ALL YOU NEED IS

poex

co-rotating twin screw extruders

Milestones

2006

Researches were done with the thoughts of spare parts production for twin screw extruders

2007

Polimer Teknik was established as a company for manufacturing twin screw extruder and spare parts when there was no existed manufacturer on this field in Turkey at 17th of Sept. 2007.

2008

First machinery production: PTLE T25 co-rotating twin screw extruder

The project about application the flow analysis technique of positron emission particle tracking for investigation of polymer flow and mixing behaviour within industrial twin screw processes PEPT-FLOW Project including Turkish Plastics Industry Foundation (PAGEV), German Association of the Plastics Converters (GKV), British Plastics Federation (BPF), Italian Plastics and Rubber Machinery Association (AMAPLAST) and Polimer Teknik was started.

2009

First export to Russia.

2010

Polimer Teknik was a member of the board of Turkish Plastics Industrialists' Association (PAGDER) for three years.

2011

The poex brand has launched.

ALL YOU NEED IS poex

2012

Moved to Cali Industrial Zone for growing the production capacity.

2013

Compliance to EUROMAP standardization.

2014

TUBITAK - International Industrial R&D Projects Grant Programme - EUREKA Creating Innovative Composite Product Technologies Convenient in Many Industries with Recycling of Waste Synthetic Textile Plastic Products

2015

Has to TS EN ISO 9001: 2008 Quality Standardization Certification

2019

Istanbul and Moscow branches have gotten included to the market.

2021

Involved in Green and Digital Transformation Project, which is carried out under the leadership of the Turkish Machinery Exporters' Association (MAIB) as a part of sustainable production and digitalization.

2022

SAP enterprise resource planning software implemented to workflows for more effective management of the process.

ABOUT US

powder coating

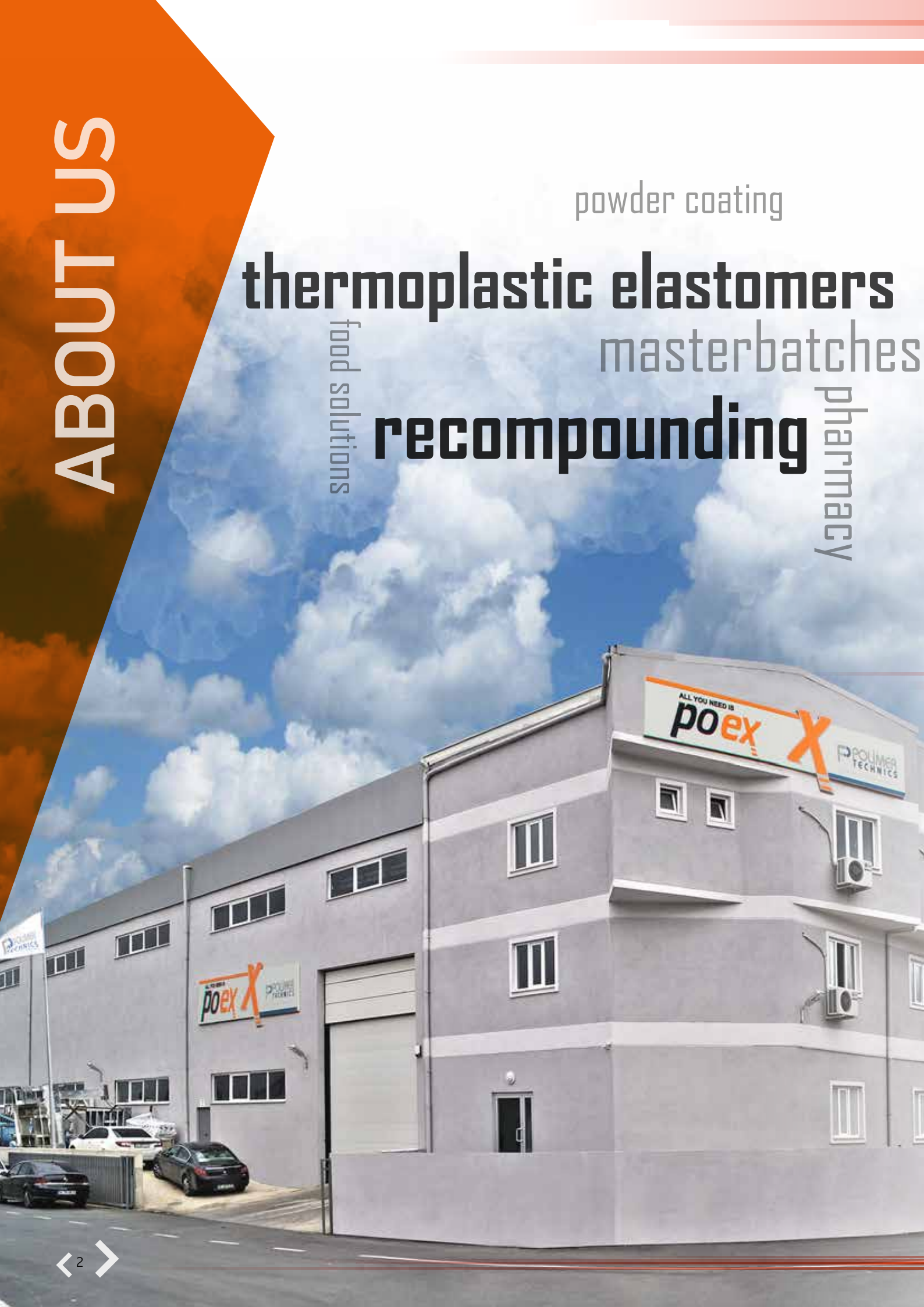
thermoplastic elastomers

masterbatches

food solutions

recompounding

pharmacy



engineering plastics

masterbatches

powder coating

recompounding

pharmacy

elastomers

thermoplastic

food solutions

recompounding

masterbatches

engineering plastics

Polimer Teknik was established in 2007 in order to manufacture twin screw extruder, extruder equipments and its spare parts when there wasn't any manufacturer on this field in Turkey. In a short span of time, Polimer Teknik achieved being a well-known and demanded company.

Polimer Teknik has a young and dynamic structure which has given new meaning to the market with its innovative and visually esthetic extruders by using modern technology and the best qualified equipment.

Polimer Teknik that earnestly pays attention on new product development and support the product quality with scientific tests has many patented equipment at its field. Since Polimer Teknik was established, it has attained an important place in the market by exporting the machines to many countries.

In the past years, Polimer Teknik has presented a name as a trademark poex and has made the brand a reliable trademark with the best quality as well.


poex
poex

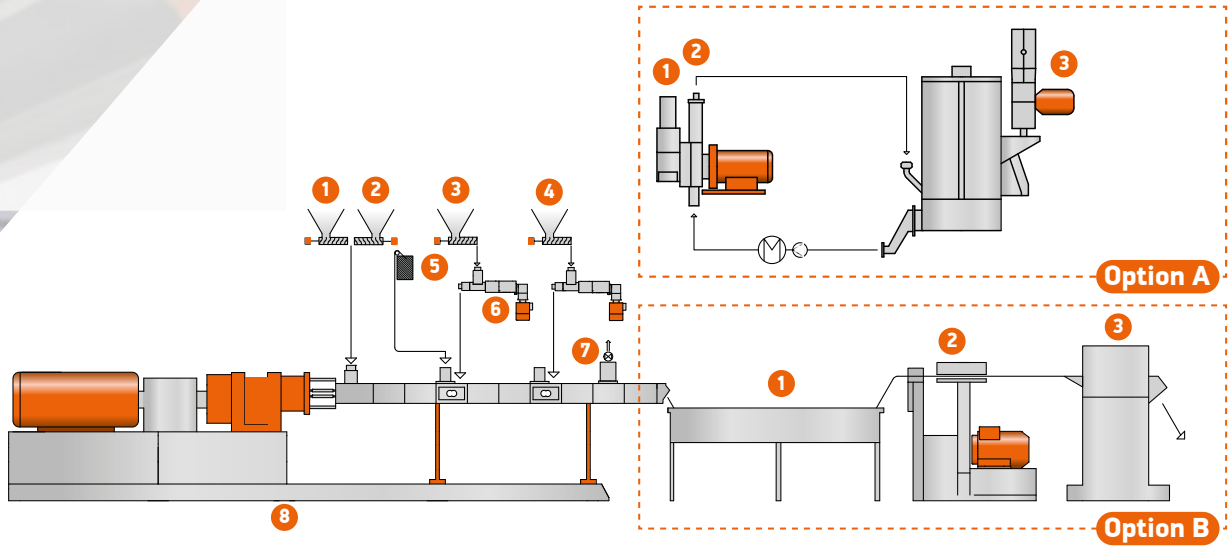
ENGINEERING PLASTICS

poex serves excellent solutions for **compounding tasks**

Plastic compounding is a process for adding fillers and additives materials into a molten plastic base to produce a material with desired qualities. Additives and modifiers may result in plastic with a particular color, texture, strength, and so on.

One of the main application fields for poex twin screw extruders is compounding. The excellent incorporation characteristics for additives, filling and reinforcing materials creates products that are used in many fields.

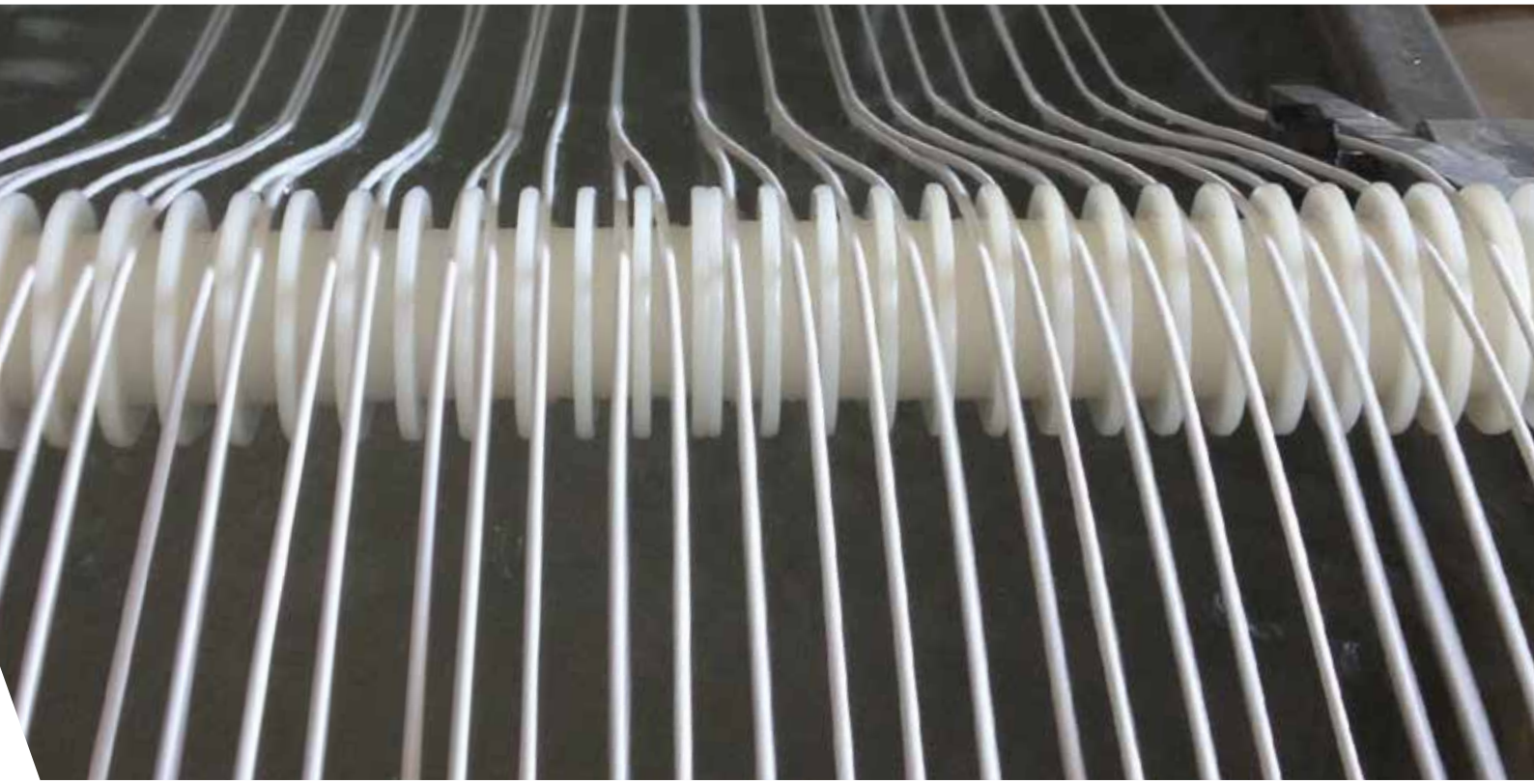
In applications where parameters such as breaking strength or impact resistance are relevant, the polymer is reinforced with fibers. Glass fibers are used predominantly, but other fibers can also enable linkage with polymer carrier substances such as carbon and natural fibers. This addition and linkage of the fibers to the polymer chains produces materials with high break and impact resistance, which also convince with their low weight.



