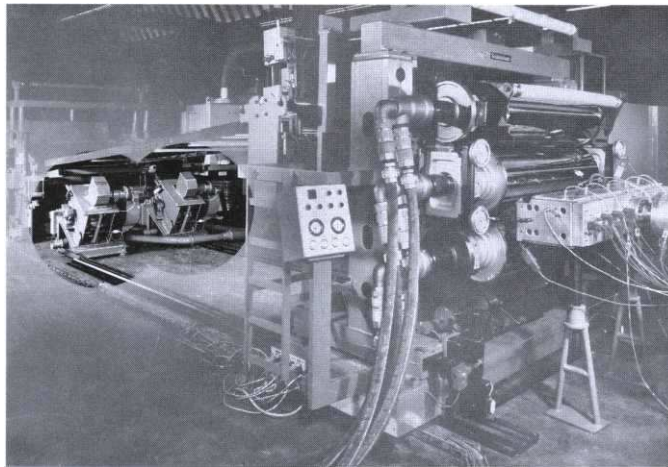


Fully automatic regranulation of peripheral trimmings on sheet production lines



On sheet producing lines, e.g. injection moulding and blow moulding, there is also a trend towards an integrated material regranulating. Waste that is incurred continually can be returned into the production process without additional personnel..



Size reduction of peripheral trimmings with twin granulators SML 30/30, "beside-the-press model"

First, it is necessary to answer a number of detailed questions to select the correct size reduction system suited for this task:

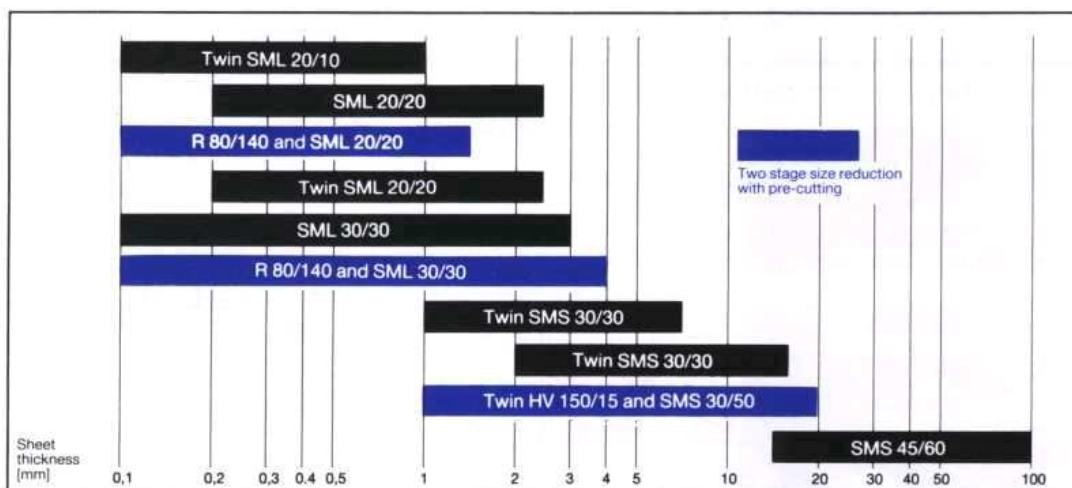
- How much space is available?
- How is the regranulated material to be returned into the extruder and mixed with virgin granulate?
- Is the unit going to be used for start-up lumps as well as peripheral trimmings?
- Are frequent material and colour changes to be expected?
- What noise level can be tolerated?
- How are the speeds of the production unit and the granulator to be synchronized?

There can be no doubt about these advantages:

- Absolutely no risk of contamination or mixing due to intermediate storage
- Material economy - the regranulated material is continually re-fed to the product
- Additional personnel and space for a separate material recovery system is not necessary.

HERBOLD has worked closely with leading manufacturers and operators of sheet producing equipment to establish answers to these questions and to put them into practice. Some of these answers are outlined below..

We have specialized in supplying tailor made solutions in the fields of extrusion. Please describe your particular problem - we will assist you in finding the best solution for your special requirements.



