

Pet Bottle Recycling

FUTURA

PLASTIC PRACTIC

P3 M3 ExNoRa

ExNoRa STREET STARS (Trained & Upgraded Rag Pickers) collect PET / Plastic Bottles



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Curbside collection of PET / Plastic Bottles

ExNoRa STREET STARS (Trained & Upgraded Rag Pickers)



Pet Bottles collected by Street Stars on behalf of their employer, RWA ExNoRa pooled & packed in Jumbo bags arrive at the Recyclers Sorting Centre



Pet Bottles collected by Street Stars on behalf of their employer, RWA ExNoRa Bottles packed in Jumbo bags get unloaded at the Recyclers' Sorting Centre



Presorting to segregate PET from other Plastics Recyclers' Sorting Centre



Presorting PET is a Labour intensive Operation



Presorting PET generates Employment



Segregated PET from other plastics



PVC Bottles



PE/ PP Bottles

**PET Bottles before Baling – Baling
is done to save Transportation costs!**



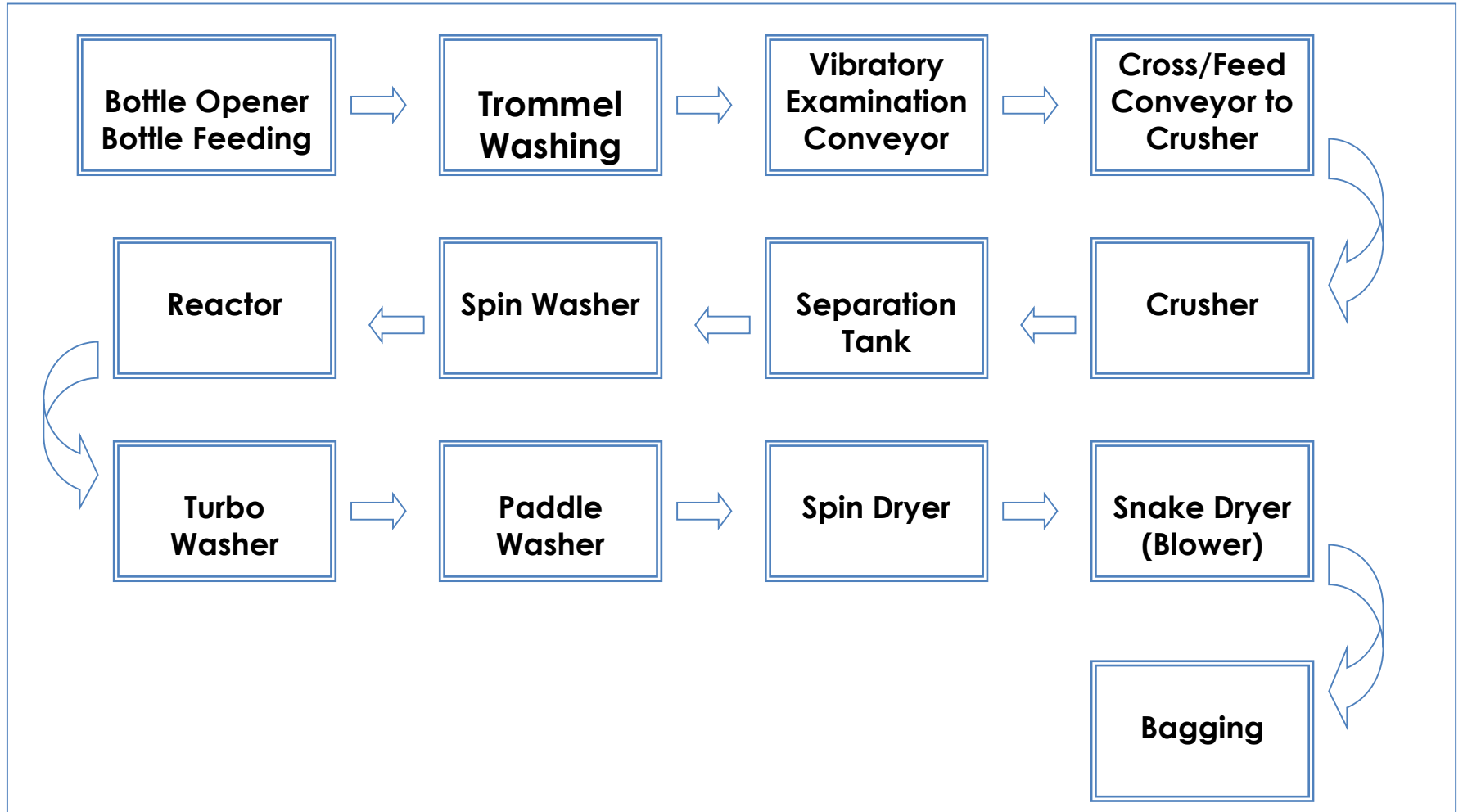
Bottle Bales-Compressed

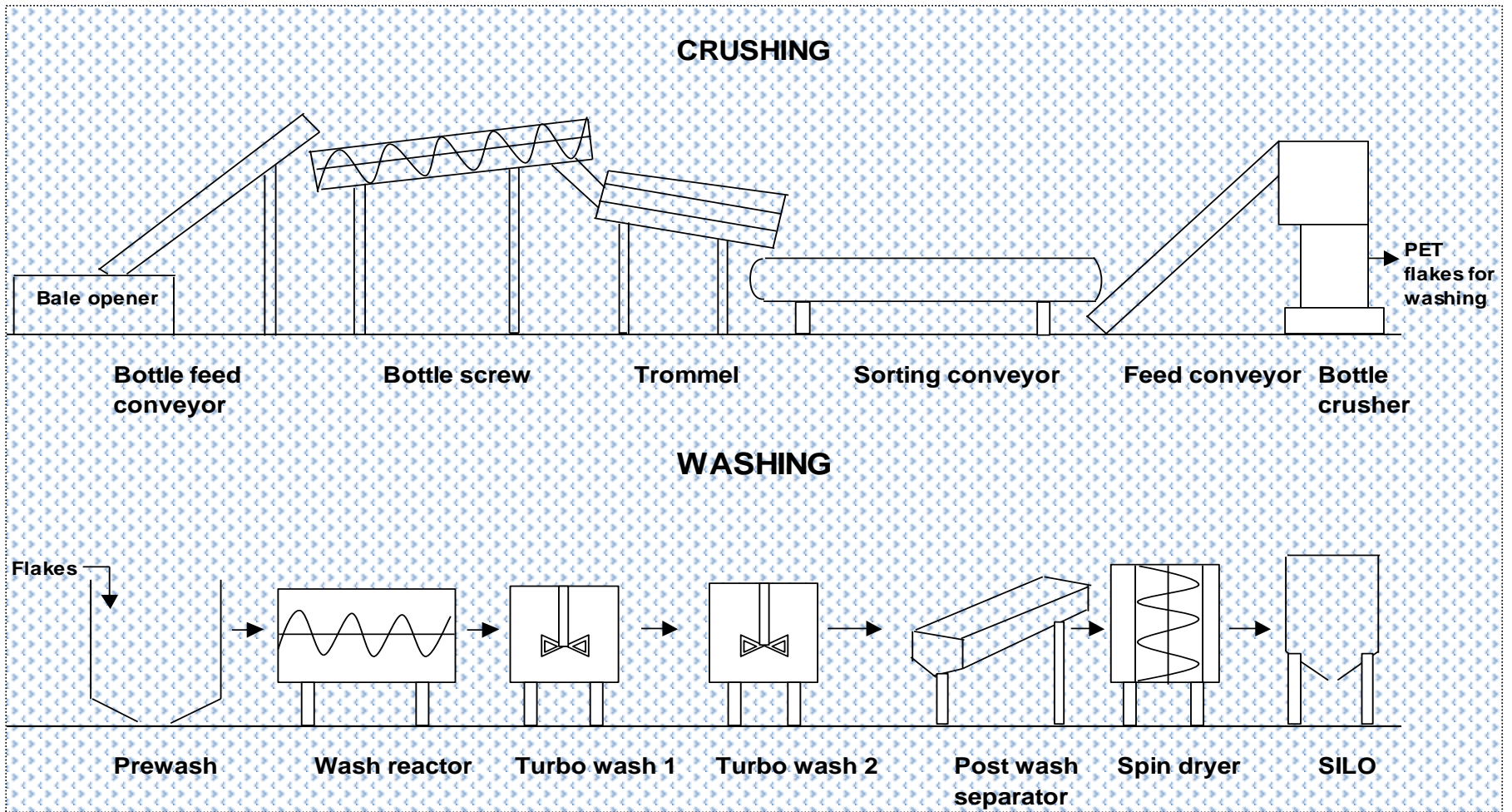


Bottle Bales - Briquetted



PET Bottle Crushing & Washing Typical Process Flow Diagram





Process Flow Chart - PET Flakes Manufacturing

BALE OPENING



Manual Segregation of Bottles moving on a Conveyor



PET RECYCLING PLANT



PET Recycling Facility



RPET – White Clear Flakes



RPET – Mixed Colour Flakes



RPET Granules from White Flakes



RPET Granules from Mixed color flakes



Uses of Recycled PET

Use of Recycled PET depends essentially on the 'Cleanliness' of the flakes. Flakes are processed as such or after pelletisation for the following Generic Applications:

- **Packaging**
- **Sheet & Film**
- **Strapping**
- **Engineering Plastics**
- **Fiber (Carpets, Fabrics, Fiberfill etc.)**

