



Compounding & Extrusion

Polymer Compounding & Extrusion

- Color/filler and functional MB
- Engineering plastic reinforcement
- Polymer/rubber alloy
- Cable compounding
- VOC devolatilization
- Steel pipe coating
- Direct extrusion for sheet/pipe (WPC, PVC, TPU, EVA, PVB)



Foam Extrusion

Polymer Foam Extrusion

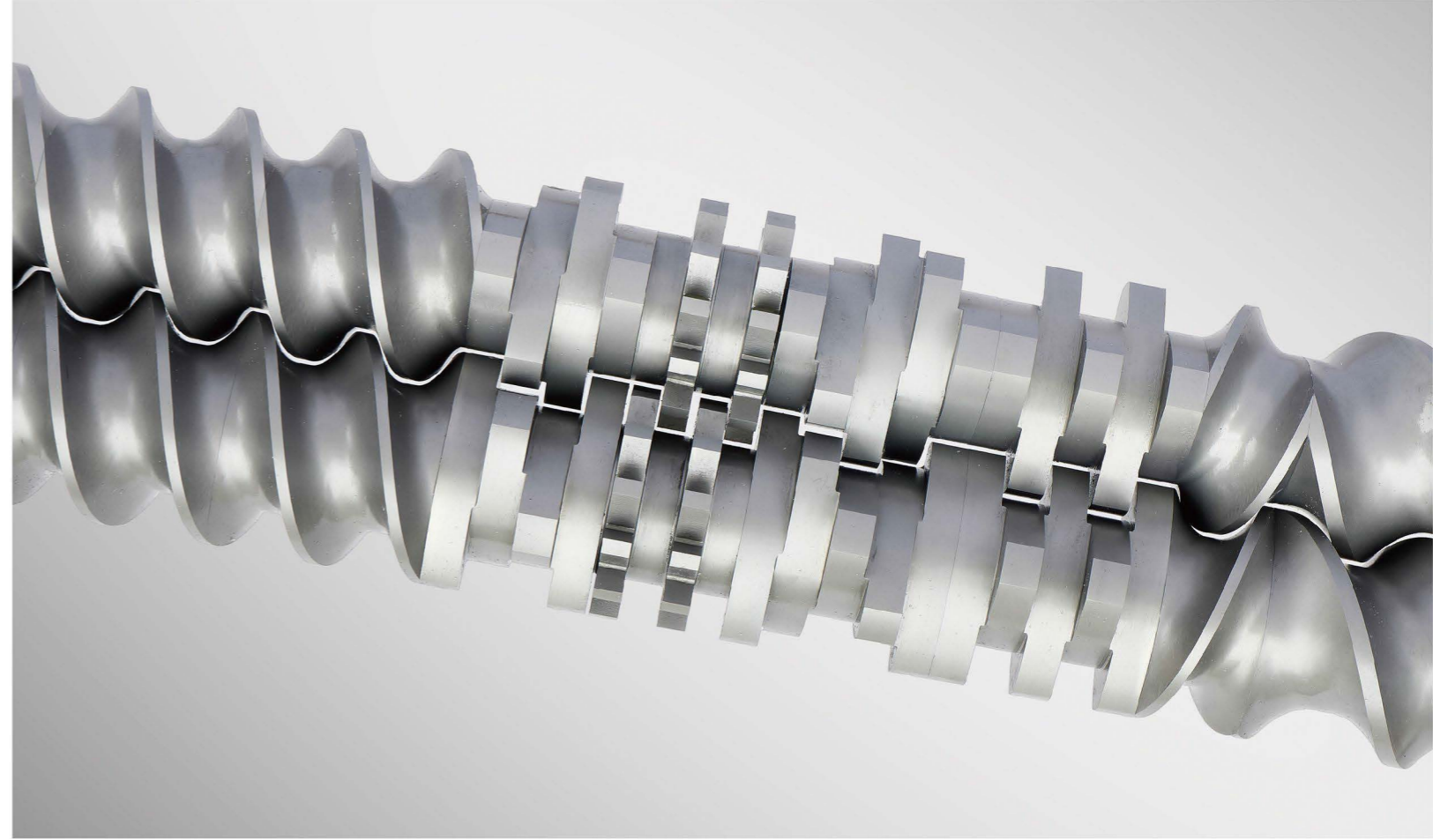
- CO2 foam XPS board
- Graphite EPS beads pelletizing
- Biodegradable foam product
- PE/PP/PET foam sheet