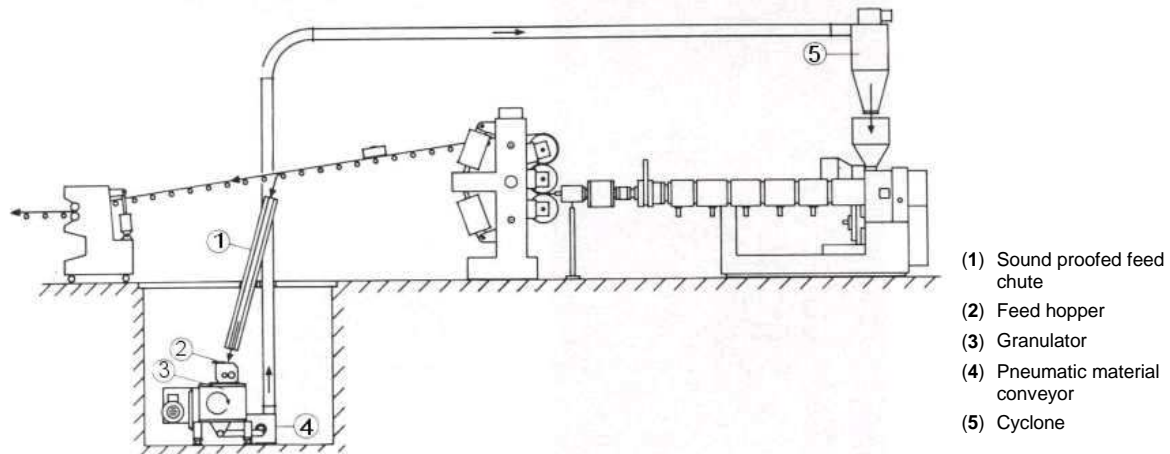
Various models depending on the thickness of the sheets

1. Pit or cellar model

This arrangement is preferable if the available space is suitable.

If the feed trough and pit cover are sound proofed it is possible to achieve an effective noise reduction for sheets up to a thickness of 0.394" (10 mm).

With thinner sheets a granulator fitted with two feed devices can be installed, one for each side of the sheet; this reduces investment costs and the costs for cleaning after colour changes.

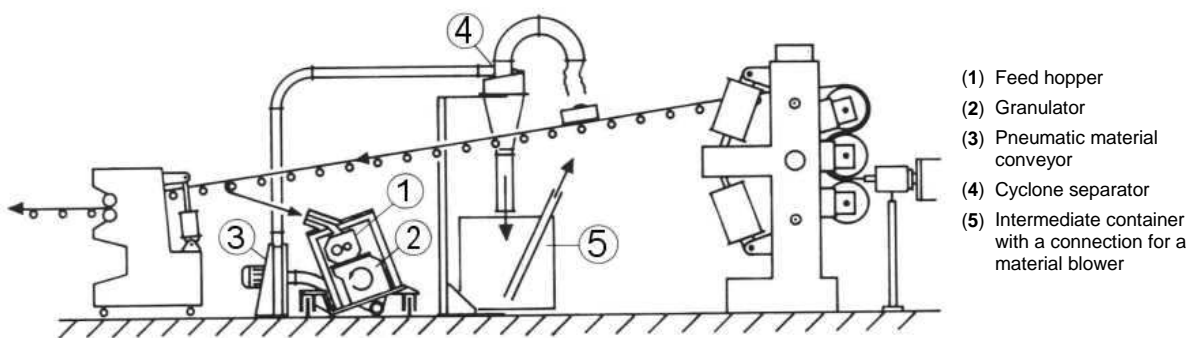


2. Shop floor installation "beside-the-press model"

For thin strips of up to 0.080" (2 mm) it is possible to use a mobile granulating unit positioned under the feed production system.

The use of two separate (twin) granulators, one for each peripheral trimming (see front page) or the installation of the reduction unit beside the production line are alternatives to the mode of installation described above.

Effective sound proofing can only be realised for sheets up to a thickness of 0.118" (3 mm). For thicker sheets pre-cutting is required in order to reduce the resonance of the trimmings being fed to the rotor.



3. Two stage system with pre-cutting unit

Size reduction with a low noise level can also be achieved for thicker sheets, if the material is pre-cut first.

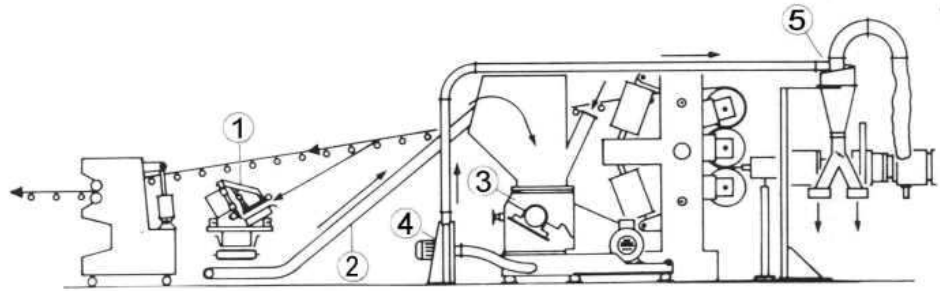
HERBOLD offers two systems for this task:

Up to approx. 0.197" (5 mm) thickness: Rotation cutter R 80/140

From 0.197" (5 mm) thickness onwards: Hydraulic pre-cutter HV 300/15

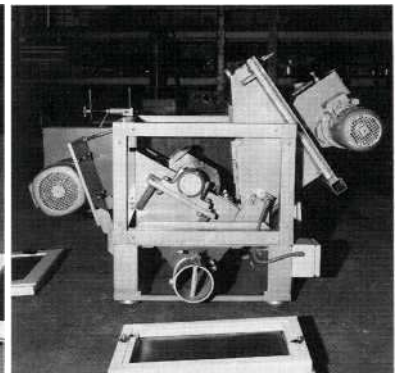
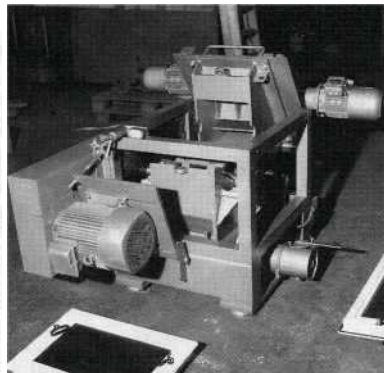
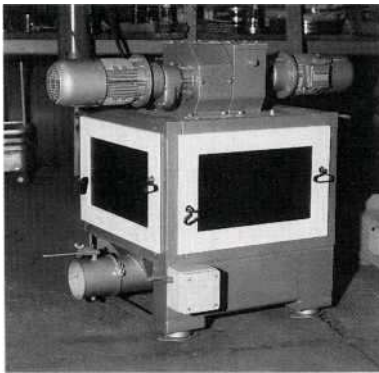
In this case the pre-cut material is being fed into a granulator that can be delivered with an enclosed housing. Reject sheets can also be reduced with this system when a larger follow-up granulator has been installed.

- (1) Hydraulic cutter
- (2) Intermediate conveyor belt
- (3) Follow-up granulator with additional slot for reject sheets
- (4) Pneumatic material conveyor
- (5) Cyclone separator with "Y" discharge pipe for sacks



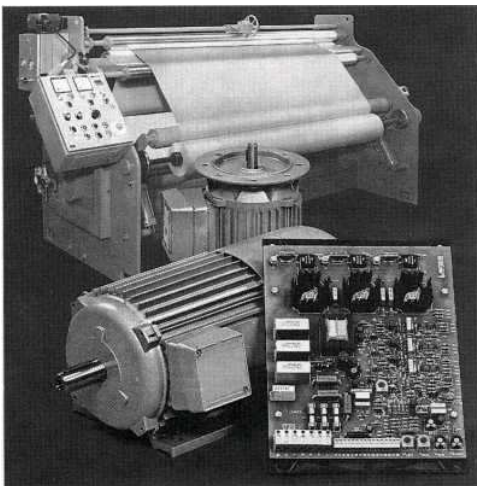
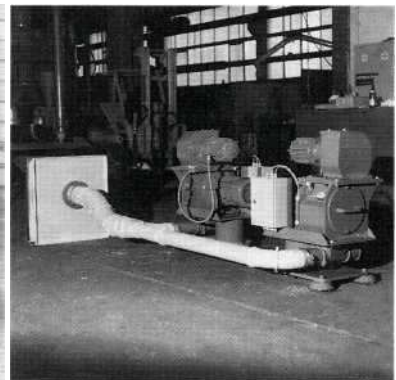
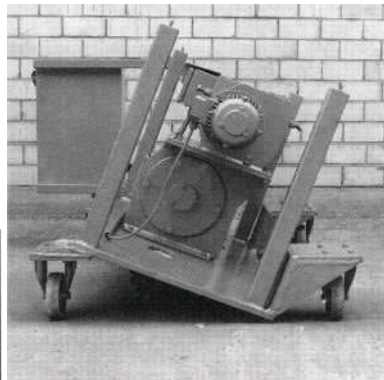
Pre-cutting

prevents resonance caused when feeding endless peripheral strips to the fast running rotor. By using a pre-cutter it is possible to achieve optimum sound-proofing for the system.



Adjustment of the feed draw-in speed to suit the running speed of the system: The optimum solution using a variable speed winder motor.

Variable speed winder motors are fitted as a standard in HERBOLD roller feed systems. These motors, originally designed for driving film rolling equipment, ensure optimum speed regulation of the feeding process related to the running speed of the complete system. The running speed of the motor is adapted automatically in accordance with the average speed of the system while maintaining a constant pre-set pulling power.

