

COMPEO

The new compounder generation.
Incredibly different.



BUSS

excellence in compounding

COMPEO – future-ready!

The polymer industry's innovation and earnings potential lies in the production of extremely high-quality compounds. End products should be reinforced, scratch-resistant, flame-retardant, weather-resistant and at the same time resource-saving. This requires a compounder which easily and thoroughly mixes in significant amounts of additives. Meet COMPEO, the new state-of-the-art compounder delivering more diversity in its application, greater flexibility in process engineering, and increased value added in compound manufacturing.

The innovative COMPEO series discharge concept uses the conveying stability of the screw pump, offering ideal pressure build-up for downstream units.

The COMPEO raw materials feed options include inlet screws and twin-screw side feeders in addition to a feed hopper with a venting duct.





Performance Compounds

Cable Compounds

Bitumen

Thermoplastic Elastomers

PBT, PET

Bioplastics

Rubber Compounds

Friction Coatings

Calendering

Hotmelt

Thermosets

Engineering Plastics

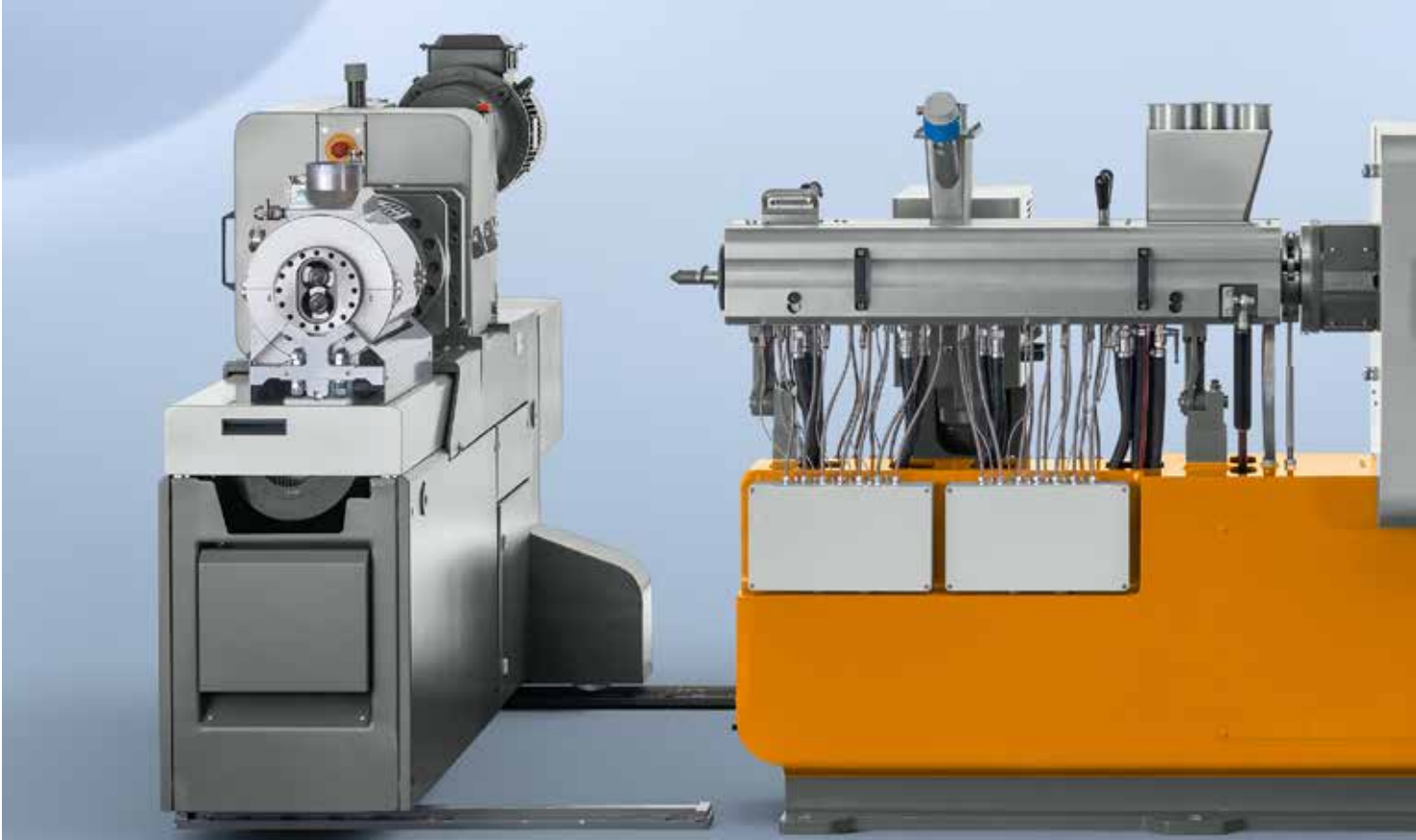
Masterbatch

PVC Pelletizing

The free combination of mixing and kneading elements with two to six rows of flights creates completely new process engineering possibilities. A considerably extended process window is just one aspect of this.