PET Recycling & Extrusion

PET Recycling & Extrusion

- Bottle flakes recycling (BTB)
- BOPET film recycling
- PET fiber recycling
- Undried PET sheet
- PET straps (4 output)
- PSF/POY direct extrusion



SAT COMPOUNDER

■ Applications ■ SAT features ■ Lab ■ Tandem ■ Data sheet ■ Pelletizer ■ Control system



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Walk The Talk



USEON's extremely professional team always focuses on the ongoing development of twin screw extruders. Since the first China-made high torque level twin screw extruder was installed in 2007, USEON has delivered more than 2200 sets of high performance machines and now the series come to SAT. SAT series machines are exactly feature as it's label:

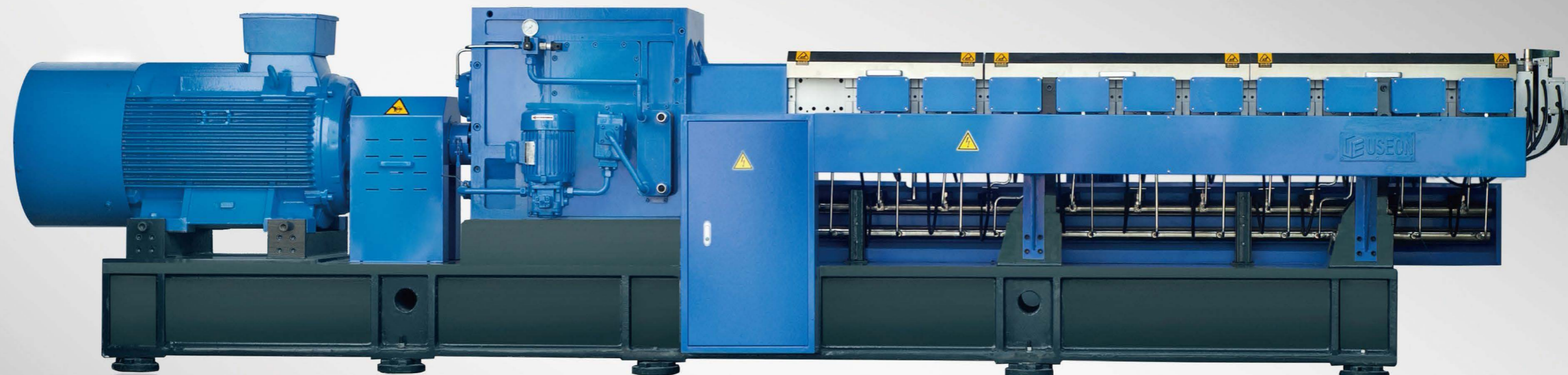
S-Safety--SAT series machines are equipped with sufficient safety protection systems to provide the highest safety factor both in mechanical and electrical.

A-Accuracy--SAT series machines are assembled with precise parts that are processed by special CNC tools. The innovative CNC tools for screw elements and kneading blocks ensure the high accuracy kneading effect.

T-Torque--SAT series machines are equipped the USEON-made high torque gearboxes. The strictly-monitored procedures with digital torque split trial provide the gearbox with high safety factor. All SAT series machines have specific torque factor up to 13 Nm/cm³ and higher, also there are more speeds available.

SAT-A MILESTONE OF USEON

As a leading supplier of polymer processing extrusion equipment, USEON team not only has expertise in machines design and manufacturing, but rich experience in polymer processing as well. Our exploring and innovating spirits have been contributing to developments of twin screw extruder application. USEON's strong technical background, multi-functional lab center and first-rate equipment will definitely meet your individual technical requirements.

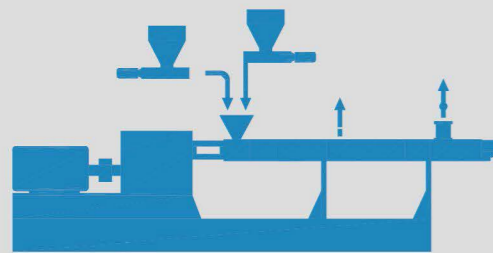


New SAT is able to achieve more delicate processing task, precise process control can meet complicate and sophisticate processing purpose. Better dispersion, more accurate temperature control and higher throughput have been integrated and optimized further.

