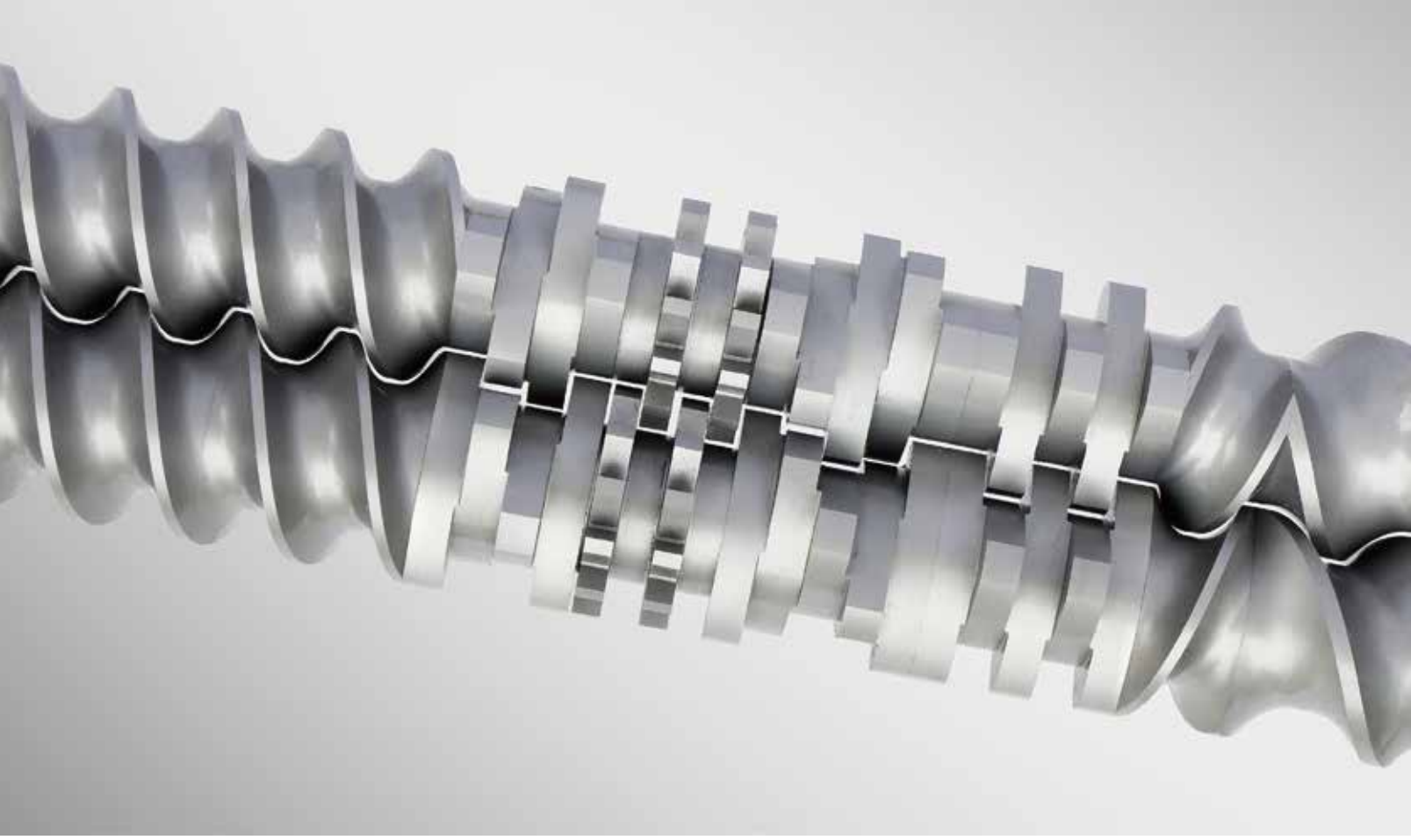




SAT COMPOUNDER

■ Applications ■ Features ■ Jumbo ■ U+ ■ Tandem ■ Data sheet ■ Pelletizer ■ Control system



Walk The Talk





■ Applications ■ Features ■ Jumbo ■ U+ ■ Tandem ■ Data sheet ■ Pelletizer ■ Control system

USEON has been pushing the boundary of China-made twin screw extruders. Since the first set of China-made high torque twin screw extruder installed in 2007 at Useon, there has been more than 2700 sets of Useon-made high-performance twin screw extruders working worldwide. Over the years, SAT series have stood the test of time. Now the brand-new SAT series redefine the art of the state.