The COMPEO series modular machine concept is so flexible that a specifically configured compounding line is available for each compounding application, independent of the temperature range.

Incredibly versatile.
Incredibly different.

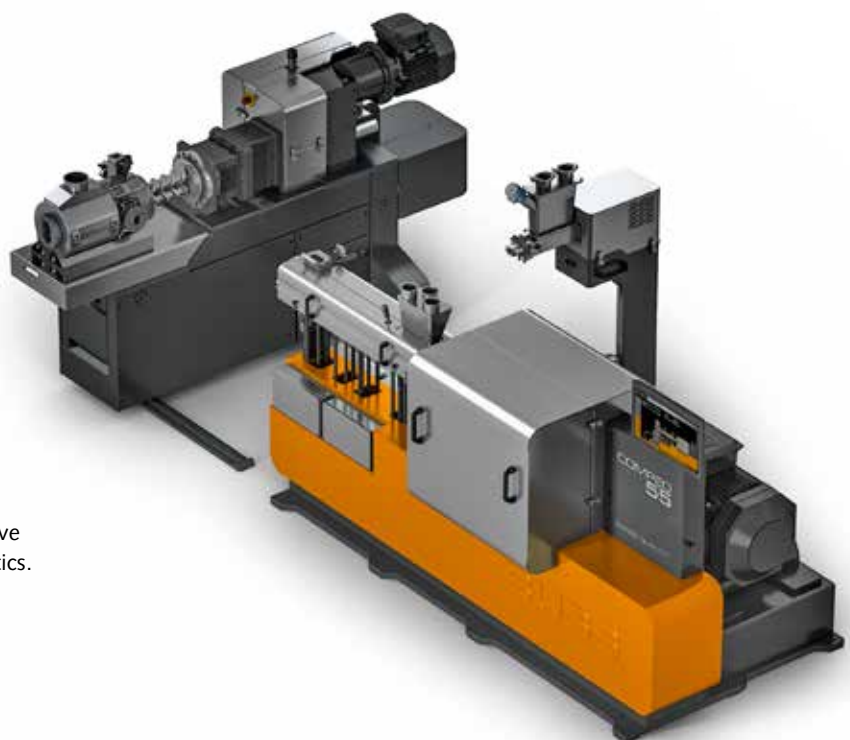


COMPEO – the best from all series!

The products and services from BUSS carry the claim of “Excellence in Compounding”. The new compounder generation COMPEO combines the advantages of all BUSS series. The result is a compounding system that can be configured from standardized modules which can be used practically for processing the entire range of plastics.

The all-rounder among the compounding systems.

COMPEO combines its predecessors' performance and robustness in a unique, multifunctional series. The series was developed for all temperature ranges up to 400°C. It has a process window that is unparalleled. Given the system's modular construction and novel process geometries, COMPEO can be used within an extremely diverse application spectrum, extending far beyond previous BUSS Kneader applications – from temperature-sensitive thermosets to demanding, technical thermoplastics.





Incredibly innovative.
Incredibly different.

Very operator-friendly and energy-efficient

When designing COMPEO, emphasis was placed on ergonomics, ease of maintenance, and energy efficiency. Pipes and lines are laid mostly inside the machine behind easy-to-clean panels. The gearbox is covered with a sound-proofing hood that also improves operational safety. To minimize energy losses, the process section is thermally insulated.