RPET Uses

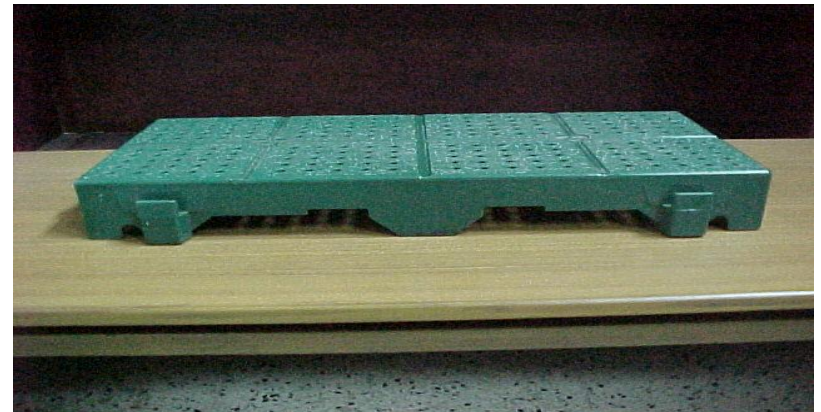
Fibre Applications

- Automobile
- Non-woven
- Geotextiles
- Fibrefills (Hollow)
- Flock cut for reinforcing paper/ cement concrete etc.



RPET Uses & End Products Other Applications

- Trays/Containers
- Bottles/ Jars/ Cans
- Garden Pathways
- Strapping
- Engineering Plastics
- Composites for various applications



GPEC 2005 Special Recycling Award

Futura Polyesters Ltd
Received the Prestigious
award from Global
Plastics & Environmental
Conference 2005
organised by the Society
of Plastics Engineering –
USA “*For Pioneering the
Production of PET and
Reclamation and
Chemical Recycling of
Post Consumer PET for
Food Grade Applications*”



Futura pioneered the PET Recycling in India since 1976!

- Futura Polyesters Limited (formerly Indian Organic Chemicals Ltd) is in the business of Polymers (100% EOU) , Preforms and Fibres apart from Recycling. Aggregate capacity is about 120000 MT/PA
- 33 years standing in Polyester Manufacturing and R&D; R&D in Recycling polyester wastes since 1974; PET bottle waste since 1990.
- Spearheaded the post-consumer PET bottle collection drive in India since 1998. Current volume of Recycling is 20,000 MT/annum.
- Commercialized the Kabaddiwala network and put money in their hands: Additional motivation through “prizes’ for maximising volume:
Radios,TV,DVD,Fridge,Sarees,Garments and the like as Prizes!
- Helped India achieve 60% Collection Vs 15% - 20% in rest of world.
- Pioneered the chemical recycling technology for US FDA approved PCR-PET through Glycolysis route for the US market only..
- Futura’s PET recycling facility conforms to ISO-14001:1996 EMS standards as well as to ISO-9001:2000 QMS Standards.
- Futura is already a Global brand in Virgin Polymer Specialties, working with Pepsi, Coke,GE,Shell,BP, Kodak and many more.
- ***Futura..... the name says it all!***

The service rendered by ExNoRa produced the following results

- Network of thousands of Civic ExNoRas / RWA ExNoRas a nationwide symbol for decentralised waste management Network of low income Self Help Groups earning an income from Zero Waste Management. Pedal energy against Petrol energy
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- Policy change at the National level in the form of enactment of Municipal Solid Waste Management Rules 2000, through intervention of Supreme Court of India. This came about through “**Demonstrative Lobbying**” as against adversarial campaigns.



CeSoWaM

MBN

The emergence of the new legal framework

The demonstrative action by NGOs and community groups like **ExNoRa** and the intervention of the Supreme Court saw the framing of the **Municipal Solid Wastes (Management and Handling) Rules**.



Schedule I of MSWM Rules 2000

[see rules 4(2) and (3)] Implementation Schedule

Serial No.	Compliance Criteria	Schedule
1.	Setting up of waste processing and disposal facilities	By 31.12.2003 or earlier
2.	Monitoring the performance of waste processing and disposal facilities	Once in six months
3.	Improvement of existing landfill sites as per provisions of these rules	By 31.12.2001 or earlier
4.	Identification of landfill sites for future use and making site (s) ready for operation	By 31.12.2002 or earlier



ROLE of ExNoRa STREET STARS (rehabilitated rag pickers)

- Collection and segregation of garbage into recyclable and non recyclable
- Total value addition by rag-pickers (ExNoRa STREET STARS) in Chennai in one year :
 - 10,000 rag-pickers (ExNoRa STREET STARS) x Rs. 500 per month (notional cost) x 12 months = **Rs.6 cr.**
- Cost incurred by state and public through an ExNoRa STREET STARS : **Rs. 0**

