

Generating cash from trash

Ganesh Polytex, a waste management company, is churning out fibres and yarns from recycled PET bottles



Sharma: finding the many uses for non biodegradable waste

Shyam Sunder Sharma, chairman and managing director of the Rs199 crore, Kanpur-based Ganesh Polytex Ltd (GPL), has been churning out polyester staple fibres and yarns from used PET (polyethylene terephthalate) bottles for years. The company is the largest PET waste recycler in India, with a capacity of 57,600 tonnes per annum (tpa), thus dislodging polymer giant Reliance Industries Ltd (RIL).

This 68-year-old technocrat caught the entrepreneurial bug only in the late 1980s. Having worked with various Birla group companies for more than two-and-a-half decades, he decided to set out on his own in 1988. Though he spent the most part of his career looking at the commercial side of business, his bent of mind towards the technical side brought him to the shop floor.

Though initially, GPL started off

producing synthetic yarn at Kanpur in Uttar Pradesh, it was only in 1995 that the company hit upon the idea to manufacture green fibre or recycled PSF from PET bottles and plastic waste with a capacity of 6,000 tpa. This plant imported from Korea also came with know-how from the country. Today, the capacity of this Kanpur plant has grown three-fold. Kanpur's proximity to north and central India, where most of its collection centres are located, makes it a suitable location.

In 2006, GPL set up a second plant at Rudrapur in Uttarakhand to manufacture recycled PSF and ramped up capacity in phases to 14,400 tpa by September 2008. Currently, it has embarked on a further 18,000 tpa capacity expansion at this facility at a cost of Rs25 crore, thus taking the total capacity to 57,600 tpa. Over the next two years, the recycled PSF capacity will be jacked up to 75,000 tpa at a cost of Rs35 crore.

Senior managers at GPL attribute the waste management strategy adopted by the company to the perspicacity and vision of the promoter. The advantage of regenerated PET vis-à-vis virgin resins is that its applications are akin to virgin grade PSF and at the same time, it enjoys a price differential of more than 15 per cent. The major user segment for regenerated PSF is the non-woven technical textiles industry. This product finds applications in personal hygiene items such as gloves and medical kits (bandages and gauze), packaging, reinforced automotive plastic parts, filtration, construction and geo-textiles, some of which are used for road layering. The market for technical textiles (these are used in conveyor belts, tents, greenhouse roofings, airport runways, etc) is currently estimated at Rs3,700 crore and is expected to grow to Rs6,600 crore by 2012.

The other user segment is synthetic yarn spinning units. Considering the price differential in recycled PSF, spinning units are increasingly switching

from virgin grade PSF to churn out non-apparel fabric. Regenerated PSF also finds use in home furnishings such as carpets and mattresses, pillows, soft toys, etc. Traditionally, these products were stuffed with cotton, foam or coir, but because of the cost advantage and the inherent qualities in terms of being light-weight, washability and comfort level, recycled PSF is being increasingly preferred. This segment of the market is estimated to be over Rs1,500 crore.

Sourcing material

So, just how does GPL go about sourcing the raw material – PET bottle waste – which involves everybody, from rag pickers to traders? The company has a network of over 30 collection centres (operating on a franchisee model) of PET waste all over India. These collection centres are equipped with washing and crushing machines. Both these activities are crucial to the production process (*see box*), as these used PET bottles contain a lot of contamination, dust, wrappers and rings, which could have a bearing on the end product. Also, these raw materials need to be crushed before transporting them to the factory, or else uncrushed bottles would largely be transporting air. For example, a truck load of uncrushed bottles would be able to transport about a tonne of PET bottles. The same truck can transport about nine tonnes in crushed bale form. This brings down logistics costs dramatically.

While collection centres is one channel to source raw material (60-65 per cent of the requirement is met through them), GPL has also developed a network of rag pickers and waste collectors over the years to exclusively supply the material to the company. Price per kg of PET waste moves in the Rs20-24 band. The company is also thinking of importing PET bottle waste, but this could be costly on the logistics front. To tackle this cost factor, the company is toying with the idea of setting up processing/washing/crushing units either in Europe, the Far East, or the US, where PET waste is available abundantly.

Interestingly, according to Sharma, polyester fibre manufactured

Process flow

PET bottles are first manually cleaned to remove dirt and foreign objects. Road waste is sorted, cleaned, washed and cut through a specially designed PET treatment wash plant. After this, long-sized waste is fed to the cutters for cutting into smaller sizes for easy handling of the materials. Irregular lumps and blocks of materials are crushed. If the raw waste is of low density, it is compacted through a densifire to get a higher density. The washed, shredded PET bottles are fed into a vacuum dryer to be rid of the moisture. The master batch of pigments is also added in the dryer to produce coloured output materials or for optical brightness, depending on the end use of the product. After this, the dryer unloads the polymer into the hoppers connected to the extruder.