S-Safety—stability creates productivity. Safety provides stability. SAT series are designed on the basis of sufficient safety protection both in mechanical and electrical ways.

A-Accuracy—accuracy means accurate control that is supported by high precise mechanical parts, ingenious design and reasonable electrical program control. The high precise screw and barrel provides excellent self-cleaning capability, as well as accurate residence time control.

T-Torque—increasing specific torque ratio without compromising safety factor, newly SAT has brought the specific torque factor up to 15 Nm/cm^3 that can make the polymer extrusion process with less energy, yet better quality.



SAT-A MILESTONE OF USEON

SAT series stands for Useon' s standard compounder for most polymer processing. We not only provide high quality machines, but also can help you develop the new applications of SAT. The screw speed ranges from 100 up to 1200rpm. The L/D ration covers from 20 up to 72. The degassing or vacuum system and side feeders can be incorporated into SAT system easily. It provides the optimal cost-effective investment.



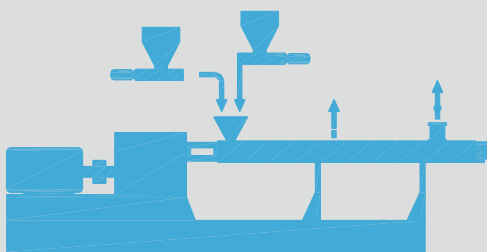


■ Applications ■ Features ■ Jumbo ■ U+ ■ Tandem ■ Data sheet ■ Pelletizer ■ Control system

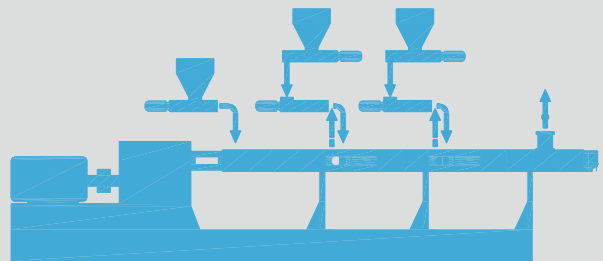
New SAT is able to achieve more delicate processing task, precise process control can meet complicate and sophisticate processing purpose. Better dispersion, more accurate temperature control and higher throughput have been integrated and optimized further.

The procedural steps in compounding include:

Metering > Feed intake and conveying > Melting > Dispersing/Homogenizing



Plasticizing and Alloying



Filling and Reinforcing



Filler/Color MB

- ▶ Carbon black
- ▶ TiO₂
- ▶ Color pigment
- ▶ Mono MB for fiber
- ▶ Filler (CaCo₃/BaSO₄/Talc)

Functional MB

- ▶ Anti-UV
- ▶ Anti-static
- ▶ Dehumidify (CaO)
- ▶ Flame- retardants
- ▶ Degradable MB (by light/ heat)

Reinforcing

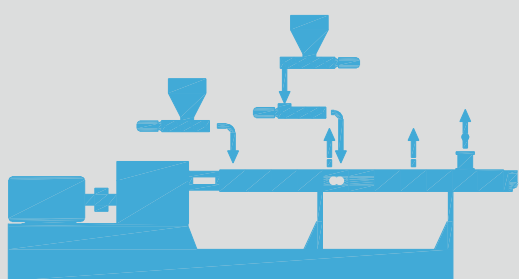
- ▶ Glass fiber
- ▶ LFRT
- ▶ D-LFT
- ▶ Carbon Fiber
- ▶ Nanometre powder (SiO₂/Talc/CC)

