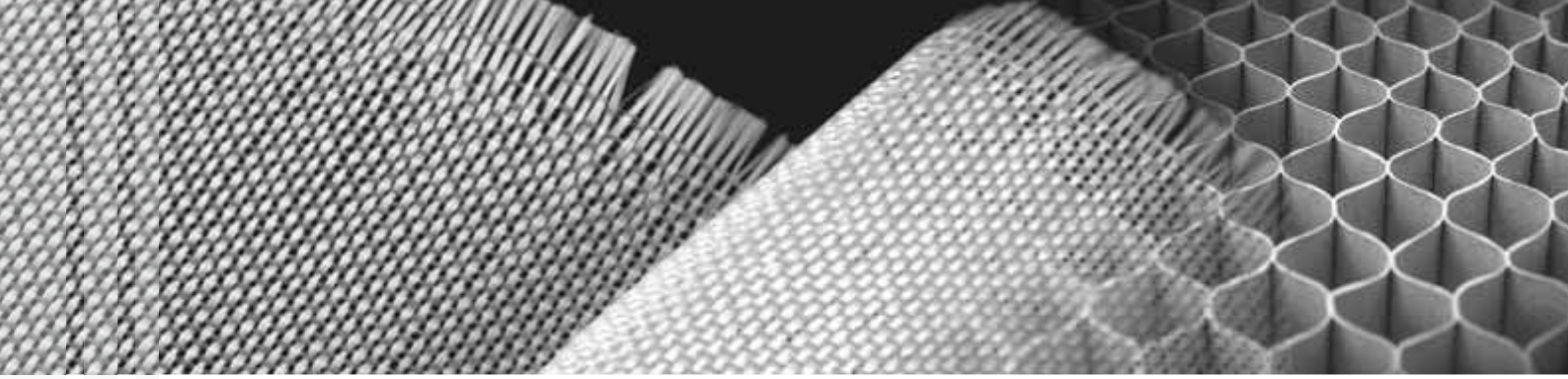
JetPreg

The Right Solution for Your Honeycomb Lightweight Structures

cannon

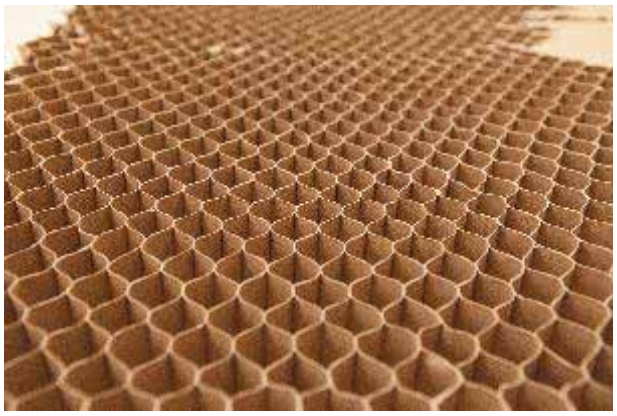
DEDICATED INDUSTRIAL SOLUTIONS



CANNON JetPreg TECHNOLOGY

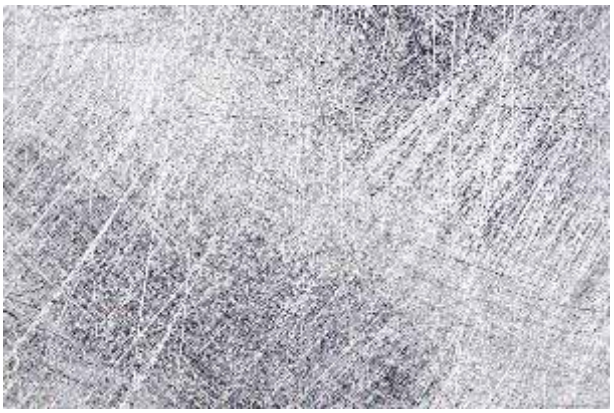
An increasing number of companies dealing with polyurethane (PU) are oriented towards spray foams for the production of lightweight composites: one reason is the lower investment needed for a spray equipment versus other traditional solutions.

