

Class "A" Automotive Panels: Is the Paint shop becoming the latest Dinosaur?

Ford Motor Company in Dearborn, Michigan, USA announced recently they had installed a production cell including a Geiss in-line former with clean room enclosure to explore the potential of the latest Class "A" exterior panels technology.

There are two methods being assessed at the moment.

The first is known as the **IMD technique** and has been used for quite some time on electronic products such as mobile phones, laptops PCS and requires a two stage process. The primary stage is the thermoforming of the component on a precision vacuum-forming machine. The final stage occurs when the component is inserted into an injection mould where a thin skin which could be a gloss/matt surface finish or even metallic finish is injected over the existing thermoformed component.

This method is seen to be ideal for small 3D automotive parts and panels such as instrument panels, bumpers, fascias and roof and even hoods for cars and trucks.



However the economics of IMD can suffer if there a large number of holes in the part as the holes require a post mould trimming operation and the risk of damage to the high quality finish maybe compromised.

Probably one of the first examples of this technology was seen on the Smart two seater Roadster.

One but can be reassured this technology is here to stay when you see the Plastic Manufacturers already heavy involved in the race to provide the ultimate material Avery Dennison, GE Plastics, Senoplast and Mayco Plastics are just a few.

Obviously the limitation are the size of the panels, this is a big negative with the IMD technique and hence the adaptation of the **Thick Sheet Forming Technique (TSF)**

Its simple enough, just using 2/3 layer co-extruded sheet and thermoforming the finished panel in one process. All this occurs in a ultra clean environment free of airborne particulates that would downgrade the surface quality. This sounds easy but one has to think about the draw depth, size of radii and contours as with any thermoforming you get thinning of the material and then there's a possible colour change as a result.

This is primarily why the use of Geiss technology is a big part of the success of this technique. Geiss AG offers halogen-heated, in-line forming systems claimed to be especially suitable for Class A auto exterior panels. Tier One suppliers Decoma and ArvinMeritor have bought Geiss machines for their plants in Germany. In the past year, a Geiss machine was also bought by GE Plastics to develop applications for its PC-based Lexan SLX weatherable films.

You may ask what are the motives behind such development. Today the paint shop of automotive manufacturers is capital intensive and faces problems of polluting the environment with volatile solvents. This has prompted the major automotive manufacturers to look for alternatives option. IMD and TSF seem to be the logical way to go.



Depicted Geiss AG first A class optional thermoforming machine equipped with clean room inclosure which incorporated multiple ceiling mounted HEPA filter plenums and air conditioning plant

This was developed for Material R&D research.

