



#### Jumbo Compounding

- Polyolefin Compounding
- ABS/POM
- Devolatilization



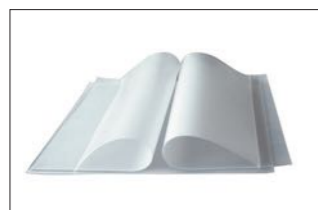
#### Polymer Compounding

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



#### Polymer Foam Extrusion

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



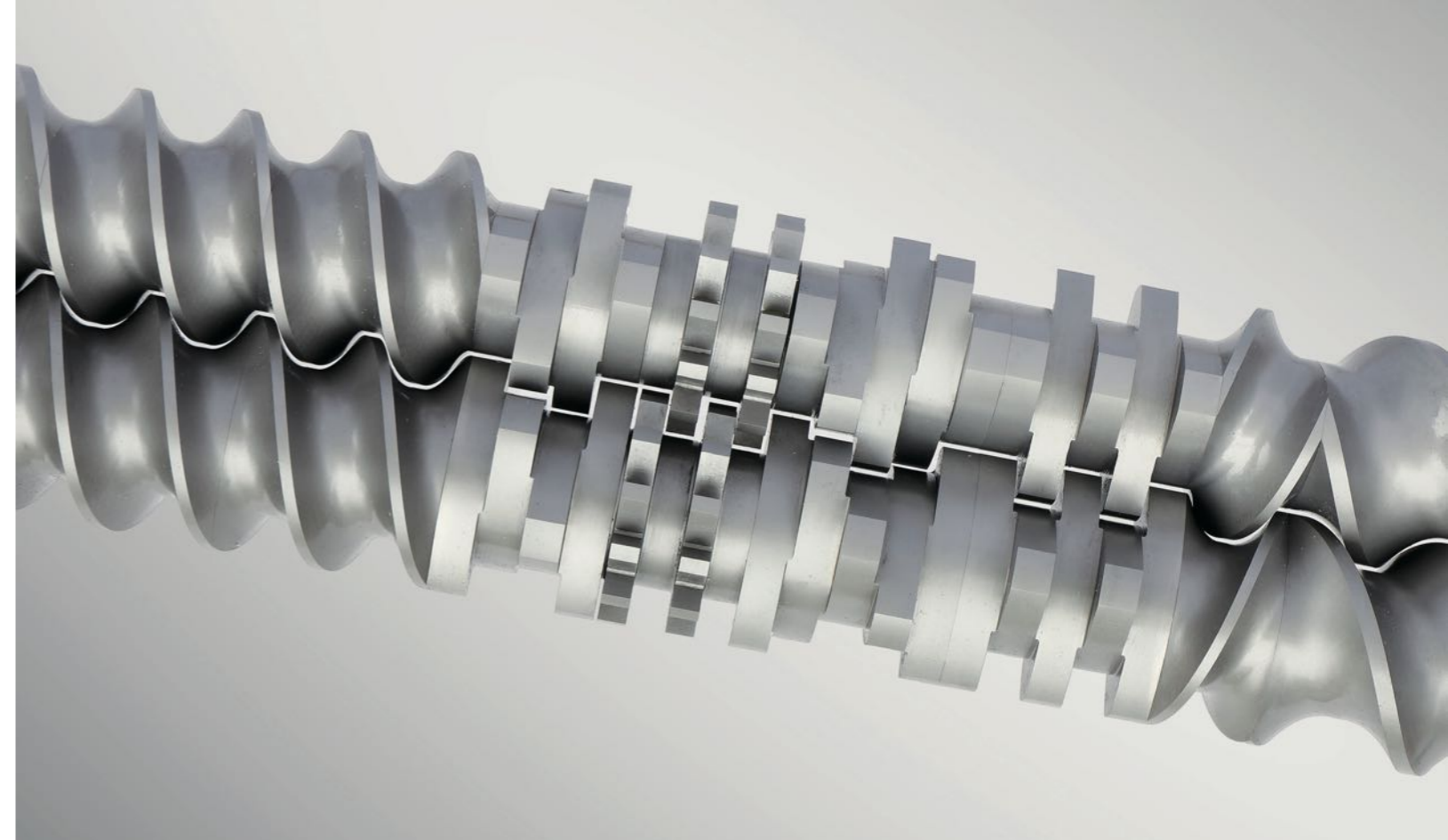
#### Direct Extrusion

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



#### PET Recycling & Extrusion

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



# SAT COMPOUNDER

■ Features ■ Applications ■ Material ■ Tandem ■ Data sheet ■ Jumbo compounder ■ UWP



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Walk The Talk



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 **4000** 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.