Mastering the PU spraying and distribution is fundamental to enhance the properties of the final part.
As a consequence of this trend, Cannon offers its JetPreg technology which combines conventional materials with an innovative way of spraying PU.



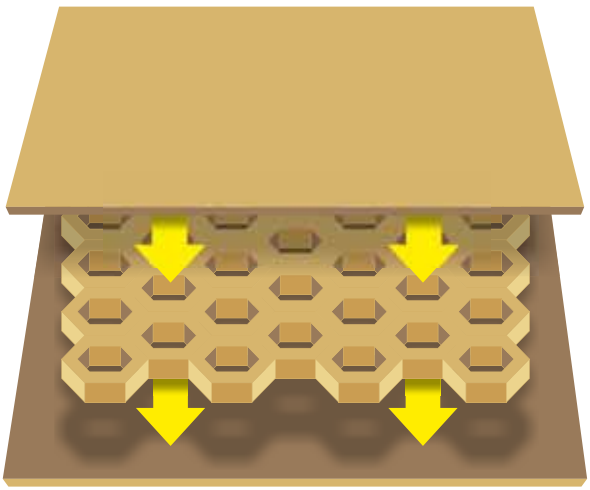
THE PROCESS

Some lightweight composites consist of a sandwich made with corrugated paper (a honeycomb structure) lined on both sides with sheets of a non-woven glass tissue, impregnated with a fast-reacting PU formulation. This is clamped to fit a profile in a press immediately after the application of the chemicals.
Cannon JetPreg is a flexible and powerful technology ready to face the future challenges in the production of lightweight reinforced composite parts.
This impregnation process was developed nearly 15 years ago, but now, with the increasing need to reduce carbon emissions, this application has become increasingly important with the specific aim of reducing vehicles weight.



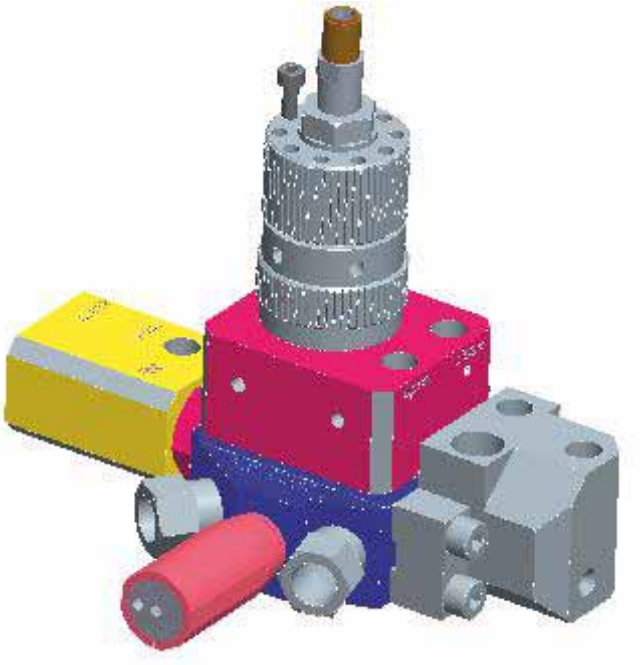
This technology has different kinds of applications in the automotive industry and is particularly recommended for the production of roof-covers, roof-exteriors, load floors or parcel shelves.

In a world oriented to the production of bigger and bigger parts, where cycle time and energy saving are essential factors, both chemical and dosing units suppliers have to answer with innovative solutions.
On one hand, chemical suppliers are developing faster formulations, on the other Cannon is offering a fast and precise spraying technology able to process these chemicals efficiently, therefore keeping both consumptions and costs under control.



THE MIXING HEAD - L-SHAPED SPRAY MIXING HEAD LS 10

After carefully considering all customer needs and cooperating with raw material suppliers, Cannon designed a specific **L-shaped spray mixing head called LS 10.**
Thanks to the special L-shaped head body geometry, the head guarantees a high-quality mixing from the very beginning of the shot throughout the whole spraying process.



