

HV series

CONTINUOUS AND FULLY AUTOMATIC OPERATION

- Agglomeration of powders, fibers, films and foams
- Drying of powders, fibers, films and foams
- Recrystallization of PET flakes
- Compounding of thermoplastics with fillers

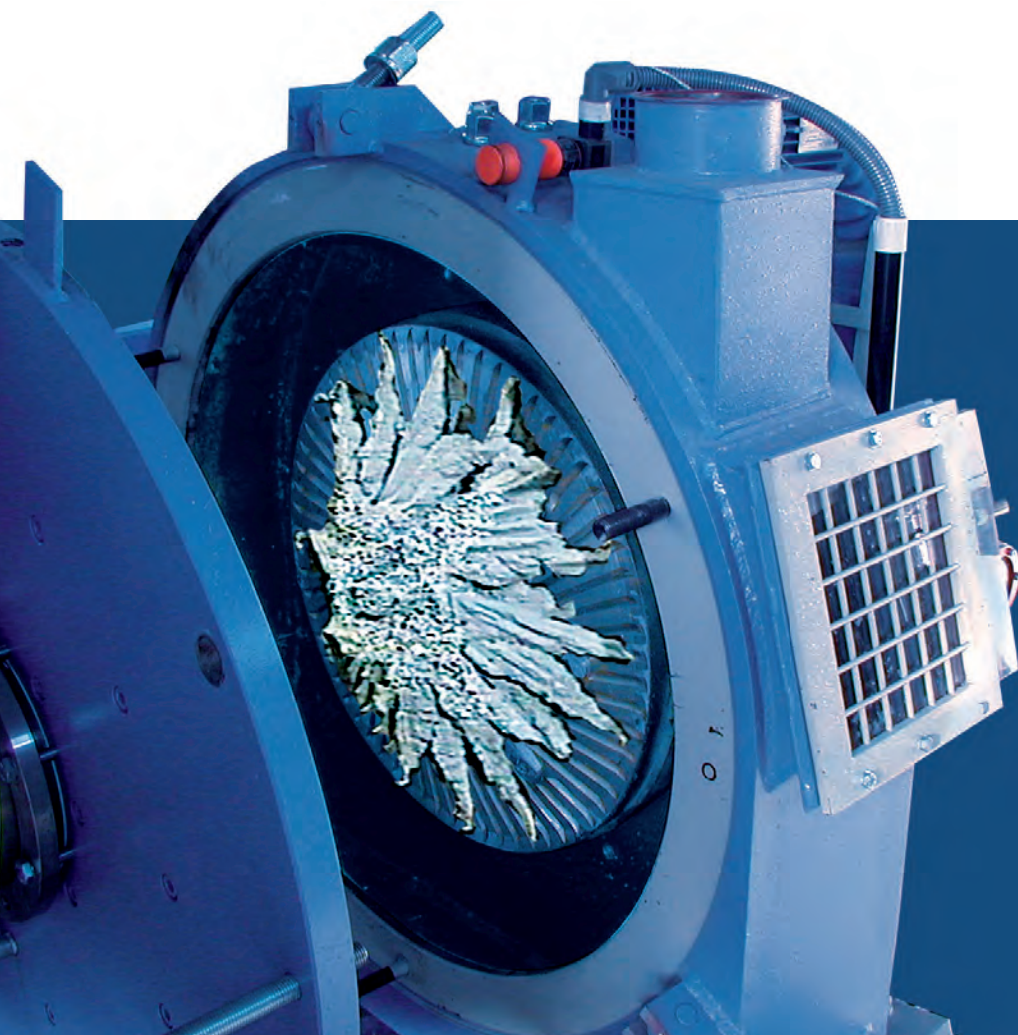
The end product is free-flowing agglomerate easy to dose and to mix with other high bulk density material.





Agglomerate

Herbold HV series plastcompactors transform low bulk density plastics into agglomerate with high bulk density while limiting additional heat history.



The process

Material feeding

- The feed material is pre-sized (granulated/shredded) and collected in a buffer silo above the compactor. The operation is continuous as the granulated material is fed to the compacting discs via a variable speed auger which directs the material into the center of the stationary and rotating discs.



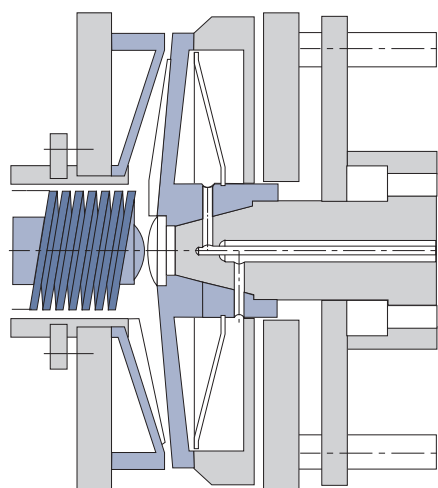
Foams

Carpet fibers

Fibers

PET Flakes

Films



Herbold plastcompactors are able to agglomerate a wide variety of materials which includes but is not limited to the list below.