Blending and Alloying

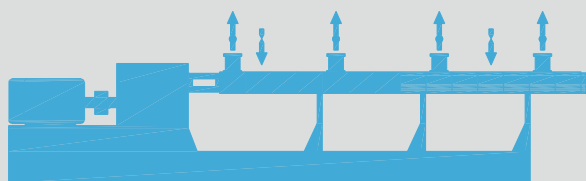
- ▶ Thermoplastic/Rubber (TPR/TPE/TPO)
- ▶ Plastic alloy (PC/ABS)

SAT authentically explains one—for-multiple. More powerful gearbox, more precise screw elements endow SAT more flexible processing range and wider operation window. We also provide individual solution according to customized requirements. Variety of modular screw elements, barrels, melt filtration and pelletizing system will cater for your unique requirement.

> Degassing > Pressurization > Filtering > Pelletizing > Packing



Masterbatch Production



Reactive Extrusion and Degassing



Cable and Wires

- ▶ PVC series
- ▶ HFFR
- ▶ PE series
- ▶ XLPE
- ▶ Special cables

PET Recycle

- ▶ Bottle flakes
- ▶ PSF (popcorn)
- ▶ PET sheet scrap
- ▶ BOPET film
- ▶ Online waste

Reactive Extrusion

- ▶ TPU
- ▶ TPV
- ▶ Grafting
- ▶ Polymerization
- ▶ PI/PC/POM/PMMA
- ▶ Silicon rubber

Other Applications

- ▶ Direct extrusion for sheet
- ▶ Powder paints
- ▶ Food Extrusion
- ▶ Devolatilization (PMMA/CPP/K-resin/SBS)

Screw Elements

Precise screw elements made by CNC tools provide SAT better intermeshing and self-wiping performance which ensures the entire processing no dead corner and better control in RTD (residence time distribution).

The ratio of outside diameter and inside diameter determines the free volume. SAT series extruder feature the excellent self-wiping functions. Combining with screw torque and free volume, the Do/Di of SAT is optimized at 1.55 that provide sufficient torque while remain enough free volume.

Except various screw geometry, we supply several materials of screw elements for different processing purpose. We also can configure different screw materials in different processing section to optimize the lifetime of the complete screw.

Material	Description	Hardness	Abrasion	Corrosion
W6Mo5Cr4V2	Through hardened tool-steel	58~60HRC		
Cr12MoV	Through hardened alloy steel	58~60HRC		
SAM10/CK45	HIP-composite bimetal steel	58~62HRC		
38CrMoAlA	Hardened and tempered nitrided steel	>HV940		
440C	Hardened Stainless steel for food	54~56HRC		
C-276	Hastelloy	180HB		





Barrels / Liners

SAT adopts ingenious cooling channel design which provides more efficient cooling performance and easier maintenance job. Modular design allows barrel sequence can be optimized with different barrel material as per the characteristic of processing task.

To ensure the precision, all SAT barrels are processed by CNC machines and checked by CMM (Coordinate Measuring Machine). We have various barrel structures to cater for different feeding types, venting types and liquid injection.

Material	Description	Hardness	Abrasion	Corrosion
Cr26MoV	Through hardened alloy steel	60~62HRC		
W6Mo5Cr4V2	Through hardened tool-steel	60~62HRC		
Ni60+25%WC	PM boned HIP nickel base material	62~64HRC		
38CrMoAlA	Hardened and tempered nitrided steel	>HV940		
440C	Hardened Stainless steel for food	54~56HRC		
C-276	Hastelloy	180HB		

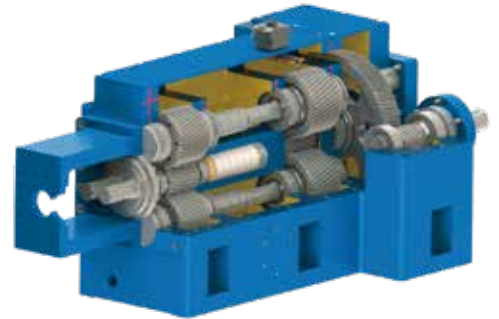


■ Applications ■ Features ■ Jumbo ■ U+ ■ Tandem ■ Data sheet ■ Pelletizer ■ Control system

USEON-patented High Torque Gearbox

The perfect concept of the split-transmitting principle has been successfully applied in USEON-patented gearbox with the digital online monitoring system; each gearbox is assembled with precise positioning for torque balance.

