

MATERIAL RECYCLING

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THE VOICE OF INDIAN RECYCLING INDUSTRY



INTERVIEW

IPARNA
Paper industry is undergoing transformation



HIGHLIGHT

Post-consumer waste recycling
A profitable way to circular economy



FOCUS

Plastic waste management
How sustainable is sustainable?



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Of Tax breaks and incentives

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Punia Group

Of expansive growth

INNOVATION

Music Recycling

Promoting sustainability through music

For Atmanirbhar Bharat

CMDR SUJEET SAMADDAR



Vehicle scrappage policy what next?

CAPT MOHAN RAM





AYYAPPAN.V
SR EDITOR

editor speak

If one could tweak the famous Shakespearean lines 'If music is the food of love play on' to 'if music is the food for Recycling, play on', it is all that one would like to tell Kanika Borad, the innovator behind Music Recycling. After trials and testing, she has successfully established it in the US of America, where it is a growing trend today, the young lady is taking her movement across continents and has brought it home to the Indian shores. India has a rich tradition of great music, and the daughter of Surendra Patawari Borad of Gemini will not find much problem in getting it loved and adopted here. Recycling is a life principle that everyone need to practice for a Green and Sustainable Planet and every effort to promote it should be supported and encouraged. You will get to read about the encouraging journey of the young musician in this edition.

Reading about music and how it is being used to promote Recycling is refreshing and indeed a stress releasing one, especially in these times of Covid pandemic, which, in its virulent second coming, is highly devastating to India and throwing its industries into total disarray. In this context, another development that is

proving more than salutary to the Indian industry, especially Recycling, and its stakeholders is the Government's announcement of the recycling policy for end-of-life vehicles in the country. While a well-known authority on the subject, Cmdr Sujeet Samanddar, writes about how the paradigm policy could help the country to become Atmanirbhar, another motor industry veteran, Capt Mohan Ram elaborates on what lies next for the industry and the country.

How sustainable is sustainability in plastic is a million dollar question at a time when we are looking at various means and methods of managing the ever-present and increasing volumes

of plastic waste in the country. While our esteemed columnist Dr Sameer Joshi dwells on that important topic, Deepak Mehta of Leevams Incorporated looks closely at post-consumer plastic waste and comes out with interesting solutions for recycling of multi-layer plastic waste.

The Recycling Industry's adeptness in coming to the country's help in these trying times of Covid-19 is one thought that I want to leave with you here. It should make every one of us proud that the industry is pooling its resources, in whichever way possible, to help the country overcome the raging crisis. For example, the secondary metal industry in the country has stalled their operations and instead are generating oxygen to be used to save lives of Covid patients. According to MRAI President, Sanjay Mehta, the industry would be contributing a sizable quantity of oxygen to hospitals, which is yet to be quantified. It is in no way a small measure and coming from the India's Recycling segment, which is not even considered as an industry by the Government, it is indeed commendable and moral boosting for its players.

RECYCLING IS A LIFE PRINCIPLE THAT EVERYONE NEEDS TO PRACTICE FOR A GREEN AND SUSTAINABLE PLANET AND EVERY EFFORT TO PROMOTE IT SHOULD BE SUPPORTED AND ENCOURAGED



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MUSICRECYCLE

PROMOTING SUSTAINABILITY THROUGH MUSIC

Of the growing movement that uses music to spread the message of sustainability and climate change. Its founder Kanika Patawari shares her thoughts

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FOCUS

PLASTIC WASTE MANAGEMENT

HOW SUSTAINABLE IS SUSTAINABLE?

Dr Sameer Joshi writes about the evolving concept of sustainability in plastic waste management in its different dimension

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HIGHLIGHT

POST-CONSUMER PLASTIC RECYCLING

A PROFITABLE WAY TO CIRCULAR ECONOMY

Post-consumer, flexible and rigid plastics waste are gathering attention of recyclers for obvious reasons. Deepak Mehta of Leevams presents the various options available before them

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★ HIGHLIGHT ★

POST-CONSUMER WASTE RECYCLING



A PROFITABLE
**WAY TO CIRCULAR
ECONOMY**

While recycling of inhouse and industrial waste is fairly developed, it is the recycling of post-consumer waste that is the “hot topic” of today

- DEEPAK MEHTA



DEEPAK V. MEHTA

THE PLASTIC INDUSTRY HAS COME A LONG WAY IN THE PAST 60 YEARS. TODAY, HIGH-QUALITY PROCESSING OF POST-CONSUMER, FLEXIBLE AND RIGID PLASTICS WASTE ARE PICKING UP IN INDIA WITH QUALITY SYSTEMS AND PROCESSES PUT IN PLACE.

MR MEHTA TRY TO TRACE THE JOURNEY OF PROGRESS

With change in life style, consumer behavioural patterns and convenience-oriented uses, India, with its 1.3 billion population and continued growth in the economy, drives manifold the per capita consumption of entire range of plastic products, primary and secondary combined.

To safeguard or protect our environment with sustainable growth, effective and efficient recycling systems are a prerequisite. Therefore, Reduce, Reuse, Recover, Recycle and Recreate are the five essential ingredients that we ought to incorporate in our behaviour.