- Thermoplastic materials such as fibers, small tapes, foams, films
- Stretch or thin films, fine particles, powder or shavings
- Plastic materials that are difficult to convey, to stock and to mix (moist or dry)

Compacting zone with rotor and stator disc

Friction

- Friction is created on and between the compacting discs, the amount of friction is determined by the distance between discs which is adjustable, the material is heated quickly, spun off and conveyed via a central downstream blower to the secondary granulator. Since the dwell time of the material in the compacting zone is only a matter of seconds, the thermal impact on the material is minimal contrary to extruders or conventional batch-type agglomerators.

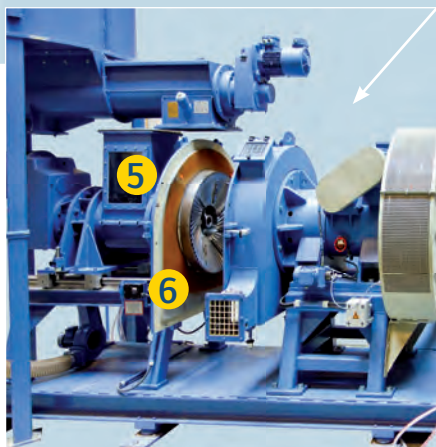
Agglomeration

- The size of the agglomerate is determined by the screen insert in the granulator. Before conveying the regrind into big bags or a silo, the agglomerate passes a sifting station where the material is simultaneously cooled and separated from fines. The fines are pneumatically returned to the buffer silo. The end product is air cooled agglomerate with good flow characteristics and a high bulk density. Some materials require further cooling down to a temperature suitable for trouble-free silage or filling into big bags. These additional steps can be incorporated into the plastcompactor system.

Fully automatic control

- A fully automatic control system which includes performance and temperature monitoring of the compacting process keeps the number of operators to a minimum. Different types of feed stock and properties will require different settings (recipes). The control system can store these recipes enabling an automatic start-up and processing.

Plant structure



- 1 Belt conveyor
- 2 Primary granulator
- 3 Suction blower
- 4 Buffer silo
- 5 Feeding device
- 6 Plastcompactor
- 7 Cyclone of the central blower
- 8 Secondary granulator
- 9 Fines separation
- 10 Control unit
- 11 Mixing and cooling silo

Applications

Drying/Agglomeration

- Herbold plastcompactors are a perfect addition within the downstream of a washing line for increased drying capacity. As material passes through the compaction zone moist material is warmed and moisture is removed. If compacting is desired at the same time it is possible to achieve a residual humidity of well below 1 percent. With this low residual moisture and high bulk density the material can then be further processed either in an injection molding machine or a standard extruder.

Addition of additives/compounding

- Fillers can be absorbed during the heating process in the compacting zone by using granulated materials that have been prepared through processes such as agitation. Special dosing units mounted above the feeding screw of the compactor allow for the feeding and addition of additives such as lubricants, plasticizers, color pigments prior to the compacting zone.

Compounding and crystallization

- Compounding of plastics and fillers.
- The pre-granulated material, is first prepared, if necessary, in an agitator, and then warmed until all the fillers have been absorbed.

Crystallization of PET flakes

- The crystallization of PET flakes after hot washing is possible by the softening of the pre-granulated material between the compactor discs aligns the molecules and brings about the crystallization of polyester. The melting point is not reached. The IV-value (viscosity) remains almost unchanged.

Performance data: (examples)