The process can be implemented keeping the mixing head fixed and using a special gripper to move and rotate the part during the impregnation.

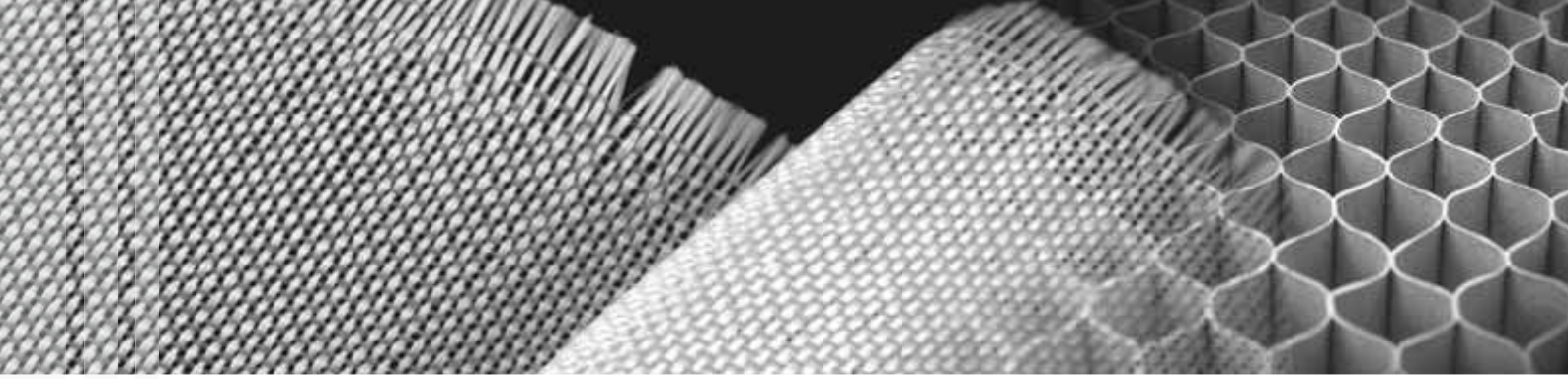
Alternatively, thanks to a compact and light body, this mixing head is suitable to be fitted on commercial robots of medium-small dimensions.

The main components of this mixing head are:

- Head Body equipped with hydraulically operated pouring and cleaning pistons
- Stroke Adjuster to improve mixing quality
- Hydraulically operated Flushing Valve
- Spray Tip Group

Cannon LS 10 mixing head consists of a very short piston with a very narrow diameter, leaving a very limited amount of chemicals at the end of the shot to be flushed out by compressed air.

Cannon LS 10 head is also available in a hardened version best suited to process filled materials for the heavy layer applications.



JetPreg ADVANTAGES

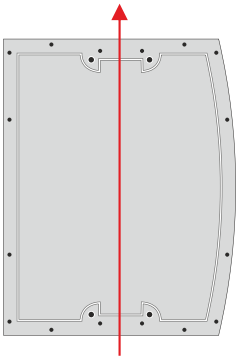
• Very High Output & Wide Range

With LS 10 Mixing Head, Cannon offers the possibility to cover a wide output range of 30-300 g/s, therefore allowing a high material flow and an increased process flexibility.

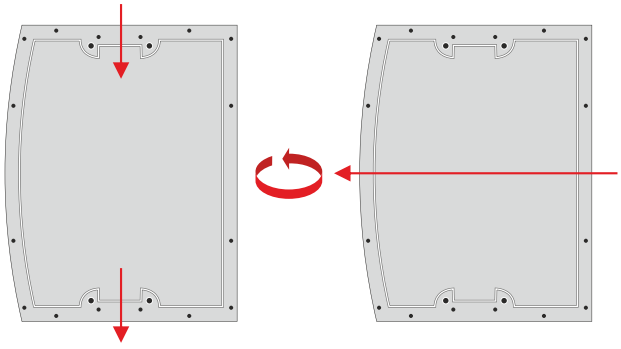
• Reduced Spraying Time

Thanks to Cannon technologies the spraying time is significantly shortened: an 800mm x 650mm sandwich can be impregnated in a net spraying time of approximately 16 seconds.