It is heartening to see the new Plastic Waste Management Rules 2016, amended in 2018, and now again in 2021, reaffirms the political will, legal framework an requisite guidelines defining actors and stakeholders to comply with the EPR and CSR responsibilities. As the system sets its pace, a lot more clarity, understanding and streamlining would follow in the coming years, bringing India too in line with global practices.

Circular Economy is the zing thing; a buzz word in the field of plastics. An era to demonstrate, plastics can be circular by its economical reuse in production, replacing the virgin feedstock to a greater extent. It is going to be a game-changer; a paradigm shift in the mindset of the industry. The outcome ought to show a strong demand from the plastic processors and converters for producing good quality recyclates.

While the recycling of inhouse and industrial waste is fairly developed, with little change in the basic approach for gaining better mileage, it is the recycling of post-consumer waste that is the “hot topic” of discussion currently.

Presently, recycling of flexible and rigid post-consumer plastic



On having been associated with this industry for almost 25 years, I can say with a certain degree of certainty that it is not an easy task to market a product that is fully or partially made from a recycled material

★ HIGHLIGHT ★

POST-CONSUMER WASTE RECYCLING



Waste from collectors, kabadiwalas, resellers, professional recyclers or for that matter even from ocean is relatively less complex in terms of further processing as compared to MSW

waste (mainly, PEs & PPs) is majorly in the domain of unorganized sector, they play a minor role in circular economy and sustainability. It is a matter of time - we will soon see professional recycling practices being followed, so as to qualify for EPR. For that to happen, the vision and approach towards recycling of plastic waste ought to be different – far more advanced to meet the emerging quality standards for better reuse of recycled granules or pellets, eventually to close the loop.

In my view, there are fundamentally four broad categories of mixed plastic waste: (1) dry recyclables originating from MSW stream; (2) waste from collectors (kabadiwala) or resellers; (3) waste originating at professional recyclers e.g. PE / PP caps & rings of PET bottles etc.; and (4) ocean waste.

Of these, the most complex is the dry recyclables from municipal solid waste or house-

hold waste. Respecting the type, kind and commingled nature of Indian post-consumer waste, essential elements for project evaluation that I feel are: (1) in-depth analysis of composition (ingredients); (2) type, kind & level of contaminations; (3) likely percentage of recoverables & accruals thereof; (4) apportioned budget and commensurate decision from where to start.

Of these, factors 1, 2 & 3 necessitate proper sorting, segregation and separation of all the major fractions – by its type, grade and form, removing all the unwanted fractions and free contaminants. Such a set-up is commonly known as Material Recovery Facility (MRF).

A typical MRF set-up comprises of Debaler or Bag-opener, Trommel / Screener, Ballistic Separator (2D/3D separation), Overband Magnet, Eddy Current Separator, Sensor-based Optical Sorters (separation of polymer by grade and colour), series of Belt Conveyors

for material transfer and quality check, Balers to compact sorted materials viz. paper, cardboard, separated polymer fractions, textiles, metals, wood, so on & so forth and finally collection of inert. It has also kept in mind that project viability of such MRFs are linked with volumes.

Waste from collectors, kabadiwala, resellers, professional recyclers or for that matter even from ocean is relatively less complex in terms of further processing as compared to MSW. As a new entrant or for a diversification venture, I would suggest – simple things first!

As an example, TOMRA, a German company, pioneer and market leader with over 60% share of the world market, have installed several sensor-based optical sorters for MRFs as well as simple sorting facilities. In India too, there are installations, including MRFs.



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★ HIGHLIGHT ★

POST-CONSUMER WASTE RECYCLING

PLASTIC RECYCLING SYSTEMS FROM ERMA

They offer state-of-the-art technology for value-addition of post-consumer waste

EREMA, an Austrian company, No. 1 in plastic recycling systems, offers state-of-the-art technology for value-addition of post-consumer waste. The washed, clean, dry, sorted film flakes are fed into a large cutter/compactor that uses friction to reduce size, compress and pre-warm the plastic material. Unique advantage of the cutter/compactor is the ability to dynamically blend the materials (homogenize), generally inconsistent in its composition and quantum, to produce a steady, predictable melt. The preheated, densified and partially degassed material is then fed directly to the single-screw extruder at a controlled rate. Compression and melting occur gradually, at a precisely controlled temperature, adding minimal heat history to the reclaim.

In their patented TVEplus® series, melt filter(s) are placed ahead of degassing system, thus exceptionally capable to handle large

amount of contaminants at higher production rates and better quality than conventional vented extruders. Thanks to the design and process engineering that allows effective filtration, extraordinary degassing efficiency and an improved homogenisation, which enable processing of even fully coated, multi-layered and vacuum metalized, printed plastic waste, in a single stage to make high-quality recycled granules.