The extruded polymer in molten form then flows to the spin assembly through filters. Filamentation takes place in the

spin assembly through spinnerets having tiny holes all along its circumference. After spinning, filaments are cooled by air and collected in cans through winders. A steam-heated hot water trough heats the tow to its glass transition temperature for easy drawing. Spin finish is applied to the tow by passing the same through a trough containing finish solution. Siliconised or ordinary spin finish is used, depending on the end use of the fibre. After finish application, the tow is crimped to give curliness to the fibre. Crimps in the tow are heat-set in a kiln, which has multiple heating zones. The tow is heated by air to a particular level, depending on the end use. The heat-treated tows are then moved through cutting machines to cut the fibre to the desired length. The loose, staple fibres are then taken to a hydraulic bailing press, where the fibre is pressed and packed in bales, and stored and dispatched.

♦ RP



Agarwal: looking at claiming carbon credit

by using PET bottle flakes consumes about 80 per cent less energy, 40 per cent less water and emits 70 per cent less carbon dioxide. The recovery loss from PET waste to fibre is around 10 per cent. "It takes about 5,000 years for a PET bottle to decompose and only about 10 per cent of all PET bottles are recycled. Being non-biodegradable, piling of PET bottles poses a serious threat to the ecological balance. Hence, converting PET bottle waste into eco-friendly, recycled green fibre is one of the best ways towards waste management," says Sharma. He goes on to add that in the developed world, textile garments and non-woven textiles markets make up for equal share of the total textile market. In India, the ratio is 90:10, with garments accounting for the lion's share. "One can see the scope of growth in geo-textiles and technical textiles," he says.

Another interesting aspect of this technology is: how does GPL ensure uniformity in its raw material, since PET bottles come in different grades and properties? "That's our USP," Sharma is quick to add. Other than RIL, which has PSF capacity second to



Churning it out: it's the largest PET waste recycler in India

GPL and uses it for captive consumption, the others such as Shiva Textiles and Arora Fibres are all bit players.

According to Gopal Agarwal, chief financial officer, GPL, the company is looking at how it can claim carbon credit for its activity in waste management. "Also, we are giving value to the waste," he says. Unlike in developed economies, where the governments provide incentives to recyclers, India is yet to adopt any regulatory norms to incentivise recycling of polymers in general and PET in particular. Already, there seems to be a silver lining for the company, as recently, the state governments of Haryana and Delhi have done away with value-added tax on recycled PET

bottles. And Agarwal says that a representation to other state governments is on the cards for similar incentives. China and Korea are said to be major recyclers of PET waste and roll out several products, including soft toys and footwear.

Another avenue

While GPL's fibre business contributes about 80 per cent to the total revenues, the company has another business – dyed, texturised and twisted filament yarn – which accounts for the remaining revenues. The 2,400 tpa plant situated at Kanpur uses partially-oriented yarn sourced from RIL and Indo Rama. Now, the company plans to integrate backwards and set

up a regenerated POY facility with a capacity of 18,000 tpa at a cost of Rs65 crore. Warrants have already been issued to the promoters in March 2010 to fund the capital expenditure (capex) plans and the plant should be up and running by the middle of the next financial year. The company allotted 3.52 million warrants, of which 515,000 warrants have been converted at a price of Rs11, and the rest at a price of Rs20 per share, which will take the promoter holding to more than 52 per cent.

GPL is also looking for idle spinning capacities to make value-added speciality yarns for textile applications. These spinning units will be taken on lease. Already, it has leased a unit in Bilaspur and another one in Jodhpur. "Our strategy is to integrate backward and forward and find new applications for our products, thereby increasing our presence in waste management," says Sharma.

Financially, GPL has been clocking a compound annual growth rate (CAGR) of about 40 per cent in topline over the past five years. A major part of the boost has come post-diversification into recycling of PET waste. With expanded capacity and increased applications, the margins can only get better. For the year ended March 2010, on a turnover of Rs199 crore (compared to Rs135 crore in the previous year), the company netted a profit of Rs9 crore (Rs4.34 crore). The earning per share (EPS), on an equity base of Rs12.3 crore, works out to Rs8.45. The market price on the BSE (it is not quoted on the NSE, as part of the warrants are yet to be converted), at around Rs46, discounts the earnings by about 5.5 times. For the current year, the company projects a topline of Rs275 crore and a post-tax profit of Rs16 crore, thus resulting in an EPS of around Rs13. This translates into a forward earning multiple of just about 3.5 times. If one can wait till the greenfield and brownfield plans kick in, this stock is certainly a steal.

Clearly, this eco-friendly recycler is bound to get re-rated in future, as Sharma's sons, Sharad and Rajesh, have already moved into the saddle to take charge at the two facilities.

♦ ROY PINTO