MAS

Maschinen und Anlagenbau Schulz GmbH

Simply intelligent, and robust: MAS compounding plants.

For gentle processing of polymers

MAS opens new compounding opportunities

For masterbatch and alloy production.

Conical : mechanical benefits

Many compounding products demand gentle processing, minimal shear and clearly defined energy input. The conical MAS co-rotator offers extremely high torque and huge intake volumes. Substantially reduced rotational speeds mean significantly less energy input and considerably lower polymer melt shear. Consequently, this gentle processing allow also the homogenisation of materials with low bulk density material and thermally sensitive polymers.

Versatile : Performance spectrum

Input materials are resin or recycled from industrial plastics such as PS, ABS, PA, POM, PET, PE, PP, PES, PC, Biopolymers, PVC, as well as waxes.
The MAS extruder is used not only in classic compounding applications, but also in direct extrusion. Typical use of the MAS extruder:

- **Homogenisation of fillers, additives and pigments**
- *Talc*
- *CaCo3, BaSo4*
- *Wood meal*
- *Hollow glass balls*
- *Graphite*
- *Soot*
- *TiO2*
- *Fire retardants*

- **Polymer alloys**
- **Production of long fibre compounds**
- *Fibreglass / Rovings*
- *Carbon fibre*
- *Natural fibres*
- *Paper*

The Conical Co-Rotator from MAS

makes more of your polymer.

MAS 55L
(Example)

Innovative : Technology

The conical co-rotator patented by MAS combines the benefits of conical extruders with those of parallel co-rotating twin screw extruders. In comparison to conventional extruders, the conical design offers substantially higher filling volumes at the material intake. This results in a higher screw filling level which gives the highest possible output with comparatively high pressure ratios and low melt temperatures. The co-rotating design provides perfect homogenisation. Generously dimensioned screw shafts paired with strong back pressure bearings result in an extremely robust design with a long service life. This makes them the perfect solution for highly efficient compounding and processing of polymers with fillers and additives.

Multifunctional : Diverse applications

MAS compounders are suitable for almost all compounding applications:

- *Processing powder, pellets, agglomerate*
- *Homogenisation of masterbatches, lubricants and additives*
- *Adding fillers*
- *Degassing plastic melts*
- *Producing masterbatches and alloys*
- *Direct extrusion*
- *Inline compounding*

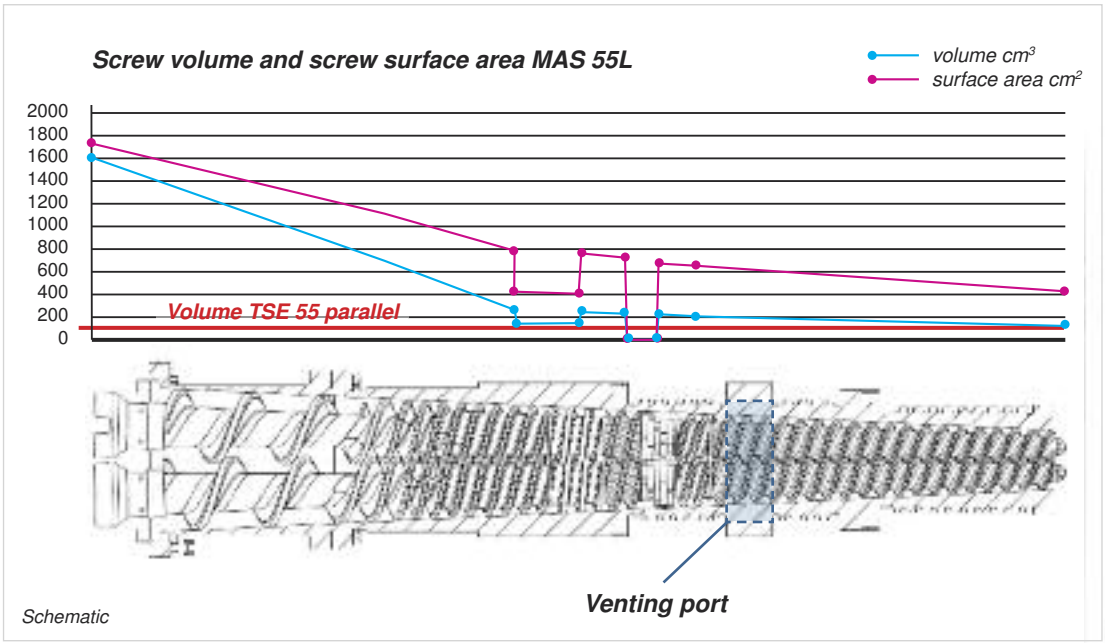
MAS compounder
perfectly fit your company.

