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Plastifizierungstechnik

Twin Screw Extuder

KMD Plastifizierungstechnik GmbH
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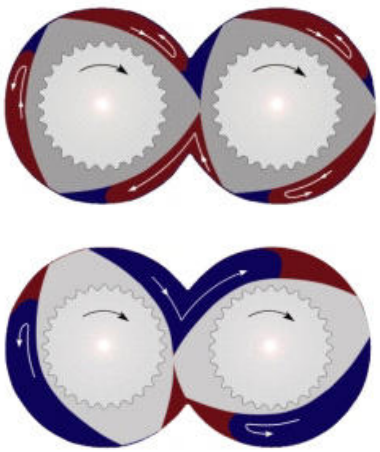


Twin Screw Extruder

The special structure of our Twin-screw Extruder brings great benefits in various compounding applications, it offers a significant increase in dispersing results with a lower cost comparing to the commonly used technologies.

The machine concept originates from the requirements of particle size and distribution in fibre applications. To ensure the product quality, the processing parts of our machine technology is optimized for increased shear and elongational loading of the materials.

Our philosophy

Focusing on improving the quality of our customer's products and on boosting their competitiveness, we deliver a satisfactory solution to all application requirements.

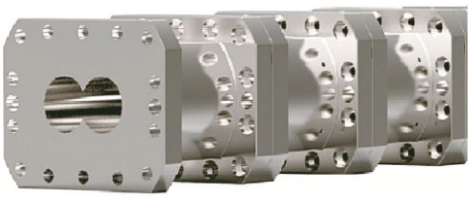
Kneading. Mixing. Dispersing

We focus in the Kneading and Mixing between the plasticized materials and other materials so that the complete Dispersing of such materials can be achieved.

Application fields

A wide range of applications can be considered for Twin-screw Extruder. Including material modification and chemical synthesis of polymeric materials, Dispersing of Nano-Material, Food and Medical industry and etc.

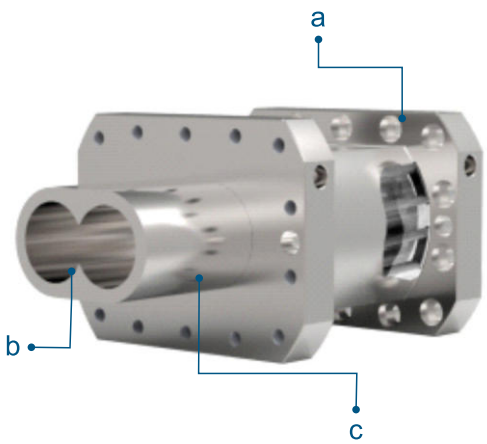
Each high-precision barrel is built from cylinder elements with compact size and efficient usage of space. These fabricated units provide high precision, good compatibility and outstanding dimensional stability under thermal loading.



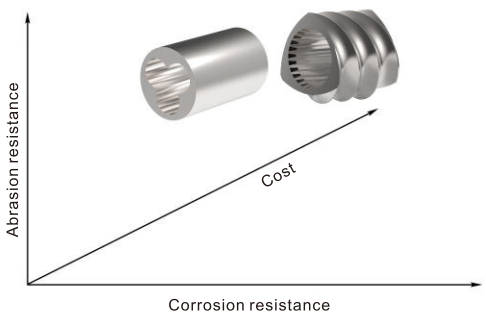
a. High corrosion resistance material not only ensures clean surfaces of the barrel, but also prevents the formation of rust deposits, which might clog up the water channels.

b. While protecting barrel and screws against damages, rounding between each bore also prevent unwanted contacts to avoid overheating of the material.

c. Inner sleeve material can be chosen according to the requirements and is replaceable when worn out. Enables the barrel to have a prolonged lifespan.



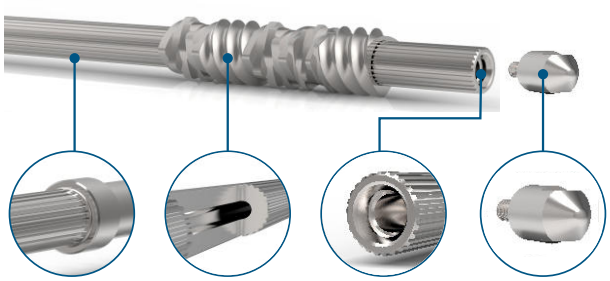
To find the best screw element material, we determine the optimum between wear resistance, corrosion resistance and costs.

