

## Compactor for fine powder feed

### Background

When powder materials are fed into an extrusion process, the capacity of extruder depends on the properties of powder. Especially when the particle size is small, powder catches a large amount of gases inside the hopper while it is discharged out of feeder and falls into the hopper port of extruder. Then the apparent bulk density of powder becomes very low at the inlet of extruder, which causes “feed-neck” phenomenon that the powder can not be fed into the extruder well.

We introduce here a special compactor developed by JSW to effectively remove gases from powder material to prevent such feed-neck and ensure stable feed of fine powder.

### Application

Pelletizing and compounding of fine powders such as HDPE, PP, POM, and more.

### Features

- 1) High processing rate  
Approx. double capacity of TEX can be realized by this compactor, for example with HDPE of the mean particle size around 100 μm.
- 2) Stable feeding  
Gases are effectively removed from fine powders and the bulk density can be stable. Then, uniform products can be produced with less fluctuation of powder feeding.
- 3) Improved powder feeding enables low-temperature and energy-saving extrusion.

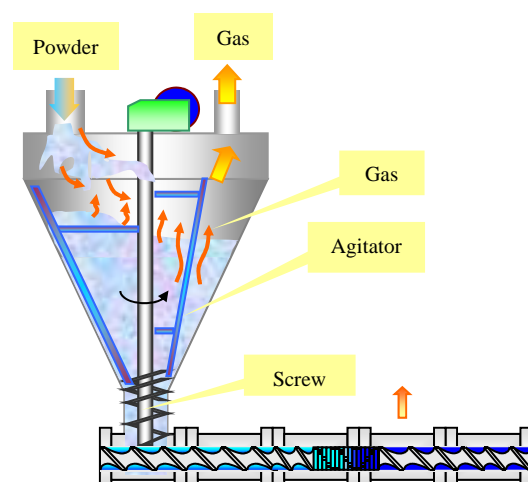
### Structure

The compactor is installed between the material feeder and hopper port of extruder.

Powder is supplied from the top of compactor and accumulates so as to keep a specified height.

A screw with agitator is installed inside the compactor to stir and convey powder. The agitator is equipped to the upper part of the screw to effectively stir and remove gases from powder. And it prevents powder from being solid due to self weight and eliminates a hollow in powder.

The screw supplies fine powder without gases into the extruder uniformly and stably.



# Technical Information

***Effect***

Please refer to the following graph for the effect of the compactor to feed HDPE powder into Twin Screw Extruder, TEX.

With the compactor installed above the hopper port of twin screw extruder, approx. double capacity can be achieved at the same screw speed. That is to say, screw speed can be reduced by half for the same extrusion rate, which enables low-temperature and energy- saving extrusion.

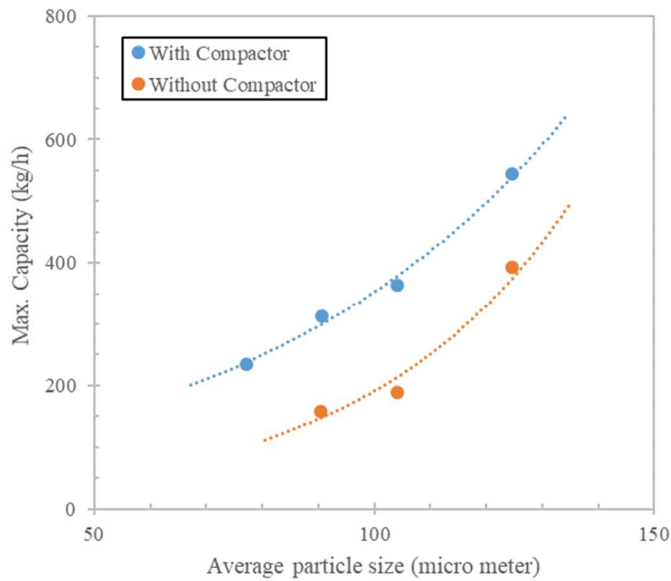


Fig. 1 Max. Cap. vs Powder Average Particle Size  
(dia. 69 mm Intermeshing TEX, L/D = 17.5, Ns = 400 rpm)



TEX + Compactor  
Test Equipment

***Effect***

With this compactor, the capacity of TEX is remarkably increased in powder extrusion. We have the test equipment in our Plastics Machinery Developing Center in Hiroshima, Japan, which is available for your trial to confirm the effect of our compactor. If you are not satisfied with conventional twin extruders, please contact us!