Thanks to our special CNC tools for gearbox and gearbox parts that ensures its durability and high torque output. With 15Nm/cm³ specific torque, SAT meets mainstream European standard which means SAT can work under lower temperature with higher throughput.



Gearbox for Parallel Triple Screw

The free volume of screw increase by 40%, more output for low bulk density material (such as filler, color and HFFR etc.)

The dispersion quality is better than twin screw extruder.

Only need to compound once for mono masterbatch with fiber application.



Safety Protection

SAT employs multiple protection system both in mechanical and electrical

Torque limiter—the overload protection torque limiter applied for instant protection for gearbox and extrusion units. This is helpful for sudden mechanical overload protection.

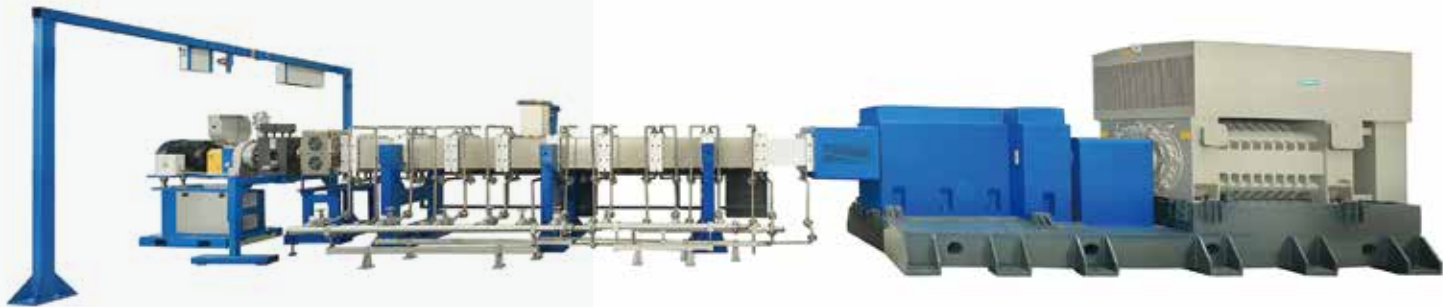
There is one sensor which will stop the motor once the pins come out when it is overloaded.



SAT Jumbo Compounder

USEON provides the Jumbo extruders for huge capacity polyolefin compounding. The maximum throughput can reach up to 35 tons/hr. Our supply scope covers from automatic raw material conveying to compounder, then from pelletizing to packaging.

Our expertise ranges from before-sales consulting, layout design, manufacturing, installation, commissioning to training, as well as remote technical support.



TECHNICAL DATA SHEET

Model	SAT130	SAT-175	SAT-260	SAT-330
Diameter mm	130	175	260	330
Speed control	Inverter	Inverter	Inverter	Manually
Motor kW	1250	2000	3500~4500	6500~10000
Power Supply kV	6.6 – 10	6.6 – 10	6.6 – 10	6.6 – 10
Specific Torque Nm/cm ³	12	12	12	12
Output ton/h	4~6	6~10	12~18	20~35





U+ Compounder

U+ series twin screw extruder is the highest-level series of USEON, mainly specialized for products that require high speed and high torque, such as engineering plastics, masterbatch and other applications.