1- Polymer
2- Additive
3- Fillers
4- Chopped Textile Glass
5- Glass/Carbon Fiber Rovings
6- Side Feeder
7- Vacuum Degassing
8- poex Twin Screw T Series Extruder

A1- Diverte Valve
A2- Underwater Pelletizer
A3- Centrifugal Dryer

B1- Cooling Bath
B2- Strand Dryer
B3- Strand Pelletizer



Some polymers are;

- Polyolefins (HDPE, LDPE, LLDPE, PP etc.)
- Styrenic polymers (e.g. ABS, PS, SAN etc.)
- Engineering thermoplastics (PA, PET, PBT, PC, ABS, POM, PMMA, PPO, PPS, PTFE, LCP, PEEK, etc.)
- Heat & shear sensitive materials (XLPE, thermoplastic rubber, foamed polymers etc.)

Special applications are;

- Manufacturing nano-composites by mixing coating silicates into PP or PA.
- Protective incorporation of micro hollow glass beads into PP, PA etc.
- Long-fiber compounds in the direct process
- Mixing wood plastic composites
- Degassing of polymer compounds with up to 80% share of fillers
- r-PET bottles or PA carpet fiber waste
- Preparing high-temperature polymers such as PEEK.
- Filtering of PC melts for optical applications.

MASTERBATCH

poex provide systems for custom color and color concentrate **“masterbatch”** application

Masterbatch is a solid or liquid additive for plastic used for coloring plastics (color masterbatch) or improving other properties of plastics (additive masterbatch). Masterbatch is a concentrated mixture of pigments and/or additives (20-90%) encapsulated during a heat process into a carrier resin which is post-cooled and cut into a granular shape. Masterbatches are available in a wide range of carrier resins: **PE, PP, PS, SAN, PMMA, ABS, PET, PBT, PLA, PA, PES, EVA, TPU** and bio-resins.

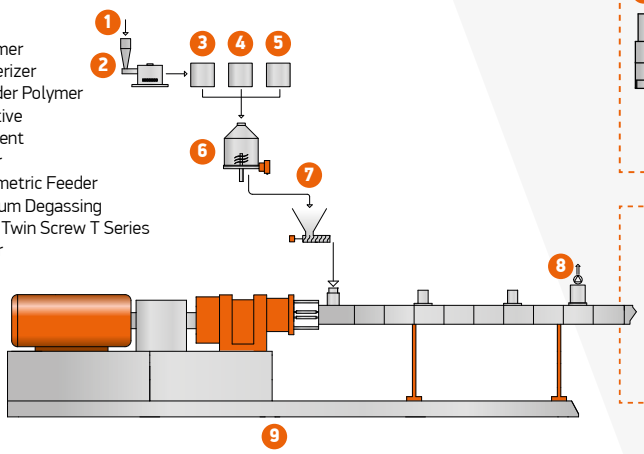
The aim of masterbatch production is the optimum incorporation of additives in the polymer matrix. The fine and powdery bulk material often tends to agglomerate and therefore it is difficult to work with.

Co-rotating twin screw extruder is the main component of a masterbatch line. It fulfills the task of homogenizing, dispersing (splitting of the agglomerates), wetting and distributing the pigments/additives/fillers in the polymer matrix. This is done either via premix or split feed or a color-matching process.

Premix

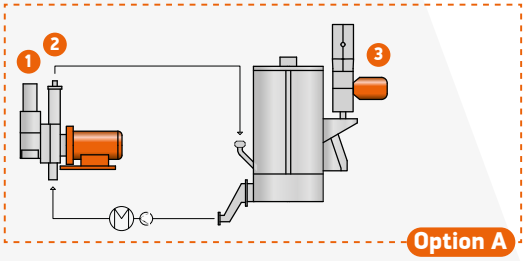
A premix consisting of polymer, pigment and dispersion additives is fed to the extruder. Normally, these premixes are produced in batches in a previous mixing step.

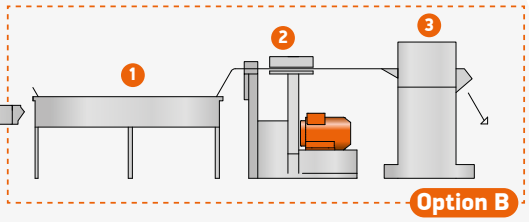
1- Polymer
2- Pulverizer
3- Powder Polymer
4- Additive
5- Pigment
6- Mixer
7- Volumetric Feeder
8- Vacuum Degassing
9- poex Twin Screw T Series Extruder



A1- Diverte Valve
A2- Underwater Pelletizer
A3- Centrifugal Dryer

B1- Cooling Bath
B2- Strand Dryer
B3- Strand Pelletizer

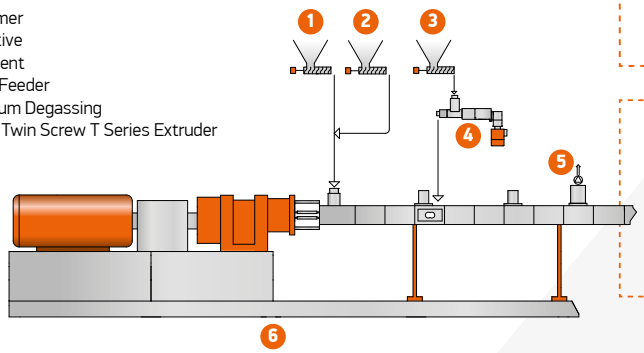




Split Feeding

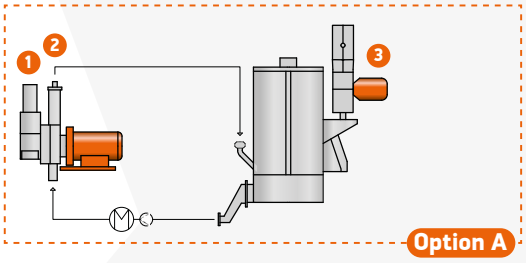
The formulation components aren't fed into the extruder at once and together. Pigments, fillers and dispersion additives added via one or two gravimetric feeders, if needed, dispersion aids are added via one or two side feeders.

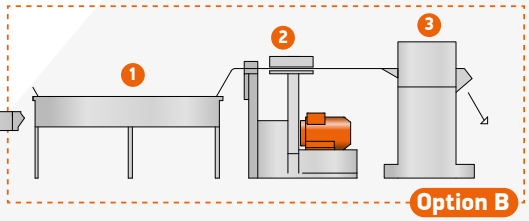
1- Polymer
2- Additive
3- Pigment
4- Side Feeder
5- Vacuum Degassing
6- poex Twin Screw T Series Extruder



A1- Diverte Valve
A2- Underwater Pelletizer
A3- Centrifugal Dryer

B1- Cooling Bath
B2- Strand Dryer
B3- Strand Pelletizer

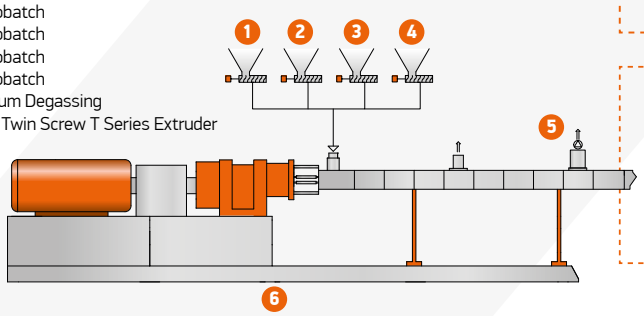




Color-matching

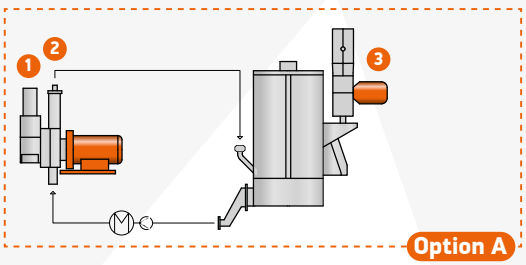
In the color-matching process, different monobatch granules can be fed into the extruder as premixed or separately. The twin screw extruder plasticizing these granules with heat and pressure, turns them into a homogeneous mixture. Thus, a masterbatch is produced with specific colors, tones, and hues. PE, PP but also PA and PET base polymers are commonly used in this process. Gravimetric feeders allow the end product to be produced in a consistent quality.

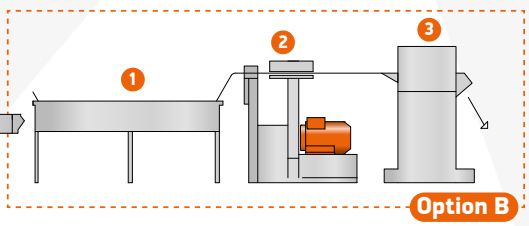
1- Monobatch
2- Monobatch
3- Monobatch
4- Monobatch
5- Vacuum Degassing
6- poex Twin Screw T Series Extruder



A1- Diverte Valve
A2- Underwater Pelletizer
A3- Centrifugal Dryer

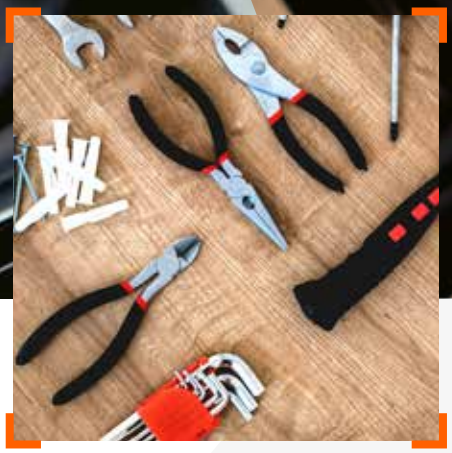
B1- Cooling Bath
B2- Strand Dryer
B3- Strand Pelletizer