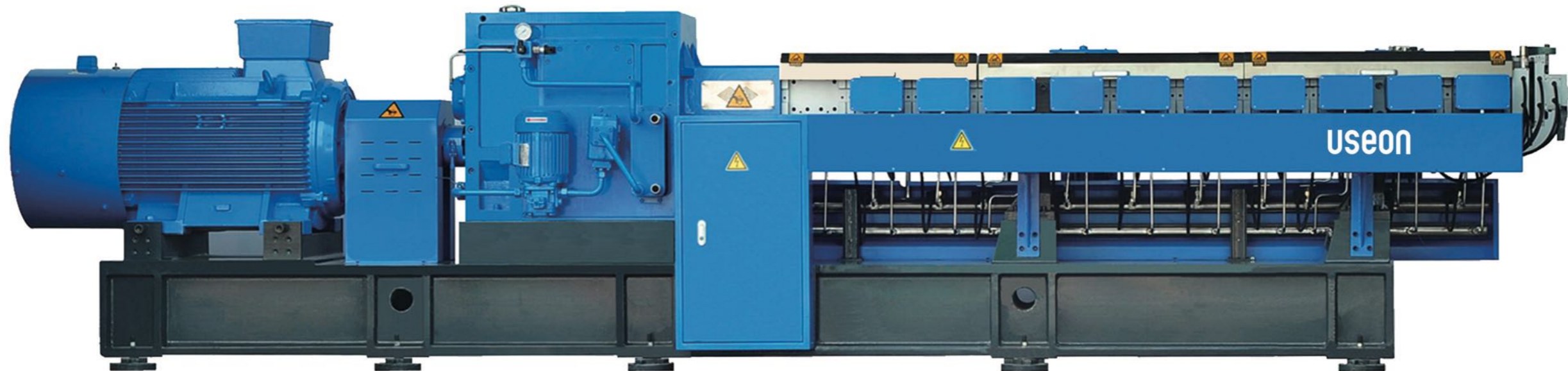
**S-Safety**--stability creates productivity. Safety provides stability. SAT series are designed on the basis of sufficient safety protection both in mechanical and electrical ways.

**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  $13 \text{ Nm/cm}^3$  that can make the polymer extrusion process with less energy, yet better quality.

## SAT-A MILESTONE OF USEON

SAT series stands for USEON 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 80. The degassing or vacuum system and side feeders can be incorporated into SAT system easily. It provides the optimal cost-effective investment.

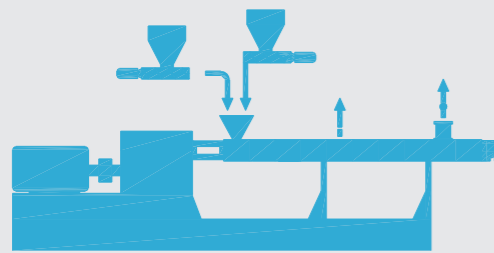


New SAT can achieve more delicate processing tasks, precise process control can meet complicate and sophisticate processing purposes. Better dispersion, more accurate temperature control and higher throughput have been integrated and optimized further.

