XINBOXUAN
鑫 博 轩

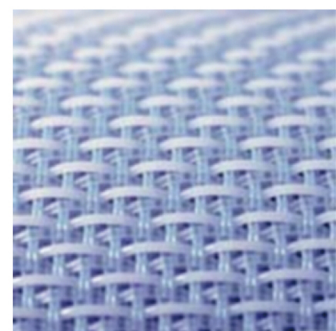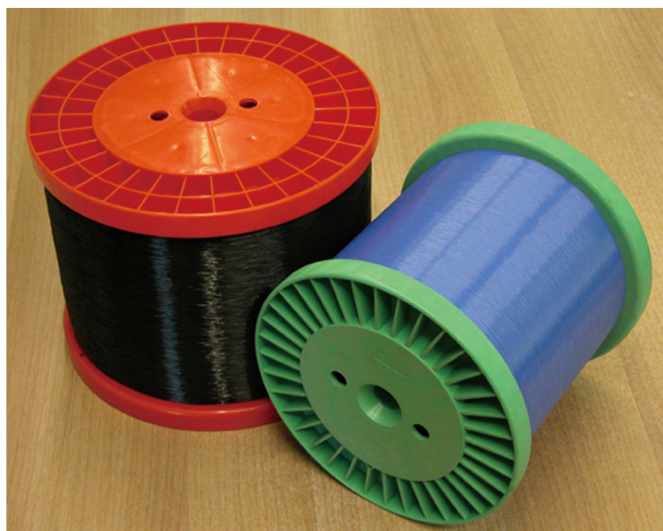# EXTRUSION LINE FOR THE PRODUCTION OF MONOFILAMENTS

Monofilaments— high precision throughout

With ten years more experience Xinboxuan has been manufacturing a very wide range of the extrusion lines from extrusion to winding, a complete solution for the processing of LLDPE,PE,PP,PA and PET polymers among which extrusion lines for monofilaments, artificial grass, as well as twine.

Our continuous search for product innovation combined the use of traditional technologies and modern electronic processors.

We are able to optimize each machine on the basis of the specific use it is designed for, in order to attain maximum process efficiency, which not only meets but exceeds the expectations of our clients.

Monofilament lines— complete systems from XBX

XBX Filament—control process control system			
Plasticizing	Forming	Stretching & heat setting control	Control system
• Extruder • Dynamic mixer	• Thermo section spinning heads • Spin pump • Cooling/drying	• Consistent temperature for production • Stable speed • Diameter monitoring	• Microprocessor—controlled drive units • Temperature and pressure controllers

Extruder

The extruder has been representing the central element of the XBX product range.

Basic specification include

• Capacity

40~350 kg per hour depending on required profile

• High output at low pressure

Less shear, reduced back—flow thanks to using barrel screw

Based on cooperation with our customers, XBX developed different screw series for several types of plastics, such as PET/PA/PP/PE/PLA，PA6.6, and elastic materials TPU/TPEE.
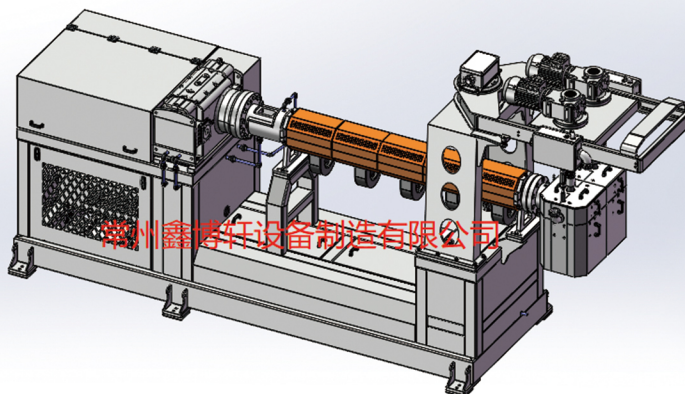
• Easy maintenance

Open—type configuration permits excellent access to all assemblies.

The spin head installed on a rotary rack which allowed spin head is moved away from production position for easy maintenance.

