

PROPELLING GROWTH WITH CREATIVITY

Courtesy: Origin Manufacturing

Owing to their cost-effectiveness, lower weight and properties of recyclability, thermoformed products enjoy a huge market in India. This has given a boost to the thermoforming industry in India, and thermoforming has become a preferred technique. Avani Jain discusses the competitive edge offered by thermoforming over other processing techniques and charts the growth trajectory of this industry.

The Indian plastics industry is witnessing growth in all verticals. This growth, coupled with increasing awareness about the importance of recycling plastic products, has ensured that not only consumers get a better finished product but the environment also breathes a sigh of relief. This has led to increased usage of thermoformed products.

Raw materials, such as Polypropylene (PP) and Polystyrene (PS), are fast gaining ground in terms of their use in production of packaging material or containers, trays and boxes. Therefore, to manufacture finished products, thermoforming is the most widely used technique. Further, with the recent revolution in organised retail and increased use of disposable containers in households and commercial establishments, the thermoforming industry is booming, both in India as well as globally.

Khushboo Doshi, Executive Director, Rajoo Engineers, notes, "The

thermoforming market is constantly growing in India. At present, this technology is only used to make cups for tea and water, but it can be used in various other segments to make a variety of products such as automotive parts, suitcases and briefcases, bathtubs, white goods such as refrigerator liners & door panels and industrial trays or covers. The key demand driver for the growth of such type of process and machinery is the booming packaging sector, which consumes almost 50–60 per cent of machines. This demand will increase in the future as well. Further, organised retail will provide a fillip to this industry."

The process

Thermoforming is a term generally used for manufacturing of plastic components through vacuum or pressure forming processes. Single-sheet thermoforming consists of heating an extruded plastic sheet and forming it over a male mould or into a female mould. That is,

the thermoplastic sheet is heated to a temperature where it softens and is then stretched over or into a single-sided mould and held in place until it cools and solidifies into the desired shape. Depending on the type of mould that the customer prefers, the thermoforming process enables a part having aesthetic properties identical to those achieved by an injection-moulded part for a fraction of the tooling expense in injection moulding.

Thermoforming over other processes

Thermoforming, one of the oldest plastics processes, has the ability to fabricate thin-walled parts with large areas using relatively inexpensive, single-sided tooling. The process can also economically produce a few thick-walled parts or many thin-walled parts. As technology advancements have greatly improved in all aspects of thermoforming machines, thermoformers are now well equipped to drive competition to the next level.

Thermoforming allows manufacturers to produce final products at a much faster rate. Similar products can be made through injection moulding, but thermoforming is quicker and helps meet production targets better. Thus, compared to other methods of plastics processing, such as injection and blow moulding, thermoforming offers low-cost tooling, faster and inexpensive prototyping, shorter production lead times, custom designs that can be easily modified, thin-gauge products, demand flexibility and exceptionally large part capabilities.

This technology is widely used across the world for creating thin-gauge finished products that can also be effectively recycled. The most common applications in India are trays, soft covers or packaging products that do not require much protection from external conditions. At present, the thermoforming industry in India seems to be witnessing an upward moving graph. The demand for light, recyclable yet rigid products is on the rise, and thermoformed articles enjoy a market that is benefitting from the above-mentioned characteristics.

Diversity in applications

Thermoforming is commonly used for manufacturing food packaging, but it finds wide applications in the production of plastic toys, cafeteria trays and even aircraft windscreens. Thin-gauge (less than 0.060 in) sheets are mostly used for rigid or disposable packaging, while thick-gauge (greater than 0.120 in) sheets are typically used for cosmetic permanent surfaces of automobiles, shower enclosures and electronic equipment. Thin-gauge sheets find wide and ready application, which is primarily due to lower cost and weight of the final product.

Challenges faced

Despite the benefits offered by thermoforming, the industry has to tackle certain issues. A key challenge for the sector is the decline in the quality of thermoformed products, which is the result of cost reduction and competition.

There should be a set thickness for thermoformed products, which must be made mandatory or else it will compromise on the quality. While growth is expected in the flexible packaging industry, consumers increasingly prefer rigid containers, the quality of which can be ensured by prescribing a minimum thickness for the product. Another important factor is the confidence of investors in the sector. With rapid implementation of stringent norms by the government, new entrepreneurs are often apprehensive to venture into this industry due to fear that they might soon have to look for alternative business avenues.

Future outlook

While there is no denying the challenges facing the thermoforming sector, customer demand and global trends still have a long way to go in determining the future of this industry. Stiff competition coupled with stringent government regulations are a matter of concern for industry players, but everyday use of thermoformed products will ensure an upward growth of this sector.

Further, the growing demand in the food packaging sector will surely have a positive impact on the growth of this sector. Lakshmi Ramakrishnan, Chief Executive Officer, Essen Speciality Films Pvt Ltd, says, "The demand for thermoforming products is growing by the day, especially in the food packaging segment. In the coming years, there will be more demand for disposable containers rather than pouches, so we are trying to develop new products in this segment."

Industry experts also believe that India has the opportunity to become a major hub for manufacturing in the days to come. The future of the thermoforming industry seems to be bright and is expected to be double the GDP growth in the next three to five years. Processors need to enhance capacities to meet the challenges of the organised retail sector and should also be more flexible in coming up with innovative packaging formats. ■

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