

VACUREMA® INLINE STRAPPING

PET strapping production directly from recycled PET bottle flake



Techno Plastic srl
IMPIANTI PER ESTRUSIONE - EXTRUSION LINES
www.technoplastic.it

EREMA®
HIGH TECH RECYCLING

From PET WASTE directly to PET STRAPPING

PET bottle flake has become an interesting commodity on the world market. The production of PET strapping from PCR-PET flake is a very attractive and profitable business opportunity for the reuse of this valuable secondary raw material.

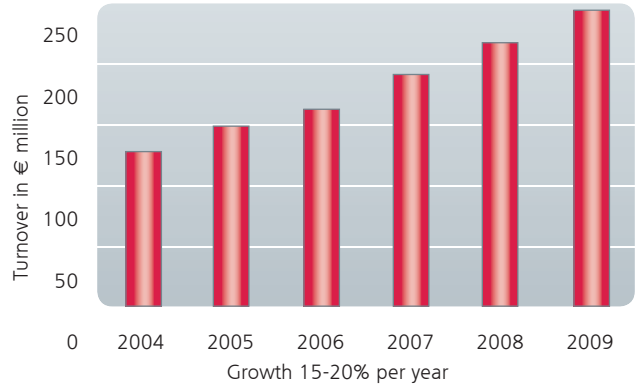
Thanks to the ability of the patented VACUREMA extrusion system together with the appropriate downstream equipment it is possible to produce high-quality PET strapping directly from 100% post consumer washed PET bottle flake.

Why PET strapping instead of steel strapping?

Because the advantages of PET strapping considerably outweigh those of steel strapping in the following areas:

- › **Increased safety:** greater constant holding strength, higher shock reserve, less risk of injury
- › **Higher quality:** no damage to edges of goods, no discolouring through rust, compensates for shrinkage of packaged goods
- › **Higher productivity:** easier to handle, more metres per reel, less weight per reel, no metal seals, no edge protection required
- › **Reduced cost:** lower price per metre, lower production costs

Market Volume Demand for PET Strapping in Europe



VACUREMA STRAPPING – HIGHLIGHTS:

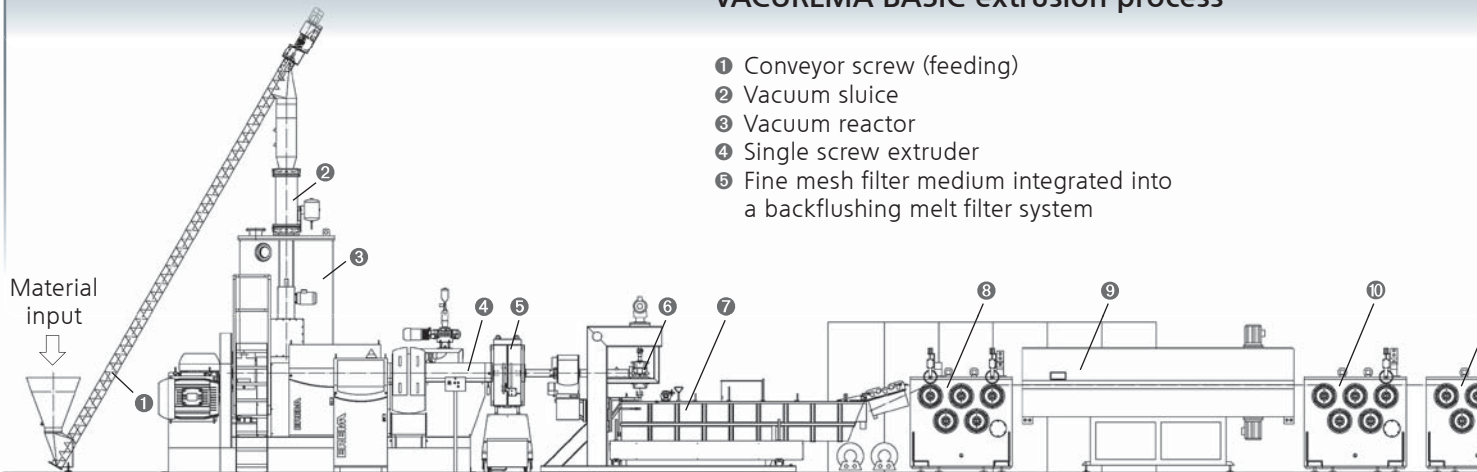
- › Deals adequately with high moisture up to 1.5% and moisture variations
- › Stable IV through constantly dried material before entering the extruder
- › Highly flexible in terms of input material bulk density and shape - 250 to 850 kg/m³
- › Large area fine melt filtration
- › Low specific energy consumption

NEW ecoSAVE® reduces energy consumption of the VACUREMA Basic system by up to 10% as well as production costs and CO₂ emissions as a result



- › Less space required (no conventional crystalliser and drier)

VACUREMA BASIC extrusion process



The upstream process:

The proven, energy-saving, patented VACUREMA STRAPPING technology consists of a vacuum reactor and a directly attached single screw extruder. It eliminates the need for a conventional, costly predryer/crystalliser/extruder system and is thus able to reduce total specific energy costs by a third.

