

CHOOSING THE TWIN SCREW COROTATING EXTRUDER FOR PLASTIC KOMPOUND PRODUCTION



The choice of right corotating twin screw extruder for several plastic compound production ranging from filled plastics to color masterbands, various elastomers, hot adhesives to reactive extrusion is a complex decision-making process.

Firstly, a detailed feasibility study should be carried out considering the market development information of the compound to be produced. Once the required capacity has been determined, technology and production line configuration will be established with machine suppliers to ensure this capacity in a safe, high quality and sustainable manner.

Selection of the appropriate machine line is possible by evaluating in detail the many criteria we have summarized below:

^ ADDITIVE FILLER TYPE - SCREW HOUSING MATERIAL:

Since glass and calcite fillers are abrasive, screw / barrel material should be selected accordingly.

^ FILLING QUANTITY - SIDE FEEDING SYSTEMS:

Since glass and calcite fillings are given into the plastic mixture which is melting in the barrel by a special feeding system, they should be in suitable quantities and properties according to the desired fill amount. For example, a maximum of 20-30% talc can be fed from the main feeding point in a healthy manner, while an extra side feeder can provide an additional talc ratio of + 40%.

^ POLYMER ADDITIVE TYPE - FEEDING SYSTEMS:

Not all production types can be made from a single main feeding point. Weighted and volumetric feeding forms (gravimetric and volumetric dosing), which require continuous feeding, are selected according to the required precision and economic value of the compound to be made.

Production that requires expensive additives such as ultraviolet and flame resistant compound production must be made with gravimetric systems.

^ POLYMER ADDITIVE TYPE - CUTTING SYSTEM:

When selecting strand-die, water-jet cooled, underwater pelletisers, die-head pelletiser systems, polymer and additive properties must be taken into consideration. Polyamides and some elastomers are water-sensitive. Although most elastomers can be solved with a simple head cutting system, the capacity increase is limited to the machine speed.

^ COMPOUND TYPE - BARREL LENGTH:

Temperature sensitive polymers such as PVC 25 Complex compounds requiring more dispersion should be made with longer sleeves, such as 55 L / D, while short sleeves such as length / diameter ratio require.

^ POLYMER TYPE - MACHINE REVOLUTION:

Some temperature sensitive pigments and low burning heat polymers such as pvc require low speed and suitable barrel cooling system.

^ POLYMER-ADDITIVE TYPE - FILTER SYSTEMS:

If the materials that are contaminated with metal are to be used in the input raw materials, it may require a metal detector trap at the inlet of the barrel and a melt filter before the outlet.

^ REQUIRED CAPACITY - MACHINE SPEED / SCREW-BARREL DIAMETER:

Although some capacities can be increased by machine speed according to the polymer property, some of the aforementioned compounds should be considered suitable optimization since some these are limited. The machine size must be determined by taking into account the existing electrical power limit.

Many more of the above criteria can be added, such as the internal and external screw diameter ratio, taking into account the polymer and compound technologies that develop every day. As new product and process improvements are made both on the material side and on the machine side, the market is rapidly advancing in that direction. Since the change continues after the selection of the machine and the investment is completed, the selected machine and production mode does not remain constant and static. New systems and equipment should be able to be added to the existing system. The manufacturer should be able to transform itself according to new markets. In order to achieve this, the

most important issue and in fact the most important of the choices made is the choice of the machine manufacturer itself.

If the machine manufacturer you choose always provides you with continuous support at your side, if you adapt quickly to innovations and respond to market demands, it is natural that your most important and accurate choice is your machine partner, your long-term companion.

Since 1992, Maris corotating twin screw technology of the company, represented by the ENPA has been used successfully by many sectors in Turkey.



Polymer – Powder Additivated Compound

Factors effecting the mix quality



Characteristics of the materials:

- Mineral filling properties - Polymer properties
- Polymer morphology (granules, powder, flakes ...)
- Chemical additives (binding agent, surfactant, wax, ...)

Mixing process conditions:

- Mixing form (mixture blend feeding, separated gravimetric feeding) - Mineral fill feeding type
- Screw geometry (Do / Di ratio)
- Screw alignment configuration - Screw speed
- Temperature profile