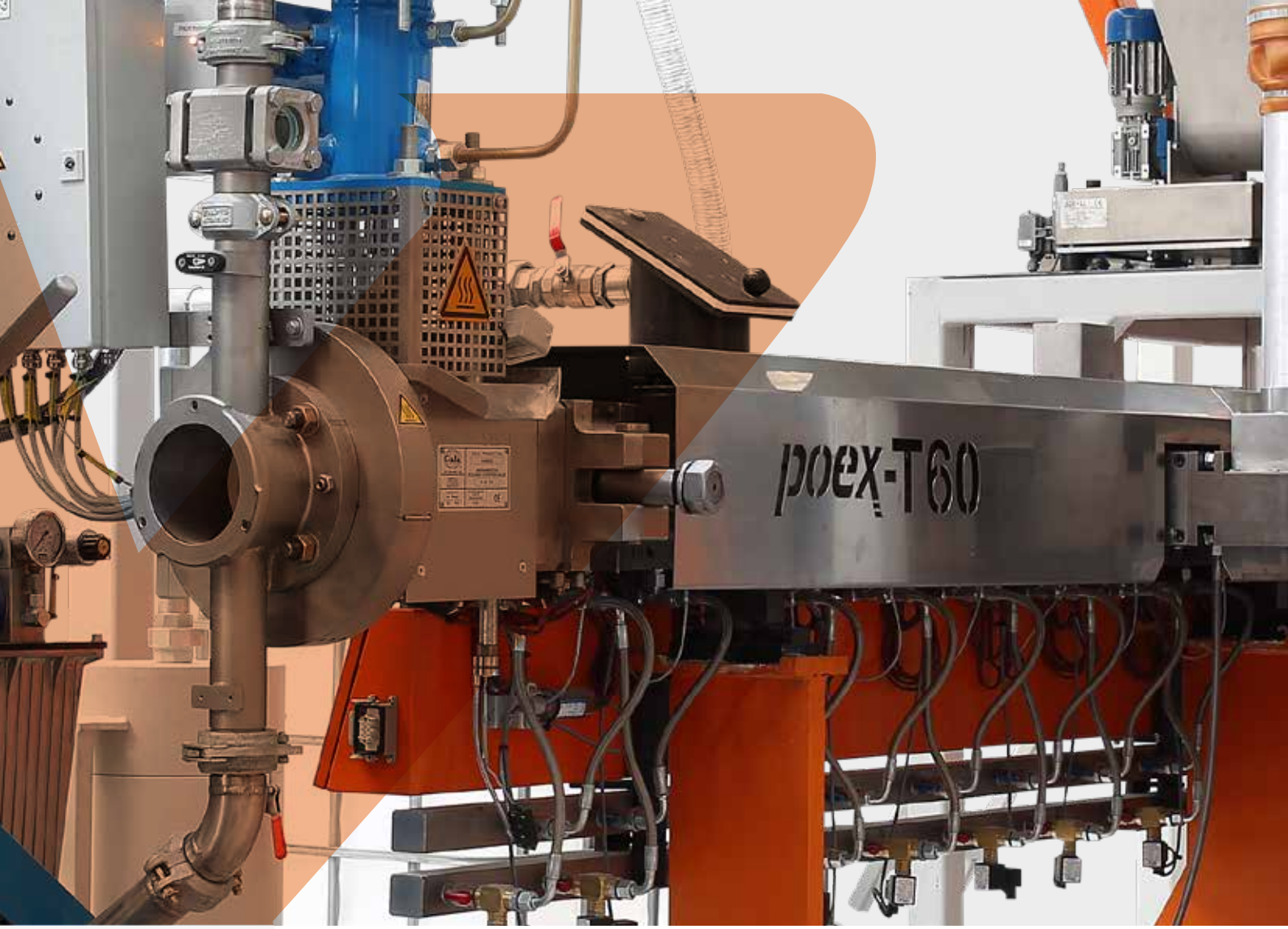


Modern design,
wide formulation range

TERMOPLASTIC ELASTOMERS

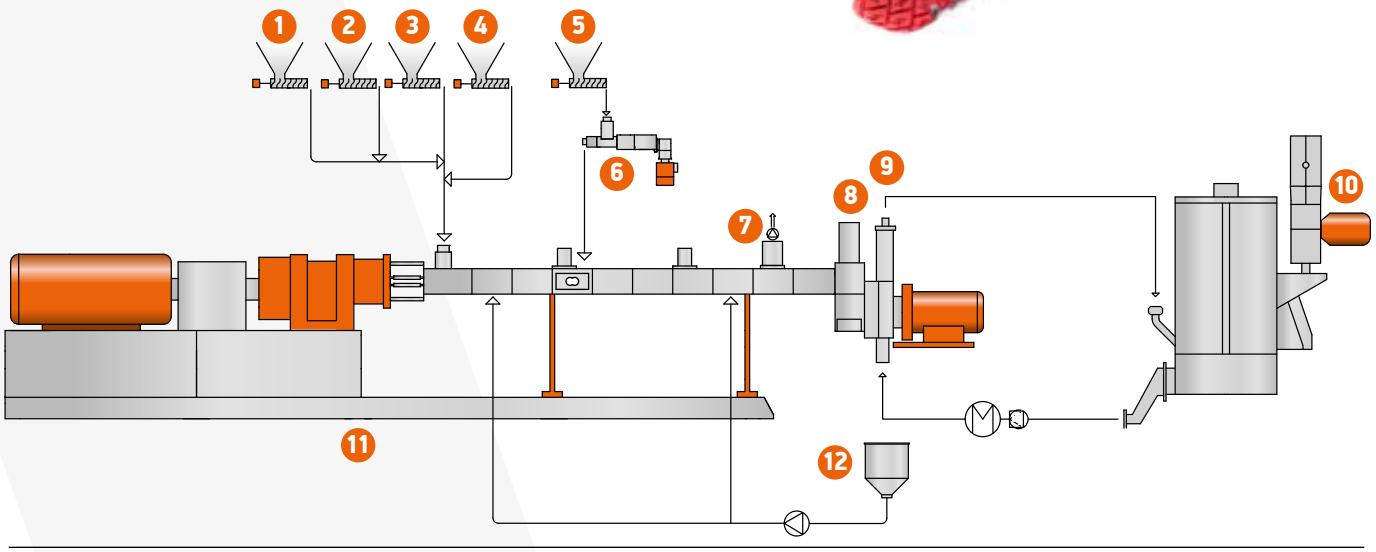


Thermoplastic elastomers are produce in a wide variety of forms and formulations bu using poex extruder systems. The processing stage is followed by heating of semi-finished product to produce final product. Due to their molecular structure, thermoplastic elastomers possess elastic properties combined with thermoplastic processing characteristics. The production possibilities of multifarious different thermoplastic elastomers need for a deeply knowledge of machines and process engineering. Therefore they are ideally suited to compounding on the poex extruders.



Major Thermoplastic Elastomers:

- Styrene Blok Copolymers (TPE-S),
- Thermoplastic Vulcanizats (TPV),
- Thermoplastic Polyuretans (TPU),
- Thermoplastic Polyolefin Mixtures (TPO)



1- Elastomer
2- Thermoplastic
3- Filler
4- Additive
5- Filler (Optional Position)
6- Side Feeder
7- Vacuum Degassing
8- Diverter Valve
9- Underwater Pelletizer
10- Centrifugal Dryer
11- poex Twin Screw T Series Extruder
12- Liquid Feeder

DIRECT EXTRUSION

Beyond compounding, poex extruders can also be used for **shaping in a single process step.**

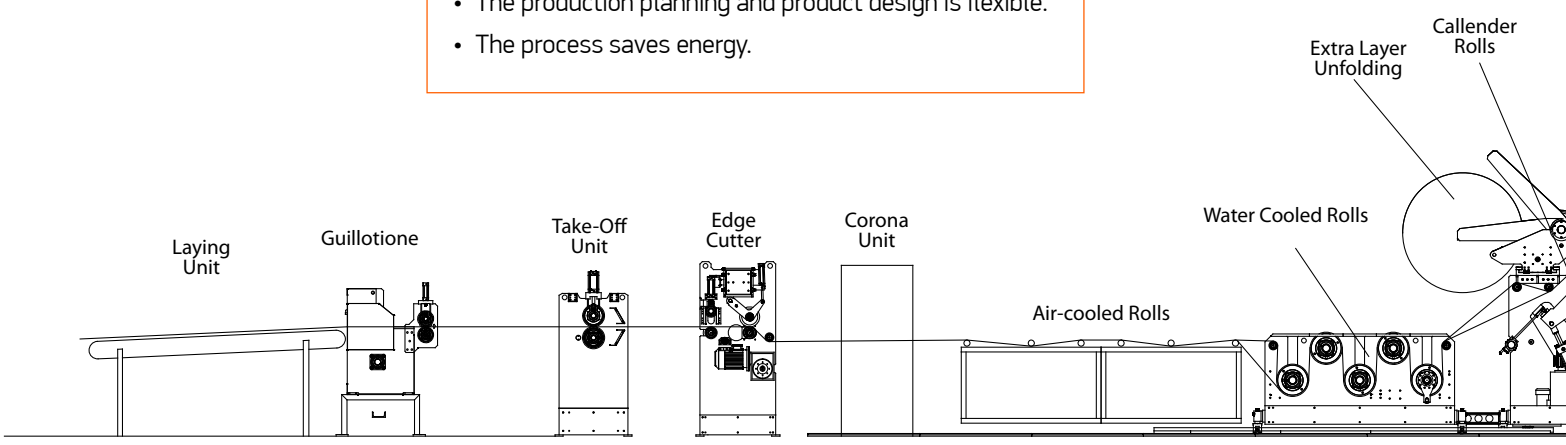
Direct extrusion or in-line compounding enables the production of semi-products and final products such as films, plates, tubes or profiles in one process step. The intermediate pelletizing typical for plastics and other products is omitted in inline compounding, the investment and operating costs and the energy requirements of the production process drop drastically as a result. Some products can only be manufactured by of single-stage direct extrusion.

With direct extrusion, the materials have one less heat and shear history which frequently results in improved mechanical properties of the end product.

Aluminium Composites Panel Production

Advantages

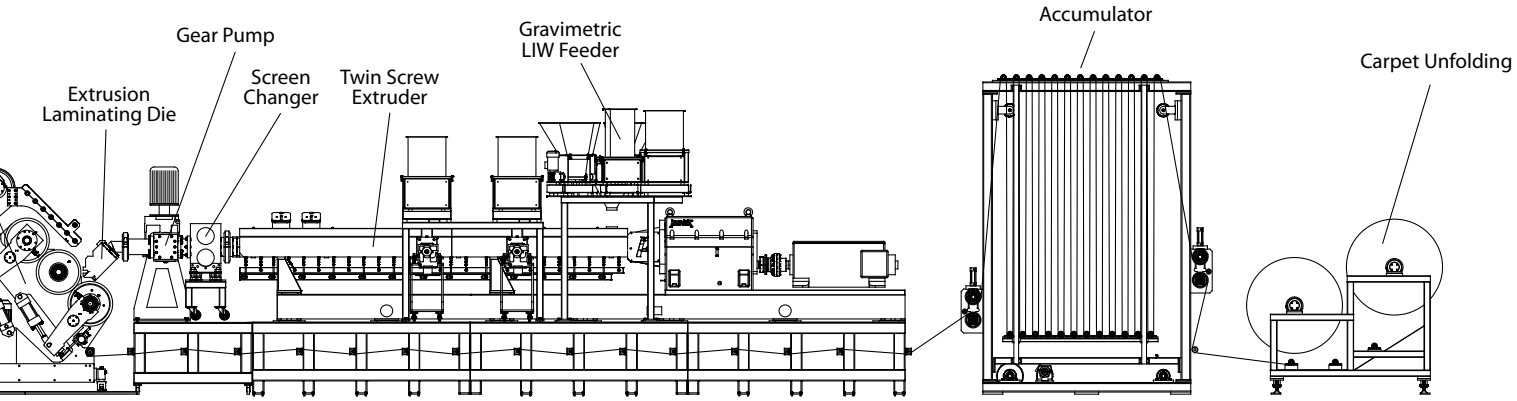
- The pelletizing step is eliminated.
- The polymer has to undergo less heat and shear stress.
- Valuable formulation know-how stay in house.
- The production planning and product design is flexible.
- The process saves energy.



Heavy Layer Production

Line for the production of heavy layers for noise protection in the car interior

Thermoforming Sheet Production Line



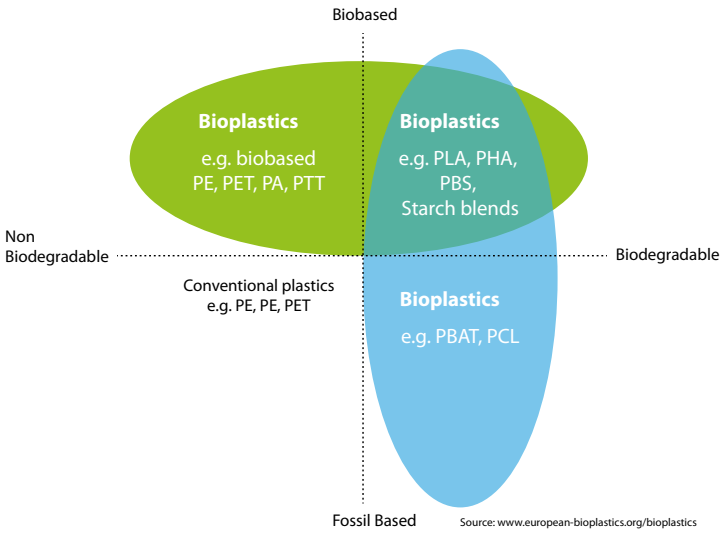
Eco-friendly polymer applications

BIO-POLYMERS

Bioplastics are the plastics which are produced from renewable bio-based raw materials.