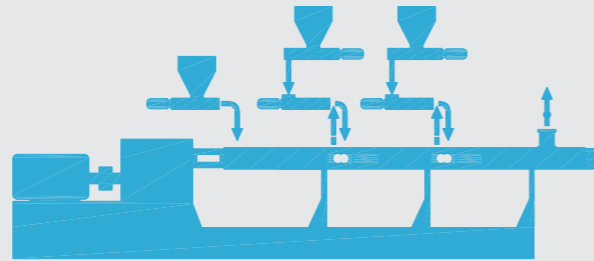
SAT authentically explains one-for-multiple. More powerful gearbox, more precise screw elements endow SAT more flexible processing range and wider operation window. We also provide individual solution according to customized requirements. Variety of modular screw elements, barrels, melt filtration and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

The procedural steps in compounding include:

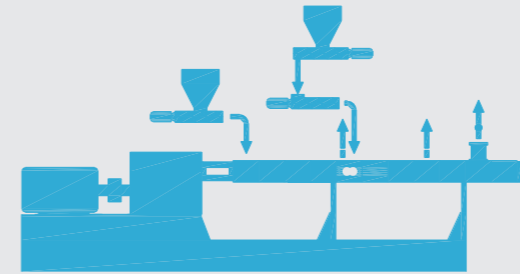
Metering > Feed intake and conveying > Melting > Dispersing/Homogenizing > Degassing > Pressurization > Filtering > Pelletizing > Packing



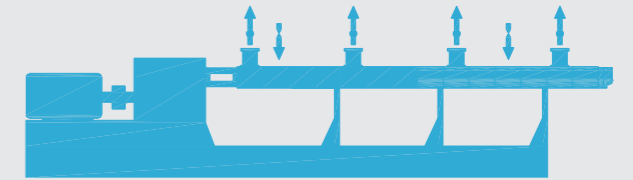
Plasticizing and Alloying



Filling and Reinforcing



Masterbatch Production



Reactive Extrusion and Degassing



#### Filler/Color MB

- ▶ Carbon black
- ▶ TiO<sub>2</sub>
- ▶ Color pigment
- ▶ Mono MB for fiber
- ▶ Filler (CaCo<sub>3</sub>/BaSO<sub>4</sub>/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 (SiO<sub>2</sub>/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
- ▶ Silicon rubber
- ▶ Polymerization (PI/PC/POM/PMMA)

#### Other Applications

- ▶ Direct extrusion for sheet
- ▶ Powder paints
- ▶ Food Extrusion
- ▶ Devolatilization (PMMA/PP/EPDM/SBS)