The procedural steps in compounding include:

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 get the most out of your investment.

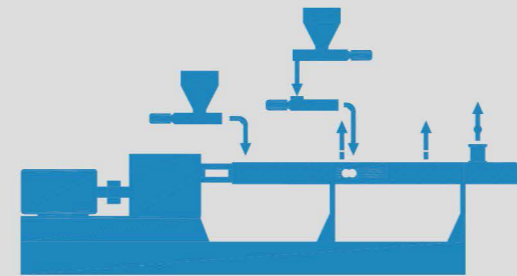
Metering > Feed intake and conveying > Melting > Dispersing/Homogenizing > Degassing > Pressurization > Filtering > Pelletizing > Packing



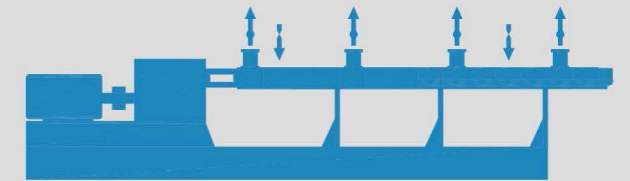
Plasticizing and Alloying



Filling and Reinforcing



Masterbatch Production



Reactive Extrusion and Degassing



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)

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 (SAT175)
- ▶ PI/PC/POM/PMMA
- ▶ Silicon rubber