Biodegradable and compostable thermoplastic starch (TPS) is mostly produced from carbohydrate-rich plants such as corn, sugar cane or cellulose by means of a kind of plasticizer. In addition, TPS can be successfully blended with a second bio-based polymer such as polylactic acid (PLA), polycaprolacton (PCL), polyvinyl alcohol (PVA) or synthetic polyesters. Consequently, bio-based products are the products which are totally or partly composed of biological or renewable materials.

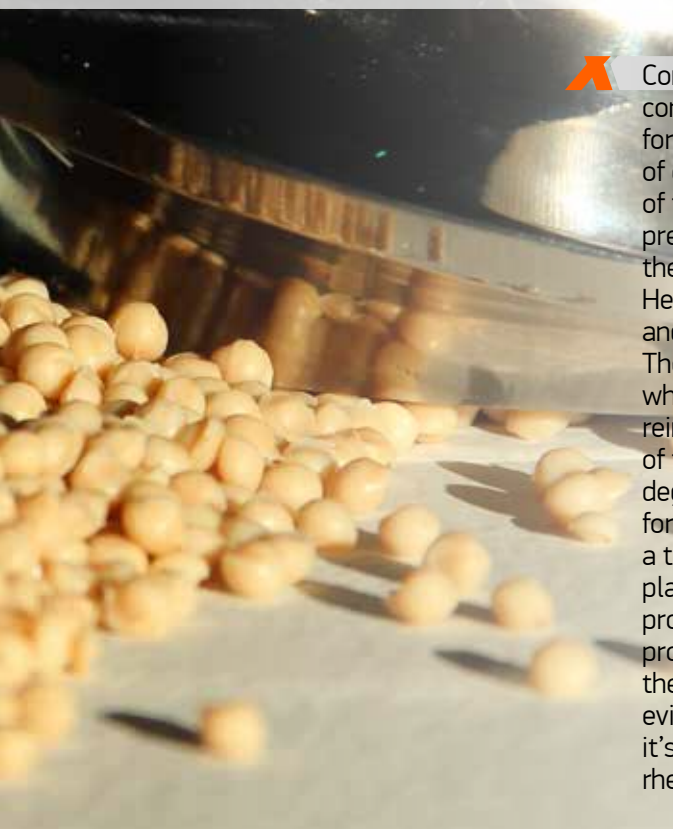
Poex has experience adequately for each of thermoplastic starch production and the design of compounding systems for biodegradable products.



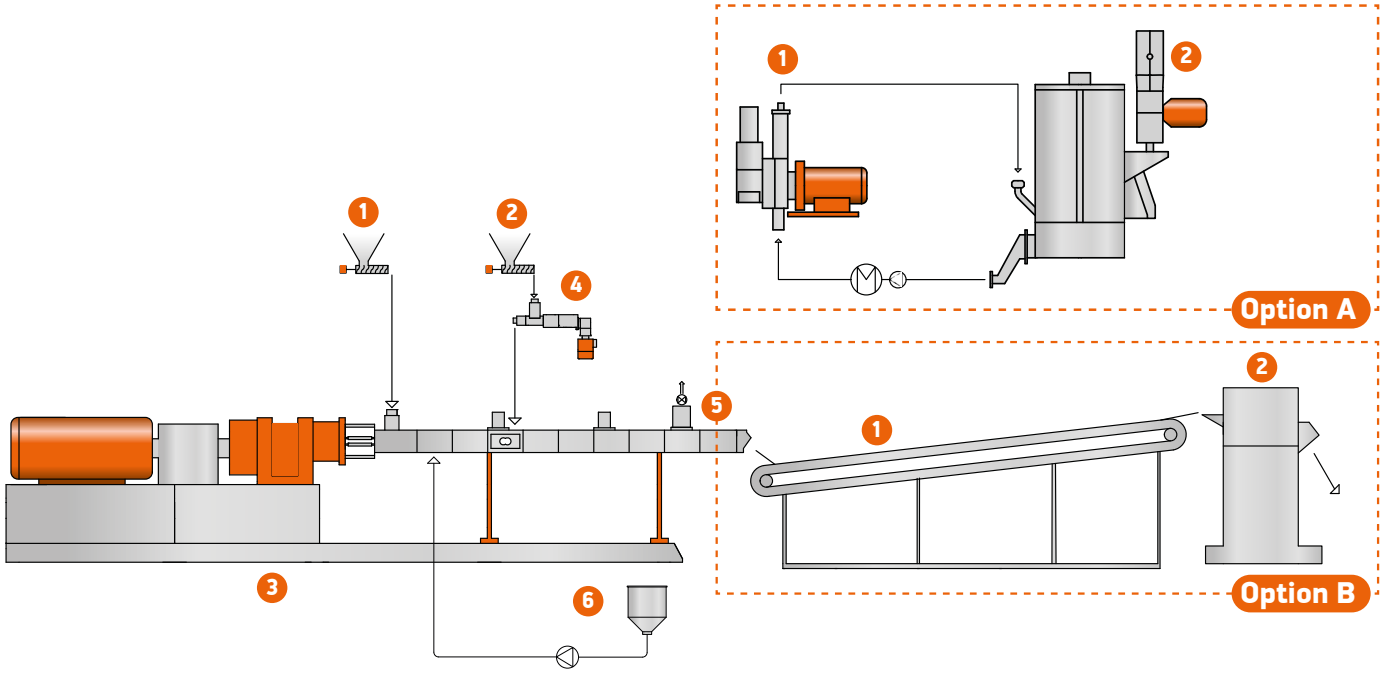
Source: www.european-bioplastics.org/bioplastics

General applications for the processing of biodegradable products

- Production of thermoplastic starch (TPS)
- Compounds of various bioplastic materials
- Compounds of plastics and biological materials
- Granular starch as a filler to improve the biodegradability of commodity plastics
- Pelletizing of PLA and PLA compounds
- Polylactide (PLA), PVOH, synthetic copolyester, PBS, PHA, PCL, CA



Compounding of biopolymers constitutes the first preparation process for the modification of plastics by means of extrusion following the production of the base polymer. Throughout the preparation, characteristic feature of the plastics can be selectively changed. Hereby, it is adapted to the next process and targeted product characteristics. The plastic is melted inside the extruder where it is blended with additives, fillers, reinforcing materials or a combination of them. After homogenization and degassing of the compound, it is formed – usually as strands – by using a tool, then cooled and processed into plastic granules. In the compounding process, numerous effectors arise before processing and during it. Depends on the type of plastic, these factors are evident in variable degrees and affect it's mechanical, thermal, (chemical) and rheological properties as well.



1- Strach/Bio-polymer
2- Other Polymer/Filler (Optianal)
3- poex T series twin screw extruder
4- Side Feeder
5- Vacuum Degassing
6- Liquid Feeder

A1- Dewatering Pelletize
A2- Centrifugal Dryer

B1- Dewatering Pelletize
B2- Granulator

HIGHLY FILLED MASTERBATCH

Up to 80%
$CaCO_3$ filled polyolefins

Highly filled masterbatch contains more than 50% over the weight of filler that are dispersed in a polymer matrix. Poex extruders are able to comprise a very high incidence of fillers, for instance in the filler masterbatch. Filler masterbatches are essentially used to optimize and increase the thoughness, reduce shrinkage and improve the surface appearance of the final product and/or reduce the price of the compound.

Poex compounders with deep-flighted screws are appropriate to achieve better results on production of highly filled compounds due to the screws large free volume. Different process installations will be needed depending upon the type and amount of the filler.

The process in compounders is identified as following steps:

- melting of the polymer matrix
- lubricating the filler with the melt polymer
- dispersion of agglomerates and aggregates
- homogeneous dispersion in the polymer matrix
- homogenization and degassing of the melt

Common usage of inorganic fillers and the features

- **Talcum** - with it's supersoft, high resistivity, low gas permeability, low abrasiveness and high lubricity features gives special surface properties for the final product- is preferably added to the melt polymer through a side feeder.
- **Calcium carbonate ($CaCO_3$)** – with it's cubic, high heat resistant, thoughness and hardness features inside the polymer, aids on enhancing or compensating loss of gloss, mineral modifying (to produce breathable film), functional filling, cost-efficiency, is added through the side feeder and it provides availability in three states as chalk, limestone and marble as well.
- **Barium sulfate ($BaSO_4$)** is in form of rhombic crystals with it's acidic and alkalic resistance and opacity, having a high specific weight-density and perfect sound barrier, is added through the side feeder.
- **Wollastonite** is fibrous and improves tensile and flexural strength, thermal and dimensional stability at elevated temperatures; is added through the side feeder.
- The fillers up to 85% are incorporated into the polymer through side feeders – two or more- in order to achieve larger shares of them. In addition, the higher filler shares require long processing sections between 52 and 60D to ensure that the filler particles are perfectly incorporated into the polymer matrix.

Three important criteria that affect the interaction between the filler and the polymer matrix:

- **Particle structure of the filler**

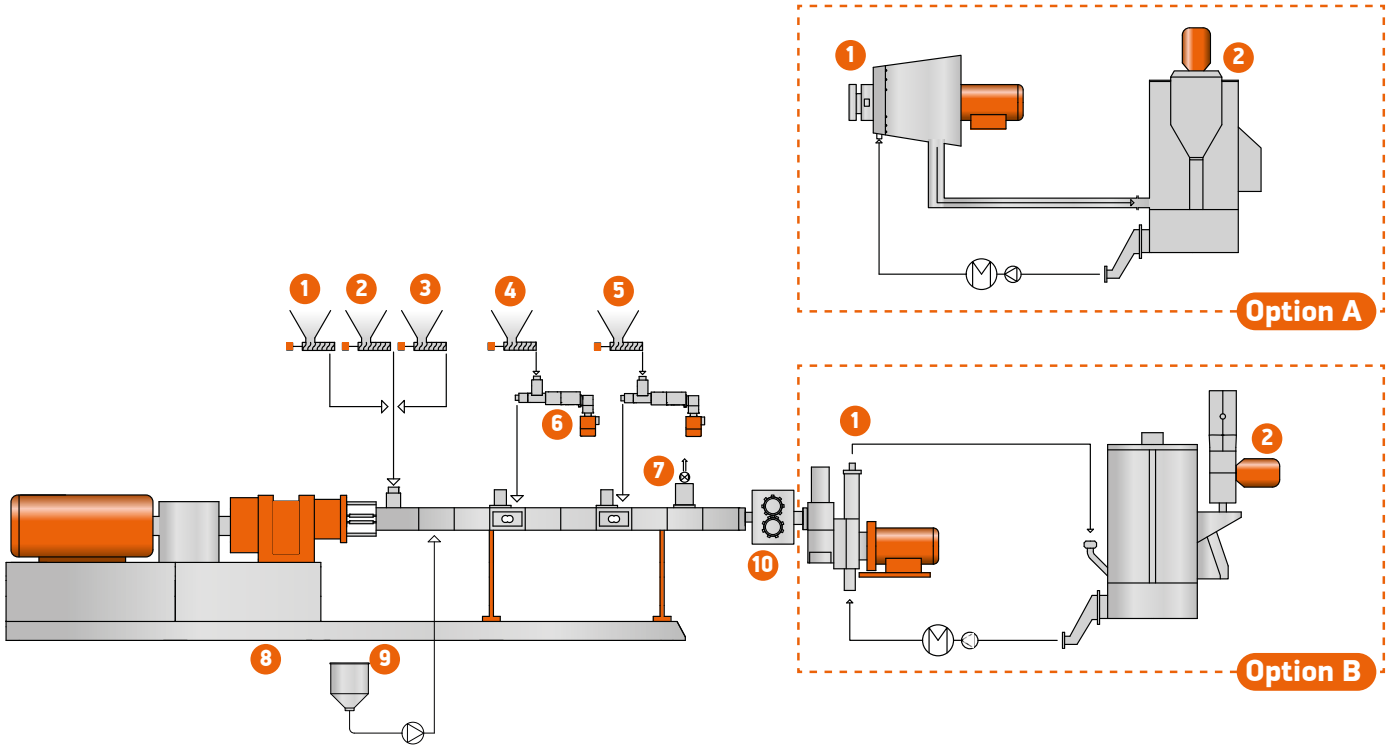
Particles with a small aspect ratio such as CaCO3 or BaSO4 do not improve the tensile strength and tear resistance significantly but improve the modulus of elasticity. Particles with a large aspect ratio such as talcum or wollastonite help improving the tensile strength and tear resistance as well as the modulus of elasticity.