Individual : configuration

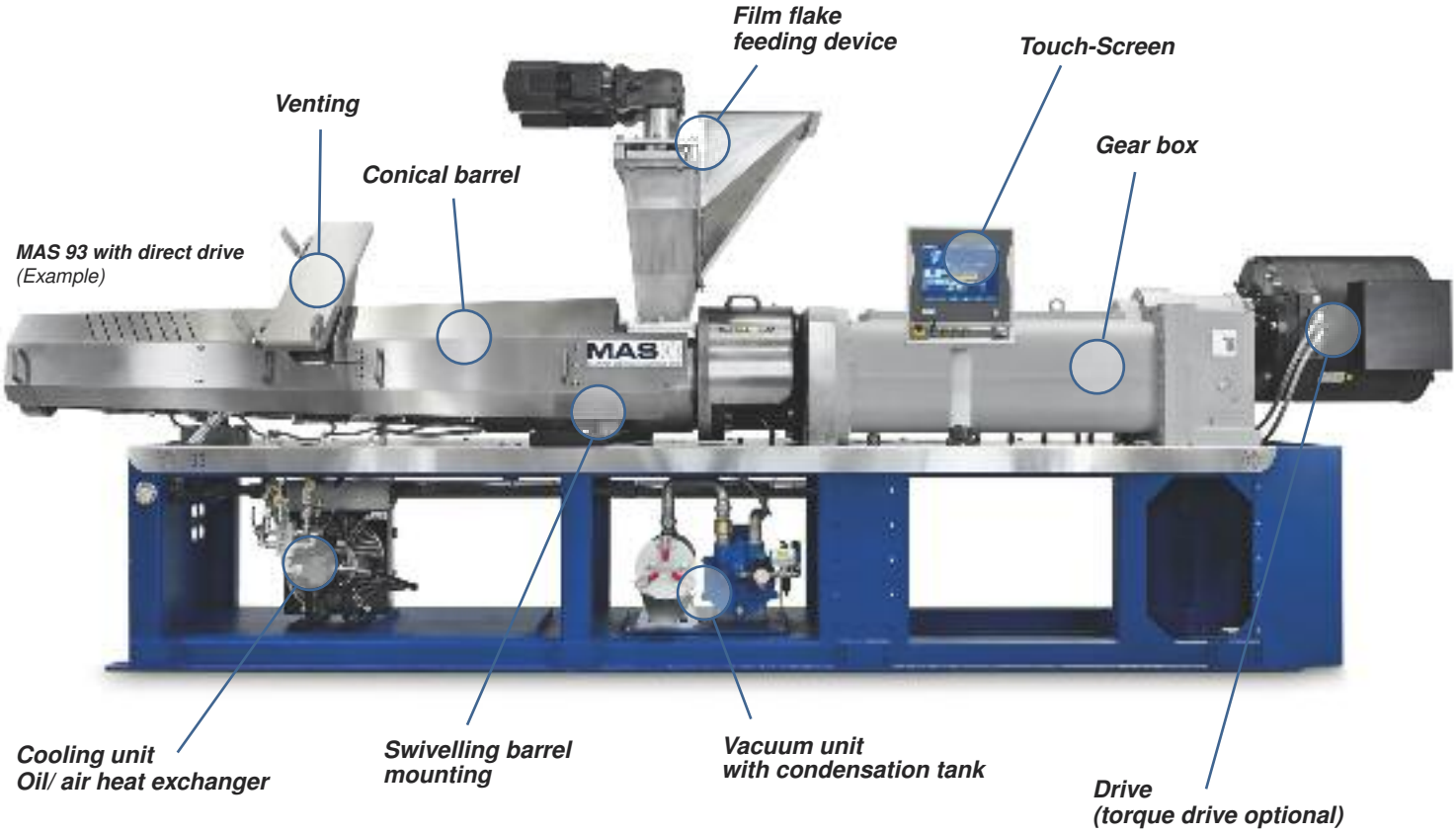
The extruder screw consists of a rear part and an front part. Each is manufactured from one piece and is available in different pitch and flight design. Tailor made mixing and shearing elements are placed in between rear and front part. The barrel zones are equipped with liquid or air cooling as required. The venting ports are fitted with exchangeable inserts. As fillers and additives are fed right into the feeding opening of the extruder, side feeders are not necessary. Depending on its size and features, the extruder has a single atmospheric venting port and/ or 1 to 2 vacuum venting zones.