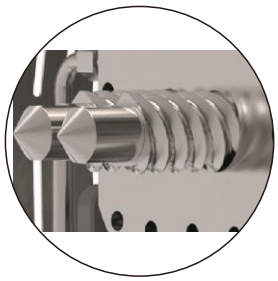


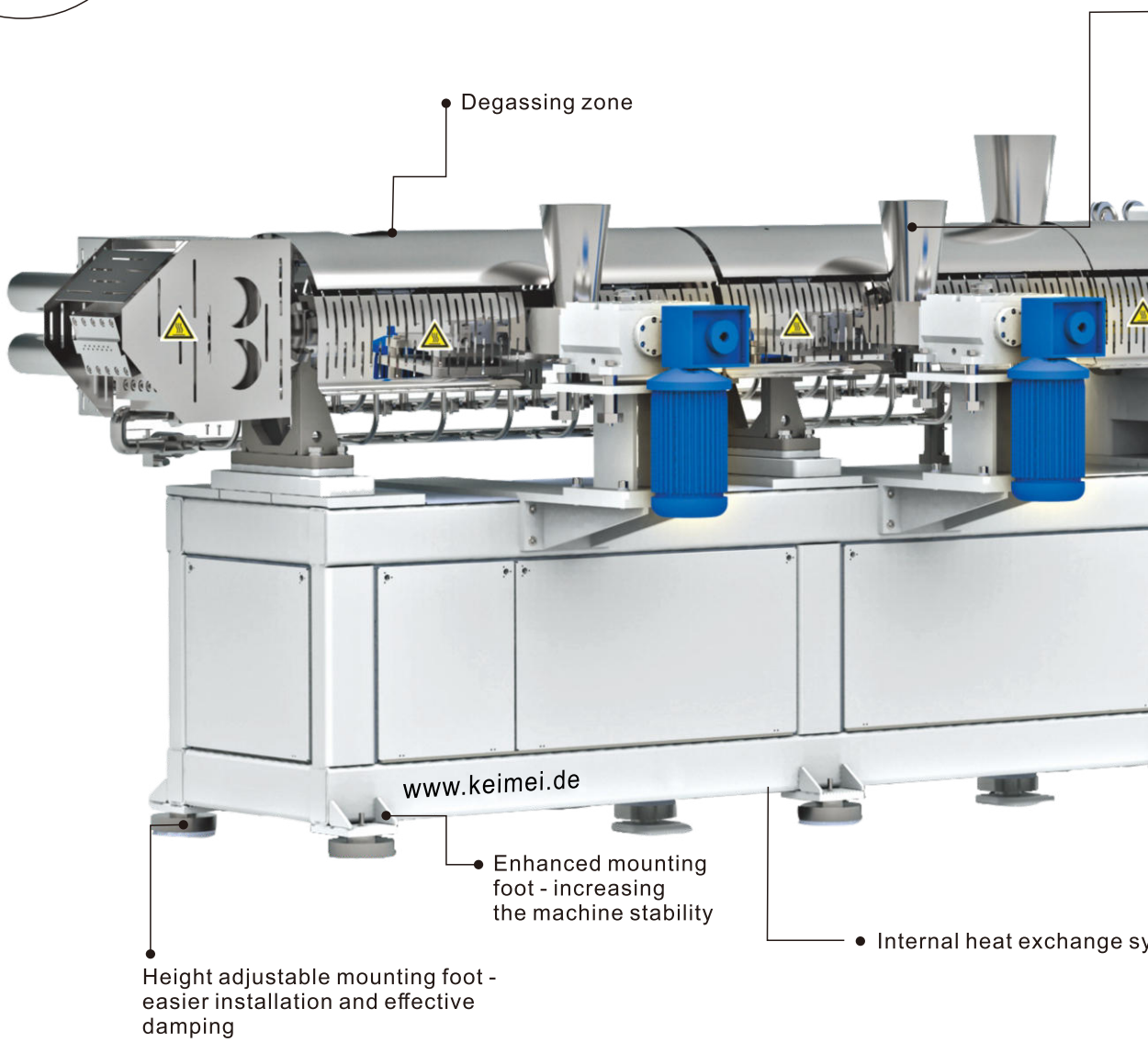
The key to strength: an integrated shaft shoulder for increased torque resistance.