- **Particle size dispersion of the filler**

The behavior of filler particles during process depends on both Van-der-Wals forces acting between the particles (particle sizes > 1 µm) and the dispersive shearing forces in the extruder (particle sizes < 10 µm).

- **Surface of the filler**

The specific surface (m^2/g) indicates the number of adhesion points between the filler and the polymer chains: large surface > numerous adhesion points > better mechanical properties (higher thoughness and surface gloss of the polymer, better tensile strength and tear resistance as well as impact strength). The surface coating is also important because it changes the surface energy: a hydrophilic surface becomes hydrophobic. This hydrophobicity means fewer agglomerates form and the free-flowing property is improved as well. The lubricating is essentially affected by the distance from the surface energies of the particles and the polymer matrix.



1- Polymer
2- Additive
3- Filler
4- Filler
5- Filler
6- Side Feeder
7- Vacuum Degassing
8- Liquid Feeder
9- poex T series twin screw extruder
10- Gear Pump
A1- Dewatering Pelletizer
A2- Centrifugal Dryer
B1- Underwater Pelletizer
B2- Centrifugal Dryer

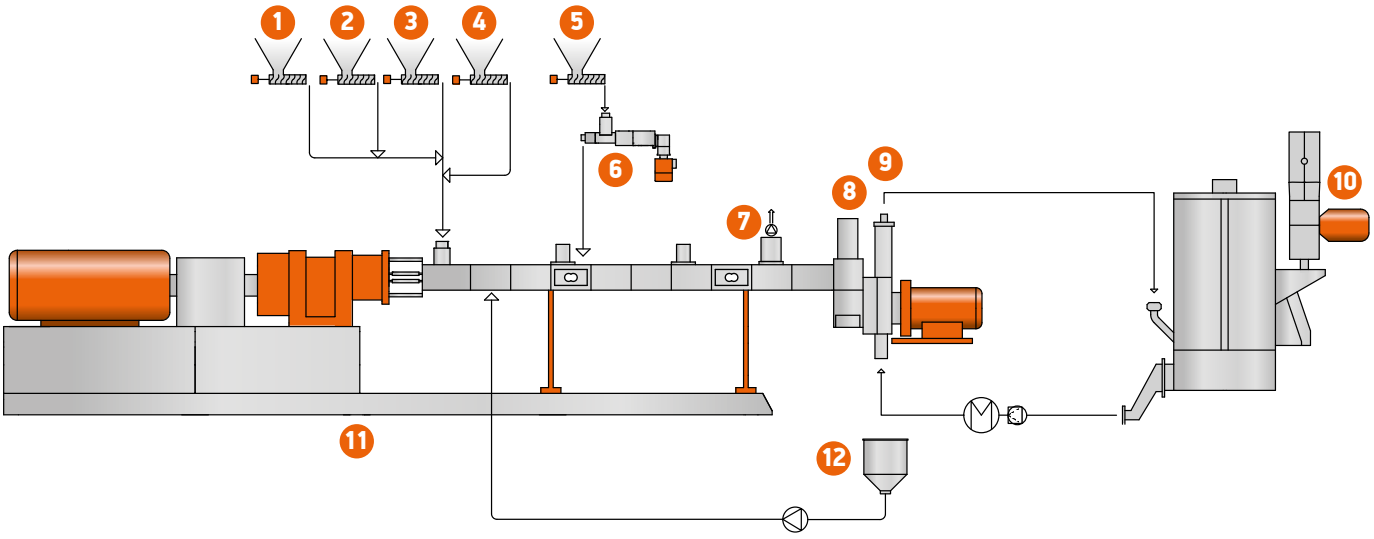
HALOGEN FREE FLAME RETARDANT COMPOUNDS

Safety applications with **flame reterdants**

Halogen Free Flame Retardant (HFFR), Zero Halogen Flame Retardant (ZHFR), Low Smoke Zero Halogen (LSOH), Low Smoke and Fume (LSF) are all names associated with compounds that are used extensively in Aluminum Composite Panels (ACP), Wire & Cables, Flooring and Foam insulation.

These compounds are generally based on polyethylene or copolymers of polyethylene with the addition of mineral fillers to improve flame retardant properties. Their usage is much preferred for the applications of PVC and other halogenated polymers where lower smoke and lower acidic gas evolution are required in case of fire.

HFFR coupling in aluminum composite panel core compounds as well as wire and cable coating are highly mineral-filled compounds such as polyolefin matrices require high concentrations of common flame retardants, ATH or Mg(OH)2. In comparison ATH with Mg(OH)2; ATH has lower degradation temperature (~200°C) and is used with EVA/LLDPE based formulations but Mg(OH)2 (Magnesium Hydroxide) has a higher degradation temperature (~ 340°C) and is used when polypropylene is the base polymer.



1- Polymer
2- Additive
3- Filler (Optianal)
4- Flame Retardant Additive
5- Flame Retardant Additive
6- Side Feeder
7- Vacuum Degassing
8- Inverter Valve
9- Underwater Pelletizer
10- Centrifugal Dryer
11- poex T series twin screw extruder
12- Liquid Feeder

The reaction mechanism of Non-Halogen flame retardants.

Flame retardancy mechanism of mineral fillers

ATH is the most popular flame-retardant filler and works by a different flame retarding mechanism than other halogenated ones. ATH performs two additional functions as filler and as a smoke suppressant. The smoke, generated by burning materials has become increasingly important in the resent times. This is especially true in mass transiportation networks. Halogenated flame retardants produce smoke as a part of their functioning; it is the smoke that helps blowing out the fire. ATH works by a different mechanism that does not produce smoke. The single usage of ATH in a high amount can produce a compound with a too little smoke. When it's used in conjunction with halogenated compounds, the smoke level can be reduced. For efficient flame retardancy, 60-65% of the filler needs to be incorporated to the polymer matrix which concludes the reduction of original mechanical performances. In order to achieve excellent mechanical performance at a very high mineral filling and optimize mechanical performance, dispersion of agglomerates and homogeneous dispersion of ATH in the polymer matrix, it is necessary to increase polymer matrix acceptability of ATH through a unique screw design.

RECOMPOUNDING

RECYCLING + COMPOUNDING = RECOMPOUNDING

poex presents to its customers energy and time-saving innovation with combinations the benefits of recycling and compounding in a single plant. The system produces custom-made recycling compounds for especially high-quality applications.

Twin screw co-rotating recompound extruders can handle all compounding operations with excellent mixing and degassing properties. In addition to the dosage of a wide variety of additives, high amounts of fillers and reinforcing agents can also be mixed. With poex recompound machines, it is possible to process and direct extrusion of PETs; neither the pre-drying of these materials nor the crystallisation and agglomeration of the recyclers are required compared to conventional PET processing techniques.

Some of Advantages

- Capability to improve material performance by adding fillers or any other ingredients.
- Homeogenous mixing of wastes has different melt flow index
- Improved Vacuum Efficiency to has more quality product
- The polymer has to under go less heat and shear stress
- The process saves energy

An excellent laboratory equipment.

LABORATORY SYSTEMS

poex laboratory extruders are distinguished not only by top quality standards and excellent design, but also by their easy compatible operation and highly flexible modular processing system.

Due to the fact that poex T16 and poex T27 requires only little space and can freely be positioned, the user gets the flexibility of a lab machine which can be adopted for batch production as well as for lab research.

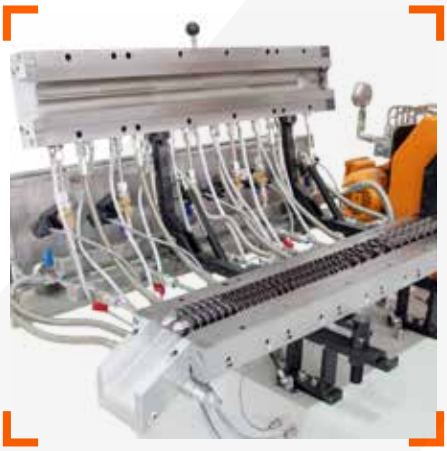
POWDER COATING

Cost-effective powder coating solutions with poex

Constantly increasing cost pressures and the demand for maximum flexibility in the manufacturing of powder coatings require production lines with the highest level of productivity. The development of new products for new fields of application – for example the automotive industry – is progressing well with poex extruders. To meet these high market demands, Polimer Teknik has developed the twin-screw extruders with the largest free volume and at the same time the highest specific torque.

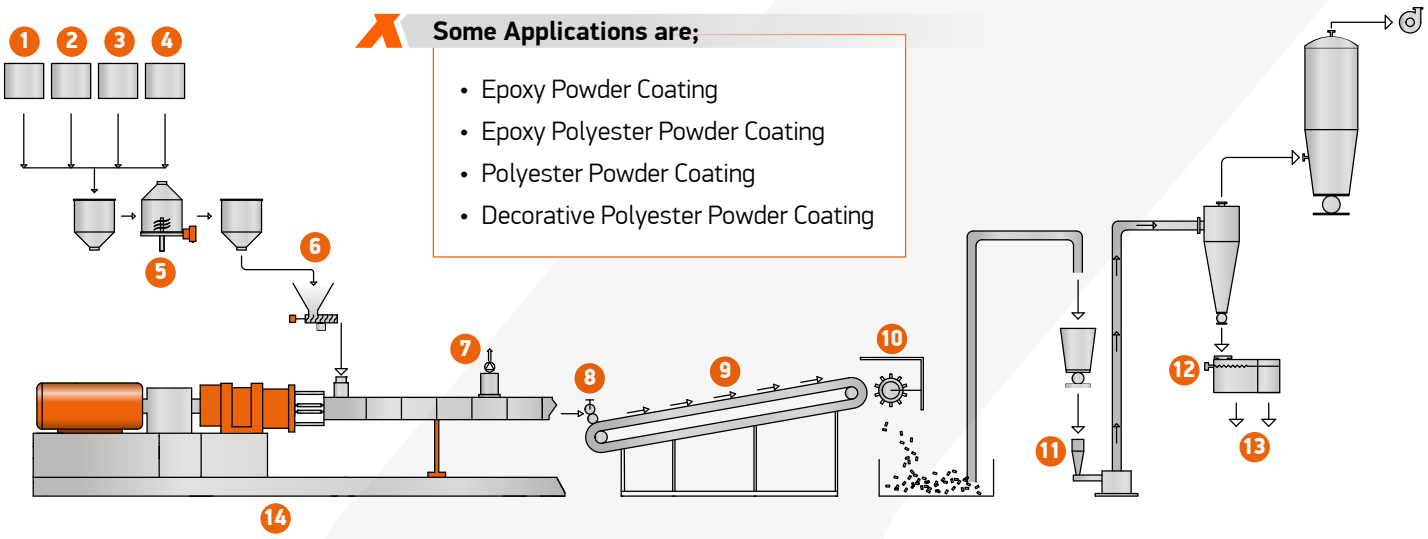
Advantages

- poex extruders produce powder coatings of convincing homogeneity at clearly reduced production costs.
- Improved feeding of fines due to greater flight depth and higher speeds
- Greater flexibility in speed, residence time, and throughput
- Lower material temperatures, thus less product stress and improved product quality, depending on the product and the process



Some Applications are;

- Epoxy Powder Coating
- Epoxy Polyester Powder Coating
- Polyester Powder Coating
- Decorative Polyester Powder Coating