• Noise reduction

Perfectly matched gears and drive system reduce noise to a minimum

新型75_G双模头

常州鑫博轩设备制造有限公司

Spinning heads

The processing capability of the spinning heads is primarily responsible for the quality of the end product.
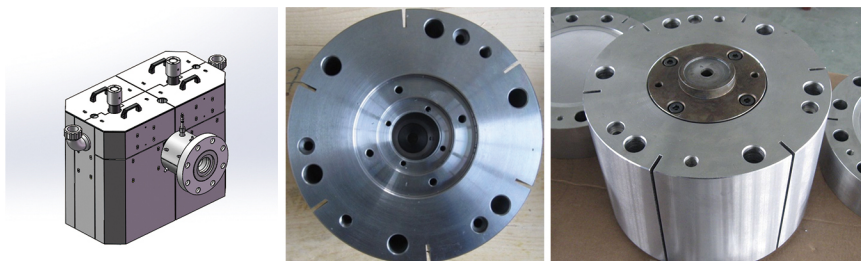
For this reason, XBX supplies spinning heads which are made of the most suitable materials for their purpose, are exceptionally well made and specifically designed for the application in question.

For certain components of extrusion lines, compromises are unacceptable.

With XBX systems, consistent melt distribution, precise temperature control throughout the process and exceptional thermal insulation are standard features.

The circular spinning die−heads are heated in sections at 6,10 up to 12,thus guaranteeing substantially improved tolerances over the entire filament line, the tolerance of diameter would reach less than 1.5%.

Spinning pump convey the melt to the spinneret.Special design for flow channel ensure no dead corner to safe melt quality.
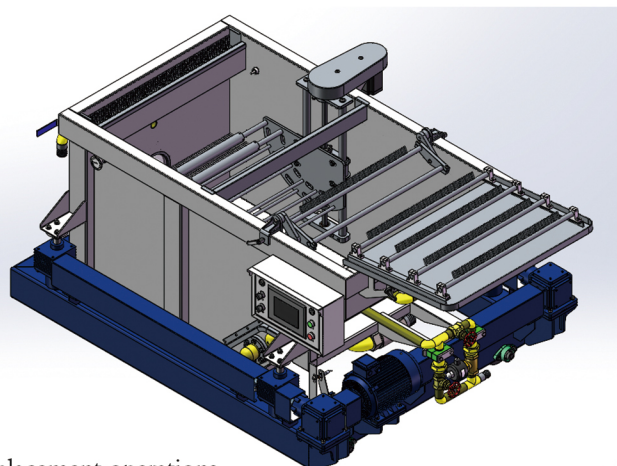

Quench tank

Three essential factors determine the specifications for the quench tank.

· precise separation of the filaments
· ease of operation
· outstanding temperature control

XBX has placed particular emphasis on ergonomic design of the quench tank. The monofilament quality depends on the yarn guide within the quench tank. This guide ensures an optimal dwell time and thus a uniform cooling of the filaments.

The height of the quench tank and basket for yarn guide is infinitely variable by motor. The tank can also be moved to the side manually, thus considerably simplifying die replacement operations.

In order to keep the requested temperature, a continuous water circuit is used.

Stretching

Digitally controlled DC−or AC−drives accurate to speeds of $< \pm 0.1\%$ ensure that the monofilaments are stretched in the draw stands at precisely specified degrees of tension.

−XBX draw stands are strongly built and are designed as standard to permit a stretching tension of 1000 daN. Special configurations can be supplied up to 5000 daN.

−Specially coated, cut−resistant godets and a pressure roll enable these parameters to be applied, thus ensuring consistent, slip−free stretching.

− Rolls driven by gear box directly without belts , no angular gear. The radial tittup of the rolls is less than $+/- 0.01mm$

−For special use, the roller can be designed coolable and heatable unit.

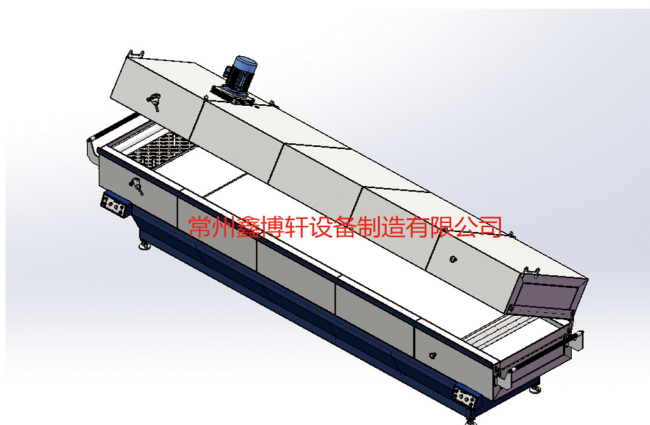−safe guard: protective cover on the top of rollers and emergency stop

Heat setting

The hot. Air ovens operate on the convection principle. Flow control flap valves permits the air flow rate to be infinitely adjusted. As a result, the material in the processing oven is entirely unstressed.