Using the compact VACUREMA STRAPPING technology to turn PCR-PET bottle flake or mixtures of a wide range of input materials (including strapping production waste) via fine melt filtration direct into strapping with stable IV makes it possible to produce very strong strapping with very small cross-sections from comparatively inexpensive raw material.



The strapping process: (provided by Techno Plastic s.r.l.)

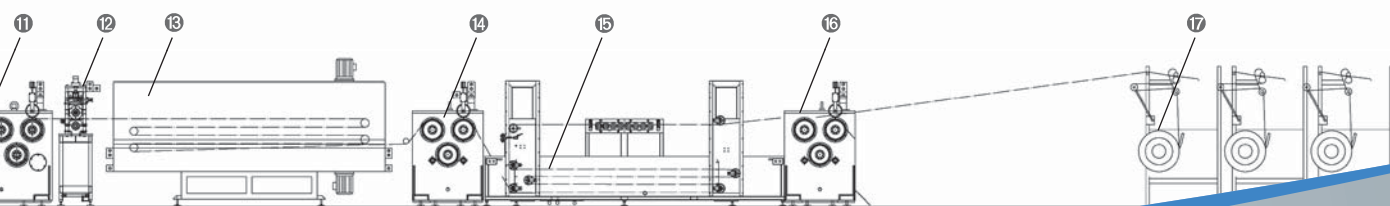
Techno Plastic's Tight Strap 300 equipment - known as "downstream" - attends to the strapping process stage, starting from the exit of the VACUREMA system. The material enters into the extrusion head, provided with two double spinning pumps, and is then divided in four channels feeding the extrusion die producing its required dimensions. Subsequently the product passes through several processes of thermal conditioning and proceeds through stretching, embossing, stabilising and cooling stations to the winders.

At the end the final result has prime levels of dimensional stability and superb mechanical characteristics. Techno Plastic's flexible and adaptable stretching technology is based on many years of experience and is focused on the production of extrusion lines for strapping bands and monofilaments.



Strapping process

- | | |
|---------------------|------------------------------|
| ⑥ Melt pump | ⑫ Embosser |
| ⑦ Cooling tank | ⑬ Stabilisation oven |
| ⑧ Slow godet | ⑭ Stabilisation godet |
| ⑨ Stretching oven | ⑮ Water cooling tank |
| ⑩ First fast godet | ⑯ Second stabilisation godet |
| ⑪ Second fast godet | ⑰ Winders |



The key advantages of VACUREMA INLINE STRAPPING PLANTS

- › The highly effective vacuum-predrying process of the patented VACUREMA extrusion system eliminates moisture variations of input material before the material is fed into the extruder. This results in even, continuous high-quality strap production with stable IV independent from input moisture variations.
- › Large area, super fine melt filtration (e.g. 32 or 64 µm) through the patented EREMA SW RTF filter system with integrated self-cleaning system ensures a high-quality end product.
- › Reduction of energy costs up to a third compared to conventional lines.
- › Raw material cost savings by using up to 100% PET bottle flake.
- › Extremely flexible, very quick material change and colour change possible (no external pre-drying and crystallising systems necessary). System processes also virgin pellet or mixtures of pellet and flake and is highly versatile in terms of input material bulk density and shape.
- › Robust single screw extrusion system, insensitive to solid contamination, providing high melt pressure for fine mesh filtration. Enables filtration before sensitive melt pump.

Plant sizes and output capacities on request.



Headquarters & Production Facilities

EREMA Engineering Recycling
Maschinen und Anlagen Ges.m.b.H.
Unterfeldstraße 3
A-4052 Ansfelden, Austria
Phone +43 732 3190-0
Fax +43 732 3190-23
erema@erema.at, www.erema.at

Subsidiaries

EREMA NORTH AMERICA INC.
23 Old Right Road - Unit#2
Ipswich, MA 01938 / USA
Phone +1 978 356-3771
Fax +1 978 356-9003
erema@erema.net
www.erema.net

EREMA JAPAN Co., Ltd.
8F Tobu Yokohama Second Building
Kanagawa Prefecture
2-15-1, Kita Saiwai, Nishi-Ku
220-0004 Yokohama, JAPAN
Phone +81 45 317-2801
Fax +81 45 317-2803
erema@erema-japan.com
www.erema.at

EREMA Shanghai Office
Room 1009, Tomson Financial Building
710 Dong Fang Road, Pudong
Shanghai China (200122)
Phone +86 21 6876-6201, 6876-6204
Fax +86 21 6876-6203
erema@erema.com.cn
www.erema.at



Techno Plastic s.r.l.

41013 Castelfranco Emilia (Modena) Italy
Via Emilia Ovest, 81/A
Phone +39 059 928984, 922313
Fax +39 059 9536822
info@technoplastic.it
www.technoplastic.it

For worldwide representatives see www.erema.at

Subject to technical modifications. Printed 10/2010. E
© EREMA Engineering Recycling Maschinen und Anlagen Ges.m.b.H.