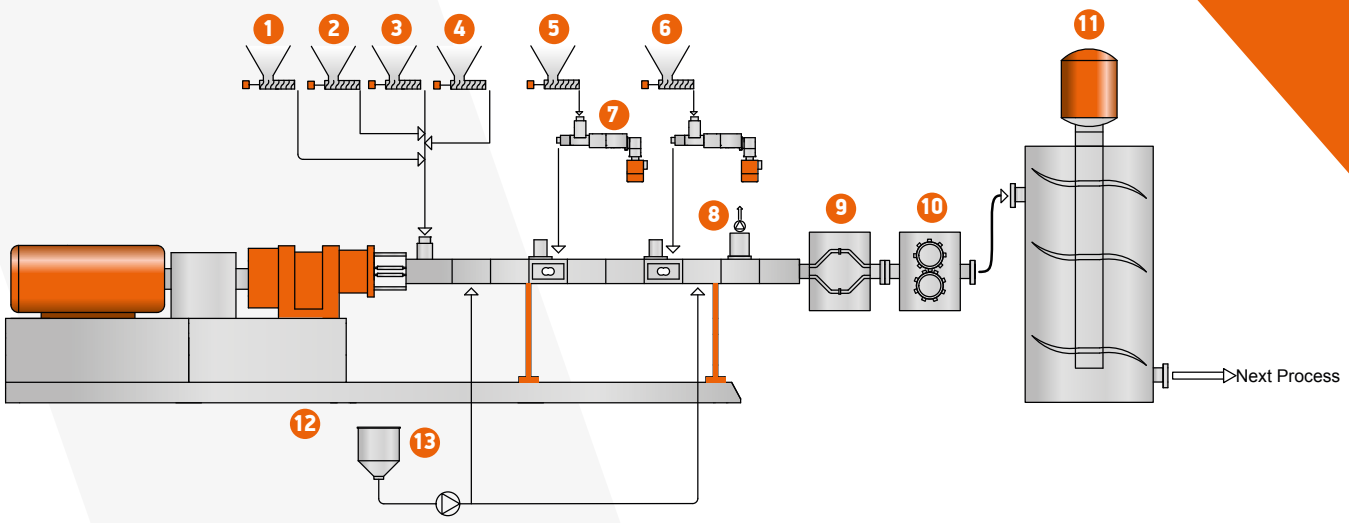
1- Resin
2- Hardener
3- Pigment
4- Filler
5- Mixer
6- Volumetric Feeder
7- Vacuum Degassing
8- Cooling Rolls
9- Conveyor Belt
10- Crusher
11- Pulverizer
12- Vibrating Screen
13- Final Product
14- poex Twin Screw T Series Extruder

Reactive extrusion, maximum efficiency

HOT MELT

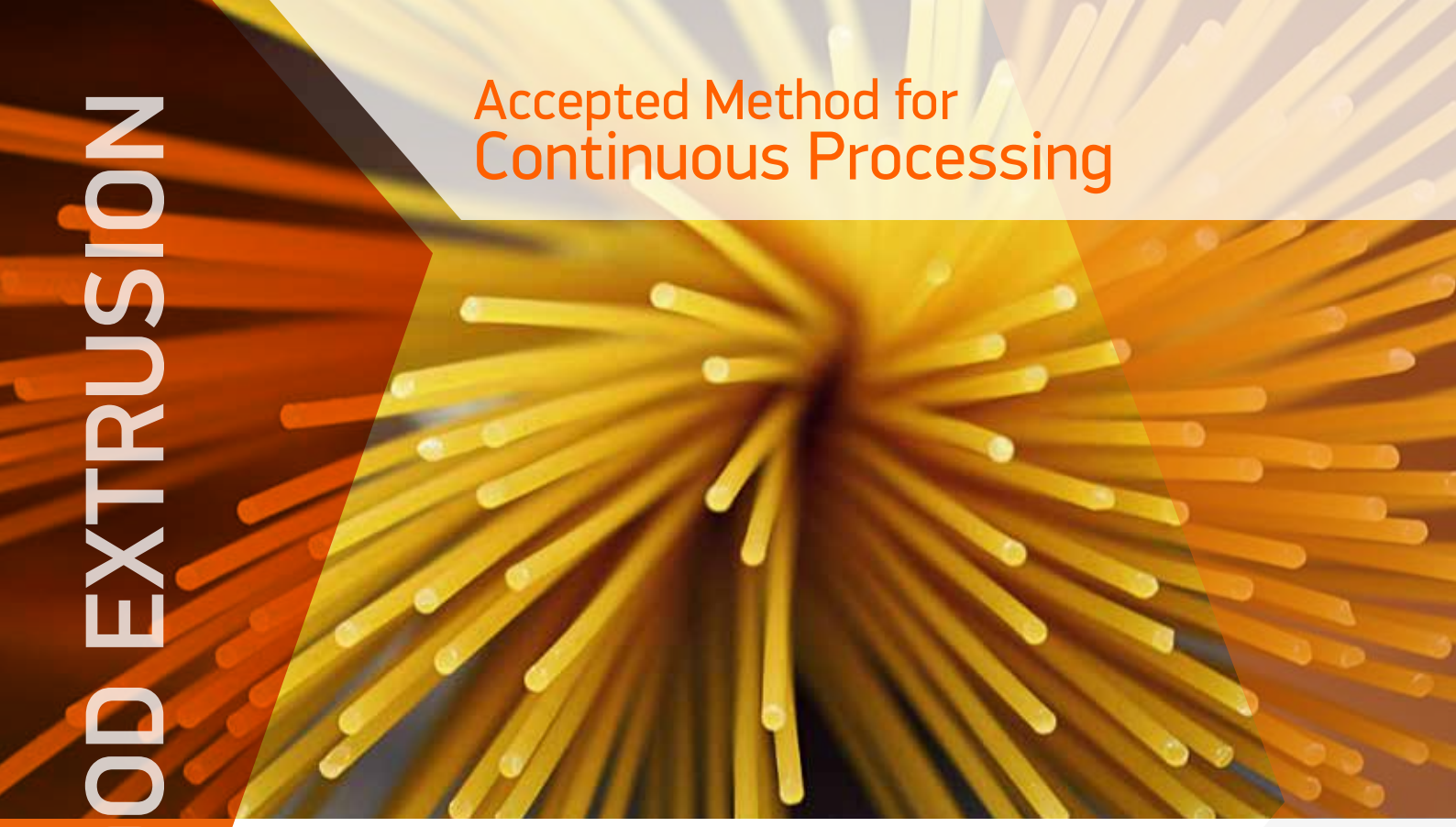
Over the last few years, the production of hot-melts and sealing has changed due to advances in technology, with resulting improvements in quality, productivity, flexibility, and ecology.

A continuous production system, featuring short residence times, high mixing power even at high viscosity and modular/interchangeable composition of the line design, is the way to achieve these ambitious goals. poex twin-screw extruder is the machine which meets these requirements best.



1- Elastomer
2- Filler
3- Additive
4- Pigment
5- Resin
6- Resin
7- Side Feeder
8- Vacuum Degassing
9- Screen Changer
10- Gearpump
11- Buffer Tank
12- poex Twin Screw T Series Extruder
13- Liquid Feder

Accepted Method for Continuous Processing



Extrusion is the core technology for a variety of products, such as breakfast cereals, food ingredients, pet food and aqua feed. Hot extrusion process can gelatinize strach modify texture or denaturate protein according to the amount of mechanical energy generated, once modifying the structure of the original raw materials into interesting finished products.

Extrusion is the most frequently used process for cooking and complete or partial forming of cereal products.

The premixed solids are fed into the process using steam and water.

If required, the taste-imparting substances are also added to the extruder to promote aroma reactions as early as during this stage. This allows the raw materials to be cooked with the introduction of more or less mechanical energy as a function of the product.

Advantages:

- More consistency in production and control of product quality
- Increased productivity due to continuous processing, faster start up and shut down between product changes, quick changeover and advanced automation
- Greater flexibility with the capability to process a wide range of raw materials
- Thanks to optimized footprint for energy and water savings
- Simple and easy to maintain and clean
- As it uses a minimum of water, it is a low-energy process and therefore ecological as well as economical

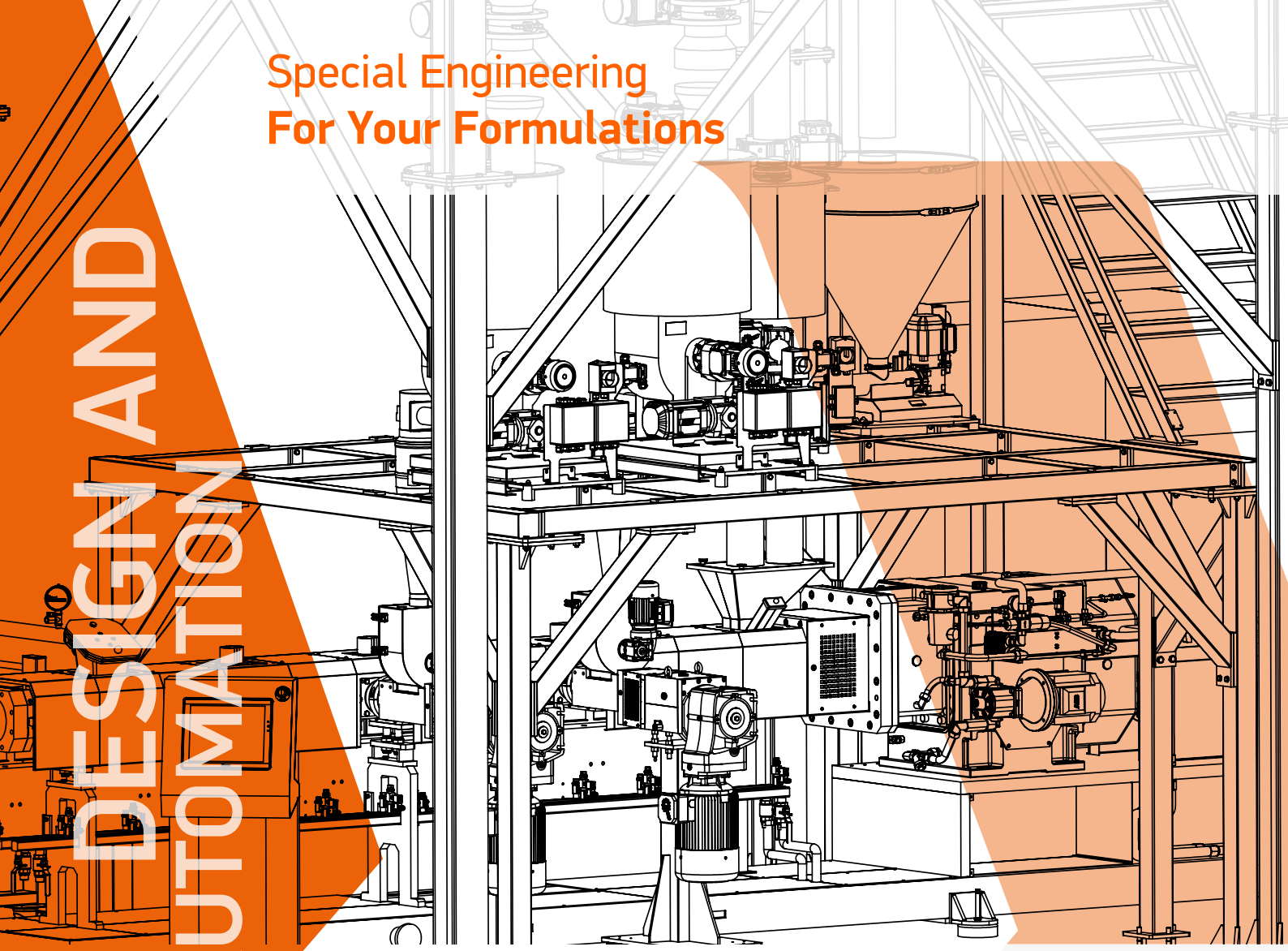
PHARMACEUTICAL EXTRUSION

Pharma extrusion has been a widely used process in the pharmaceutical area. Extrusion technology is an accepted method for the continuous processing of pharmaceutical materials, and it often offers significant advantages compared to batch processes. In this field, it is important to optimize the formulation in order to meet specific requirements. poex pharma extruders are designed to obtain the expected product within the limits for continuous mixing of pharmaceutical active ingredients. A number of processing steps are combined, including feeding, melting, mixing, venting and discharge in extruder. Upstream materials handling and downstream equipment work in conjunction with the extruder to perform the intended manufacturing operation.