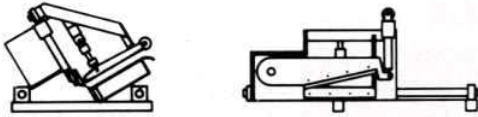


The most important advantages as opposed to conventional drive systems:

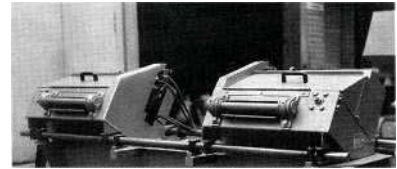
- Operation without looping, resulting in less wear and tear to the feed rollers.
- Automatic tuning
- The running speed can be reduced down to a complete standstill.

Hydraulic pre-cutter HV 150/15

for sheets up to approx. 0.787" (20 mm) thickness

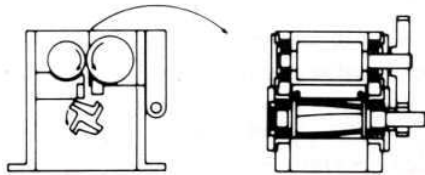


The material is pressed by a hold-down clamp and cut by the hydraulic pre-cutter. The transport of the material into the cutter is regulated by the discharge from the extruder. In cases where the peripheral trimmings are removed after the sheets have been cut to length it is necessary to redirect the trimmings subsequent to the cutting process.

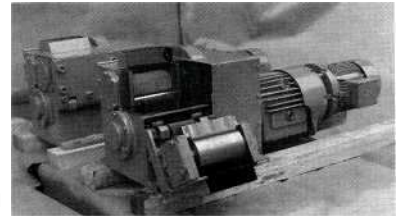


Rotation cutter R 80/140

for strips up to approx. 0.197" (5 mm) thickness



The material is fed to the cutter by a roller feed device which is driven by a toothed gear drive connected to the rotor shaft. The cutter with its slow running motor reduces the material to pieces of 0.787" (20 mm) length.



The pre-cutter, followed by the granulator, can be installed alongside the production plant where it receives both peripheral trimmings or two pre-cutters can be located underneath the production plant, one for each trimming.

HERbold



Equipment available for the size-reduction of sheet peripheral trimmings	SML 20/10	SML 20/30	SML 30/30	SML 30/50	SMS 30/30	SMS 30/50	SMS 45/60	Pre-cutter	
								R 80/140	HV 300/15
Maximum sheet thickness* [inches / mm]	1/16" 1,2 - 1,5	1/8" 2,0 - 2,5	1/4" - 3/8" 6,0 - 8,0	1/4" - 3/8" 6,0 - 8,0	3/8" - 5/8" 10 - 15,0	3/8" - 5/8" 10 - 15,0	3 3/4" 100	1/8" - 1/4" 3,0 - 5,0	5/8" - 3/4" 15 - 20,0
Throughput [lb/h / kg/h] with perforated screen [1/4" / 6 mm]	44 - 66 20 - 30	66 - 110 30 - 50	132 - 220 60 - 100	220 - 264 100 - 120	220 - 364 100 - 150	330 - 550 150 - 250	880 - 1760 400 - 800		
Throughput [lb/h / kg/h] with perforated screen [5/16" / 8 mm]	88 - 110 40 - 50	110 - 176 50 - 80	176 - 330 80 - 150	264 - 440 120 - 200	440 - 550 200 - 250	440 - 880 200 - 400	1100 - 2200 500 - 1000		
Maximum width of peripheral trim									
a) single granulator with 2 feed systems	2 x 1 1/2" 2 x 40 mm	2 x 4 1/2" 2 x 120 mm	2 x 4 1/2" 2 x 120 mm	2 x 5 1/2" 2 x 140 mm	2 x 4 1/2" 2 x 120 mm	2 x 5 1/2" 2 x 140 mm		2 x 5 1/2" 2 x 140 mm	12"
b) double granulator with single feed system	4" 100 mm	5 1/2" 140 mm	5 1/2" 140 mm	5 1/2" 140 mm	5 1/2" 140 mm	5 1/2" 140 mm		5 1/2" 140 mm	300 mm
c) special feed system	4" 100 mm	5 1/2" 140 mm	11" 280 mm	17 1/2" 450 mm	17 1/2" 450 mm	17 1/2" 450 mm			
Drive power [HP / kW]	3 2.2	3 - 7.5 2.2 - 2.5	7.5 - 15 5.5 - 11.0	10 - 20 7.5 - 15	10 - 30 7.5 - 22	15 - 50 11 - 37	60 - 125 45 - 90	1.5 - 5.5 1.1 - 4	5.5 - 15 4 - 11
Unit height for shop floor installation [inches / mm]	36" 900	36" 930	41 1/2" 1050	41 1/2" 1050				31 1/2" 800	36" 900
Pit depth for cellar installation [inches / mm]	77 1/2" 2000	77 1/2" 2000	85" 2200	85" 2200	85" 2200	85" 2200	118" 3000		

* The sheet thickness data quoted in this information sheet are based on impact resistant PS, PP and similar plastics. Subtract 20 % from the given values for the reduction of difficult products, such as ABS or PC.