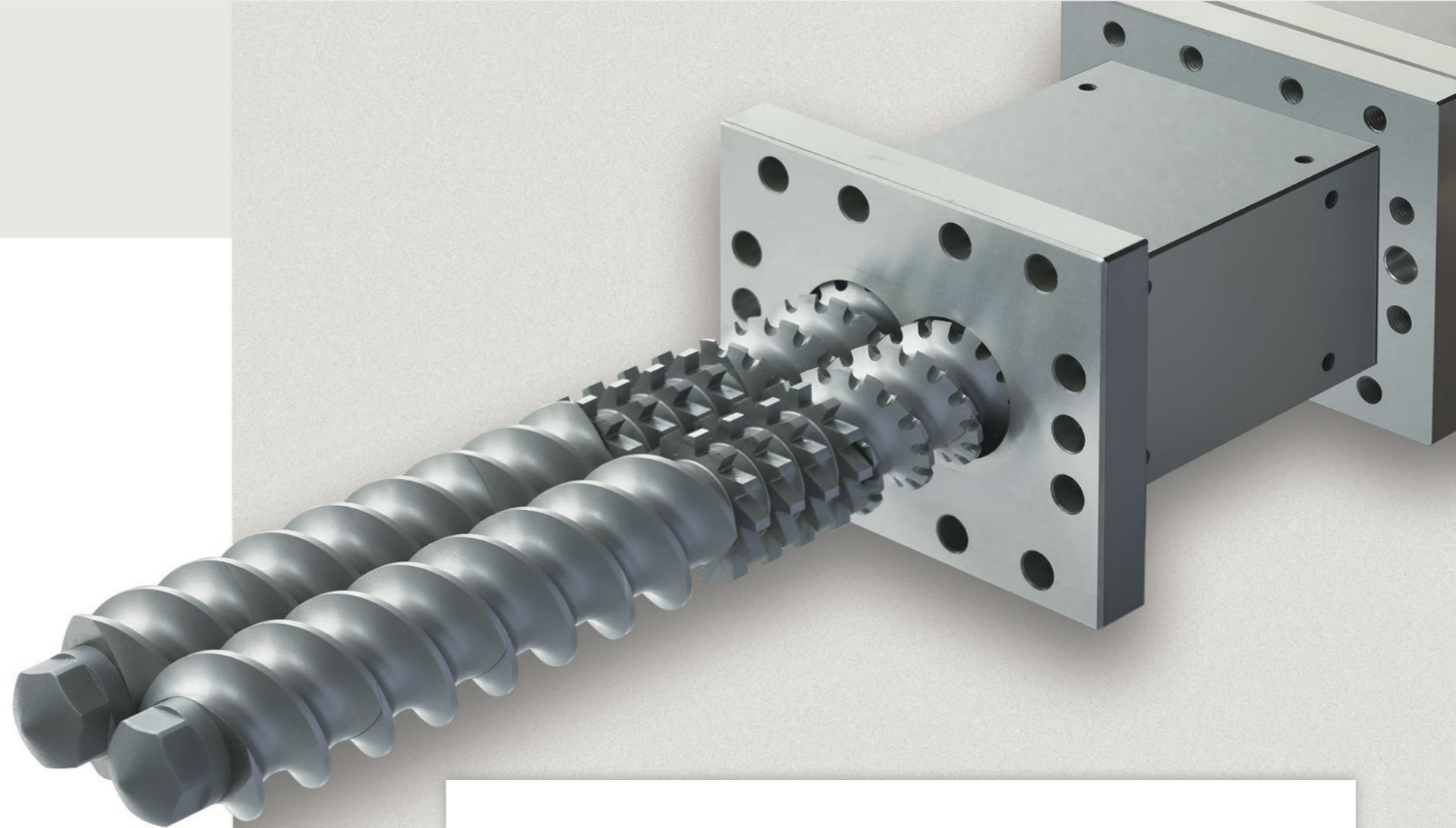
## SCREW ELEMENTS

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).

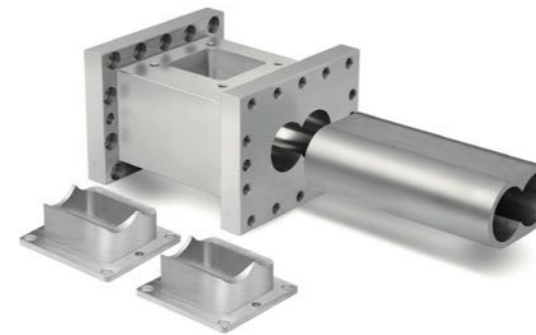
The ratio of outside diameter and inside diameter determines the free volume. SAT series extruder feature the excellent self-wiping functions. Combining with screw torque and free volume, the Do/Di of SAT is optimized at 1.55 that provide sufficient torque while remain enough free volume.

Except various screw geometry, we supply several materials of screw elements for different processing purposes. We also can configure different screw materials in different processing sections 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 bi-metal 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
Cr12MoV	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		



## 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.



## TDY COMPOUNDER

### Counter-rotating Twin Screw Extruder-Specially for Reaction and Devolatilization

In reaction and devolatilization extrusion, USEON has a long tradition and wealthy 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



## 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

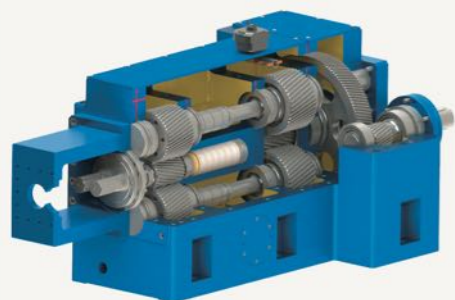
## TECHNICAL DATA SHEET

### 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 <sup>3</sup>	11	11	11	11	11	11
Screw Length L/D	28 ~ 70	28 ~ 70	28 ~ 70	28 ~ 70	28 ~ 70	28 ~ 70
Throughput kg/h	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	600	600	600
Motor kW	110	160	250	400
Specific Torque Nm/cm <sup>3</sup>	10	10	10	10
Screw Length L/D	32 ~ 64	32 ~ 64	32 ~ 64	32 ~ 64
Throughput kg/h	400 ~ 600	600 ~ 1000	1000 ~ 1600	1800 ~ 2500