Additionally, pharma extrusion equipment accelerates the throughput and potential of large scale drug delivery. The drug exudate produced by pharma extrusion equipment can be shaped into tablets or ground into a powder for mixing with other excipients.

Special Engineering
For Your Formulations

DESIGN AND AUTOMATION



Polimer Teknik offers a complete consultancy package for the plastic processing industry, from technical layout, project planning and assembly with it's well experienced engineers right through to line start-up.

Polimer Teknik process control was considerably extended and offers much more comfort

- Easy-to-learn and use, operation via touch screen
- Graphic and tabular display
- Large display of selected parameters
- Trend display
- Fault alarm system with optical display and logging
- Choice of languages,
- Multi-stage log-in
- Simple text-based help function
- Recipe management of all process parameters

TURN-KEY PROJECTS AND MODERNIZATION

The project team designs the equipment for the supply and distribution of auxiliaries such as electrical power, compressed air, cooling water etc. as well as the required equipment for emissions treatment (mainly vented gas and air and process waste water) in close collaboration with the customer.

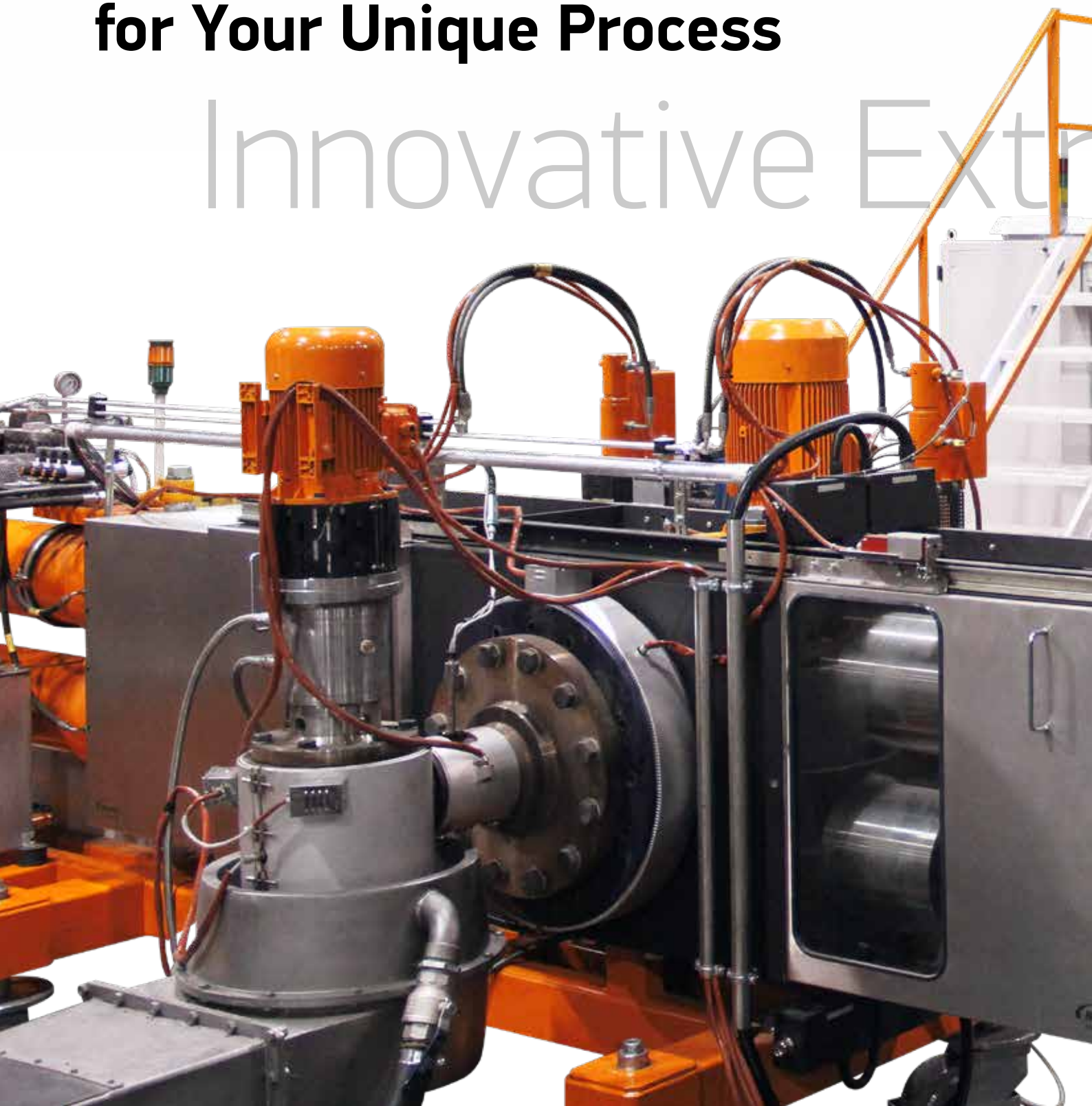
Our turn-key system encompassed complete project engineering and support to smoothly integrate the lines with all related factory systems including material handling, compounding and granulation systems, as well as final compound storage and distribution management.

Additionally, the Polimer Teknik service team is available for worldwide professional support by taking care of your new 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 and reparing the compounding system later, moving the compounding system or modernizing the compounding line.

Bespoke

Bespoke and Innovative Extruder **for Your Unique Process**

Innovative Extr



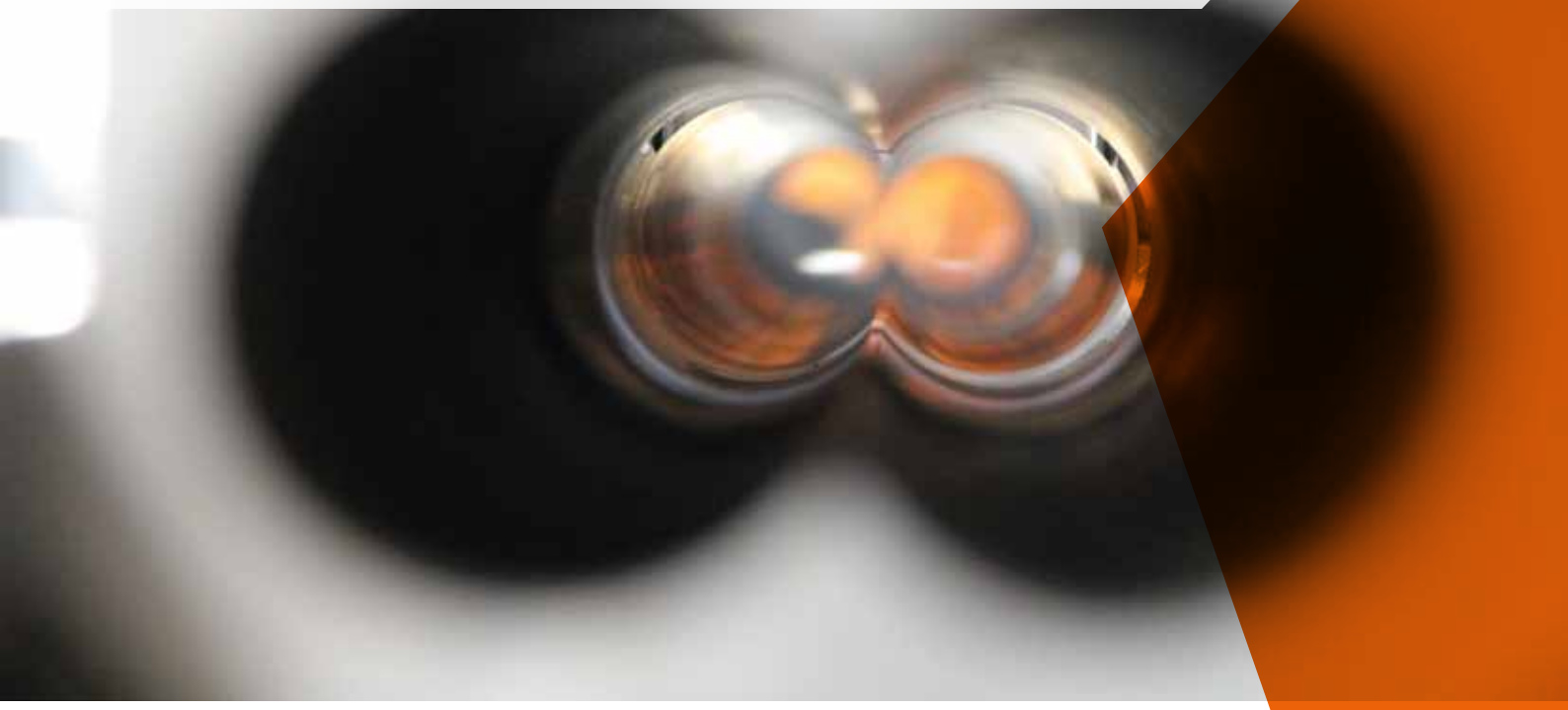
Innovative Extruder Bespoke

Modular Screw Elements

The screw elements for twin screw extruders are consistently designed according to the modular principle. The very wide range of wear protection, different equipment and the wide variety of combinations provide nearly unlimited options in order to adjust the screw configuration to your process. And in case that is not enough to tailor the equipment to your product and process ideas, Polimer Teknik will always respond to your special requirements.

Material Overview			Protection Against	
Material Code	Material	Thickness	Abrasion	Corrosion
PSW 50	Nitrided Steel	0,5-0,6 mm	X	X
PSW 43	Tool Steel	Through Hardened	XX	X
PSW 79	Tool Steel	Through Hardened	XXX	XX
PSW 12	Stainless Tool Steel	Through Hardened	X	XXX
PSW 40	Tool Steel	Through Hardened	XXXX	XX
PSW-HS	High Speed Steel	Through Hardened	XXXX	X
PSW 10	HIP-PM Steel	Through Hardened	XXXXX	XX
PSW 26	HIP-PM Steel	Through Hardened	XXXX	XXXX
PSW 39	HIP-PM Steel	Through Hardened	XXXX	XXX

EQUIPMENTS



Modular Barrel Elements

Polimer Teknik barrels are specifically designed for poex T series. Standard poex barrels can be produced both as solid and liner insert, as well as having a modular structure that provides high flexibility to its users. With its optimized barrel channel structure, it provides an excellent heat transfer with cooling medium and electrical heating at the process section. Each zone has a separate heating/cooling system and provides users flexible working opportunity.

As an option, another barrel structure produced by Polimer Teknik is the clamshell barrel system. It provides maximum and easy access to the process section by opening the split barrels horizontally & thanks to its modular structure that enables the screw and barrels to be changed very quickly. Thus, the system ensures easy cleaning of the barrel and screw segments at the end of each production cycle.

Easy assembly and disassembly, easy cleaning, no needing for extra equipment for replacing and repairing are some of the advantages of Polimer Teknik innovative barrels. One of the main distinguishing quality features of poex twin screw extruders is the automatic control of electric heating and liquid cooling systems with zone temperature control. Therefore, each zone has a separate heating and cooling control.

In addition, different types of barrels can be produced according to customer demands and our production capabilities.

Material Overview			Protection Against	
Material Code	Material	Thickness	Abrasion	Corrosion
PSW 50	Nitrided Steel	0,5-0,6 mm	X	X
PSW 79	Tool Steel	Through Hardened	XX	XX
PM 12	Stainless Tool Steel	Through Hardened	X	XXX
PSW 40	Tool Steel	Through Hardened	XXX	XX
PSW-HS	High Speed Steel	Through Hardened	XXX	X
PSW 26	HIP-PM Steel	Through Hardened	XXXXX	XXXX
PSW 39	HIP-PM Steel	Through Hardened	XXXX	XXX

OTHER EQUIPMENTS

Shaft

Shafts are one of the most important and really decisive equipment transferring the torque of the drive to the screw segments and hereby to the process. For this reason, they should be conceived to provide maximum mechanical performance. The special identification of material and heat treatment coupled with precise machining creates a high-quality component. poex offers a wide range of screw shafts which are made appropriate to machine and process requirements to prevent over maintenance or failure.

