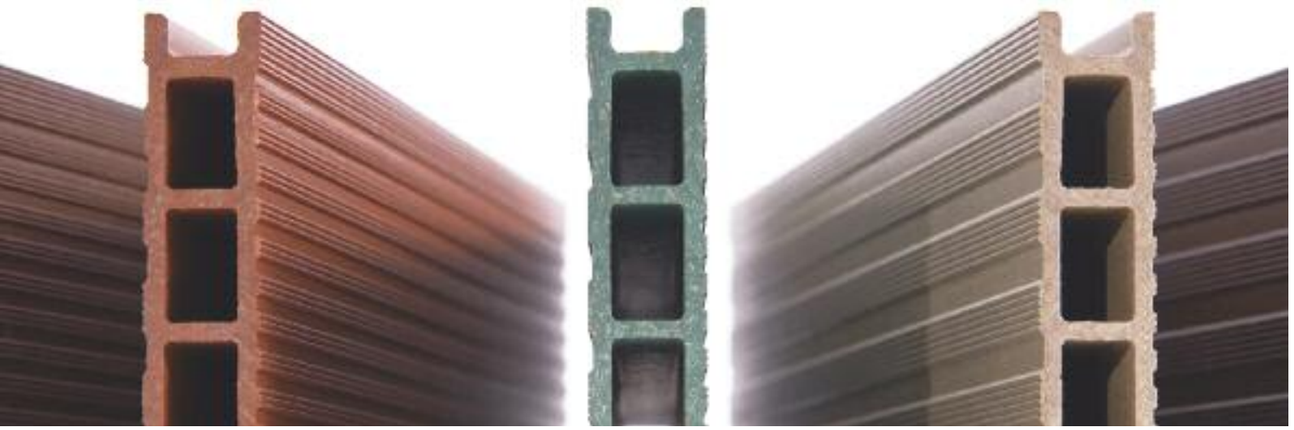
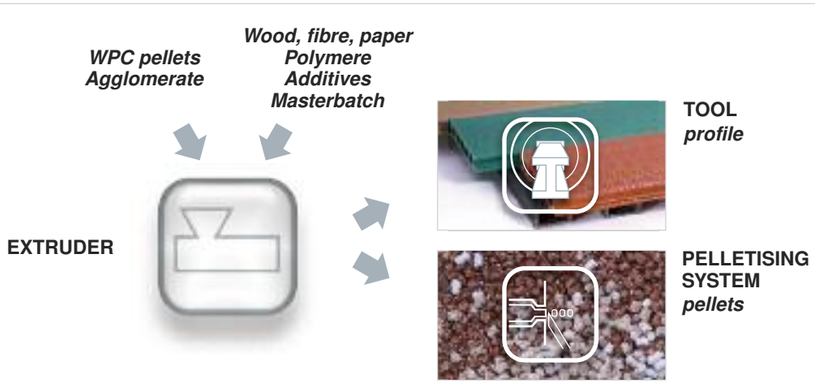
MAS
Maschinen und Anlagenbau Schulz GmbH

Simply smart and robust: Extrusion for wood plastic composites

Direct extrusion and compounding.

MAS puts its stamp on
future material extrusion.





minimal energy consumption and therefore lower production cost. The feed materials must be dosed gravimetrically with an optimum moisture content <2%. That means, profiles can be manufactured cost effectively in one operation without the need for pre-compounding.

Sustainable : Application

A wide range of products made of WPC (wood plastic composite), NFC (natural fibre composite), PPC (paper plastic composite) or paper-fibre reinforced materials such as drink cartons can be compounded using PE, PP or PVC. These commonly contain up to 80% fibre.

A basic distinction is made between two forms of production:

1) **Compounding and pelletizing.**
   The extruder is equipped with gravimetric dosing devices, the formula is produced directly on the machine and subsequent pelletization ensures a perfect homogenous pellet.

2) **Direct extrusion without pre-compounding.**
   A major benefit of direct extrusion is the provided line flexibility,

MAS NCT (New Conical Technology)
makes more of your polymer.

Calibrating table with haul-off

MAS 55

Innovative : Processing unit

The New Conical Technology (NCT) developed 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 combination of benefits provides the perfect solution for highly efficient compounding and processing of wood/natural fibre plastic composites.

Versatile : Scope of performance

MAS extruders are suitable for almost all extrusion applications:

- *processing powder, granulate, agglomerate*
- *homogenisation of pigments, lubricants and additives*
- *addition of fillers such as talc and calcium carbonate*
- *de-gassing of plastic melts*
- *manufacture granulates and master batches*
- *direct profile extrusion*