Compact and effective internal water temperature control, permitting cooling of the screw core can be chosen according to needs.

Special bimetallic structure provides independent compensation for thermal expansion of the core shaft and screw elements.






Degassing zone
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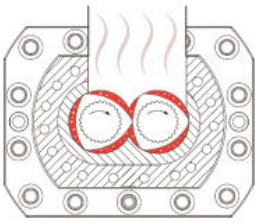
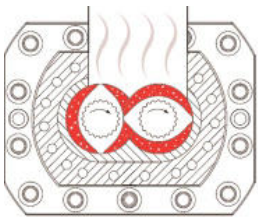
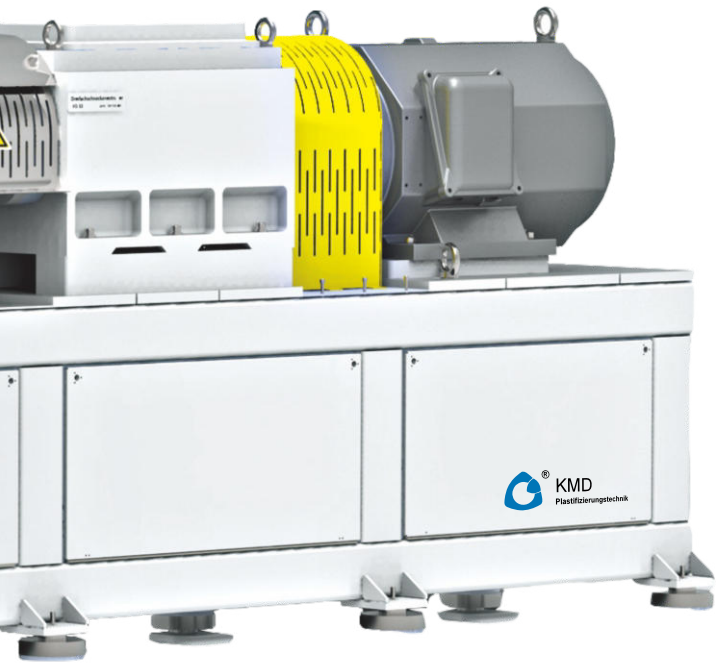
Enhanced mounting foot - increasing the machine stability
Internal heat exchange sy
Height adjustable mounting foot - easier installation and effective damping





Side feeder

Comparing a three-start twin-screw extruder to a version with two-start in the degassing zone, an increased functional surface area and a lower channel height significantly improves degassing. The same situation will occur at the feeding zone.



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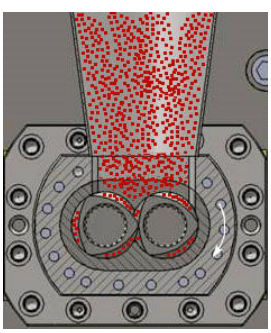
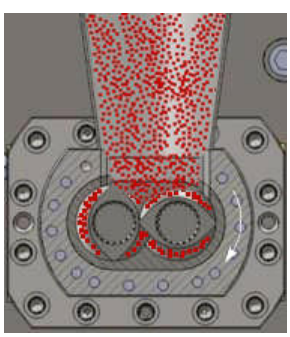
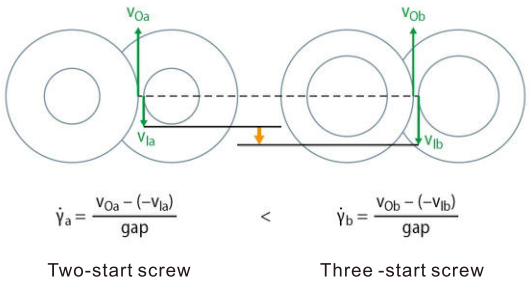
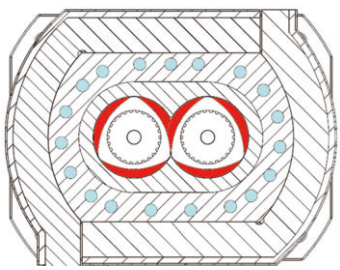






