

# PET瓶回收清洗功能性单机

Functional Single Unit For PET Bottle Recycling



**BoReTech**<sup>®</sup>  
PET Recycling Equipment

再生聚酯产业链  
资源与技术整合者

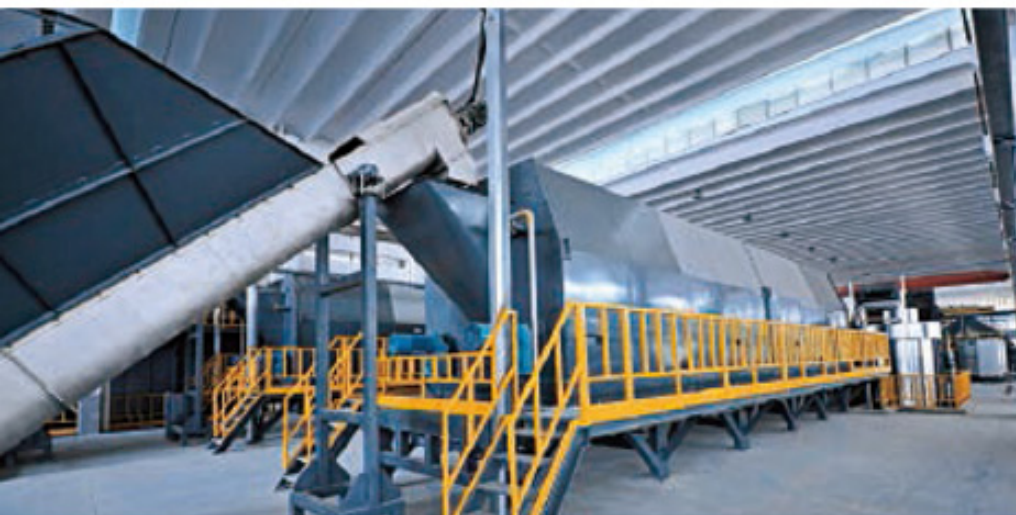
Resources and Technology Integrator of  
Recycled Polyester Industrial Chain

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# 公司简介

## Boretech Brief



浙江宝绿特环保技术有限公司是专精于PET瓶回收清洗及聚酯纤维生产的环保机械工程公司。宝绿特起家于PET瓶清洗厂，再进入到再生聚酯纤维生产。经过10年的耕耘，积累了丰富的PET瓶原料专业知识，凭借着对再生聚酯生产原料及其质量要求的了解，透过不断地研发与创新，进而投入到PET瓶回收系统生产制造。目前实现「单线产能6吨/小时的清洗线，全球单个车间处理量最大的清洗系统、瓶到瓶级交钥匙工程清洗系统、为国家首批“城市矿产示范基地工业园”提供PET瓶回收清洗设备。诸如：成套专业工程规划，污水处理工程、管道工程、自动化控制等成套专业工程规划可解决客户需求，提升客户产品的竞争力。多年来，不断精进的PET瓶回收清洗系统与单机使宝绿特通过了ISO9000，ISO14000与欧洲CE认证，与国际知名自动化设备厂商长期合作与技术交流，成为国际PET瓶回收系统制造与聚酯产业链系统整合的领导厂商，我们将持续深耕于绿色环保技术的开发，引领世界走向更美好的未来。

BORETECH is a professional environmental mechanical engineering company which specializes in the recycling of PET bottle and production of polyester. Started as a PET bottle recycling factory in Taiwan in 1991, Boretech enters into the production of regenerated polyester fibers in 1994. After 10 years of work, Boretech has accumulated a wealth of expertise in PET bottle materials; by virtue of the understanding on the production raw materials and quality requirements of the regenerated polyester, through continuous research and innovation, we had launched into the new business of manufacturing of PET bottle washing line. Up to now, we has achieved "the PET bottle washing line with the single line capacity of 6 tons /hour, the world's largest capacity of a single line and B-to-B grade turnkey project", and to provide it to the first batch of national "Urban mineral demonstration base industrial park". Sewage treatment engineering, pipeline engineering, automatic control and other complete sets of professional engineering planning, those of which total solution service, effectively and completely solve the customer demand and improve the customer's product competitiveness. Over the years, constantly refining PET bottle recycling system and single machine have enabled Boretech to pass ISO9000, ISO14000 and CE certification, to carry out long-term technical and cooperation with the international well-known manufacturers of automation equipment and to become an international leading manufacturer in the manufacturing of PET bottle recycling system. We will continue to the development of green technologies and leads the world toward a better future.