Gearbox for twin screw extruder



Gearbox for triple screw extruder

### 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 <sup>3</sup>	6	6	6	6	6	6
Screw Length L/D	28 ~ 70	28 ~ 70	28 ~ 70	28 ~ 70	28 ~ 70	28 ~ 70
Throughput kg/h	70 ~ 120	130 ~ 220	200 ~ 350	400 ~ 600	700 ~ 1000	900 ~ 1200

### Tandem Series

Model	Dia. mm	rpm	L/D	Motor kW	kg/h
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

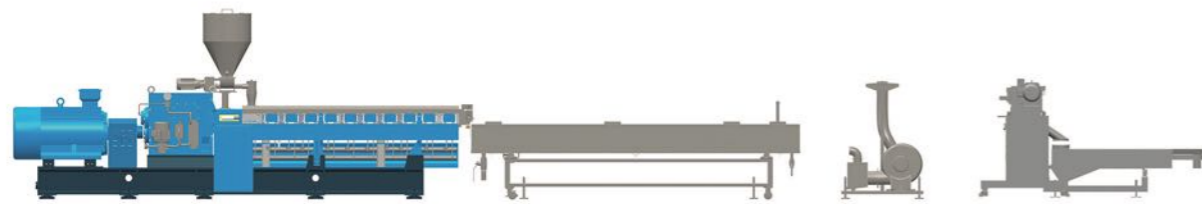
### Lab Series

Model	Dia. mm	rpm	L/D	Motor kW	kg/h
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.



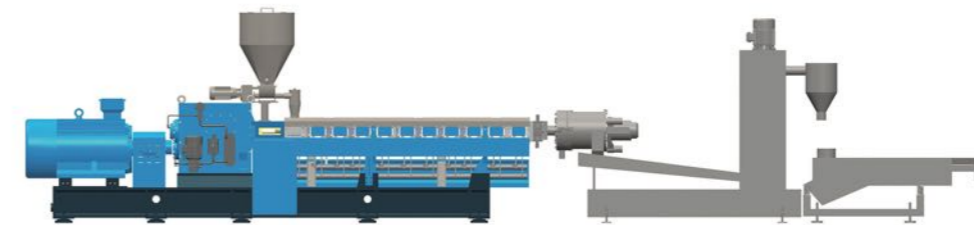
### Air Cooling Die Face Pelletizing System

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.



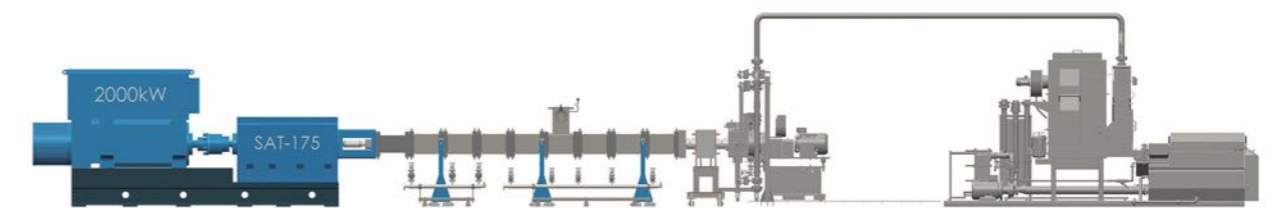
### Water Ring Pelletizing System

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 throughput is huge.





## SAT JUMBO COMPOUNDER



USEON provides the Jumbo extruder for huge capacity polyolefin compounding and pelletizing comparable to the world's top equipment suppliers and spare parts service for imported equipment. The maximum throughput reaches up to 60 t/h. Our supply scope covers from automatic raw material conveying and feeding 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.