Temperature accuracy 24 hrs.= ± 1° C

The production of very soft, elastic monofilaments places, particularly heavy demands on the product stabilization process. The entire stretching and relaxing system can be adjusted to suit individual production process. Since the systems are identically structured, the results are precisely reproducible.XBX supplies water/hot air/steam stretch−ing oven for a certain process demands.XBX provides a contact−free hot water stretching system, the so−called "overflow system". Even in this bath, the temperature does not fluctuate by more than ± 1° C .

To meet exceptional requirements, XBX developed steam stretching oven, that will help production at high speed up to 600m/min for small diameter monofilament. For annealing process, elimination of the internal tension is granted which help to obtain a uniformly oriented product, free of localized memories. In the oven automatic temperature control up to 250° C(tolerance ± 1° C) and air flow up to 32 m/s controlled through inverters. Air dispersion to the outside reduced to minimum, thanks to the aerodynamic study of the air flow.

Winding machines

The winding machines are exceptionally easy to operate and offer rapid replacement facilities for the cores. The machine elements and electronics are simple and robust. The installation system is compatible, so that any winder format can be incorporated.

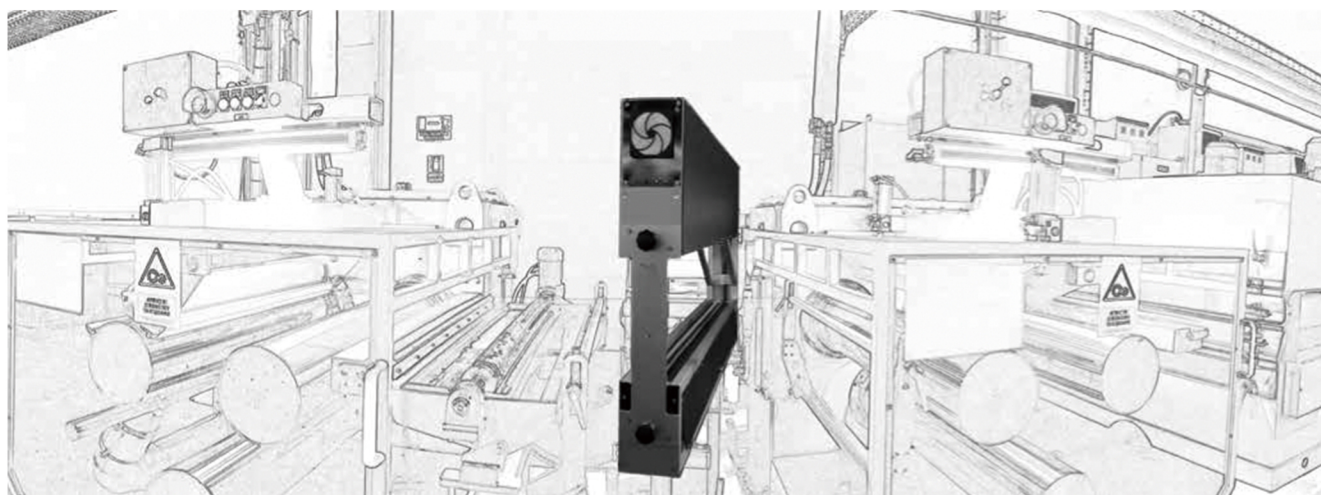## Programmable logic control and process data acquisition

XBX developed process control system "Filamentcontrol" is a communication system for monofilament procution lines. Data acquired from the PLCs and from individual microprocessor−driven controllers is transferred through interfaces to the Filamentcontrol process control system.

Main features

−automatic programs   −temperature control   −heat current monitoring   −speed monitoring
−diameter data acquisition   −analog data acquisition   −pressure monitoring   −RPM monitoring

Filamentcontrol system controls preset parameters and tolerance limits by monitoring the temperature, pressure and drive parameters of the draw stands and spin pumps. The synchronous speed control permits the drive systems of all types of monofilament lines to be individually adjusted to different criteria. Different automatic programs, such as start−up, production and product change−over programs, ensure an increased simplicity and a saving of time in the operation of the line.

The diameters of the monofilaments are determined by optical scanners with lasers and are statistically evaluated by Filamentcontrol. These data can be stored in the process control system for months and a comprehensive record can be filed in data bank.

For the production lines described, XBX offers a computer aided process data acquisition system which records and monitors all relevant machine parameters.

In addition, each type of alarm is displayed by parameters.

Advantages of the data acquisition system include:
· Formulation management for different products
· Storage of customer`s orders
· Shift reports
· Identification of product variances within a given production period (trend analysis)

At this point, the data are displayed after being converted into simple, user−friendly graphics and trend diagrams. They can also be printed out by printer, or stored on stick.