Other Applications

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

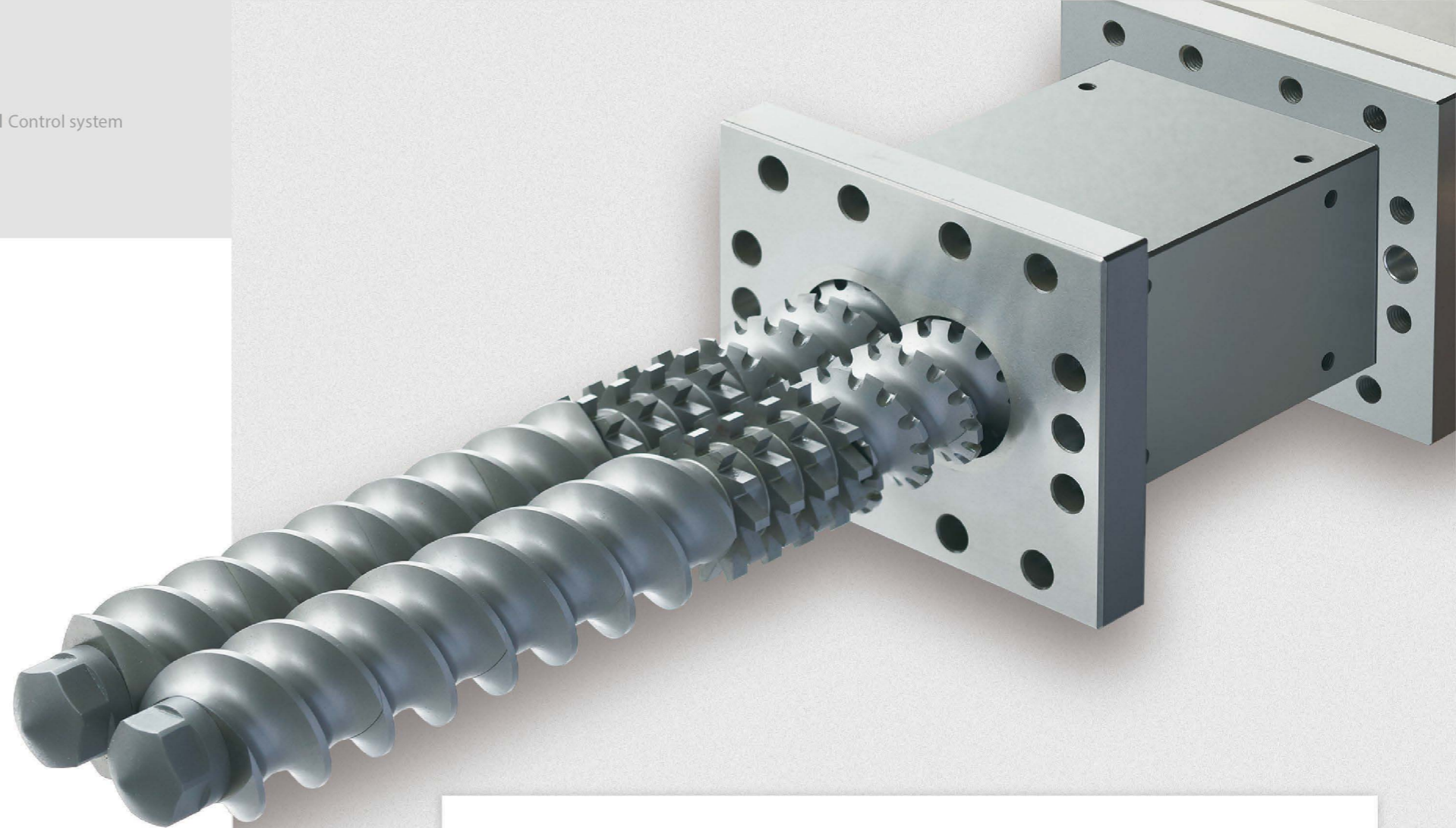
SCREW ELEMENTS

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).

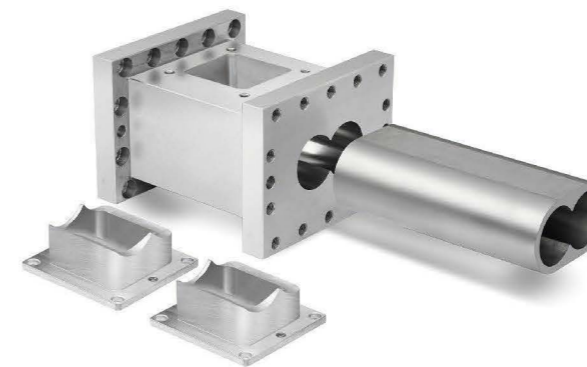
The ratio of outside diameter and inside diameter determines the free volume. SAT series extruder feature the excellent self-wiping functions. Combining with screw torque and free volume, the Do/Di of SAT is optimized at 1.55 that provide sufficient torque while remain enough free volume.

Except various screw geometry, we supply several materials of screw elements for difference processing purpose. We also can configure different screw materials in different processing section.

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. 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. 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		

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 13Nm/cm³ specific torque, SAT meets mainstream European standard which means SAT can work under lower temperature with higher throughput.

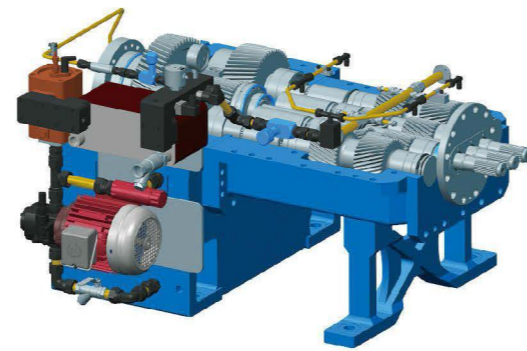


Gearbox for Parallel Triple Screw

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 will be helpful for sudden mechanical load protection.

There is one sensor which will stop the motor once the pins come out due to overload.



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 easily-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.



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-shear, lower speed single screw extruder provides enough cooling and pressure building. The typical processing applications include PVC, LSFH, WPC, EVA, cross-linkable PE and high concentration carbon black MB, etc.

- L. Barrel Heating
- M. Barrel Cooling
- R. Side Force Feeder



TECHNICAL DATA SHEET

SAT Series

Model	SAT40	SAT52	SAT65	SAT75	SAT95	SAT110	SAT130
Diameter mm	41	51.4	62.4	71	93	110	130
Max. Speed rpm	800	800	800	600	600	400	400
Motor kW	75	132	220	280	600	650	1000
Specific Torque Nm/cm ³	10.9	9.9	9.3	10.3	10	10.1	9
Output kg/hr	150-250	350-500	500-900	700-1200	1300-2400	1800-3000	2500-3500