TECHNICAL DATA SHEET

Model	U2	U3	U5	U6	U7	U9
Diameter mm	26	35.6	51.4	62.4	71	93
Max. Speed rpm	1200	1000	1000	1000	1000	900
Motor kW	37	90	250	450	680	1350
Specific Torque Nm/cm ³	13.6	15	15	15	15	15
Screw Length L/D	28-70	28-70	28-70	28-70	28-70	28-70
Output kg/hr	50 – 100	100 – 200	500 – 900	800 – 1500	1500 – 2500	2000 – 4000

FEATURED DESIGN

High torque: torque of 15Nm/cm³, meeting higher filling rate and production capacity, greatly improving productivity with reduced specific energy input.

High speed: maximum screw speed up to 1200r, configured screw speed and motor based on process tasks.

High efficiency: increased temperature control accuracy and efficiency of the processing section by optimized heating and cooling system. Each barrel is distributed with 4-6 radial U-shaped (U-Cooling) cooling channels along the axial length, replacing the previous industry-wide axial reciprocating cooling channels, improving cooling efficiency and reducing radial deformation.



EC Compounder

Economic Solutions

EC-compounder series machines are specially designed for those users who wish to make small to medium size compounding quantities and less torque inquiry for process. The EC Series machines have the features of easy-maintained, simple operation concept, user-friendly and cost-effective.

The EC-series machines have significant PRICE/PERFORMANCE ratio.

The EC- compounder is designed for a wide range of application in the polymer compounding industry:

- Master batches;
- Nanometre (SiO₂/Talc/CC) compounding
- Devolatilization (PMMA/PP/K-resin/SBS)

TDY Compounder

Counter-rotating Twin Screw Extruder Specially for Reaction and Devolatilization

In reaction and devolatilization extrusion, USEON has a long tradition and rich experiences. The unique working principle of counter rotating twin screw extruder finds a particular niche in extrusion process. We have developed some special screw elements and barrels to fulfill the individual processing task.

Due to its unique working principle, the relative line speed is low so that the material can be processed under very low shear force and fast exchange rate of material turn over. The increased material surface area associates with vacuum system result in ideal devolatilization performance.

Typical application:

- Polymer reactive extrusion.
- Polymer devolatilization.
- PVC compounding.
- WPC inline compounding extrusion.





■ Applications ■ Features ■ Jumbo ■ U+ ■ Tandem ■ Data sheet ■ Pelletizer ■ Control system

Lab Compounder Trial Machines

Lab compounder is specially designed for the trial-level or entry-level user, or the small scale production of color masterbatch and some functional masterbatch. Modular design makes it very flexible against different recipes.

The design concept of LAB is Plug-n-play. All the temperature controlling systems, electric controlling systems and even the mini-vacuum system are integrated into the machine frame. What you need to do is just plug in water and electricity.





Tandem Compounder

For some polymers, the pelletizing has to be done under the condition without water and moisture, so that the extrusion system should have sufficient cooling capacity to cater for this process. And some materials belong to shear-sensitive or heat-sensitive. SAT tandem extrusion system is designed for such kind of process. Primary twin screw extruder provides mixing and dispersion without over-shearing, lower speed single screw extruder provides enough cooling and pressure building. The typical processing applications include PVC, LSFH, WPC, EVA etc.



Barrel Heating



Barrel Cooling



Side Force Feeder



Technical Data Sheet

SAT Series

Model	SAT40	SAT52	SAT65	SAT75	SAT95	SAT110
Diameter mm	41	51,4	62,4	71	93	110
Max. Speed rpm	800	800	800	600	600	400
Motor kW	75	132	220	280	600	650
Specific Torque Nm/cm ³	10,9	9,9	9,3	10,3	10	10,1
Screw Length L/D	28–70	28–70	28–70	28–70	28–70	28–70
Output kg/hr	150 – 250	350 – 500	500 – 900	700 – 1200	1300 – 2400	1800 – 3000

SAT-T Series (Parallel Triple Screw)