The newly developed machine concept

Thanks to its modular structure, the COMPEO series can be precisely configured to meet the specific compounding application. Systematic standardization of the modules used results in considerable investment cost savings. Maintenance outlay is kept low by using highly resistant surface-hardened materials in the process zone. The ergonomics of the COMPEO system design simplifies operation and simultaneously reduces application errors and downtimes.

Improved raw materials feed

The new COMPEO series achieves the performance of its predecessor series using lower speeds, but also due to ideal fill levels. As a standard, raw materials are metered in free fall via an enlarged inlet opening. Alternatively, inlet screws or side feeders can be used. Thanks to the operating principle of the twin screw and backventing, they ensure efficient feeding, even if there are high filler contents.



Backventing of the twin-screw side feeder ensures the removal of entrapped air or volatiles.

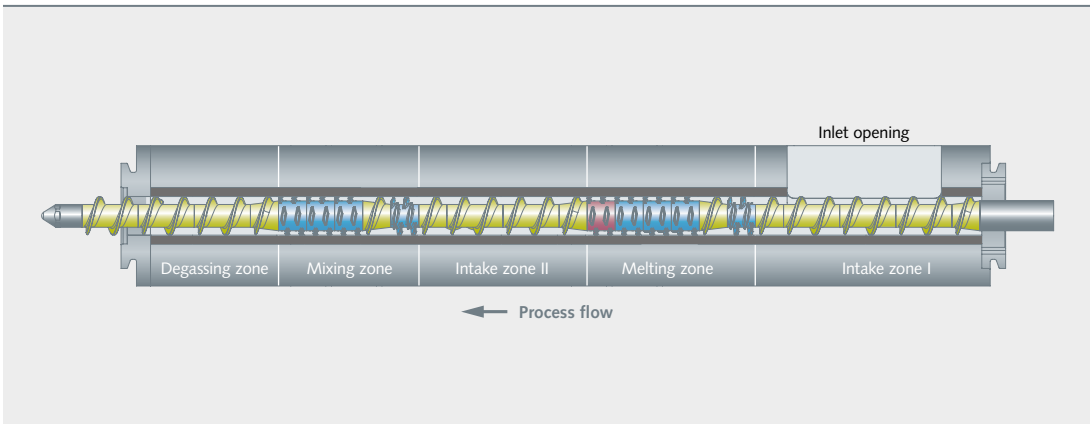


COMPEO – new geometries for greater flexibility!

COMPEO's innovative operating principle:

In the basic version with two inlet zones, polymers, additives and some of the fillers are fed through the first intake opening. The polymers are molten and mixed with the additives in the melting zone. In the second feed zone, further fillers are added via a side feeder and distributed homogeneously in the downstream mixing zone.

Volatiles and entrapped air are removed in the degassing zone before transfer to the discharge unit. The processing length, type and number of feeding units, temperature, degassing and process geometries are defined according to the compounding application.



The process geometry can be configured optimally by the specific arrangement of different screw elements for the respective compounding application.



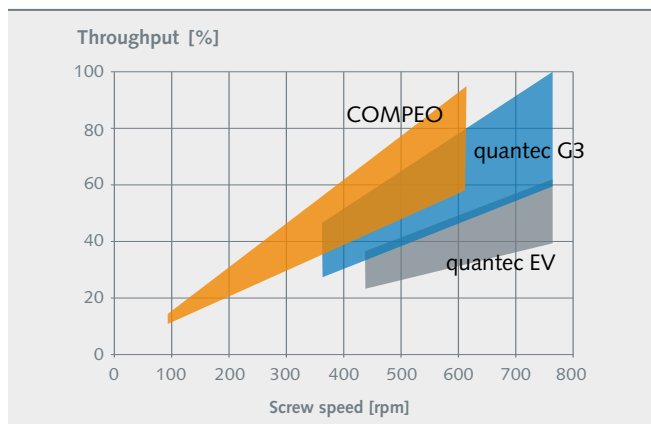
Incredibly flexible.
Incredibly different.

