

## SIGNIFICANT ADVANTAGES

We are BoReTech, an innovation and technology team with customer-oriented that is provided with PET bottle-to-bottle plant engineering and service



Applications

### Less energy, more profit

- Higher ROI (Return on Investment), lower TCO (Total Cost of Ownership)
- Energy-saving and environmental, based on European technology, the unit energy consumption is reduced by 35% further
- Combined with European and American equipment, the Capex of the equivalent scale saves 50%, the output ratio is high, and the benefit is good

### A sound investment is worth

- More than 30 years of experience, the resources and technology integrator in recycled polyester industry chain
- A perfect after-sales service team with high-efficiency, profession, rich experience, comprehensive guidance



Guarantee to fulfill global brands

ZHEJIANG BORETECH ENVIRONMENTAL ENGINEERING CO., LTD.

No.888, Jiuliting Avenue, Caoqiao Street, Pinghu City, Zhejiang, China.

T: +86-573-8512-0186 F: +86-573-8511-3959

E-mail: sales@bo-re-tech.com

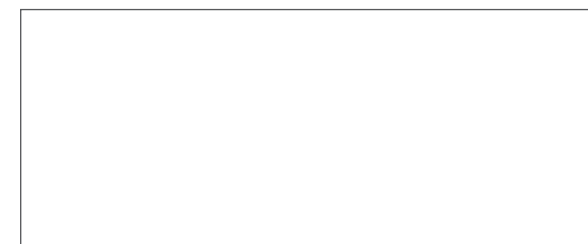
www.bo-re-tech.com

2022 / 06 ver.2



uCloud

Agent



## Bottle to Bottle PET Recycling Solution

Engineering / Procurement / Construction / Kickoff /  
Technology / Test



Resources and Technology Integrator of  
Recycled Polyester Industry

www.bo-re-tech.com

## FOOD GRADE rPET PELLETS

PROFESSIONAL / RELIABLE / CERTIFIED / SECURE  
Stable quality on rPET pellets and guarantee to fulfill global brands of recycled plastics applications steps! GREEN, ECO-FRIENDLY, LOW-CARBON, SUSTAINABLE



### That's What We're Doing!

- More than 30 years of process technology and production experience in PET bottle recycling
- European and American based technology, Asian manufacturing brings a superior ROI
- Flexible process and configuration, outstanding decontamination technology
- Clear rPET flakes and pellets, comparable to the quality of the virgin one
- The specified IV value and stable, that meets the highest quality of various application
- Food contact, with FDA & EFSA certifications

