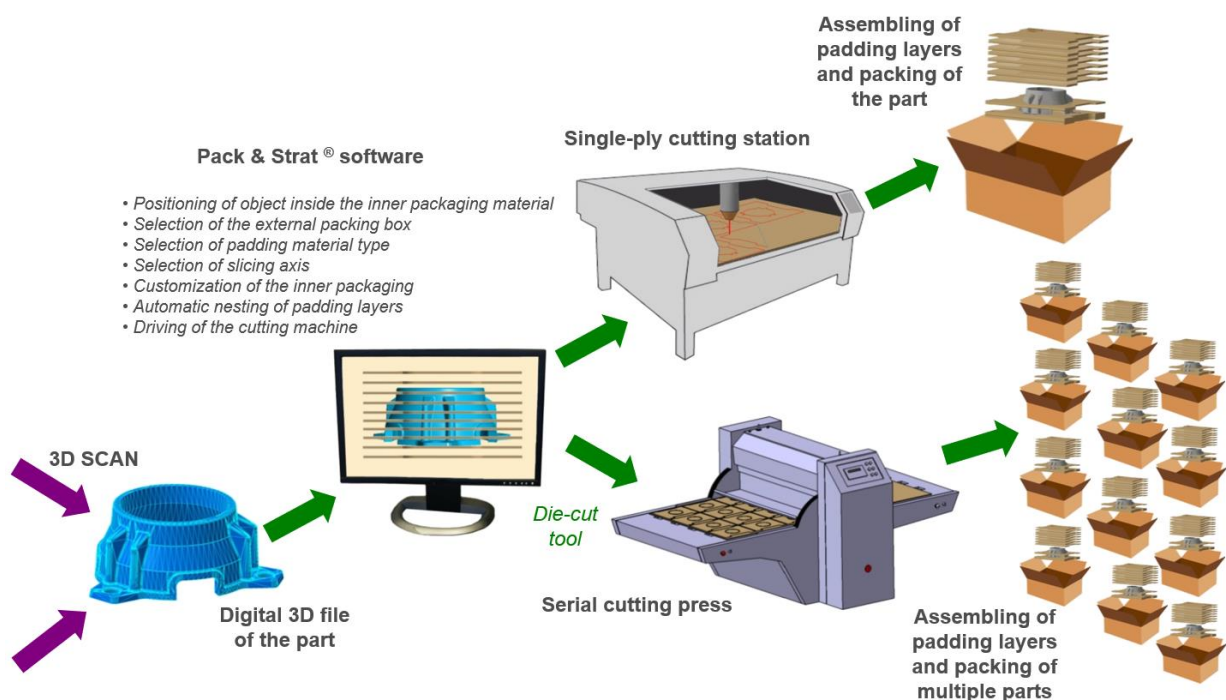
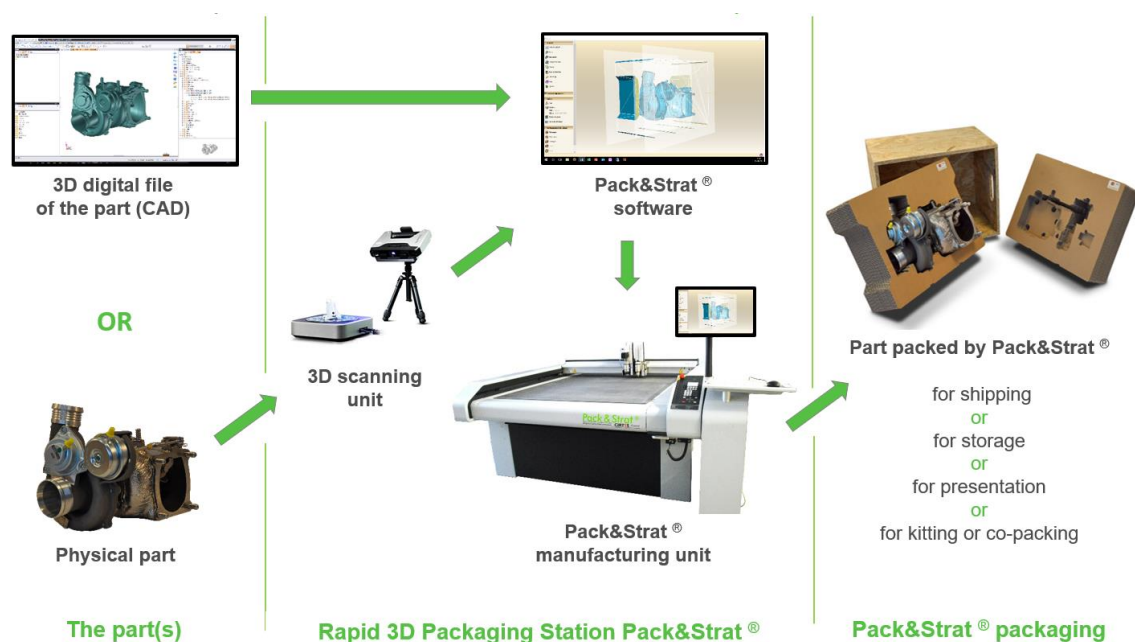
Stratoconception[®] has been the original Additive Manufacturing process by Claude Barlier and developed and internationally patented since 1991 by CIRTES.