The configurable process zone of the COMPEO compounder opens up completely new process engineering possibilities through the application of mixing and kneading elements with two to six rows of flights. The combination of traditional three- and four-flight elements with newly developed mixing elements allow, for one thing, achieving goals which in the past conflicted with each other, such as high specific throughput with controllable energy input. For another, the COMPEO process window is considerably larger than those of previous models. Throughput can be varied in a ratio of 1:6, increasing both system flexibility and user-friendliness. The high throughput ratio is particularly advantageous for starting up, for small lots, and for in-line processes, where the downstream unit requires consistent product quality even with greatly varying throughput rates.

New screw geometries extend the process window

The new COMPEO series screw geometries ensure high throughput with up to 20% lower RPM. Increasing the volume-related torque by 15% enables the configuration of longer mixing zones. That results in more stable process conditions without a higher energy input.


The systematic free-form surface design of the screw flights ensures evenly intense shearing of the product and eliminates local overheating.



The COMPEO process window with a throughput ratio of 1:6, here using PVC as an example, is considerably larger than those of previous Kneader series machines.



Novel melting elements, e.g. for cable applications, replace the restriction ring in the compounder barrel.



The innovative COMPEO series twin-screw discharge unit is used for all compounding applications.

COMPEO – efficient down to the last detail!

Innovative discharge concept

Pressure build-up at the end of the production process is at least just as important for perfect pellet quality as fully homogeneous mixing of the various raw materials in the compounding step. The discharge unit is decisive for this. It ensures optimum and reliable pressure build-up required for downstream units such as screen changers and pelletizers, independent of the compounder. The innovative COMPEO also enables the realization of hybrid systems for processing widely differing products.



Efficiency, quality and user-friendliness

The new COMPEO discharge unit, based on the principle of a conical twin screw, is designed to run in a metred method. As a result, the entire pressure build-up takes place in the slowly rotating twin screw, thus reducing temperature increases at the transition from compounder to discharge unit. The operating principle of the screw pump also guarantees maximum conveying efficiency in case of higher back pressure, enabling minimization of the speed and potential temperature increase. The COMPEO discharge unit has a wide range of application possibilities and is exceedingly user-friendly. The retractable housing gives full access to the conveying screws for cleaning and maintenance.

Incredibly efficient.
Incredibly different.



The COMPEO system controller is operated intuitively, featuring a system HMI that shows the most important process parameters even when idle.

COMPEO – system control 4.0

Intuitive operation of control panel, Industry 4.0 connectivity

The touchscreen-equipped control system is based on a state-of-the-art controller (Siemens or Allen Bradley) and has an OPC-UA interface for connection to higher-level IT architectures. This interface makes the system fully Industry 4.0-compliant. The modular software is structured according to the system configuration and can be operated intuitively.

The control system works with stored formulation parameter sets, which makes it possible to switch between formulations with the push of a button. All essential system parameters such as fill levels, flow rates or quantities, pressures, temperatures and outputs are visualized, recorded and archived. Defined process parameters such as temperatures, power consumption or specific energy input, and thus the efficiency of the system, are continuously monitored by the control system. Optionally, the system can also be maintained via remote diagnosis and remote maintenance.



The entire system can be operated and monitored from the start screen.



Clear arrangement of display and operation fields on the metering details page.

Technical data

	BUSS Compounder				Discharge unit		
	Screw diameter [mm]	Process length [L/D]	Screw speed [rpm]	Drive power max [kW]	Screw diameter (depending on application) [mm]		Process length [L/D]
COMPEO 55	55	11 ... 25	600	55	40/2	-	6
COMPEO 88	88	11 ... 25	600	200	40/2	or 70/2	6
COMPEO 110	110	11 ... 25	600	400	70/2	or 100/2	6
COMPEO 137	137	11 ... 25	600	800	100/2	or 140/2	6
COMPEO 176	176	11 ... 25	600	1.650	140/2	or 175/2	6