SAT-X Series

Model	SAT-X52	SAT-X65	SAT-X75	SAT-X95	SAT-X110	SAT-X130	SAT-X175
Diameter mm	51.4	62.4	71	93	110	130	175
Max. Speed rpm	800	800	600	600	400	400	300
Motor kW	160	280	355	750	800	1400	2000
Specific Torque Nm/cm ³	12	12	13.1	12.6	12.4	12.5	10.2
Output kg/hr	450-700	700-1200	800-1400	1700-2600	2200-3300	3000-4500	6000-8000

SAT-T Series (Parallel Triple Screw)

Model	Dia. mm	rpm	L/D	Motor kW	Output kg/hr
SAT-T52	51.4	600	32-64	110	300-400
SAT-T65	62.4	600	32-64	160	500-700
SAT-T75	71	600	32-64	250	800-1200

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
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

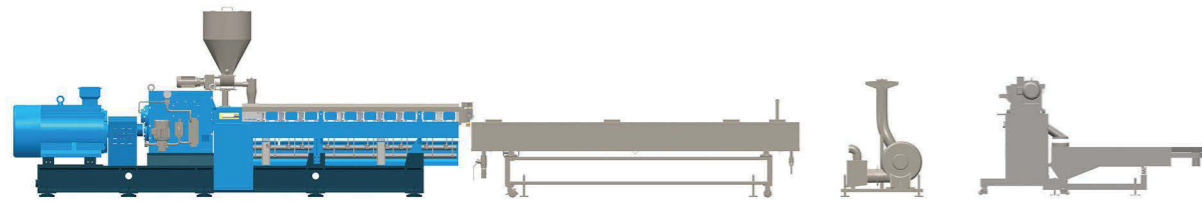
Lab Series

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

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.



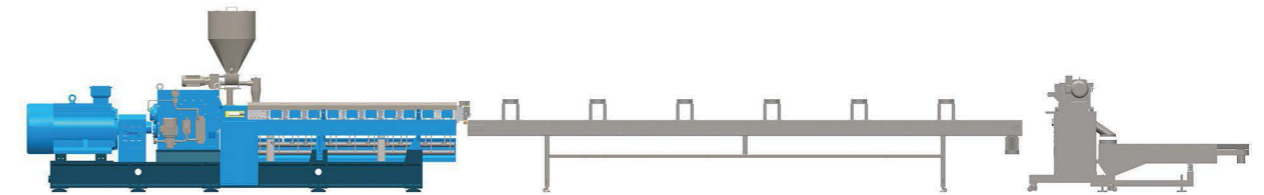
Under Water Strand Pelletizing System

It is suitable for plastic recycling which needs to change the filter frequently. The strands go into the pelletizer automatically by the water flow, even the strands break during changing the filter. So 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 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

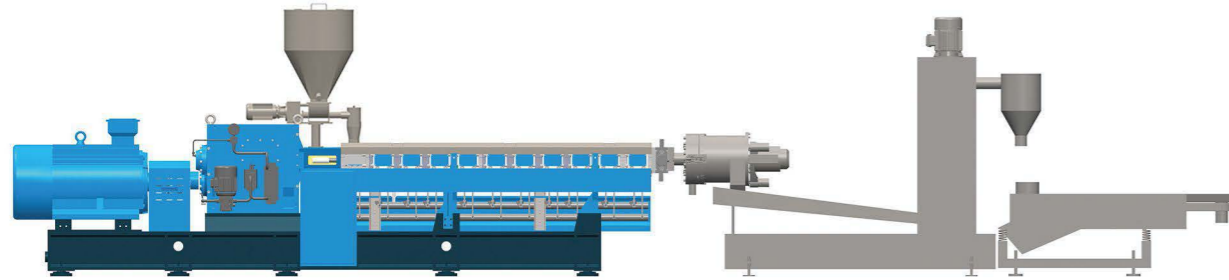
This system incorporates with tandem compounder. It is suitable for certain recipes, such as PVC, LLDPE, high filling masterbatch, degradable masterbatch, HFFR, WPC etc. Which has ring type and centrifuge type as per the property of the raw materials. The merit of this system is that lets the material 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