The biggest challenge confronted is in recycling flexible packaging - multilayer or laminated film waste - be it, industrial or post-consumer, which are currently perceived as "mechanically non-recyclable"! The reality is otherwise; more than converting such 'complexly structured' waste into recycled granules, the real challenge lies in its reuse, due to technological limitations in its moulding and/or extrusion in 'as is, were is' basis! Additional treatment is a prerequisite in the present context for better reusability.

RegrindPro®, is the latest and highly efficient technology for the recycling of regrind materials (rigid plastics). Recycling regrind as an alternative to virgin material has enormous potential for processors of plastics. With raw material prices ever increasing, the demand for the processing of regrind to make high-quality recycled pellets is growing more and more, especially in the thick-walled packaging, electronics (WEEE or e-waste) and automotive sectors.

The thick-walled input material (HDPE, PP, ABS, PS, etc.), however, requires a specific treatment process which is designed to be able



The sorted mixed plastic waste fraction that does not have a definitive reuse, may find its current use in polymer composite panels, extruded sections, RDF, pyrolysis or even for road construction.

The well-sorted polymer fraction (say, PEs & PPs) would then undergo further treatment in a Wash Plant comprising of Wash Granulator (Wet Grinder), Friction Washer, Swim-n-Sink Floatation Tank, Cold / Hot Wash System, Centrifuge, Mechanical Dryer, Thermal Dryer, Collection Silo / Big Bag Station, series of Belt & Screw Conveyors for material transfer etc. The type of plastic (flexible and/or rigid) and leftover contaminations therein decide the configuration / orientation of the Wash Plant, at times inviting the need for the post treatment envisaging Flake Sorter

and/or Colour Sorter as a final quality check.

The right preparation of the valuable waste plays a very important role for obtaining good quality reusable granule or pellet. The washed, clean, dry, sorted film flakes or regrinds are then processed in a Pelletizing Plant or Recycling Extruder.

We clearly see, the pathways are opening for plastic material recycling facilities, more so utilizing mechanical recycling methods as compared to the chemical, due to several factors. Prudence lies in continuing the benefits that plastics offer, devising means to overcome its perceived drawbacks. Efforts to reduce and to reuse must be sacrosanct with the logical and sensible act to "recycle"!

The reluctance to use of recyclable plastics is due to its designation - 'cheap'. The incorrect adjective attached to its accrued lower per unit cost, which the consumers associate with its 'quality'.

Rightly so, inappropriate introduction of recycled plastics prevents end products to meet the required quality specs for which a

Removing the entire spectrum of odours as effectively as possible requires the support of the entire recycling process chain



to handle mixed fractions with varying compositions, high bulk density and moisture, plus strong and varying contaminants through a very wide variety of impurities. The recycled pellets also have to meet exacting quality standards to be able to make end products from them with top surface quality and particularly high recycle content.

Extremely gentle processing and highly efficient filtration enables the recycling of regrind into application-oriented secondary raw materials and ReGrindPro® is the technological solution for recycling of inhouse, industrial and post-consumer waste.

ReFresher: High-efficiency anti-odour technology for more value-addition. In a simple term, Deodourizer – a perfect complimentary product for odour-optimised premium recycled granules or pellets. The unbeatable combination of top granule or pellet quality and odour optimisation opens up completely new application opportunities for recycled plastics.

A typical problem of household waste is that it develops intense odours. These are caused not only by contaminants adhering to the surface, but also by so-called migrated odour substances. The latter is caused by the packaging absorbing the odour of the food, cosmetics or cleaning agents inside it, etc. The substances which migrate like this into the plastic are particularly stubborn. While the TVEplus® or ReGrindPro® extruder system primarily takes care of the high volatile, low molecular substances, the ReFresher removes the low volatile, high molecular odour matter.

Removing the entire spectrum of odours again as effectively as possible requires the support of the entire recycling process chain as outlined above.



product is actually designed. The loop ought to close in the right perspective, more so when the Circular Economy is gaining its importance.

Identification, classification, segregation, sorting, washing, cleaning, drying, reclaiming or recycling of plastic waste is a stupendous effort in converting back into a “good quality” reusable product. Feasibility lies in the economic chain for an “all win” solution.

On having been associated with this industry for almost 25 years, I can say with a certain degree of certainty that it is not an easy task to market a product that is fully or partially made from a recycled material. Collective efforts and synergy to use a certain quantity of recycled material in the finished product, devising stringent quality parameters for the recycled materials and conducting peri-

odic simulation tests to ensure that the finished product continues to meet the customer’s requirement, its acceptance ought to shift towards a positive direction.

The principle responsibility for promotion and acceptance of recycled plastics across its bandwidth gets jointly shouldered by the raw material producers, compounders, brand owners, product designers, product converters and the recyclers. Circular Economy is all about the right blend and synergy from all.

A collaborated and corroborated effort in the mission called “recycling” is the need of hour. The plastic industry has come a long way in the past 60 years. “Recycle and Reuse” is an avenue to retain its well-deserved recognition.

In conclusion, plastic recycling is a profitable proposition, if nurtured in the right way!

» Mr Mehta is Founder and Managing Partner of Leevams Incorporated, Vadodara – Gujarat

A collaborated and corroborated effort in the mission called “recycling” is the need of hour