

Bottle to Bottle PET Recycling(페트병 재활용)

[FDA승인]



BoReTech
PET Recycling Equipment

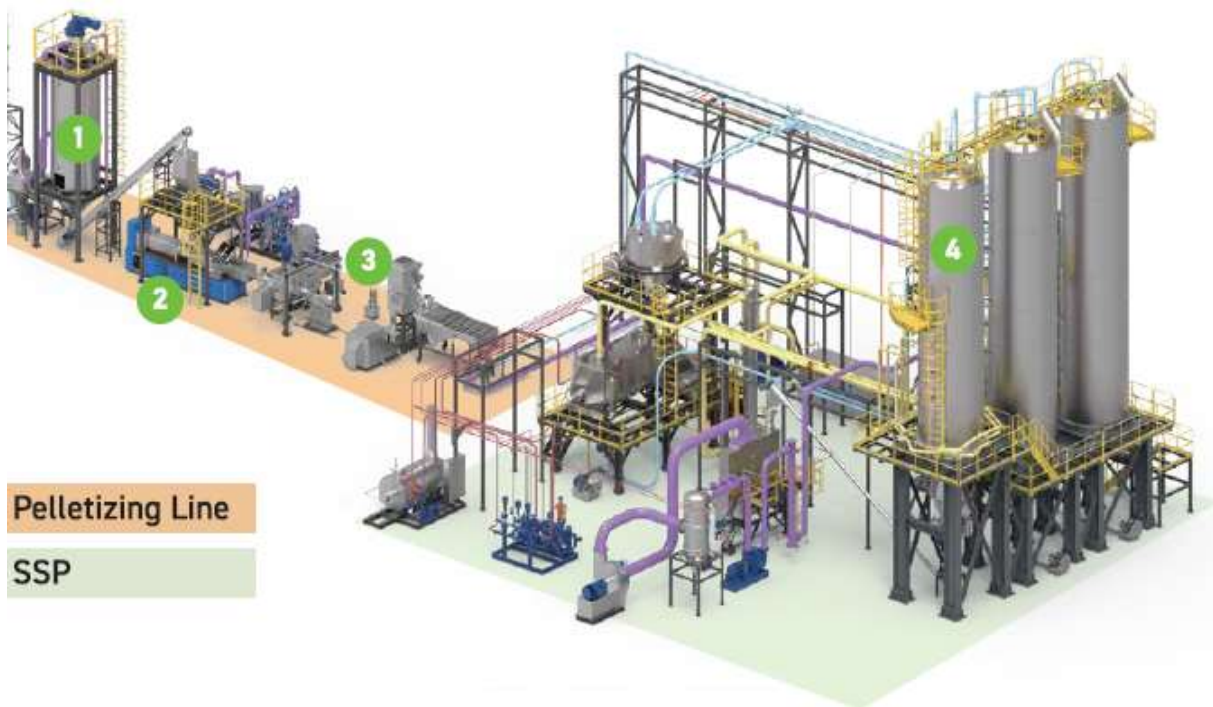
Bottle to Bottle PET Recycling Solution

Engineering / Procurement / Construction / Kickoff /
Technology / Test

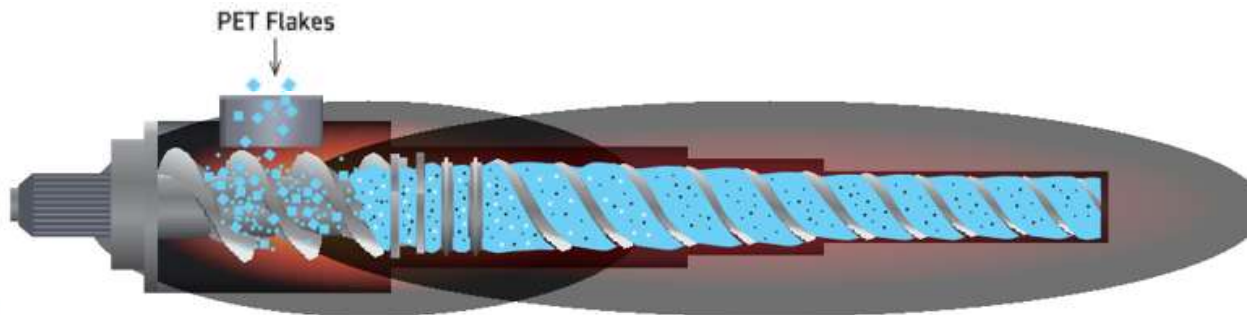
Food Grade

The advertisement features a young child with curly hair, wearing a white t-shirt, drinking from a clear PET bottle. The child is giving a thumbs-up gesture. The t-shirt has a green circular logo with a white stylized 'R' and a fork, and the words 'Food Grade' in green below it. The background is a soft, out-of-focus outdoor setting.

Resources and Technology Integrator of
Recycled Polyester Industry



압출단계 전 Hot air Preheating 및 Vacuum Preheating을 통해 플레이크의 수분 및 VOC, 오염도를 제거하고 IV값을 높이는데 도움을 줍니다.



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Extrusion

Flexible choice of single-screw or twin-screw extruder according to different pretreatment processes

- A short extruder to minimize dwell time, high torque, stable melt pressure
- Low thermal stress
- Huge intake-volume structure is specially designed for PET whose bulk density is small
- Highly efficient vacuum system, well degassing and devolatilization technology, effectively removes moisture and VOCs
- The melt is thoroughly mixed and homogenized
- Excellent energy-saving

전처리 과정에 맞는 압출기(싱글 또는 트윈형) 선택이 가능합니다.