This reduced spraying time has a positive effect on the increase of productivity.



6 s



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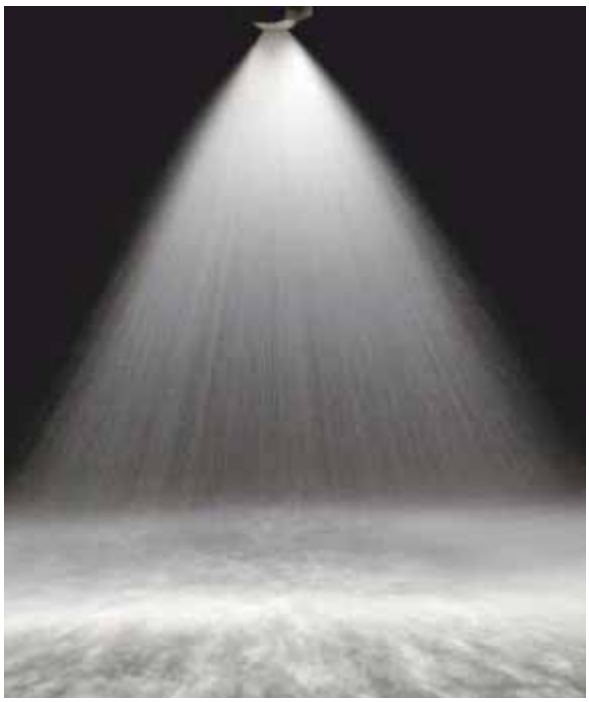
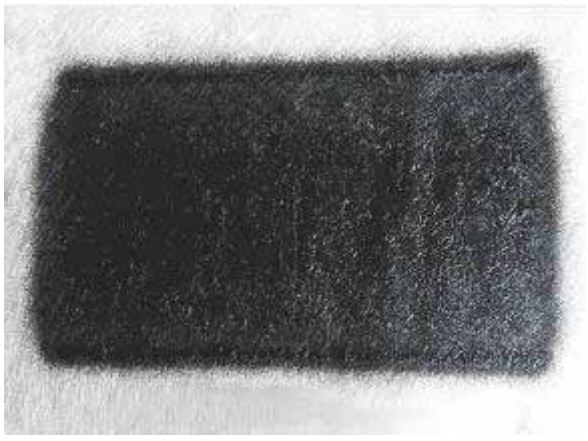
• Less Overspray

LS 10 can generate a larger spray veil which allows full-width coverage of the part with a single movement, thus avoiding reworking.



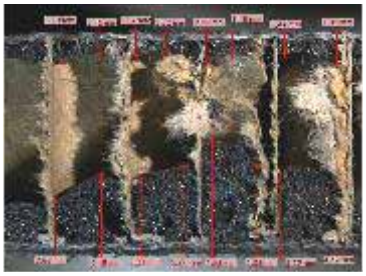
This is possible because, contrary to traditional conical way of spraying, Cannon offers a regular, triangular, 2D-shaped spray distributing the chemicals precisely wherever they are required.

The cycle-time is cut by around 20 ÷ 30% versus other traditional conical spraying methods.



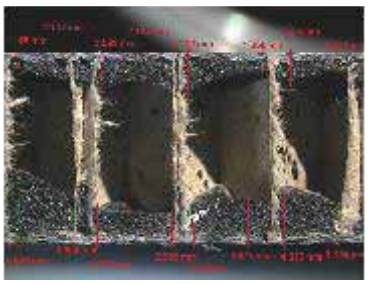
• High Quality Mixing & Uniform Distribution

The L-shaped geometry and the use of a stroke adjuster ensures a high-quality mixing from the very beginning of the shot. Furthermore, the Cannon LS 10 guarantees homogeneous spray distribution even at high outputs.