Model	SAT-T52	SAT-T65	SAT-T75	SAT-T95
Diameter mm	51,4	62,4	71	93
Max. Speed rpm	600	60	600	600
Motor kW	110	160	250	400
Specific Torque Nm/cm ³	9,9	9,3	10,3	10
Screw Length L/D	32–64	32–64	32–64	32–64
Output kg/hr	300–400	500–700	800–1200	1500–2000

EC Series

Model	EC40	EC52	EC65	EC75	EC95	EC110
Diameter mm	41	51,4	62,4	71	93	108
Max. Speed rpm	600	600	600	600	600	400
Motor kW	30	55	90	132	315	355
Specific Torque Nm/cm ³	5,8	5,5	5,1	4,9	5,3	5,5
Output kg/hr	70–120	130–220	200–350	400–600	700–1000	900–1200

TDY Series (Counter-rotating)

Model	TDY40	TDY52	TDY65	TDY75	TDY95	TDY110
Diameter mm	41	51.4	62.4	71	93	108
Max. Speed rpm	600	600	600	600	600	400
Motor kW	30	55	90	132	315	355
Specific Torque Nm/cm ³	5.8	5.5	5.1	4.9	5.3	5.5
Screw Length L/D	28–70	28–70	28–70	28–70	28–70	28–70
Output kg/hr	70–120	130–220	200–350	400–600	700–1000	900–1200

Tandem Series

Model	Dia. mm	rpm	L/D	Motor kW	Output kg/hr
SAT52/TDD150	51.4/150	600/90	32–64/8	110/55	200–400
SAT65/TDD180	62.4/180	600/90	32–64/8	160/75	400–800
SAT75/TDD200	71/200	600/90	32–64/8	250/90	600–1200
SAT95/TDD240	93/240	600/90	32–64/8	500/110	1500–2500

Lab Series

Model	Dia. mm	rpm	L/D	Motor kW	Output kg/hr
Lab–20	22	720	32–64	7.5	5–20
Lab–30	30	600	32–64	18.5	15–40
Lab–35	35.6	600	32–64	18.5	25–60

Pelletizing System

Water Cooling Strand Pelletizing System

It is suitable for most polymer compounding production, which features simple structure, easy operation and convenient maintenance. The threshold of operators is also low. This system consists of strand die, water bath, air knife, strand pelletizer and vibrating classifier.



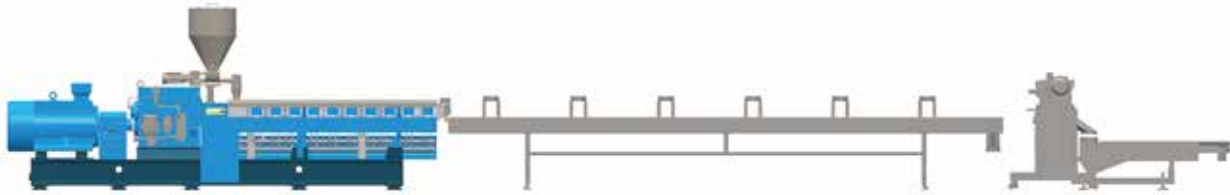
Under Water Strand Pelletizing System

It is suitable for plastic recycling which needs to change the filter frequently. The strands go into the pelletizer automatically with the water flow, even the strands break during changing the filter. Therefore, there will be almost no waste during the manufacturing process. This system consists of strand die, water bath, strand pelletizer, centrifugal dewater and vibrating classifier.



Air Cooling Strand Pelletizing System

This system incorporates with single stage extruder. It is suitable for certain recipes, such as PP base filler degradable and WPC, which is too sticky to be cut by air cooling die face pelletizer. The other merit of this system is that it lets the material avoid contracting with water. This system includes die head, air cooling belt conveyor, strand pelletizer and vibrating classifier.