Extrusion tool

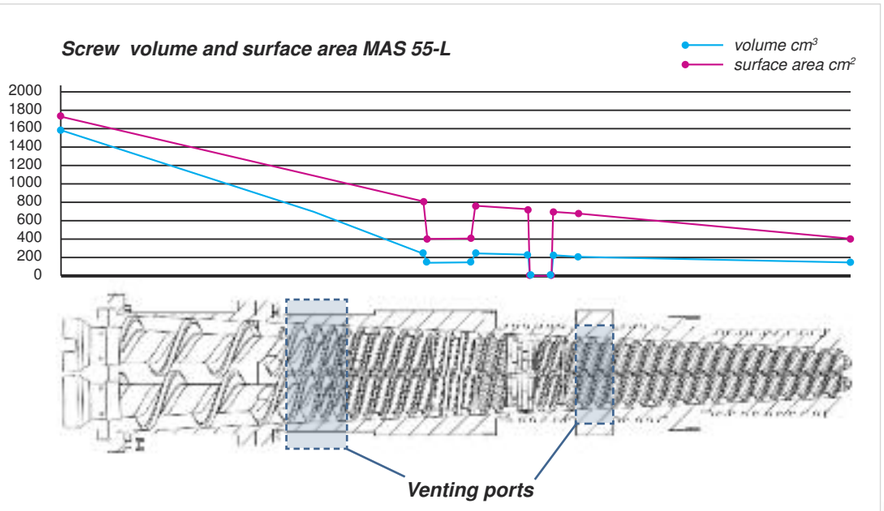
MAS extruder are the precise
fit for your company.

Individual : configuration

The extruder screw consists of a rear part and a 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 air cooling. The venting ports are fitted with exchangeable inserts. Depending on its size and features, the extruder has a single atmospheric venting port and/ or 1 to 2 vacuum venting zones.

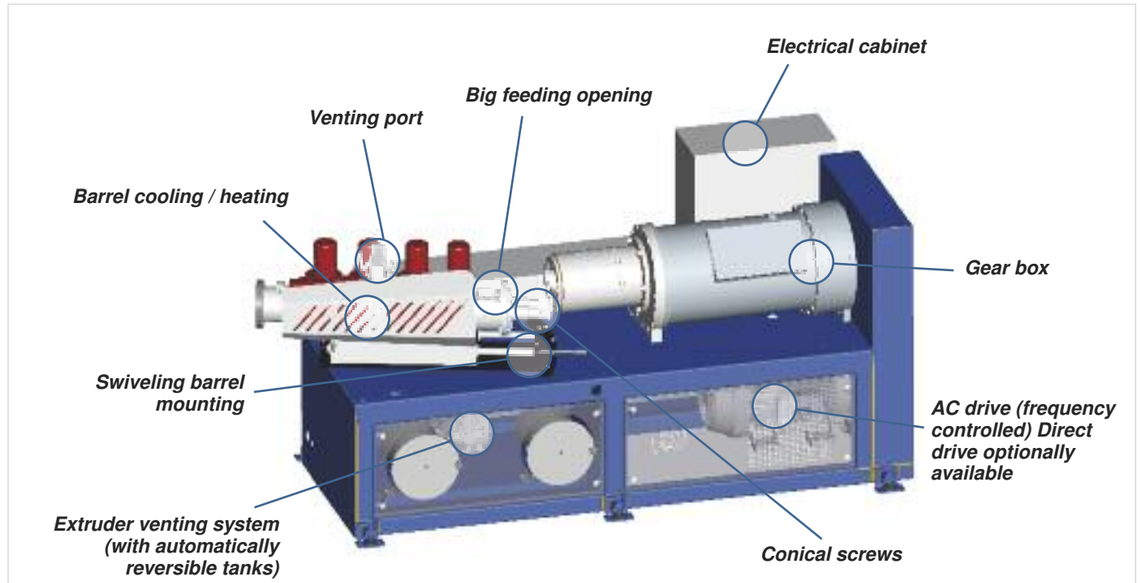
Logical : Operation

The control system, based on an industrial PC (1.1 GHz) 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 telephone / GSM / WLAN maintenance.

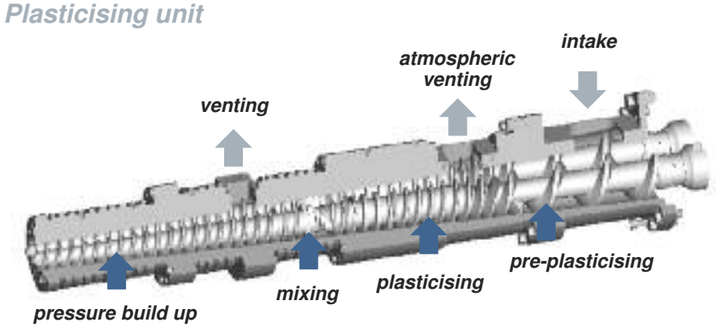


Conical : Plasticising unit

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. The flight volume of the baffle with the reduced pitch essentially determines the plasticising performance of the screws. Thanks 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 degassing zone also permits processing of damp materials with 2-4 % moisture content, depending on the model of the plasticising unit. 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 degassing performance is achieved. High outputs can therefore be obtained, even at low screw speeds with high melt pressures at low melt temperatures.



Schematic



MAS reliability
in design and quality.

Perfect : die 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.