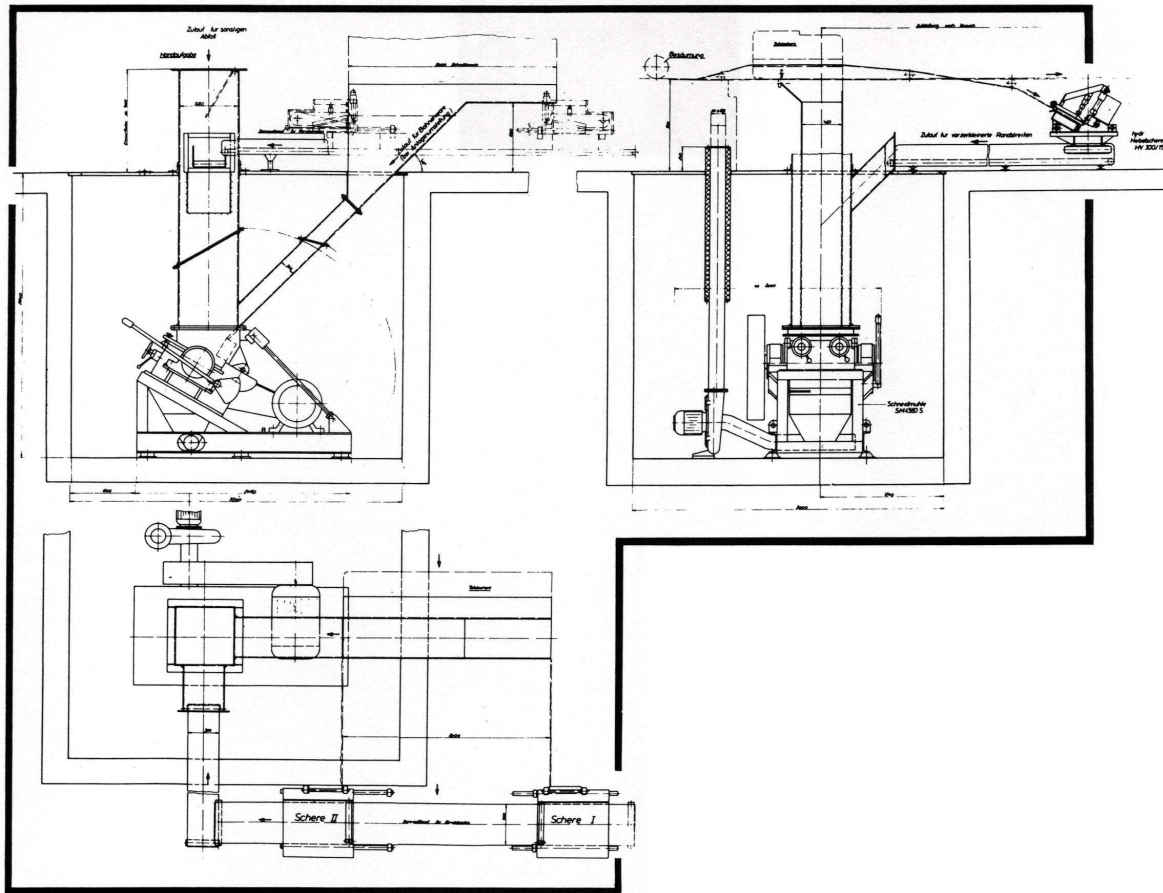
Special modifications

An example for special models designed and manufactured to suit a particular customer's requirements:

Peripheral trimmings, start-up pieces and pieces of waste can be reduced fully automatically by this system. The peripheral

trimmings are being pre-cut by a hydraulic cutter before they get fed into the granulator via a conveyor. After cutting off start-up pieces are automatically being fed into the granulator via a special chute.

In addition, pieces of waste, e.g. rejects or start-up lumps, can be fed manually into the granulator.



Our product range

- Granulators
- Pulverizing Systems
- Shredders
- Hammer Mills
- HOG Shredders
- Guillotines
- Washing Systems
- Plastcompactors

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