Logical : plasticising unit

The control system, based on an industrial PC (1,6 GHz, 1GB RAM) with touch screen panel, is simple and logical to operate. The system offers a wide range of functions, such as a formula storage, production and trend analyses, recording and storing of production data plus remote maintenance.



Schematic



Conical : plasticising unit

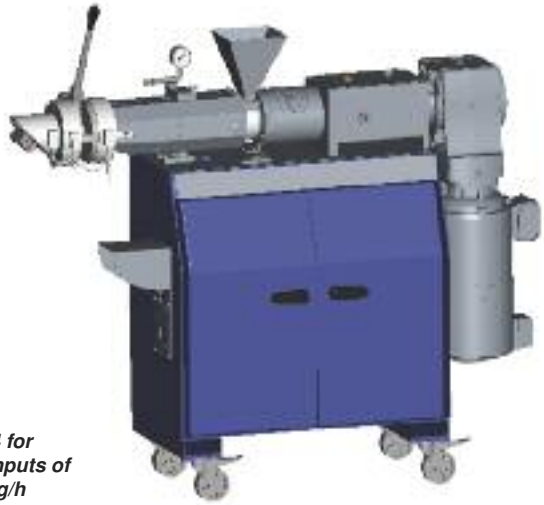
The plasticising unit consists of several functional zones. The feed zone has a comparatively large chamber volume to guarantee the perfect filling level of the screws. The melting zone is completely filled by the back up from the baffle zone. The large surface area of the screws ensures efficient energy transfer to the material. Due to the modular design, the plasticising unit can be adapted individually to meet each customer's specific needs. Mixing and kneading elements serve to homogenise the melt. The following discharge zone is responsible for pressure build up. Due to the high overlapping of the screw flights a significant pressure build up, combined with consistently high output and outstanding venting performance, is achieved. High outputs can therefore be obtained, even at low screw speeds with high melt pressures at low melt temperatures.

Customer oriented : Masterbatches

As the bulk weight of additives is often minimal, the generous feed volumes of the MAS compounder is particularly important in order to work gently even at low screw speeds.

Your benefits at a glance:

- *Huge feed volume*
- *High screw filling level*
- *Safe and reliable degassing*
- *Low melt temperature*
- *Low shear*
- *Swivelling barrel mounting for easy screw replacement*
- *Short processing unit*
- *Easy to clean system*
- *Low energy consumption*



MAS 24 for throughputs of 20-30 kg/h

MAS compounder
exceed your expectations.

Perfect: Mechanics

Due to a robust mechanical engineering, MAS extruders have a particularly long service life and are easy to service. The conical design of the screw ensures minimal mechanical stress in the screw shaft, even at extremely high torques. The large intake zone centre-to-centre distances enable the use of maximum-sized drive shafts. The back-pressure bearings are also generously dimensioned. The compact design of the MAS extruder ensures a very small footprint.

Robust : Material and design

Premium quality steel, robust design and quality workmanship guarantee high availability and a long life time. Barrels and screws are designed for maximum wear-resistant:

Wear resistance

MAS material code	*Steel quality*	*Wear resistance*	*Corrosion*
Barrel			
M101	Nitrided steel	++	++
M503	Tool steel, hardened nitrited	+++	+++
M352	Tempered steel with tool steel bush	++++	++++
M370	Tempered steel coated with tungston carbid	+++++	+++++
M392	PM, hardened	+++++	+++++
Screws			
M161	Nitrided steel (flights clad with stelite 1, 6 or 12)	+++	++
M370	Tempered steel coated with tungston carbid	+++++	++++
M392	PM, hardened	+++++	+++++

