

Herbold Washing Lines Modular Washing Lines for Post-Consumer Polyester (PET) Bottles



Hot Wash Step

- A modular system: according to the required degree of cleanliness for the final product there is a choice of different components that can be supplied
- Simple structures for simple applications
- Complex structures for complex applications

**Procedure steps
in PET-bottle recycling**

A

Preparation of PET bottles

A1 Debaling

A screw shredder or a debaling drum breaks down the pressed bales into single bottles.

A2 Breaking down of briquettes

A shredder breaks down highly compressed parts into single bottles.

A3 (Automatic) sorting of bottles

Identifies and separates foreign plastic bodies with the help of electro-optical sensors.

A4 (Manual) sorting of bottles

Operators sort out foreign plastic bodies, possibly with the help of ultraviolet light.

A5 Prewashing of bottles

With the help of warm and cold water coarse contamination is partly removed in a washing drum or screw (alternative to A6+7).

A6 Precrushing (dry)

A shredder or granulator reduces the bottles without water into cuttings of 30 - 60 mm.

A7 Air separation

Bottle cuttings are separated from film and paper labels in the air stream.

A8 Metal separation

With a magnet or a detector most foreign metal bodies are separated.

B

Size Reduction

B1 Wet grinding

A wet granulator size-reduces the bottles while the wash water removes paper and foreign body contamination from the flakes.

B2 Separation of dirty water

The wash water from the granulator is separated from the PET flakes.



C

Separation in water

C1 Density separation step

In the water bath or with a hydrocyclone a light fraction (mostly polyolefines) is separated from the heavy fraction (mostly polyesters).

C2 Water separation sediments

The polyester fraction is pre-dried.

C3 Water separation floating material

The polyolefine is pre-dried.

C4 Air separation floating material

Granular and film PE/PP are separated.



Hot washing step

D1 Material storage basin / preheating

The flakes are heated to the temperature of the hot washing step.

D2 Intensiv washing and dispersion

The flakes are thoroughly washed in hot water, caustic soda and detergents; glues are dissolved.

D3 Separation of heavy materials

Materials heavier than polyester (glass, stones, metals) are separated in the bulk material cyclone.

D4 Separation according to density

In a hydrocyclone remaining polyolefines and floating glues are separated from the polyester.

D5 Separation of the suds

The hot wash water with the detergents in it is separated from the flakes.

D6 Treatment of the suds

The hot wash water is enriched with lye and detergents.

D7 Clean rinsing

The clean flakes are rinsed in water in order to obtain a neutral pH value.

D8 Mechanical drying

The flakes are dried to the required residual moisture.

Treatment of flakes

E1 Air separation

Remaining film and polyester dust are separated from the flakes.

E2 Metal separation

Remaining metals are separated.

E3 Color and material separation

An electro-optical particle separation unit separates remaining foreign plastic bodies (mostly PVC) and undesired color flakes.

E4 Increase of the bulk density

A secondary granulator improves the bulk density and the flowability of the flakes.

E5 Bulk density and crystallization

A plastcompactor improves the flowability, bulk density and recrystallizes the flakes.

F

Water Treatment

F1 Water collection, screening

The dirty water is collected in a pit and any contamination larger than appr. 0.1 mm is removed.

F2 Sedimentation

The screened water is stored in a sedimentation basin for the sedimentation of light contamination; the result is circulation water.

F3 Storage

The mechanically treated circulation water is stored.

F4 Treatment of fines

In a chemical or physical water treatment plant.

F5 Reconveying into the plant

A pump conveys the circulation water back into the plant.

F6 Neutralisation (waste water)

Decrease of the pH value according to the regulations for public water treatment.

- These functional units represent possible procedure steps when PET bottles are recycled.
- They are selected according to the frame parameters of the feed material and the desired final product when such a plant is designed.
- The single functional units are combined with conveying systems (belt conveyors, conveying screws, elevators, blowers, pumps) appropriate to the specific nature of the product and in relation to their location. Type and volume of the necessary conveying systems are determined in respect to the project.



Hot Air Dryer



Swim-Sink-Tank

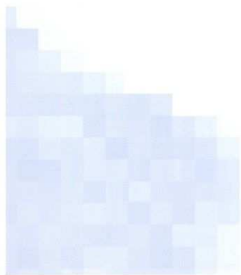
HERBOLD also manufactures and supplies washing lines for agricultural film, bottles, waste bins, post-consumer plastic waste and waste from car batteries and casings. Please ask for our general brochure on washing lines.

Our product range

- Granulators
- Pulverizing systems
- Shredders
- Hammer mills
- Guillotines
- Complete washing systems and components
- HOG Shredders
- Plastcompactors



Washing Mill with Friction Washer



Specifications are not binding and subject to change without notice - 04/2004

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