Feeding material	Granulate density g/l (lbs/ft ³)	Throughput kg/h (lbs/hr)		
		HV 30 30 – 75 kW (40 – 100 HP)	HV 50 90 – 160 kW (120 – 215 HP)	HV 70 160 – 315 kW (215 – 425 HP)
PE film 20 µm	335 (21)	200 – 500 (440 – 1.100)	500 – 800 (1.100 – 1.750)	700 – 1.400 (1.500 – 3.000)
PE foam	345 (22)	200 – 500 (440 – 1.100)	400 – 700 (880 – 1.500)	600 – 1.200 (1.300 – 2.600)
PP fiber	345 (22)	150 – 400 (330 – 880)	300 – 700 (660 – 1.500)	500 – 1.200 (1.100 – 2.600)
PS film 10 – 20 µm	450 (28)	150 – 300 (330 – 660)	300 – 700 (660 – 1.500)	500 – 1.200 (1.100 – 2.600)
PS hard foam (broken blocks or plates)	400 (25)	180 – 300 (400 – 660)	300 – 700 (660 – 1.500)	500 – 1.200 (1.100 – 2.600)
PVC hard film 10 – 30 µm	560 (35)	250 – 400 (550 – 880)	300 – 700 (660 – 1.500)	500 – 1.200 (1.100 – 2.600)
PVC soft film	500 (31)	250 – 400 (550 – 880)	300 – 700 (660 – 1.500)	500 – 1.200 (1.100 – 2.600)
PVC soft foam	510 (32)	250 – 400 (550 – 880)	300 – 700 (660 – 1.500)	500 – 1.200 (1.100 – 2.600)
PA film	470 (29)	150 – 300 (330 – 660)	400 – 900 (880 – 2.000)	600 – 1.400 (1.300 – 3.000)
PA 6 fibers	420 (26)	150 – 250 (330 – 550)	400 – 900 (880 – 2.000)	600 – 1.000 (1.300 – 2.200)
PA 6.6 fibers	450 (28)	100 – 250 (220 – 550)	250 – 500 (550 – 1.100)	500 – 1.000 (1.100 – 2.200)
Polyester film 20 – 80 µm	600 (37)	200 – 400 (440 – 880)	400 – 600 (880 – 1.300)	600 – 1.200 (1.300 – 2.600)
Polyester fibers	600 (37)	150 – 300 (330 – 660)	400 – 600 (880 – 1.300)	600 – 1.200 (1.300 – 2.600)
Polyester foam	500 (31)	100 – 250 (220 – 550)	250 – 600 (550 – 1.300)	400 – 1.000 (880 – 2.200)
PET deep-drawn film	540 (34)	200 – 300 (440 – 660)	600 – 900 (1.300 – 2.000)	800 – 1.400 (1.700 – 3.000)
PET cuttings (bottles)	510 (32)	200 – 400 (440 – 880)	400 – 1.000 (880 – 2.200)	800 – 1.400 (1.700 – 3.000)
PP non-woven	380 (24)	150 – 300 (330 – 660)	400 – 700 (880 – 1.500)	600 – 1.200 (1.300 – 2.600)
Polyester-based carpet	360 (22)	100 – 250 (220 – 550)	350 – 600 (800 – 1.300)	600 – 1.000 (1.300 – 2.600)
PP base	330 (21)	100 – 250 (220 – 550)	350 – 700 (800 – 1.500)	600 – 1.200 (1.300 – 2.600)

(All performance data are reference values.)

Depending on the scope of supply, systems can be furnished with the following components:

- Primary granulator in the form of a cutter, single-shaft shredder or a combination of the two
- Pneumatic or mechanical transport of the pre-granulated material
- Buffer silo with emptying device and feeding screw
- Dosing of additives
- Compactor with motorized disc adjustment
- Secondary granulator
- Air separator for cooling the agglomerate and for the separation and return of fine particles
- Electrical control units and automatic process controls

For abrasive materials such as post-consumer waste or plastics with a high proportion of glass fibers or calcium, Herbold plastcompactors and granulators are available with wear protection packages.



Our product range

Guillotines
Shredders
Hammer mills
Granulators
Pulverizing systems
Washing systems & components
Plastcompactors/agglomerators

Advantages of Herbold plastcompactors

- Continuous operating process, not a batch feed design or labor intensive
- Accurate system controls which maintain the parameters for proper feeding speeds and disc gap to meet recipe requirements as well as the option to adjustment parameters during machine operation to maximize performance
- Low wear costs, even with processing highly abrasive materials as main wear components are bolted in place allowing for easy and quick replacement
- Durable and virtually insensitive to foreign bodies
- High throughputs in fully automatic continuous operation, few operators needed
- Plastcompacting is a sintering process, no melting: gentle processing with a very short dwell time and low process temperatures



For more information, please see our videos on our website www.herbold.com

Herbold Meckesheim GmbH
Industriestr. 33 | 74909 Meckesheim | Postfach 1218 | 74908 Meckesheim | Deutschland
Tel.: + 49 (0) 6226/932-0 | Fax: + 49 (0) 6226/932-495
E-Mail: herbold@herbold.com | Internet: www.herbold.com

Subsidiary in the US: Herbold Meckesheim USA | Resource Recycling Systems Inc.
130 Industrial Drive | North Smithfield, RI 02896, USA | P.O. Box 239 | Slatersville, RI 02876, USA
Tel.: + 1 401 597/5500 | Toll-free (US/CDN): +1 888/612 RRSI (7774) | Fax: + 1 401 597/5535
E-Mail: info@herboldusa.com | Internet: www.herboldusa.com

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