\+ light +++++ very strong

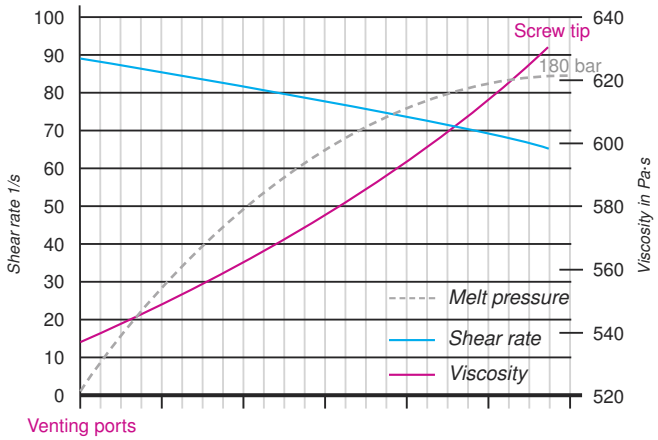
Barrel with Bush M352

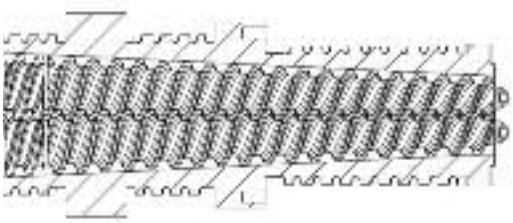
Complete : Additional equipment

- *Strand dies (incl. downstream equipment)*
- *Underwater pelletizing*
- *Watercooled die face pelletizing*
- *Melt pump*
- *Gravimetric dosing*
- *Side feeders*
- *Vacuum unit*
- *Feeding devices*

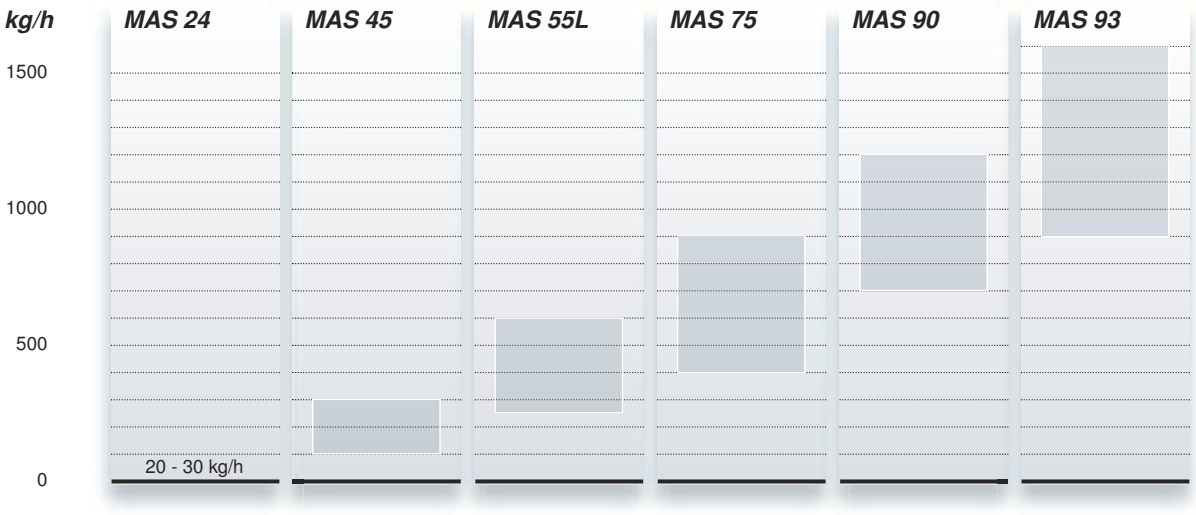
Mixing parts

Shear rate and Viscosity in MAS 55L barrel





MAS 75
(Example)



Throughput data depends on polymer, type of filler and filling degree

MAS

Maschinen und Anlagenbau Schulz GmbH

Representations in

(Australia (Europe (Asia (Africa (North and South America

M-A-S Maschinen- und Anlagenbau Schulz Gmbh
A-4055 Pucking, Hobelweg 1

T: +43 7229 78 999
F: +43 7229 78 999 10

General Sales Manager
Stefan Lehner
Tel: +43 7229 78 999 17

Area Sales Manager
Gerhard Ossberger
Tel: +43 7229 78 999 21

info@mas-austria.com
www.mas-austria.com

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