Air Cooling Die Face Pelletizing System

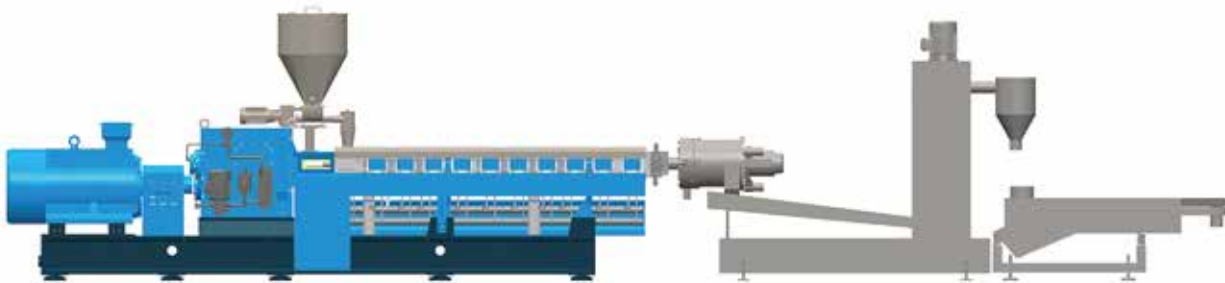
This system incorporates with tandem compounder. It is suitable for certain recipes, such as PVC, LLDPE, high filling masterbatch, degradable masterbatch, HFFR, WPC etc. Which has ring type and centrifuge type as per the property of the raw materials. The merit of this system is that lets the material avoid contacting with water which is critical for certain materials. This system includes die head, air cooling pelletizer, air cooling conveyor and vibrating classifier.



Pelletizing System

Water Ring Pelletizing System

It is suitable for certain recipes, such as PE/PS/EVA/TPU etc. The final pellet looks nicer and has good flowability. The length of production line is shorter than that of strand pelletizing. This system includes water ring pelletizer, water circulating system, centrifugal dewater and vibrating classifier.



Underwater Pelletizing System

Underwater pelletizing system can handle almost all kinds of polymers. Comparing with other pelletizer, underwater is more compacted which is more obvious when the output is huge. The size of final pellets also can be better controlled.

Application

- Output more 1 ton/h
- Micro pellets with diameter 0.7~2mm, such as color/function MB for better distribution
- Expendable micro pellets with foaming agent, such as EPS, EPLA, ETPU.
- Soft or sticky material, such as TPR/TPE/TPV, EVA base HMA





TECHNICAL DATA SHEET

Model	UP300	UP500	UP1000	UP4000	UPD250	UPD300	UPD400
Diverter	D30	D40	D50	D60	D70	D120	D160
Hole No.	8~16	20~40	40~80	100~160	700~1000	1000~2000	2000~3000
Knife No.	4~6	6~8	8~12	12~18	16~22	16~24	20~40
Knife moving	Manually	Manually	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Water system	W300	W500	W1000	W2000	PCW250	PCW300	PCW400
Output kg/h	~300	~700	~2000	3~8ton/h	10~20t/h	20~35t/h	35~50t/h



MAIN PARTS

■ Diverter

Discharge position/Working position, Hydraulic driving

■ Pelletizer:

Die plate heating: electrical heater or oil

Knife moving: manual or hydraulic

Online polish for knife

One button start/stop

Knife length indication



■ Water circulation system:

Water level: adjustable one HMI

Water flow control by speed of pump

Water pressure indication

Dewater with degassing fan and filter

Water temp. control: Including heater, heat exchanger,

Proportional valves for outside cooling water.



Intelligent Control System

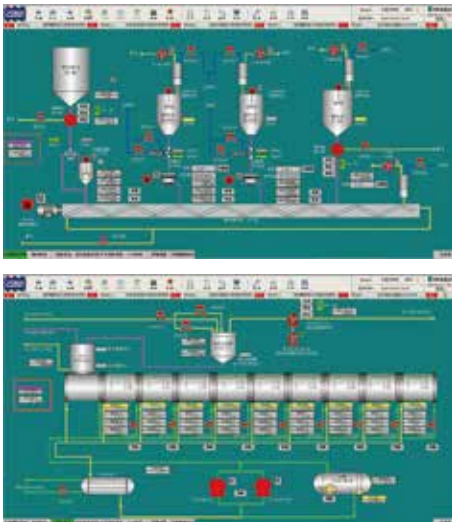


The merit of this system is for production management. Our experts can diagnose your machines via internet. The intelligent control system can help you gain production data from which you can dig some valuable information, especially when you have several lines or several plants. We not only consider your present demands, but also your future potential extended requirements.