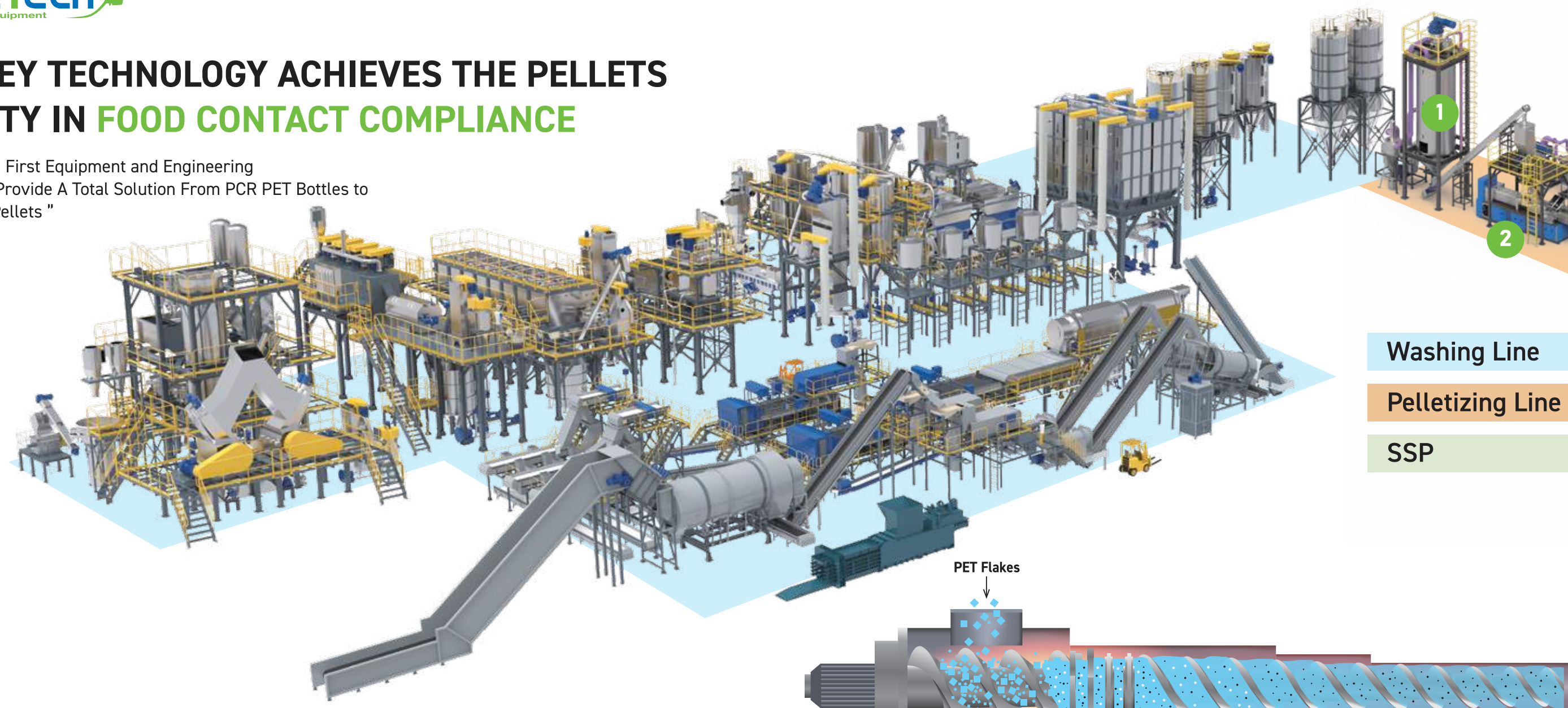
### Global projects, well acknowledged by brands

- More than 200 production lines are running in 40 countries worldwide, which rPET pellets are widely favored by international brand owners
- Help customers quickly obtain food-grade certification and brand recognition
- Smooth raw material supply and sales support for food-grade recycled pellets



## THE KEY TECHNOLOGY ACHIEVES THE PELLETS QUALITY IN FOOD CONTACT COMPLIANCE

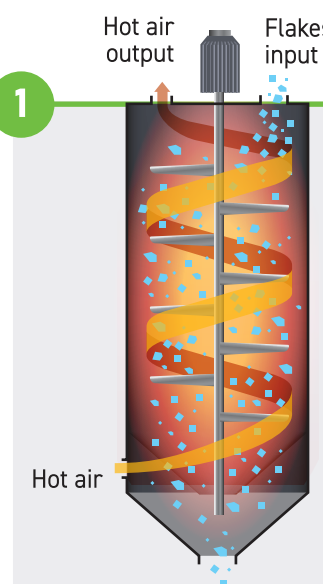
" The World's First Equipment and Engineering Company to Provide A Total Solution From PCR PET Bottles to Food-grade Pellets "