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1. Description of the Pack&Strat® process

The Pack&Strat® software automatically calculates the virtual counter-form intended to house or wedge the part(s) to be packed. It then proposes the cutting of this counter-form into several slices and automatically calculates the cutting program for each of these slices in the material selected, taking into account the packing and unpacking directions. These different layers thus produced are positioned and assembled together before being inserted into an appropriate packaging.

Pack&Strat® makes it possible to tackle the issue of secure and aesthetic product packaging with an exceptional responsiveness and at a reasonable cost. Indeed, it enables to considerably accelerate the CAD steps necessary for the design of a custom-made wedging, and thus to increase productivity and competitiveness.



2. Pack&Strat® stations

Models PS-DC 3D rapid packaging station by digital cutter qualified for the Pack&Strat® process

Manufacturing units qualified for the Pack&Strat® process enabling the production of 3D packaging in various materials (cardboard, single-wall, double-wall, and triple-wall corrugated cardboard, polyethylene foams, ...) on the basis of a digital cutting machine whose characteristics will be adapted to detailed customer's needs:

- Cutting table with multi-region air suction
 - Several working areas available: **from 1050 x 1500 mm to 2200 x 3200 mm**
 - Several possible configurations: **static felt or conveyor**
 - Air suction power: **between 2 kW and 9 kW** according the dimensions of the chosen table
- Several beam height configurations: maximum material thickness to be processed **from 25 mm to 120 mm** (also depending on the used tool)
- Automatic cutting initialization device (quick, easy and reliable configuration of the cutting depth)
- Basic configuration with 2 tool holders equipped with:
 - 1 electric oscillating knife module
 - 1 creasing module
- Pen marking module
- Other available tools:
 - Micro-milling spindle (see models PS-DC-MF)
 - Universal tangential knife
 - Pneumatic oscillating knife
 - Tangential cutting with variable pressure (Kiss-Cut)
 - V-Cutting tool
 - Notching and punching modules
- 1 PC with keyboard / screen and control software
- 1 license of the Pack&Strat® process
- 1 license of the Pack&Strat® software (unlimited term on one workstation)
 - Possible extensions to several workstations
- Shipping, installation, commissioning of the complete station on site
- Training to the use of the Pack&Strat® process (manufacturing unit and software)
- Remote support (hotline) to the use the Pack&Strat® process and supply of Pack&Strat® software updates (annual subscription)



Non-contractual photograph

Models PS-DC-MF 3D rapid packaging station by CNC micro-milling and digital cutting machine qualified for the Pack&Strat® process

Manufacturing units qualified for the Pack&Strat® process enabling the production of 3D packaging in various materials (cardboard, corrugated cardboard, honeycomb cardboard, polypropylene, polyethylene foams, plywood, MDF wood, ...) on the basis of a digital cutting and CNC micro-milling machine whose characteristics will be adapted to detailed customer's needs:

- Cutting and micro-milling table with multi-region air suction
 - Several working areas available: **from 1050 x 1500 mm to 2200 x 3200 mm**
 - Several possible configurations: **static felt or conveyor**
 - Air suction power: **between 2 kW and 9 kW** according the dimensions of the chosen table
- Several beam height configurations: maximum material thickness to be processed **from 50 mm to 150 mm** (also depending on the used tool)
- Automatic cutting and machining initialization device (quick, easy and reliable configuration of the machining depth)
- Basic configuration with 3 tool holders equipped with:
 - 1 micro-milling spindle
 - Several spindle powers available: **from 350 W to 8 kW**
 - 1 electric oscillating knife module
 - 1 creasing module
- Pen marking module
- Other available tools:
 - Universal tangential knife
 - Pneumatic oscillating knife
 - Tangential cutting with variable pressure (Kiss-Cut)
 - V-Cutting tool
 - Notching and punching modules
- 1 PC with keyboard / screen and control software
- 1 license of the Pack&Strat® process
- 1 license of the Pack&Strat® software (unlimited term on one workstation)
 - Possible extensions to several workstations
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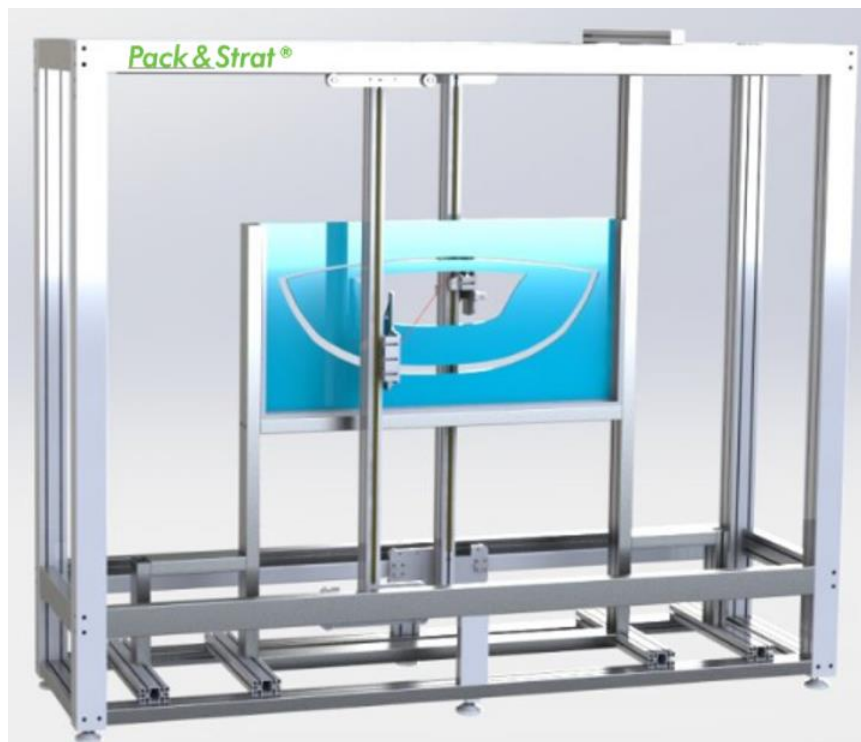


Non-contractual photograph

Models PS-HW 3D rapid packaging station by hot-wire cutter qualified for the Pack&Strat® process

Manufacturing units qualified for the Pack&Strat® process enabling the production of 3D packaging in various materials (expanded polystyrene, extruded polystyrene, ...) on the basis of a hot-wire cutter whose characteristics will be adapted to detailed customer's needs:

- 4-axes hot-wire cutting technology
 - Several working areas available: **from 1150 x 600 x 115 mm to 5000 x 2500 x 250 mm**
- Speed: **3.5 m/mn**
- Resolution: 0.1 mm – accuracy: ± 1.0 mm – repeatability: 0.05 mm
- Wire diameter: 0.3 mm
- 1 PC with keyboard / screen and control software
- 1 license of the Pack&Strat® process
- 1 license of the Pack&Strat® software (unlimited term on one workstation)
 - Possible extensions to several workstations
- Shipping, installation, commissioning of the complete station on site
- Training to the use of the Pack&Strat® process (manufacturing unit and software)
- Remote support (hotline) to the use the Pack&Strat® process and supply of Pack&Strat® software updates (annual subscription)



