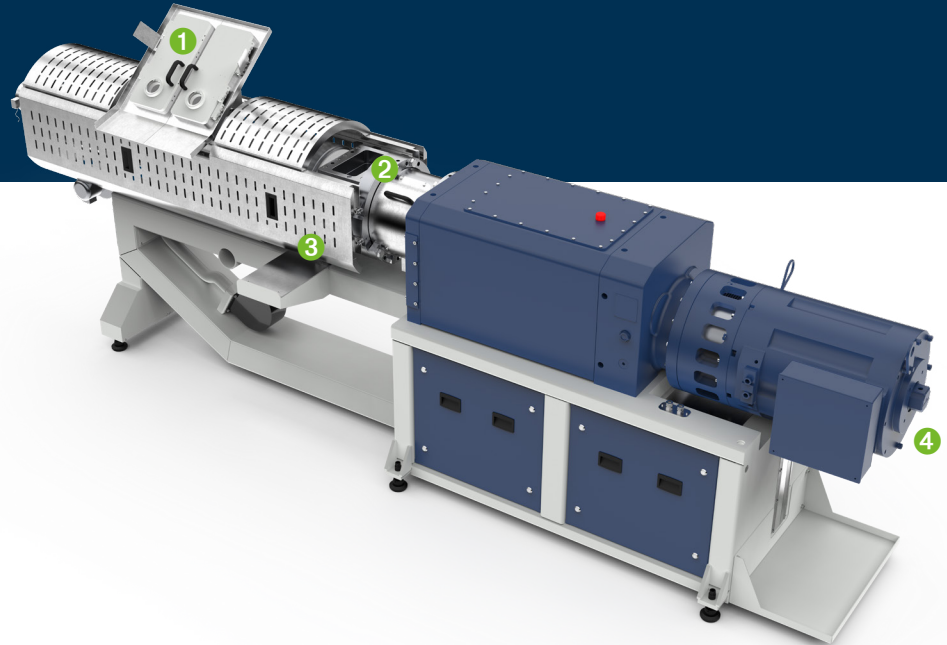


Compact.  
Efficient.  
Versatile.

# PET-Extruder



- 1 Venting ports vacuum system
- 2 Feed opening
- 3 Swiveling unit for screw removal
- 4 direct drive (180 kW)

## Conical co-rotating – leading the way

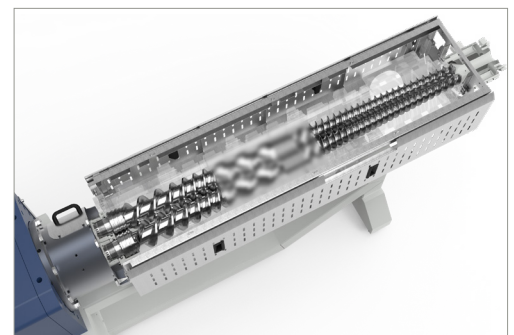
The conical, co-rotating MAS extruder features a large feeding opening as well as intake volume and hence high screw fill levels. As a result “shear sensitive” materials such as A-PET, G-PET but even GAG-PET and PLA (pellets & virgin quality, bottle regrind, film regrind, film edge trims, like BOPET production waste), as well as additives can be fed directly into the extruder and processed very gentle with low screw speed and high throughput.

The short length of the MAS extruder is not only a major contributor to the very low specific energy consumption [kWh/kg], but also allows for a very short residency time in the processing unit, which results in outstanding quality.

Depending on the application, the vent ports can be equipped with various different de-gassing systems, ranging from closed vent ports to one stage water ring pumps all the way to the 3-stage High performance vacuum system (< 5 mbar).

For undried applications MAS offers the optional “PET Feeding Gate”, which is used to remove surface moisture from the input flakes in the extruder feed zone.

The downstream equipment, such as melt filtration, on demand melt pump, and pelletizing system can either be provided by the customer or supplied by M-A-S as a complete package.



**Large Feed Opening**  
with enormous intake-volume and therefore good intake behavior



## MAS in the extrusion of PET stands for

- ▶ huge feed volume and thus, very good intake behavior
- ▶ high screw fill levels high capacity [kg/screw revolution]
- ▶ low screw speeds at high throughputs [kg/h] low shear and low melt temperature
- ▶ short barrel length and short residence time of the melt results in:
  - excellent IV-values/color values/AA-values
  - very low specific energy consumption

### Benefit with MAS:

Further advantages, detailed explanations of the key figures and the level of performance of MAS can be found at:

Type	Extruder	Throughput from [kg/h]	Throughput up to [kg/h]	Throughput max. pre-dried [kg/h]
PET line 350	MAS 45	150	350	500
PET line 600	MAS 55	300	600	800
PET line 1200	MAS 75	600	1.200	1.500
PET line 1500	MAS 90	900	1.500	2.000
PET line 2500	MAS 93	1.200	2.500	2.800

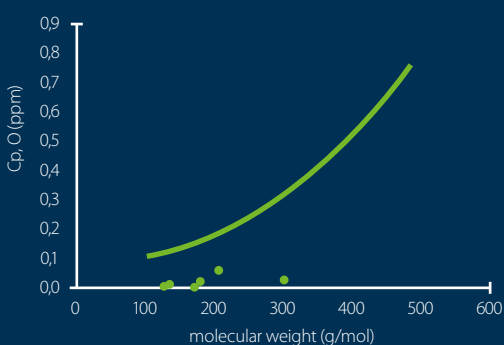
\*Throughput depending on viscosity and properties of the input-material, type and degree of contamination as well as filtration-finess.

## FDA/EFSA

The MAS Process that received the "No Objection Letter" from the FDA also fulfills the EFSA criteria for processing of washed PET bottle flakes into products for direct food contact. The process is completely modular, which enables customers to supplement certain components of the process with their own (possibly existing) equipment. The main components of this modular system are as follows:



- ▶ Pre-Drying: dwell time of 3 h with a temperature of  $\geq 150$  °C
- ▶ Feeding/Dosing Unit of the MAS Extruder: dosing can be, depending on the application, gravimetric as well as volumetric
- ▶ MAS Extruder: gentle processing of PET with a low melt temperature and short dwell time
- ▶ Extruder Degassing:  $\leq 10$  mbar required



Residual concentrations corresponding to a migration of 0.1 ppb (EFSA requirement) of surrogates adjusted to 3 ppm initial concentration, green line: maximum allowed concentration.

## PET-Extruder in Sheet Lines

For inline applications in PET Sheet-Lines (A-PET, G-PET, C-PET, as well as G-A-G und PLA) several essential advantages of the MAS extruder have a huge impact:

- ▶ Due to the large feed opening granulated productionwaste (film edge stripes/bales) can be fed back into the production process.
- ▶ Diverse IV-values of different input materials will be perfectly homogenized.
- ▶ The combing process unit allows a fast color change.
- ▶ The adjustable screw speed enables individual melt temperatures.
- ▶ No need for pre-drying of virgin material or in-house industrial waste.
- ▶ Very short length, therefore ideal for upgrade of existing lines in order to improve the quality of film, widen the application range, and improve throughput.
- ▶ Excellent compounding properties, hence adding fillers and additives for the exact optimization of the film properties and material costs.