Reference Panel

Max penetration:	8,1 mm
Min penetration:	1,0 mm
Average penetration:	3,5 mm



Cannon Panel

Max penetration:	4,1 mm
Min penetration:	2,1 mm
Average penetration:	3,4 mm

• Material, Weight & Costs Reduction

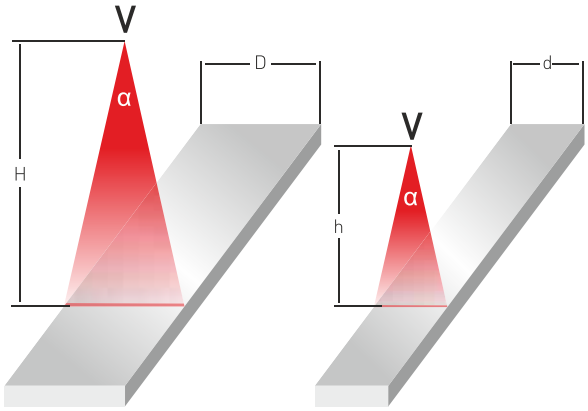
Cannon offers the possibility to tune the output to economize the sprayed material keeping PU and energy consumptions as low as possible. This significantly reduces the used material, the weight and the cost of the final parts.

• Airless Spray for an Eco-friendly, Clean & Cheap Process

JetPreg offers an innovative airless, fully mist-free spray which can guarantee precise edges and a cleaner working area.
In fact, thanks to Cannon LS 10 mixing head, moulds, robots, floors and the surrounding equipment are kept cleaner for much longer, ensuring a work-friendly environment.
The air jet is used only to clean the mixing head, thus guaranteeing an eco-friendly and cost effective flushing.
No compressed air is required to nebulise PU during the spray process.
The final air blown cleaning of the spray tip can occur over the part itself, eliminating the need for special disposal precautions.
A considerable quantity of PU is therefore saved in the process.

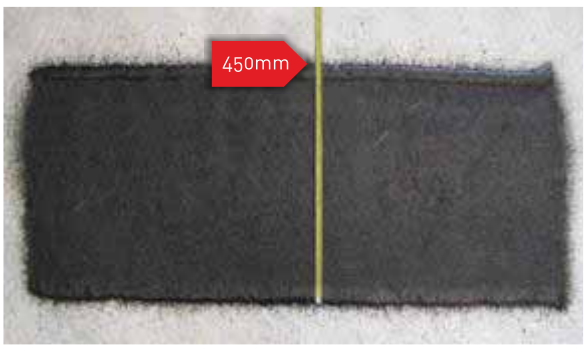
• Easy Footprint Regulation

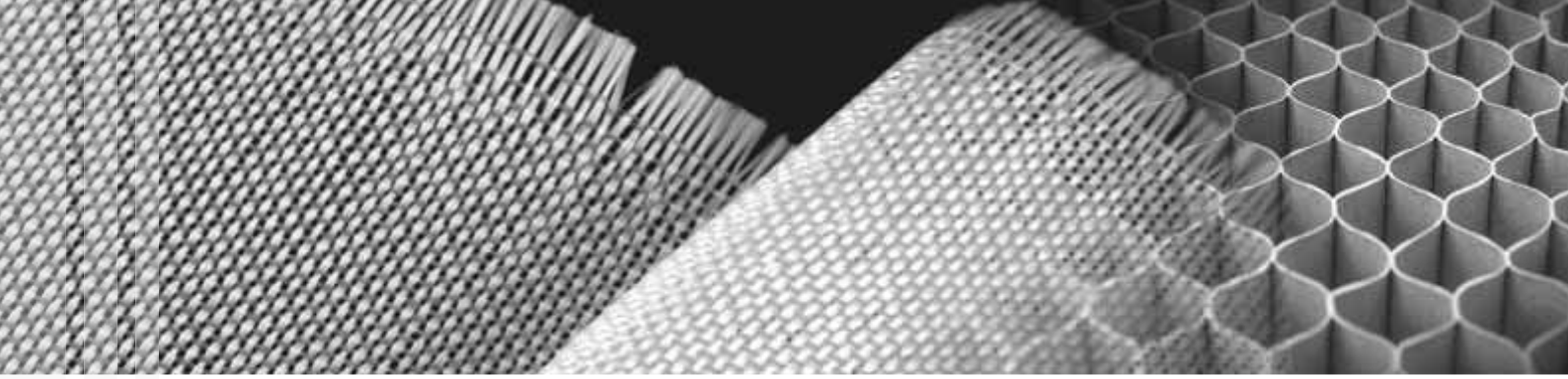
The spray width can be regulated by tuning the distance between head and sandwich and changing the PU output. It is therefore simple to control the impregnated geometry.



