



Toray Advanced Composites



Master Assignment:

## Tayloring Stamp formed product using a flow layer

Thermoplastic based composite materials can be processed into 3D shell-like products with a high productivity level using the stamp forming technology. This technology is based on laminates which are reheated above their processing temperatures, before being stamped into the desired shape. Stamp forming is applied in many aerospace parts. Current state of the art means the laminates have a constant basic thickness. This simplifies the production of laminates, though limiting the capacity to optimize the products.

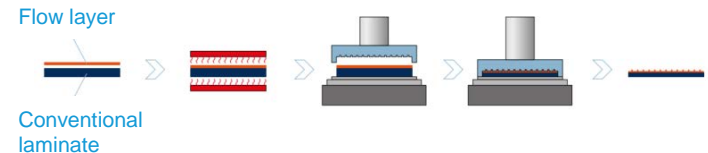
Toray Advanced Composites proposes a modification of such basic laminates, by adding a so-called 'flow layer' to the standard, constant thickness laminates. This flow layer makes it possible to obtain stamp formed product with added features, like ribs (see picture on the right) and local variation of thickness.

This assignment proposes to focus on processing products with local thickness variation through the addition of flow layers. A proof of principle of this 'stamp moulding' has been performed. A relation between the amount, type, distribution of flow layer material and the potential thickness gradients to be reached needs to be elaborated. Both experimental and numerical tools can be used.

Stamp moulding demonstrator with ribs:



Stamp moulding Process:



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