Throughput rates in kg/h¹

	COMPEO 55	COMPEO 88	COMPEO 110	COMPEO 137	COMPEO 176
PVC Pelletizing – Unfilled	150–325	600–1200	1200–2400	2400–4800	---
PVC Pelletizing – Filled	200–400	800–1600	1600–3200	3200–6400	---
PVC Calendering ^{2, 3}	---	---	600–1600	1200–3200	2400–6400
Cable – PVC	200–400	800–1600	1600–3200	3200–6400	---
Cable – HFFR	150–250	600–850	1200–1700	2400–3500	4800–7000
Cable – Semiconductives	150–250	600–850	1200–1700	2400–3500	4800–7000
Cable – Silane Crosslinkable	175–225	600–850	1300–1700	2500–3500	5500–7000
Cable – Peroxide Crosslinkable ²	---	---	600–800	1200–1600	2800–3200
Black Masterbatch	150–250	600–850	1200–1700	2400–3500	4800–7000
Filled & Reinforced Thermoplastics	150–250	600–850	1200–1700	2400–3500	4800–7000
Natural Fibre Composites	150–250	600–850	1200–1700	2400–3500	4800–7000
Polyamide	150–200	600–800	1200–1600	2400–3200	4800–6400
Polycarbonate	150–200	600–800	1200–1600	2400–3200	4800–6400
PBT, PET	150–200	600–800	1200–1600	2400–3200	4800–6400
Thermosets	50–150	200–500	400–1000	800–2000	1600–4000
Bioplastics	75–150	300–600	600–1200	1200–2400	2400–4800
Thermoplastic Elastomers	100–225	400–850	800–1700	1600–3500	3200–7000
Rubber Compounds ²	40–100	150–400	300–800	600–1600	1200–3200
Hotmelt	100–150	350–500	750–1000	1500–2000	3000–4000

¹ Expected maximum throughputs dependent on raw materials and formulation

² Expected maximum throughputs at 300 rpm

³ The throughput range for calender applications is 1:6



Unique features

With its unique functions, COMPEO offers new, convincing advantages and benefits for a highly varied scope of application:

- Extremely wide range of applications
- Novel screw geometries
- Considerably extended process window
- High output at lower speeds
- High robustness and operational safety
- Improved energy efficiency
- Innovative discharge concept



Future-proof system

BUSS has developed the new COMPEO compounder generation to meet current and future plastics industry requirements. With a wide range of applications, a large operating window, high flexibility and robustness, as well as improved process stability, but also operational and operator safety, energy efficiency and reduced operating costs, COMPEO can be applied for a wide array of applications.

Strong service concept

The BUSS service team is available to you world-wide for professional support in taking care of your new COMPEO compounding system. From project engineering, process-related advice, installation, and commissioning to training and unparalleled service, we are your partner to protect your investment for the long term. This also includes retooling or revamping the system later, moving the system or modernizing the compounding line.



BUSS. Excellence in Compounding.

BUSS is 70 years of knowledge, innovative strength and experience in the development of compounding systems. It all stems from our highly experienced employees, who bring maximum quality and professionalism to all our services. BUSS' core competence is customer- and product-specific solutions of processing tasks. Always analogous to the high demands on process technology and product quality as well as the constantly increasing technological market needs. The performance strength and investment security in our systems can be summarized in two words: Swiss quality. All of this makes us a leading supplier of high-quality compounding technology.

Buss, Inc. USA

743 Kimberly Drive
Carol Stream, IL 60188
USA

P +1 630 933 9100
F +1 630 933 0400
info.us@busscorp.com

Buss Japan Ltd.

Wakura Building 702,
1-5, Fukagawa 1 chome
Koto-ku, Tokyo 135-0033
Japan

P +81 3 5646 7611
F +81 3 5646 7612
info.jp@busscorp.com

Buss Compounding Solutions (Shanghai) Co., Ltd.

Building 8, No. 2317
Shengang Road, Songjiang District
Shanghai 201611, PRC

P +86 21 64339233
F +86 21 64332793
info.cn@busscorp.com

Buss AG

Hohenrainstrasse 10
4133 Pratteln
Switzerland
P +41 61 825 66 00
F +41 61 825 68 58
info@busscorp.com

www.busscorp.com



BUSS

excellence in compounding