Modular Design

Reduce 70% cable and 90% failure

- Controller (16 zone temp control and 10 contactor for motor)
- Driving Module (Each module with 5 zone)
- Heating Module (Each module with 4 zone, Short-circuit protection)
- Ampere Module (Each module with 16 zone, Fault diagnosis for heater and SSR)
- Cooling Module (Each module with 14 zone, Control the solenoid)
- Industrial PC (Built-in WIFI, Windows system)



Function Introduction

- Data collecting and centralized management, can be send to MES/SAP by Ethernet.
- Recipe Handling (Includes feeding capacity, temperature and all speed)
- Networking (with feeding and down stream machine)
- Process flow display on one page
- One button for remote control (by Teamviewer)
- Alarm diagnosis
- Maintenance remind

Auxiliary System

USEON also provides the auxiliary system for compounder. Our supply scope covers from automatic raw material unloading/conveying/weighing/premixing/feeding system to compounder, then from pelletizing to packaging.



■ Unloading system



■ Vacuum loader



■ Volumetric feeder



■ Gravimetric weighing system



■ Pellet loss in weight feeder



■ Powder loss in weight feeder



■ Liquid loss in weight feeder



■ Applications ■ Features ■ Jumbo ■ U+ ■ Tandem ■ Data sheet ■ Pelletizer ■ Control system

Special Applications

Foam Extrusion



Direct Extrusion



PET Recycle



Useon - Your Reliable Partner

Only with customer's support and trust, can we achieve more. A good strategic relationship can put both parties in win-win position, yet it can contribute to the industry. Many of our improvements were the result of working with customers, in this course, we witnessed the growth each other.

Cooperation Begins Understanding - Welcome To Consult Us

If you are a rich-experienced user of twin screw extruder, you could purpose any possible requirements on equipment and USEON will carry out your idea with our optional equipment. We can discuss further to determine the final solution.

If you have no professional know-how on extruder, our experts would like to share our expertise and knowledge with you to get the most reasonable solution and equipment. Our team will help you complete the whole project in a turn-key way.

In addition, our well-equipped lab center is open for you. We welcome you to test your new material, new recipe, new process and new ideas before you make decision. Our professionals are here for you.

How To Select A Suitable Extruder

Learn comprehensively about processing characteristics of your raw material and identify which type of screw extruder is suitable for your case.

Determine the main parameters, i.e. L/D, screw diameter, driving motors, screw speed according to throughput and process.

Select the auxiliaries, i.e. material loading, feeding, vacuum units, screen changers and pelletizing units according to the process purpose. Whether you purchase single set of extruder or a complete project, our experts will give you professional advice.





Polyolefin Pelletizing

Polyolefin Pelletizing

- Jumbo Extruder
- Underwater Pelletizer



Compounding

Polymer Compounding

- Color/filler and functional MB
- Engineering plastic reinforcement
- TPE/TPR/TPV
- Cable compounding



Foam Extrusion

Polymer Foam Extrusion

- CO2 foam XPS board
- Graphite EPS beads pelletizing
- PET Foam Core
- PLA Foam Beads pelletizing
- XPE Foam Sheet



Direct Extrusion

Direct Extrusion

- EVA/POE solar film
- UHMWPE battery separator film
- BOPET/BOPA/BOPP film extrusion
- Steel pipe coating



PET Recycling & Extrusion

PET Recycling & Extrusion

- Bottle flakes recycling (BTB)
- PET fiber/film recycling
- Undried PET sheet extrusion
- PSF/POY direct extrusion



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