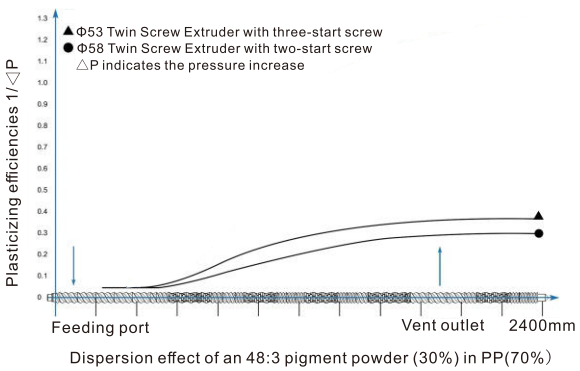
With the same outer diameter, screws with three-start flights compared to them with two-start flights result in higher inner screw diameters, due to geometrical contexts. Therefore, the circumferential velocities at the inner diameter, with the same gap size and rotational speed, lead to a higher velocity gradient between screw flight Vo and root V_I and thus higher shear rates $\dot{\gamma}$.

This context is shown simplified in a schematic diagram on the left.



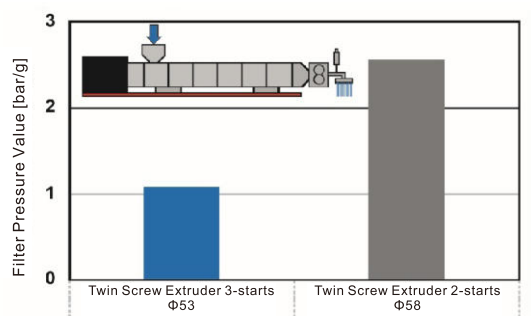
Uniformly distributed cooling channels and heating elements are accurately adjusted to the target processing temperature in each barrel segment.

A curved structure was employed to ensure the uniform cooling of the materials.



Dispersion effect of an 48:3 pigment powder (30%) in PP(70%）

Plasticizing result comparisons along the twin-screw extruders with different structures. It also indicates the impact of different L/D ratio of screws, which is aimed to be used as a selection reference.



Due to the 6-start flights, the highest shear rates are well distributed over the channels' cross section, thereby increasing the dispersion significantly.

Excellent kneading & mixing of materials leads to a great dispersing efficiency.

Twin Screw Extruder

Technical Data

Model	KT-12	KT-20	KT-38	KT-53	KT-67	KT-96
Screw Diameter [mm]	11.7	20	38.3	52.9	66.5	95.5
Screw L/D Ratio	26-60	24-60	30-60	30-60	30-60	30-60
Screw Rotational Speed [rpm]	500	640	600	800	800	800
Power Main Motor [kW]	0.25-0.55	1. 5-3	18.5-30	55-220	90-450	160-800
Power Electric Heating [kW]	1-2.5	3.7-9.5	10-26	27-48	28-52	50-95
Max. Output [kg/h]	1.0	8	70	450	720	1600
Barrel Cooling Type	Distilled Water					
Power water pump (internal cooling circuit) [kW]	0.12	0.37	0.37	0.55	0.75	1.5
Cooling Water Consumption (external) [m³/h]	0.2	0.4	0.8	1.0	1.5	3
Vacuum Venting System (optional)						
Vacuum Pump Type	Liquid-ring Pump					
Max. Air Flow [m³/min.]	0.15	0.15	0.4	0.4	0.8	1.5
Final Vacuum Pressure [MPa]	0.095	0.095	0.095	0.095	0.095	0.095
Power Pump Motor [kW]	0.55	0.55	1.5	1.5	2.2	4
Water Consumption [m³/min.]	0.3	0.3	0.3	0.6	0.75	1.0
Melt Filter System (optional)						
Screen Change Mode	Hydraulic, Continous Double Piston					
Power Hydraulic Unit [kW]	–	–	2.2	3	3	3
Feeding System (optional)						
Feeder Type	Twin Screw					
Power Feeder Motor [kW]	0.12	0.2	0.55	1.5	2.2	4
Motor Control Mode	Frquency Inverter					
Max. Feeding Input (PP) [kg/h]	2	10	100	500	800	2000
General Size, L x W x H (L/D= 48) [m]	1.2x0.35x0.58	1.75x0.72x1.5	4.2x0.72x2.2	5.42x0.72x1.4	6.45x0.86x1.6	8.1x1x1.7

The data presented in this brochure shows a current status, please contact our sales department for further information.

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