# 粉碎机 Crusher

参数表 Parameter Sheet

型号 Model	处理量 Capacity (kg/h)	功率 Power (kw)	动刀数 No. of Rotary Blade	定刀数 No. of Fixed Blade	旋转直径 Rotor Diameter (mm)	进料口尺寸 Size of Feeding Hopper (mm)
SC800/1200	2000	110	16	6	φ800	800x1200
SC700/1000	1500	75	16	6	φ700	700x1000
SC500/1000	1000	55	16	6	φ500	500x1000
SC500/500	500	45	8	3	φ500	500x500

\* 以上各型号达到该处理量的条件为瓶片粉碎后最小尺寸为12mm

Capacity of above model is based on the minimal size of flakes is 12mm after crushing



特殊结构设计的粉碎机可以在粉碎的过程中加入水，让瓶片进行第一道摩擦清洗，同时达到降低粉碎室内温度和刀具磨损，最重要的是可降低粉末的产出损耗量。

Water can be added in the grinder with special structural design in the process of crushing to allow the flakes to carry out the first friction cleaning while reducing the temperature in the crushing room and abrasion of the blades; the most important is to reduce the output loss of the powder.

以20多年PET瓶回收和粉碎机的制造经验，我们在机构设计、材质选择和生产加工工艺中都在往故障率低的方向前进。

With more than 20 years of experience in the recycling of PET and manufacturing of grinders, we advance in the direction of low failure rate through mechanical structure design, material selection and manufacturing process technology.

调整动刀和定刀之间的剪切角度使粉碎效率更高，并且保证物料在粉碎室内的运行方向，降低物料对壳体的摩擦与机械冲击。

Angle of cutting between rotary blade and fixed blade increases the efficiency of crushing and assure the moving direction of materials in the crushing chamber, reduce the friction and mechanical impact of the materials to the crusher chamber.

特殊的机构设计和加工方式尽可能地减少物料和水分从筛网和外壳的间隙泄露。

Specially designed machine structure and processing method prevent the material and water leaking from the gap between the screen and chamber in a minimum level.

轴心的强度在选材和热处理过程中有进行专门设计，轴断裂的情形不会发生。

The strength of the shaft in the process of material choosing and heat treatment with special designed, so that the shaft will not break.

将高耐磨性的材料与普通的材料用特殊加工设备进行焊接的粉碎刀具；在保证质量的稳定性的同时，延长了刀具使用寿命，达到降低生产成本的效果。

Crushing blade, using special processing equipment to weld high wear-resistance steel and carbon steel, extends the service life of blade and decrease production cost while keeping the stability of productive quality.

调刀架的设计可使换刀和调整刀具的维护工作变得更为简便。

The design of blade adjustment frame to make it easier for exchange blades.



## Z型风选机

# Zig-zag Separator

参数表 Parameter Sheet

型号 Model	处理量 Capacity (kg/h)	功率 Power (kw)	外形尺寸 Dimension (mm)	小标签与粉尘分离率 Dust Separation Rate (%)
FXZ-1500	6000	7.7	1510x2050x6368	> 70
FXZ-1200	3000	7.7	2400x2700x6500	> 70

PET粉尘对下道产品的生产都会产生重要影响，尤其是POY，PET薄片的生产过程中，它对粉尘的要求条件极为严格。基于瓶片与细小粉尘之间的重力差，利用可调节风力与特殊内部结构的作用，将细微杂质及粉尘从瓶片中抽离。在前道工序中仍残留的细碎标签，亦可透过本设备去除70%以上。

PET fine has an important impact on the next production of PET flakes. Especially for the production process of POY and PET sheet, the requirement of PET fine is extremely strict. Dust-removal equipment can effectively separate more than 70% residual fines, small plastic labels or film in the flakes by taking advantage of the gravity between flakes and dust, pneumatic vacuum system and the internal structure specially designed.

## 摩擦机

# Turbo Washer

参数表 Parameter Sheet

型号 Model	处理量 Capacity (kg/h)	功率 Power (kw)	外形尺寸 Dimension (mm)
MCJ-800	3000	55.75	1560x1720x2710
MCJ-600B	1500	45.75	1650x1445x2712
MCJ-600A	500	15.75	1601x1454x1910

附着在PET瓶片表面的黏胶及混杂在瓶片中的细小杂质对PET的再利用都将产生重要的影响。宝绿特研发的摩擦机是利用内部叶片结构装置对瓶片产生打击作用，使得瓶片与瓶片间产生的摩擦力将黏胶去除，同时利用离心力去除一部分水份。

The glue attached on the flakes will also affect the recycling application of the flakes, Boretech turbo washer uses special design mechanical structure to result strong friction among flakes and paddles and then remove the glue by centrifugal dryer. At the same time, some moisture will be removed by centrifugal force.