Non-contractual photograph

3. Integration of the Pack&Strat® process in an existing machine fleet

We also propose to transform your own CNC machine (digital cutting, micro-milling, hot wire cutting, etc.) into a Pack&Strat® rapid 3D packaging station. This integration service comprehends:

- a complete integration study,
- a license of the Pack&Strat® process,
- a license of the Pack&Strat® software, either single-user or multi-user,
- the development of a post-processor on a custom basis,
- the supply of specific accessories for the process (assembly and possible gluing of the wedging layers, etc.),
- on-site installation and commissioning,
- the technology transfer of the process,
- the training to the use of the Pack&Strat® process,
- the remote support (hotline) to the use the Pack&Strat® process and supply of Pack&Strat® software updates (annual subscription).

4. Supply of licenses for Pack&Strat® process and software

It is also possible to purchase a license for the use of Pack&Strat® process and software dedicated to the rapid manufacturing of custom-made 3D packaging. This software enables the generation of toolpaths at the format of any type of Pack&Strat® manufacturing units. Thus, it becomes possible to outsource the manufacturing of your custom-made wedging without having to communicate the 3D files of the parts to be packed to any subcontractor equipped with a Pack&Strat® station and thus avoiding any data disclosure issue.

5. 3D scanning equipment for the Pack&Strat® process

This equipment, useful upstream of the Pack&Strat® solution, enables the acquisition of the 3D geometry of an object in STL format. The obtained file may thus be used in the Pack&Strat® software in order to design its custom-made 3D packaging.

3D scanning equipment for small-sized objects

This equipment includes:

- 1 portable 3D scanner with the following features:
 - Minimum scan volume: 30 x 30 x 30 mm
 - Maximum scan volume: 200 x 200 x 200 mm
 - 3D scanning resolution: 0.1 mm at a distance of 20 cm (Z)
- 1 motorized and indexed turntable (diameter: 200 mm) with calibration target
- 1 ergonomic software interface to control the 3D scanner, clean scans and export them to STL format



Hybrid 3D scanning equipment (structured white light / infrared) for medium-sized and large-sized objects

This equipment includes:

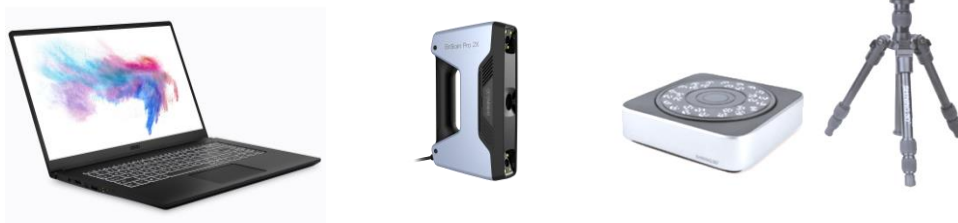
- 1 handheld 3D scanner with the following features:
 - Scanning modes: white LED structured light / infrared structured light
 - Minimum scan volume: 300 x 300 x 300 mm
 - Maximum scan volume: 4000 x 4000 x 4000 mm
 - Resolution (distance between 3D points): 0.25 ~ 3 mm (LED) / 0.5 ~ 3 mm (infrared)
 - Volumetric accuracy: up to 0.05 mm (LED) / up to 0.6 mm (infrared)
 - Scanning speed: 1,200,000 points/s (LED) / 720,000 points/s (infrared)
 - Working distance: 470 mm
 - Built-in color videocamera for full color texture capturing
- 1 calibration plate with its support
- 1 set of markers
- 1 ergonomic software interface to control the 3D scanner, clean scans and export them to STL format



Polyvalent 3D scanning equipment for small-, medium- and large-sized objects

This equipment includes:

- 1 handheld 3D scanner with the following resolution:
 - 0.04 mm in automatic fixed scan mode with turntable (small-sized objects) or in manual fixed scan mode (medium-sized objects)
 - 0.05 mm in handheld HD scan mode
 - 0.1 mm in handheld fast scan mode (large-sized objects)
- 1 motorized and indexed turntable with calibration target
- 1 tripod with quick-release plate, 3-directional ball joint and height adjustment device
- 1 ergonomic software interface to control the 3D scanner, clean scans and export them to STL format
- 1 laptop computer whose configuration is optimal to drive the 3D scanner



Our offers also include training to the operation of the 3D scanning equipment and remote support (hotline) for one year.

3D data format conversion and STL file repairing software

This pack contains the recommended software tools to convert 3D data from different formats (STEP, IGES, native CAD files) to STL format and to clean the resulting STL meshes.

It comprehends:

- a license for the use of ANSYS Discovery SpaceClaim software, including the 3D-Printing add-on,
- a license for the use of Stratoconcept® Mesh software for editing and cleaning STL files,
- an access to the remote technical support (hotline) for the aforementioned software programs.

The licenses for the use of these software programs are granted for a limited period of one year on one workstation. Our offer also includes training for the use of this software pack.

6. Devices in relation to the assembly of Pack&Strat® wedging layers

In order to assemble, if necessary, the Pack&Strat® wedging layers, we offer various devices qualified by INORI.

Professional gluing device with 4.5 l tank

This hot glue generator can be used to assemble all types of polyethylene foams by gluing; it is particularly suitable for large volumes.

Technical characteristics:

- Dimensions: 720 x 360 x 360mm
- Weight: 45 kg
- Weight of the gun only: 970 g
- Manual spiral gun with 360° rotation
- Spiral nozzle: Ø 1.0 mm
- Tank capacity: 4.5 l
- Hose length: 2.4 m (other lengths available)
- Connection for two hoses (optional 2nd outlet)
- Requires main power supply connection
- Operating temperature: 210°C (260°C max)
- Glue: bulk, carton, tub and stick



Professional gluing device with 200 ml tank

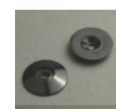
Technical characteristics:

- Dimensions: 280 x 400 x 400 mm
- Weight of the gun only: 1.7 kg
- Console for gun stand
- Spiral nozzle Ø 1.5 mm
- Tank capacity: 200 ml
- Hose length: approx. 3 m
- Requires main power supply and compressed air connections
- Working temperature: 260°C ± 11°C
- Automatic stand-by
- Glue: bulk, plug Ø 43 mm, carton



Set of plastic ratchet rods and clamping rings

These accessories allow the assembly of wedging layers without gluing.



7. Custom-made furniture for the Pack&Strat® 3D packaging station

Furniture assigned to the storage of corrugated cardboard sheets



Vertical storage rack for the storage nearby the Pack&Strat® rapid 3D packaging station, of corrugated cardboard sheets suitable for the manufacturing unit (dimensions: 1600 x 1300 mm).

Other pieces of furniture are also available such as jig tables for the assembly and gluing of Pack&Strat® wedging layers. Please consult us.

8. Services in relation to the Pack&Strat® process

We also offer a set of services in relation to the Pack&Strat® process, as standard or as an option depending on the configuration.

Remote support (hotline) and supply of software updates



Three people provide a daily hotline service for our software and processes in order to provide you with a response as quickly as possible. We guarantee a solution to all issues or answers to your questions.

Training to the Pack&Strat® process and software



We offer training to the use of the Pack&Strat® process, software and manufacturing unit, which can be carried out on site or at our premises in Saint-Dié-des-Vosges.

Manufacturing of Pack&Strat® custom-made packaging

We also offer the service of manufacturing, in our premises, of your 3D packaging custom-made according to the Pack&Strat® process.

If you own a Pack&Strat® software license, you may send us the toolpaths you generated for your project.

Otherwise, you may just send us the 3D files (in STEP, IGES or STL format) of the parts you want to pack and we will create an optimal 3D packaging for you using the Pack&Strat® process.

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