- All common thread profiles
- High torsional strength
- Monoblock or modular design
- Production capability with different types of steel

Strand Pelletizer

poex offers solutions for the pelletizing requirements of its customer with poex G series strand pelletizers which are specially designed for the granulation of wide range polymers extrudable to strands. poex G series strand pelletizers have many options to choose the right steel material type crucial for consistent product quality and system availability. Wear resistance or corrosion resistance design exists depend on process demands. Also, poex strand pelletizers provide easy operating and easy maintenance with their unique structures.

Model	Operating Width (mm)	Motor Power (kW)	Line Speed*(m/min)	No. of Strands*
poex G15	15	0.75	20-80	1
poex G60	60	2.2	30-70	12
poex G100	100	5.5 - 7.5	30-70	20
poex G200	200	7.5 - 11	30-70	40
poex G300	300	11 - 15	30-70	60
poex G400	400	22	30-70	80
poex G600	600	37	30-70	120

* Above values for 3 mm pellet diameter and length. Optionally online pellet length adjustment is available.

Table consists general information of standard G series pelletizers. Custom-made production is also possible.

Vibrating Screen

Vibrating screen is also an important accessory for strand pelletizer and pellet making process of plastic and rubber granules. It has a powerful high capacity vibrating motor. It can effectively screen out both over-sized and under-sized pellets, permitting only the correctly sized pellets to enter the loader.

- Polimer Teknik unique design,
- Efficiently removes longs without losing good on-spec pellets with the over-size,
- Lightweight parts easily handled by a single operator,

Model	Dimensions (mm)	Screening Area (m²)	Motor (kW)	Capacity (kg/h)
poex E200	200 x 1500	0,20	1 x 0,27	max. 120
poex E500	500 x 3000	0,80	2 x 0,27	max. 1000
poex E800	800 x 3000	1,40	2 x 0,31	max. 2500

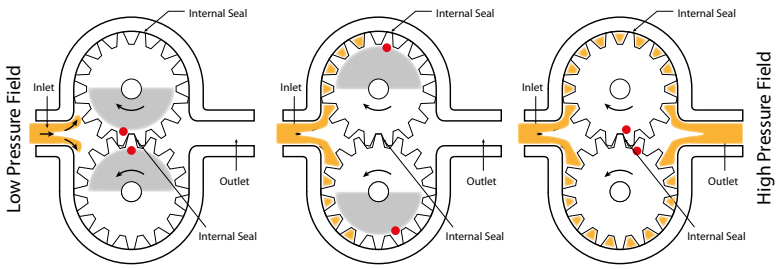
Table consist general information of standard E series vibrating screens. Custom-made production is also possible.

Screen Changer

The hydraulic screen changers are characterized by simple design, ergonomics and rationality which they were designed. Thanks to a uniform and efficient heating system, are suitable for the processing of highly sensitive polymers. The operation in combination with a quick-change hydraulic power unit allows the replacement of the filtering media while the extruder is running. The units are equipped with a cable channel in the bottom that conveys the power cables and thermocouples in a junction box located next to the hydraulic cylinder. This prevents dangerous overheating of the electrical system, ensures maximum reliability. The many possible configurations allow a wide use of these models where perfect flow continuity during screen replacement.

Gear Pump

Gear pumps increase the capacity in proportion to the time of start-up. Gear pump determines the operation according to the pressure capacity as a fixed point. Especially in the presence of a large volume gear pump plants start (start-up) and materials reduce the time change



OTHER EQUIPMENTS

Dosing Systems

poex feeders are utterly versatile machines for the volumetric and gravimetric dosing of various materials with different properties very accurately. Whether it concerns powders, grains, flakes, chips, pills: poex offers you a feeder which can perfectly dose these for you! Additionally, poex feeders present solution for feeding of liquid ingredient as well. Liquid feeders provide accurate continuous volumetric or gravimetric flow control of liquids. The highly accurate gravimetric units combine the pump and tank with a suspension scale or platform scale; the feed pump for metering the material is located outside the scale area. When the liquids are fed, each application may consist the special requirements. A wide range of pumps and tanks can be combined to constitute a liquid feeder and satisfy the specific demands. The feed pump is selected according to the material and the required feeding capacity as diaphragm pumps or gear pump.

poex feeders offer flexible wall hopper technology for bulk materials. The walls are massaged with paddles from the outside to keep the powder, which is to be dosed. This way prevents rathole and bridging of dry materials. Hence optimal dosing is guaranteed. Many manufacturers in various industries have confidence in this proven feeder technology for the reliable dosing of their dry bulk materials. Available in different sizes and screws variants in different diameters. The dosing devices are available in volumetric and gravimetric models and can be supplemented with many options, such as nozzles, measurement and control electronics, extension hoppers and a wide assortment of complementary applications.

The capacity is controlled by frequency invertors for volumetric machines. For continuous gravimetric dosing, an advanced weight control is used.

Control Systems

The control system offered is the latest state of the art control system. Drive control through microprocessor based direct drive and the logic, interlocks and safety in operation, through the use of Siemens S7 – 300 PLCs, are all integrated through a touch panel HMI.

Features of poex control systems

- Central operation and visualization of the entire extrusion process
- Operation and visualization
- Fault alarm system
- Trend data
- Recipe management

Raw Material Handling Systems

poex provides innovative bulk material handling, raw material handling, pneumatic conveying systems and bulk containers for the reliable automation of production processes for the plastic industry.

Flexibility is the key feature in all systems, especially for the production of many different engineering grade plastics.

The raw material from bulk containers are conveyed into the external silos by pressure conveying. Depending on the raw material, the silos are equipped with a head space drying system and partly as a two-chamber silo.

Pneumatic suction conveyor systems bring the raw materials to the receivers located above the extruders. Medium and small components, which are available in sacks, containers or mixing vessels are emptied into the receivers via appropriate discharge bases. The premix for the mixing vessels is weighed and filled with additives on its own manual weighing station. Micro components such as paints are added directly to the extruder via a feeding hopper.

Granular raw materials are fed into the system either via a simple feeding funnel or via a combined discharge base.

Strand Belt Conveyor

The belt conveyor pelletizing system is specifically designed for the compounding of water-sensitive or highly filled (>60%) or fragile products. Variable system configuration permits a perfect adaptation to the product to be processed. Using the belt conveyor, even elastic and very flexible polymers may be handled easily and efficiently.

Instead of being conventionally extruded into a water bath, the polymer strands are extruded directly onto a plastic or steel conveyor belt, which carefully draws the fragile strands to the pelletizing unit.

This controlled drawing of the strands while they are still in a molten state prevents breaks in the strands and enables them to be directly fed into the pelletizer, where they are cut into uniform pellets. Depending on the application, the strands may be cooled with air, water, or both. Where water cooling is used, the SE air knife can be used for efficient dewatering.

Strand Dryer

Strand dryer has two-piece vacuum strips that can be positioned and placed along the water bath to draw water off the strands as they exit the water bath.

This takes up less floor space and maximizes efficiency while utilizing the heat of the strands to expel surface moisture, resulting in drier polymer entering the pelletizer.

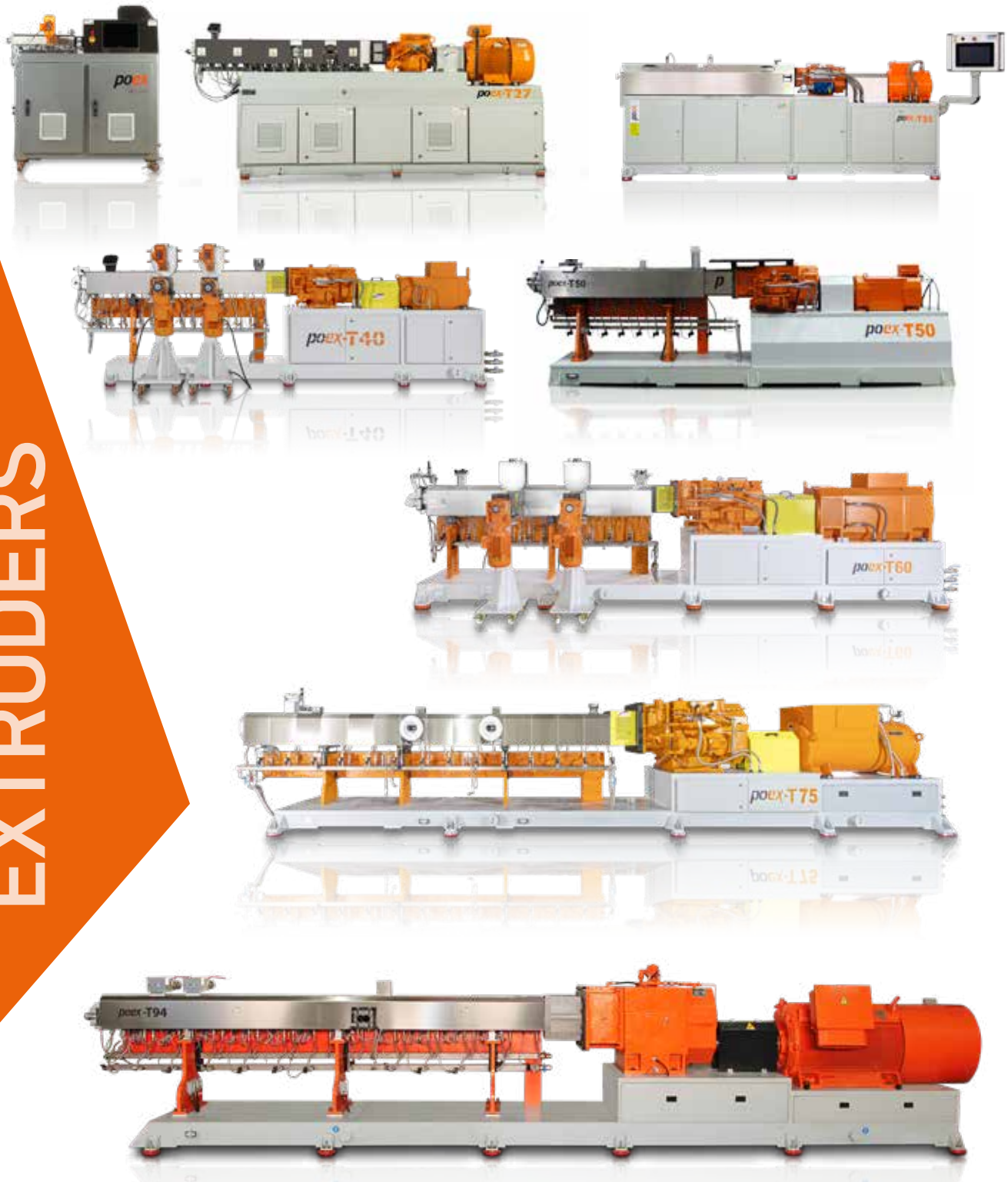
A stainless-steel cyclone continuously separates the water from the air stream with the water exiting to a drain port.

poex T Series Extruders

Model	Screw Diameter (mm)	Do/Di	Screw Speed (rpm)**	Drive Power (kW)	Throughput (kg/h)
poex T16	16	1,55 - 1,76	max. 1200	3 – 5,5	1-5
poex T27	25-27	1,55 - 1,76	max. 1200	30 – 37	30-100
poex T35	31-33	1,55 - 1,76	max. 1200	37 – 75	80-150
poex T40	40-42	1,55 - 1,76	max. 1200	75 -160	100-350
poex T50	50-52	1,55 - 1,76	max. 1200	90 – 250	200-500
poex T60	58-62	1,55 - 1,76	max. 1200	200 - 482	500-1400
poex T75	71-80	1,55 - 1,76	max. 1000	315 - 720	800-2000
poex T94	92-94	1,55 - 1,76	max. 1000	410 - 1470	1000-3000
poex T110	106-110	1,55 - 1,76	max. 1000	500 – 2130	2500-5000

** Screw speeds and installed drive power depending on the process task

poex T SERIES EXTRUDERS



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