It is easy to clean machine and do daily maintenance with special design structure of the turbo washer bottom.

设备底部的特殊结构设计方便设备的日常维护与清理。



# 脱水机

## Horizontal Dryer

参数表 Parameter Sheet

型号 Model	处理量 Capacity (kg/h)	功率 Power (kw)	外形尺寸 Dimension (mm)	成品含水率 Moisture Content of Product (%)
TS-800	3000	55	2449x1850x2020	< 2
TS-600	1500	18.5	2510x1500x1755	< 2
TS-700	700	15	1322x1583x1898	< 2

\* 以上各型号脱水率针对PET瓶片  
Water content is for PET flakes



通过高速机械离心脱水，瓶片的含水率会降至1~2%，如后段再辅以热交换，瓶片含水率会进一步下降。对于涤纶短纤或者POY长丝等下游产业来讲，采用我们公司机械式高速脱水设备（含辅助加热）足以满足市场需要。

最终成品的含水率是PET回收的一个重要考核指标，机械式脱水效率的高低直接影响到成品的质量以及回收过程中的能源消耗量。自2005年以来，在中国、东南亚、中东、美洲、非洲有超过数百台的宝绿特脱水机在运行，这足以证明了这种产品优越的稳定性和高效性。

在考虑生产过程中的种种状况，我们的产品配有特殊设计的轴心，防堵塞筛网等可以达到最高的产量，最低的产品含水率，最低的故障率与简单的设备维护工作。

The high-speed machinery is used for the centrifugal dewatering so that the moisture rate of the flakes will be reduced to 1~2%. If the heat exchange drying is supplemented later, the moisture rate of the flakes will be further reduced. For the downstream polyester staple fiber or POY filament application, using the high-speed mechanical dewatering equipment (with auxiliary heating) of our company is enough to meet the market demands.

Water content of the final product is an important criterion for performance standard of PET recycling, and rate of mechanical drying directly affects the quality of products as well as energy consumption during the recycling process. Since 2005, hundreds of Boretech horizontal centrifugal dryers are running in China, Southeast Asia, Middle East, America and Africa, which proves the stability and high efficiency of this product.

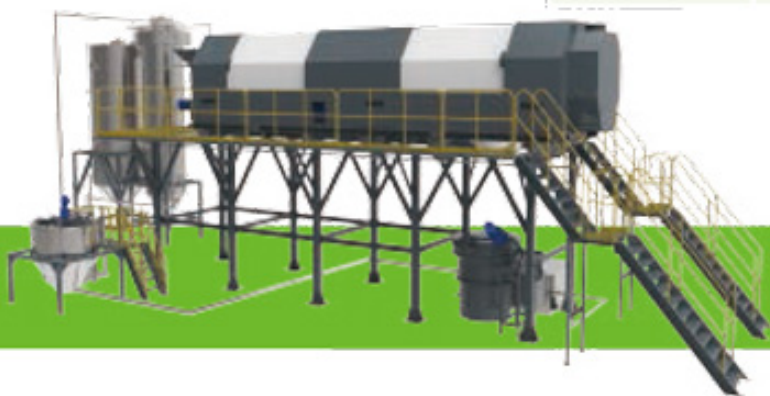
We considered all kinds of situation in the process of production, equipped specially designed shaft and anti-block screen for the crusher to reach the highest capacity, minimal water content, the lowest failure rate and simple maintenance work.

# 整瓶洗涤机

## Bottle Pre-washing Machine

参数表 Parameter Sheet

型号 Model	处理量 Capacity (kg/h)	功率 Power (kw)	外形尺寸 Dimension (mm)	蒸汽耗量 Steam Consumption Rate (kg/h)
XDL-2400	6000	30	15800x3225x3050	1500
XDL-1800	3000	15	11200x2370x2280	850



采用连续进料，连续清洗的方式。利用具有专利及特殊设计的内部结构与蒸汽加热的高温药剂水清洗瓶体表面，把瓶子表面的PP标签，纸标签，泥沙，胶水，橡胶，金属等杂质通过过滤系统去除，使PET瓶在洗涤机腔体内部彻底洗净。透过在线传感侦测系统，自动控制药剂温度及药剂补充，实现生产工艺全自动控制，保证洗瓶质量。