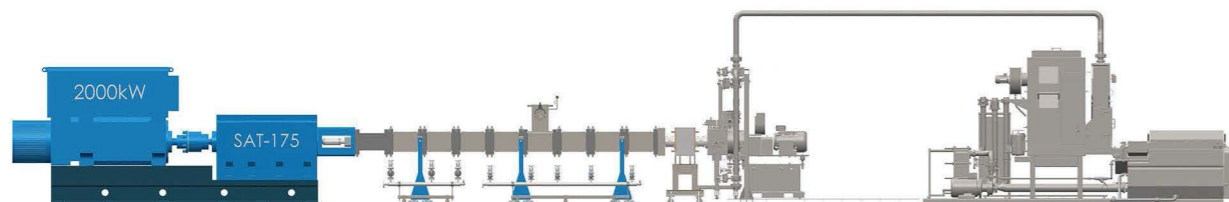
Water Ring Pelletizing System

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 is good for most of polymers. Especially for TPU and TPV or similar elastomer, its advantage plays well. Comparing with other pelletizer, underwater is more compacted which is obvious when the output is hug. The size of final pellets also can be better controlled. This system consists of die head, underwater pelletizer, water circulating system, and dewater system. It can incorporate with auto-packaging system.



INTELLIGENT CONTROL SYSTEM

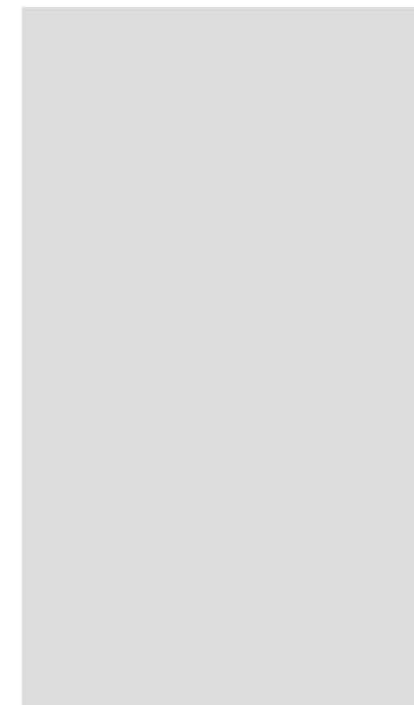


The merit of this system is for production management. Our experts can diagnose your machines via internet. We not only consider your present demands, but also your future potential extended requirements.

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)

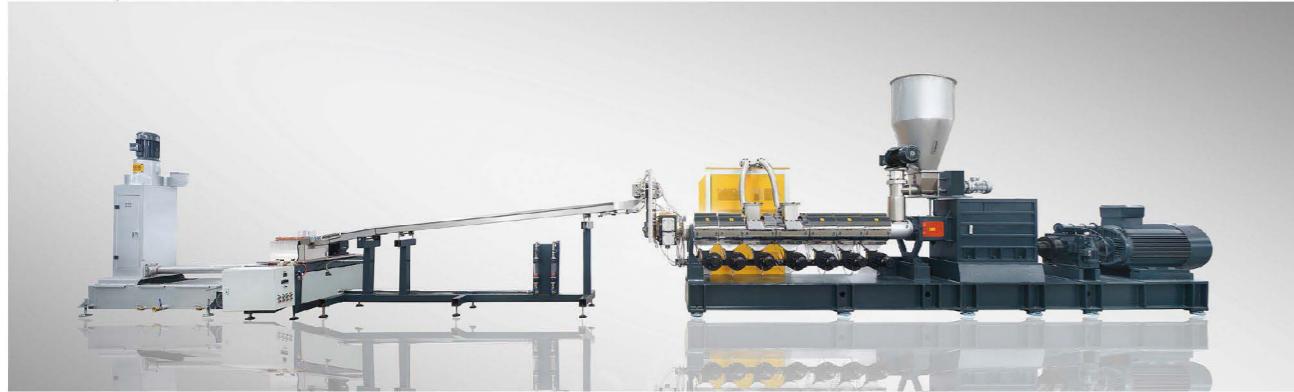


Function Introduction

- 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)
- One button start/stop (according to the setting temperature, speed etc.)
- Process flow display on one page
- One button for remote control (by Teamviewer)
- Alarm diagnosis
- Maintenance remind

SPECIAL APPLICATIONS

PET Recycle



Foam Extrusion



Direct Extrusion



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 grow up 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 turn-key way.

In addition, our well-equipped lab center is open for you. We welcome you to test your new material, new recipe and new process 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.