뛰어난 탈기시스템(Super Vacuum)과 열발생이 적고 효율적인 에너지 사용량으로, 전단(Shear)에 민감한 폴리머(PET)에 적합합니다.

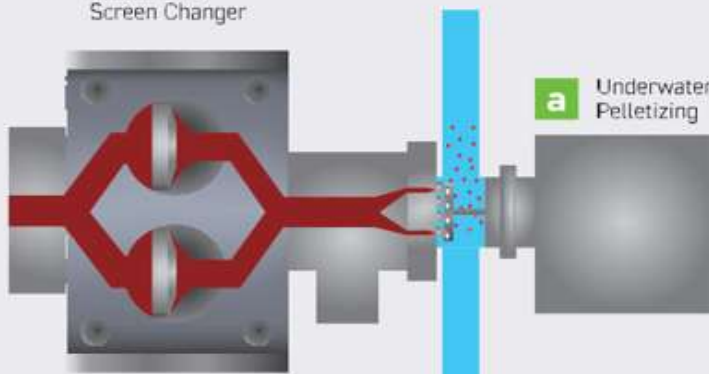
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Strand or Underwater Pelletizing System

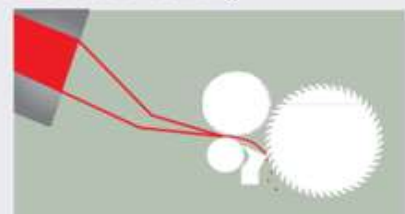


Continuous
Screen Changer

- Continuous screen changer ensures continuous operation of the production line effectively removes any impurities from the melt
- Long tool life of pelletizing blades
- Inline crystallization system saves 50% energy without external energy
- Less noise, less steam, better production environment
- Excellent color value control



b Underwater
Stand Pelletizing



r-PET의 용도(이물 사이즈)에 따라, 1차 또는 1차+2차 연속식 필터를 채택하며, Chip Cutter는 Underwater Pelletizer 및 Strand Pelletizer를 선택할 수 있습니다.

SSP (Solid-state polycondensation)

The continuous SSP of PET is divided into basic processes such as pre-crystallization, crystallization and pre-heating, SSP reaction, pellets cooling, and nitrogen purification.

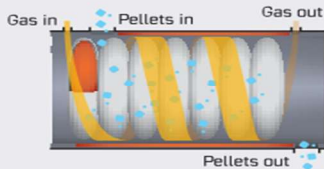
- Compact, cover a small area
- Continuous reaction, "First in, first-out"
- Pre-crystallization and Pre-heating, prevent sticking of the pellets
- Mechanical discharge, no arching
- Quick cooling, low energy consumption
- Efficient nitrogen circulation and purification system
- Stable IV value, stable pellets quality
- Minimal VOC content, AA residual less than 1ppm

Pre-crystallization and Pre-heating

Entire pre-crystallization process under air and preheating process under nitrogen

Agitation Heat Exchanger

Indirect heating HTM technology



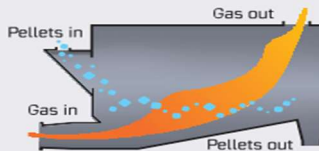
- Prevents twin-pellet or lump formation during crystallization
- Minimal gas required to convey evaporated volatiles

- Material is in contact with the Vessel walls and/or hollow-disc rotor are heated using hot oil
- Thin-layer heat exchanger offers highest heat transfer coefficient, reduces energy required to fluidize material by more than 50%
- High amount of heat transfer surface area in a more compact footprint, reduces footprint and building area by more than 50%
- Gives strict control of heating rate, resulting in better crystal structure for higher quality preforms

Fluidized Bed Heat Exchanger

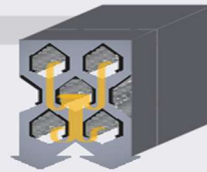
Direct heat Fluid Bed technology

- No mechanical agitation and therefore no pellet deformation
- Excellent de-dusting of the polymer



Roof-Type Heat Exchanger

- No mechanical agitation for maintenance free operation
- Closed loop process gas circuit with exchange gas from the reactor for minimal energy consumption
- Excellent de-dusting for improved product quality



SSP reaction

The pre-heated pellets form a vertical moving bed and the pellets are held at a sufficient residence time to allow decontamination and increase the molecular weight. Narrow residence time distribution allowing uniform pellet-to-pellet thermal history. Provides uniform counter-current gas flow for even VOC removal



Discharge Structure

- Accurately controls bed level, residence time, and throughput rate
- True first-in-first-out operation
- Prevents hang-ups during startup
- Enhances even gas distribution
- Prevents blockages due to lump formation
- Minimizes off-spec generation during start-up and product change over

Nitrogen purification

Nitrogen from the process is continuously cleaned in a catalytic combustion or gas washing system.

- All process steps under nitrogen (crystallization and cooling under air or nitrogen)
- Fully purified reactor gas loop
- Low maintenance requirements
- Low Energy consumption

초기 결정화장치(Pre-Crystallization) 및 SSP 공정을 통해 PET의 VOC를 최소화하고, 용도에 맞게 IV값을 높여 줍니다.