• Integrated Reinforcement

Cannon offers the possibility to control the amount of PU released along the width of the sprayed footprint.
In particular, it is possible to tune the spray profile to lay down more PU at the edges, thus creating an integrated reinforcement and avoiding reworking.





SPRAYED PU DISTRIBUTION

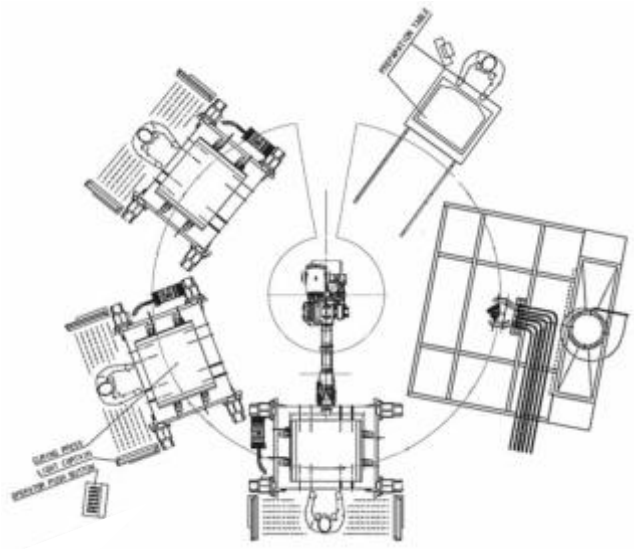
With the Cannon LS 10 it is possible to dispense a reduced quantity of PU obtaining a part with the required mechanical properties.

Cannon LS 10 can control the weight of sprayed material and deposit the minimum necessary quantity: as shown in the picture, it is possible to impregnate the fiberglass mats and the honeycomb paper with a thin PU layer without filling the honeycomb cells.

This solution can significantly cut down weight, PU consumption and costs.

THE PLANT CONFIGURATION

Cannon can offer multiple turn-key solutions for any need ranging from modular plants to fully automated plants.
One in particular is the possibility to provide a dedicated solution consisting in an entirely customized plant.
Thanks to this feature it is possible to extend or modify the plant without having problems of compatibility or integration.



MODULARITY

- Sandwich preparation area
- Spray cabin with mixing head
- One or more presses
- One or more dosing units
- Six-axes robot or a shuttle table

The sandwich is held by a gripper mounted on a six-axes robot and several stations can be placed around the robot.
The working cycle starts at the loading station where the sandwich is prepared.
Then the robot moves it to the spray cabin where the head is mounted and PU is prayed on the sandwich. After that, the sprayed part is moved into a press.

Up to three presses can be installed around one single robot. While the first part is curing, other sandwiches can be prepared and impregnated with PU.
When a sandwich has finished curing, it can be manually removed from the press.

FULLY AUTOMATED PLANT

- Sandwich preparation area
- Automatic transfer system
- Spray booth
- 6-axis robot mounting the spray head
- Two or more presses
- One or more dosing units
- Automatic downloading system

02/2017 - Edited by: Cannon Communication - Italy

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