

DE-GASSING CYLINDER " DGC "

Developed to remarkably improve productivity of powder material

Background

Recently, there have been further demands to achieve various added values and high performances in plastics compounding and particle sizes of polymer powder or filler to be fed into extruder are getting smaller and smaller. For example, compounding of plastics and wood powders has attracted great attention in related to the environmental problem now.

When particle size of feed material is rather small, the material involves much air and has quite low bulk density. This causes "feed-neck problem" and the material can not be fed into the extruder hopper. Especially in wood powder compounding, pre-drying is generally required because wood flour from lumbermills contains very much moisture. Water contained in wood powder is vaporized by heat of kneading and then bulk density is extremely reduced. That causes feed-neck problem and prevents us from making more economical and simpler wood powder compounding system without dryer.

Here, we introduce our new developed "De-Gassing Cylinder --- DGC" on our twin screw extruder TEX, which helps you to solve feed-neck problem as above and significantly increase processing rate in plastics compounding with low bulk density material.

Degassing Mechanism of DGC in feed section of TEX

De-gassing cylinder "DGC" is installed between feed hopper and kneading section of extruder to effectively remove and exhaust gas out of low bulk density plastics naturally or by force. Bulk density of feed material is remarkably increased with DGC, and therefore, processing rate can be significantly increased due to improved feeding ability.

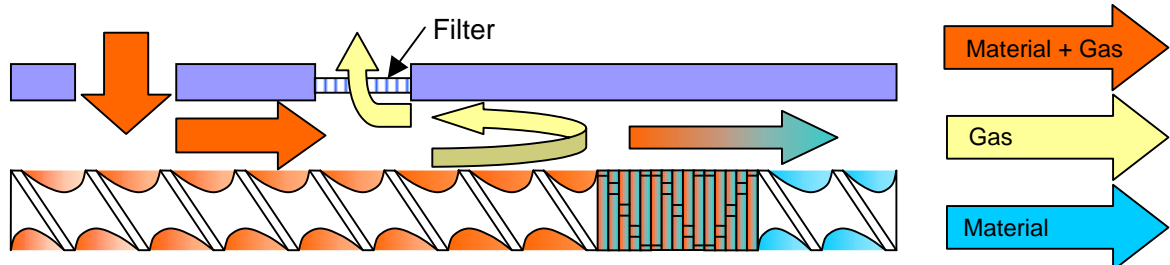


Fig. 1 Material Flow

Applications

1. Pelletizing & Compounding of powdered plastics (e.g. HDPE, POM, PPE, PPS...)
2. Compounding of powdered filler (e.g. Talc, calcium carbonate, magnesium hydroxide...)
3. Pelletizing & Compounding of water-containing plastics (e.g. ABS...)
4. Compounding of water-containing filler (e.g. wood powder...)
5. Recycling of crushed plastics with low bulk density (e.g. film, carpet...)

Advantages

1. Large processing rate
For example, DGC can increase processing rate by three times in compounding of HDPE with mean particle size of 70 μ m.
2. Strong kneading at low temperature
Strong kneading at low temperature can be achieved due to improved material feeding.
3. Excellent de-gassing performance
Gas out of polymer can be effectively exhausted by the special filter installed on DGC.
It is easy to recover the filter from powder clogging because it has reverse flow cleaning structure.
4. Various filter mesh sizes
You can select the optimum filter size depending on the particle size of plastics.

Photos



Photo 1 **TEX with DGC**



Photo 2 **Special Filter**

Data comparison (typical)

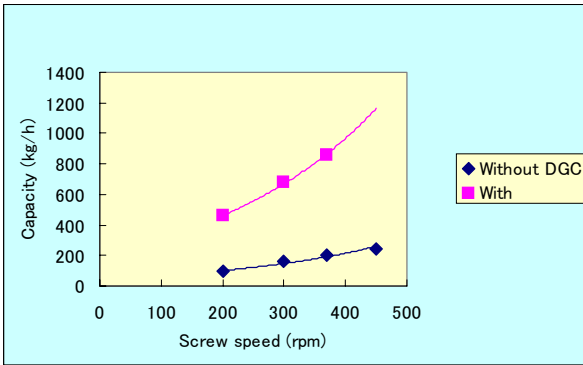


Fig. 2
HDPE Powder 70µm (TEX65)

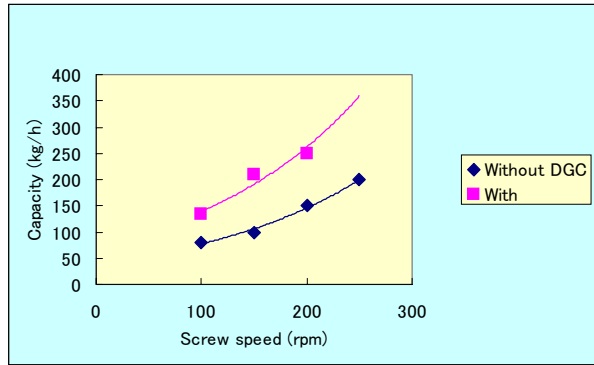


Fig. 3
PP + 50% of No-drying wood powder (TEX65)

We believe that TEX with DGC must be a standard technology of the times in powder compounding. Test equipment is available in our Plastics Technology Developing Center in Hiroshima, Japan. You can make trial on TEX with DGC with your plastics material to evaluate the performance.

Patents concerned in Japan

Utility model right	No. 2585280	Screw type extruder
Patent	No. 2960885	Screw type extruder

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