Force reducing : Conical Co-rotator

The co-rotation principle means that the compressive forces are distributed very evenly on the barrel wall so that the screws are virtually floating in the melt. In contrast, the counter rotating system creates intermeshing forces, resulting in subsequent high point pressures on the barrel wall especially at the intake/melting zone. The co-rotating principle offers a considerably longer service life due to the uniform distribution of pressure in the system.

back pressure bearing

Robust : Material and design

Premium quality steel, robust design and solid quality workmanship guarantee high availability and a long life time. Barrels and screws are designed for maximum wear-resistant: The barrels are made of tool steel, case hardened or nitrited with the screws being hardened, tempered and nitrited. The screw land can also be equipped with satellites on request.

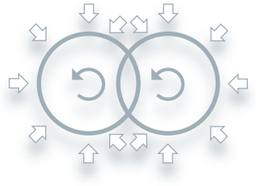
Exchangable screwparts

Complete : Additional equipment

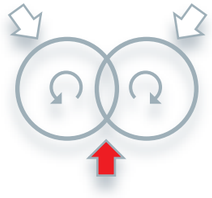
- *Extrusion tools and calibration*
- *Downstream equipment, haul off, saw*
- *Dosing units*
- *Big bag stations*
- *Underwater pelletizing system*
- *Air pelletizing system*

Force distribution co-rotating versus counter rotating

Co-rotating

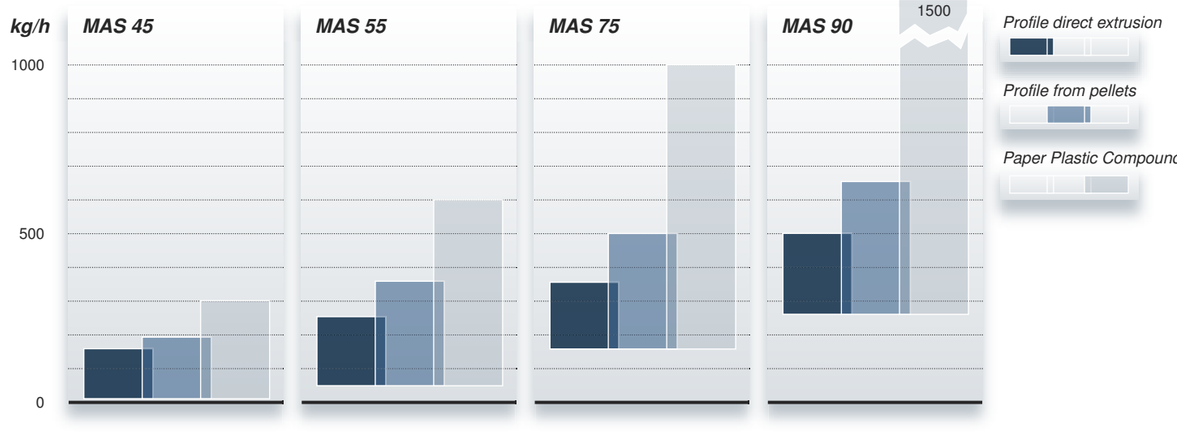


Counter rotating



Direct Drive

MAS Extruder with underpelletizing system



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

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

MAS Austria

General Management
Günther Klammer
Tel: +43 7229 78 999 10

Sales
Stefan Lehner
Tel: +43 7229 78 999 17

MAS International

Switzerland / France
Staub Technologie GmbH
René Staub
Sonnhaldenstrasse 7 A
CH-4653 Obergösgen
staub@mas-austria.com

Poland / Ukraine
MT Recykling Sp. z o.o.
Tomasz Zujkiewicz
Ul. Byslawska 82
PL-04-994 Warszawa
t.zujkiewicz@weima.pl

Spain
Elba
Ramon Xifra
Ctra. De la Bruguera, 10
ES-17150 Sant Gregori
r.xifra@cgac.es
www.elba-spa.it

UK / Ireland
John Wood & Associates
Julian Wood
UK-14 Ladythorn Road, Bramhall
julian@johnwoodassociates.com
www.johnwoodassociates.com

Benelux
Habro Handel & Advies BV
Arjan Brouwers
Het Wolbert 19 7547
NL-RA Enschede
brouwers@winza.com
www.habrobv.nl

Sweden / Norway
Prominova AB
Erik Skoglund
S. Stationsv. 6
SE-517 33 Bollebygd
info@prominova.se

Bulgaria
Gebrüder Paschev GmbH
Daniel Paschev
Georgi Benev Str. 3
BG-4003 Plovdiv
daniel.paschev@g-paschev.com
www.g-paschev.com

Iran
Pasargad Rahpouyan Kish Co.
Kambiz Megharazi
Nr. 6 Pialeh st. Nakhjawan st.
Theran-Iran, 1975744571
pcciran@gmail.com

USA / Canada
eFACTORTHREE
Hartmut Bendfeldt
15720 John J. Delaney Drive
Charlotte, NC 28277, USA
hbendfeldt@efactor3.com
www.efactor3.com

Mexiko
Interplast, DA DE CV
Ben Propfe
José Ma. Rico No. 102 Desp. 103
Col. Del Valle
03100 México, DF
benpropfe@interplast.com.mx

Australia / New Zealand
Koga Group
Geof Pile
PO Box 6010
Victoria, Australia
geofp@koga.com.au
www.koga.com.au

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