Gearbox

Clutch

Barrel



Screw

Venting port

Diverter valve & UWP

### TECHNICAL DATA SHEET

Model	SAT135	SAT150	SAT175	SAT260	SAT330	SAT360
Diameter mm	130	150	175	260	330	360
Speed control	Inverter	Inverter	Inverter	Inverter	Manually	Manually
Motor kW	1250	1500	2000 ~ 3000	3500 ~ 4500	6500 ~ 10000	9000 ~ 15000
Power Supply kV	6 ~ 10	6 ~ 10	6 ~ 10	6 ~ 10	6 ~ 10	6 ~ 10
Specific Torque Nm/cm <sup>3</sup>	12	12	12	12	12	12
Throughput t/h	4 ~ 6	5 ~ 8	6 ~ 10	12 ~ 18	20 ~ 35	35 ~ 60



SAT360 Conveying element

SAT175 Kneading element

SAT360 Barrel



USEON machine at Clients' site

Model: SAT175  
Motor power: 2000KW  
Capacity: 70KTA  
Material: PP



Model: SAT175  
Motor power: 2000KW  
Capacity: 50KTA  
Material: HDPE



Model: SAT260  
Motor power: 3150KW  
Capacity: 120KTA  
Material: PP



## UNDER WATER PELLETIZING SYSTEM

USEON independent innovated complete set of underwater pelletizing system, includes from diverter to classifier. Underwater pelletizing system is good for most of polymers. Comparing with other pelletizer, underwater is more compacted which is obvious when the throughput is huge.

### Application

- High throughput pelletizing (1~60 t/h)
- Micro-beads, such as color or functional masterbatch with better dispersion
- Beads containing blowing agents, such as EPS, EPLA, ETPU
- Soft or adhesive material, such as TPR/TPE/TPU, EVA base hot melt adhesive



Die head (oil heating)



Hot oil heating system



Hydraulic knives feeding and locking head



Pelletizer



Melt pump → Screen exchanger → Diverter



Dewater and water circulation system

### 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 on 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.



### Technical Specification

Model	UWP300	UWP500	UWP1000	UWP2000	UWP4000	UPD250	UPD300	UPD400
Hole No.	8 ~ 10	20 ~ 30	40 ~ 80	100 ~ 160	200 ~ 400	600 ~ 800	1000 ~ 2000	2000 ~ 3000
Knife No.	4 ~ 6	6 ~ 8	8 ~ 12	10 ~ 16	16 ~ 18	16 ~ 22	16 ~ 24	20 ~ 40
Knife moving	Manually	Manually	Manually	Manually	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Die heating	Electrical	Electrical	Electrical	Electrical	Oil/Steam heating	Oil/Steam heating	Oil/Steam heating	Oil/Steam heating
Water flow m <sup>3</sup> /h	10 ~ 15	15 ~ 20	25 ~ 40	40 ~ 50	60 ~ 80	100 ~ 250	350 ~ 500	5000 ~ 900
Throughput	50 ~ 300kg/h	200 ~ 700kg/h	1 ~ 2 t/h	2 ~ 3 t/h	4 ~ 8 t/h	10 ~ 20 t/h	20 ~ 35 t/h	35 ~ 60 t/h

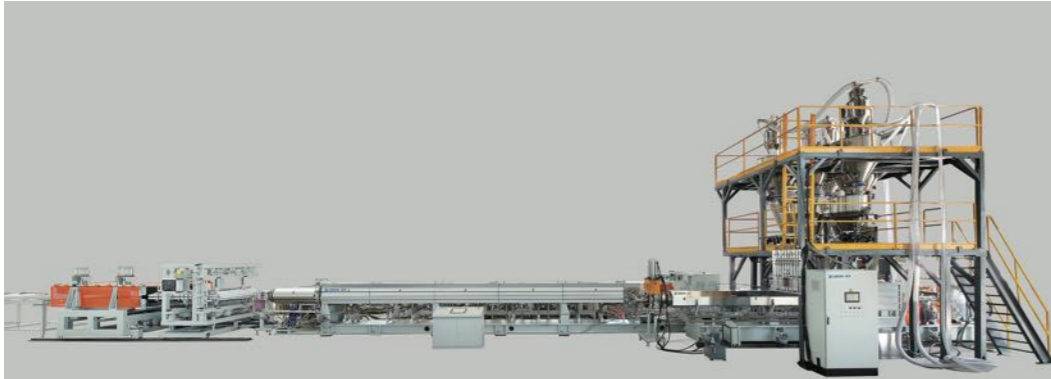




## SPECIAL APPLICATIONS



Graphite EPS Beads



XPS/PET Foam Board



Sheet 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.