Washing Line

Pelletizing Line

SSP



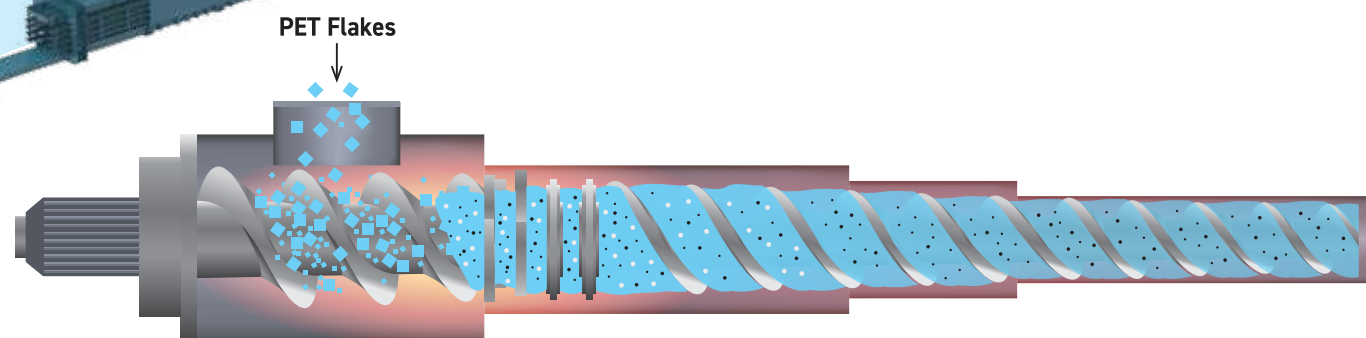
### Pre-treatment

#### Hot Air Preheating

- Unique pre-heating technology
- FIFO principle of pre-dryer (uniform pretreatment of material)
- Preheating by means of hot air
- Make the moisture and VOCs in the flakes vaporize and escape more quickly, and ensure the IV value of the next section

#### Vacuum Preheating

- High efficiency and energy saving, uniform and easy to control
- Use microwaves or convert kinetic energy into thermal energy to heat flakes
- High-intensity agitation, material homogenization
- High vacuum, lower vaporization point of moisture and VOCs, faster decontamination



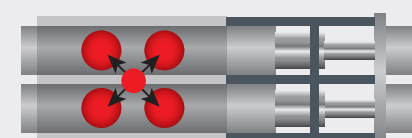
### Extrusion

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

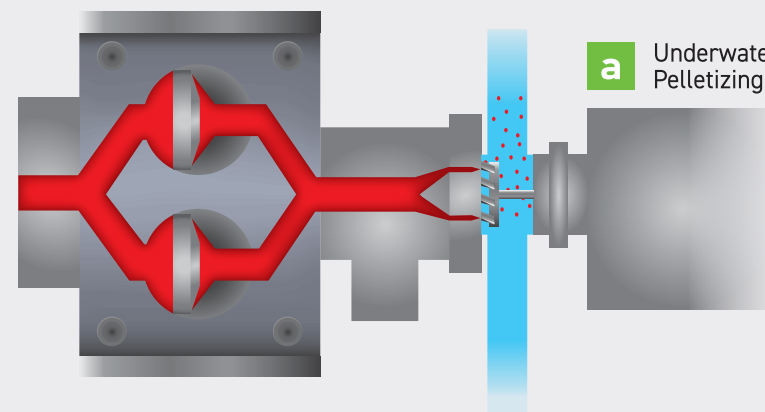


### Strand or Underwater Pelletizing System

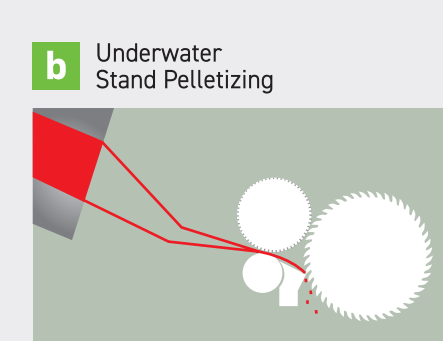


Continuous Screen Changer

- 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



a Underwater Pelletizing



b Underwater Stand Pelletizing

4

### 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.

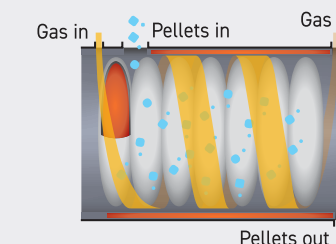
- Compact, cover a small area
- Continuous reaction, "First in, first-out"
- Pre-crystallization and Pre-heating, prevent sticking of the pellets
- Mechanical discharge, no arching
- Quick cooling, low energy consumption
- Efficient nitrogen circulation and purification system
- Stable IV value, stable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



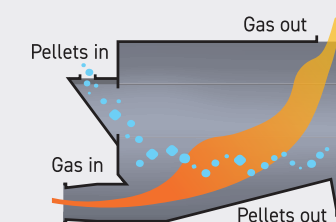
- Prevents twin-pellet or lump formation during crystallization
- Minimal gas required to convey evaporated volatiles

- 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

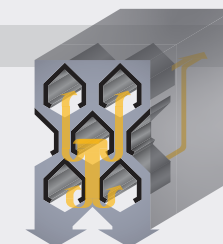
Direct heat Fluid Bed technology

- 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