配备自动加药循环过滤系统，利用粗过滤、细过滤、沉淀等方式，把药剂水中的杂质进行分离后再回用，使药剂水的使用寿命更长。

整瓶清洗工艺对瓶片中的PVC含量都有重要影响。经过高温清洗可以让PVC瓶改变外观，从而易于与PET瓶进行区别，让人工挑选变得非常简单，同时清洗后的瓶子可以让自动挑选系统具有更高的分拣效率。

This machine adopts the automated water circulation system, continuous feeding and washing. This system uses the structure specially designed to cause friction of PET bottles inside the machine, and uses the high-temperature chemical water to remove the labels, dirt, sands, glues, rubbers, metal and other impurities on the bottles surfaces. Through detection system, it is able to conduct automatic control over temperature and chemical supplement, to achieve comprehensive automatic control of production process, and guarantee bottle washing quality.

Supporting chemical water filtration system, using coarse filter, fine filter, sedimentation, separate impurities of chemical water and reuse, thus to prolong the service life of the chemical water.

The bottle Pre-washing unit has a significant impact on the PVC contents of the recycled flakes. High-temperature washing can make changes in the appearance of PVC bottles, making it easy to distinguish in the PET bottles and manual sorting become very simple; meanwhile, the bottles cleaned can allow the automatic selection system with higher sorting efficiency.

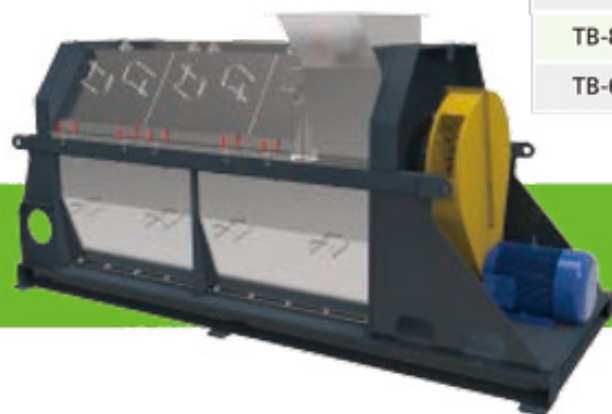


# 脱标机

## PVC Label Scrapping Machine

参数表 Parameter Sheet

型号 Model	处理量 Capacity (kg/h)	功率 Power (kw)	外形尺寸 Dimension (mm)	脱标效率 Label Separation Rate (%)	破瓶率 Bottle Broken Rate (%)
WTB-800	3000	30	3935x1560x1935	≥ 90	≤ 5
TB-800	3000	30	3300x1462x2258	≥ 90	≤ 5
TB-600	600	11	3200x1980x1895	≥ 90	≤ 5



亚洲回收的PET瓶都有热收缩标签，无法透过整瓶清洗来去除，是回收行业非常困扰的问题。专利的高效率脱标机的出现使其彻底得到解决。宝绿特的新型脱标机使得瓶子与设备的接触面积变大，根据不同瓶子的外形结构更换不同的刀具组合，利用瓶子在动定刀之间转动的瞬间将瓶子表面的标签撕破，使标签不再粘附在瓶体上，然后利用瓶子与标签的比重和面积的区别，配套使用可调节风力的吹标机将瓶体和标签进行彻底分离。

专利设计的脱标机刀片具耐久性长，高效脱标与低损伤瓶体的特性，有更长使用寿命和高速的脱标效率，低损伤瓶体的特性，一般脱标率约在90%以上，破瓶率约在5%以内，正常情况下，使用寿命可长达1000吨。

特殊设计的机构可以让更换备件的时间缩短到最小，易于拆卸保养，结构稳定，工作可靠，保证整条生产线的流畅运行。

In Asia, due to hot beverage filling, most of labels made from PVC heat-shrinkage film which cannot be removed through bottle prewashing. This is another major problem in PET bottle recycling industry. Patented high efficiency label scrapping machine completely solved this problem. Boretech PVC label scrapping machine extends the contract area between bottles and equipment, taking advantage of its rotary between the blades and bolts, using different blades combination to tear the labels firstly, so that the labels will not adhere to the bottles body, then the blowing device should be used according to the differences of the density and the area of the bottles and labels, the bottles and labels are completely separated under the influence of the adjustable wind-force.

Patented label scrapping machine blade and bolt has the feature of long service life, high efficiency of label separation rate and low bottle damage. The general separation rate is over 90% and bottle-breaking rate within 5%; and service life reaches up to 1000 T.

Specially designed machine structure can minimize the time of changing blades, making sure the smooth running of the entire production line.



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