COSTRUZIONI MECCANICHE
TECOM
THE POWER OF QUALITY

The **power** of **quality**

BLOWN **FILM LINES** FROM 1 TO 5 LAYERS

MEMBER AMAPLAST

Since 1950 Union OFFICINE MECCANICHE

Go Bio™

SINCE 1963 AT YOUR SERVICE

TECOM:
evolving experience

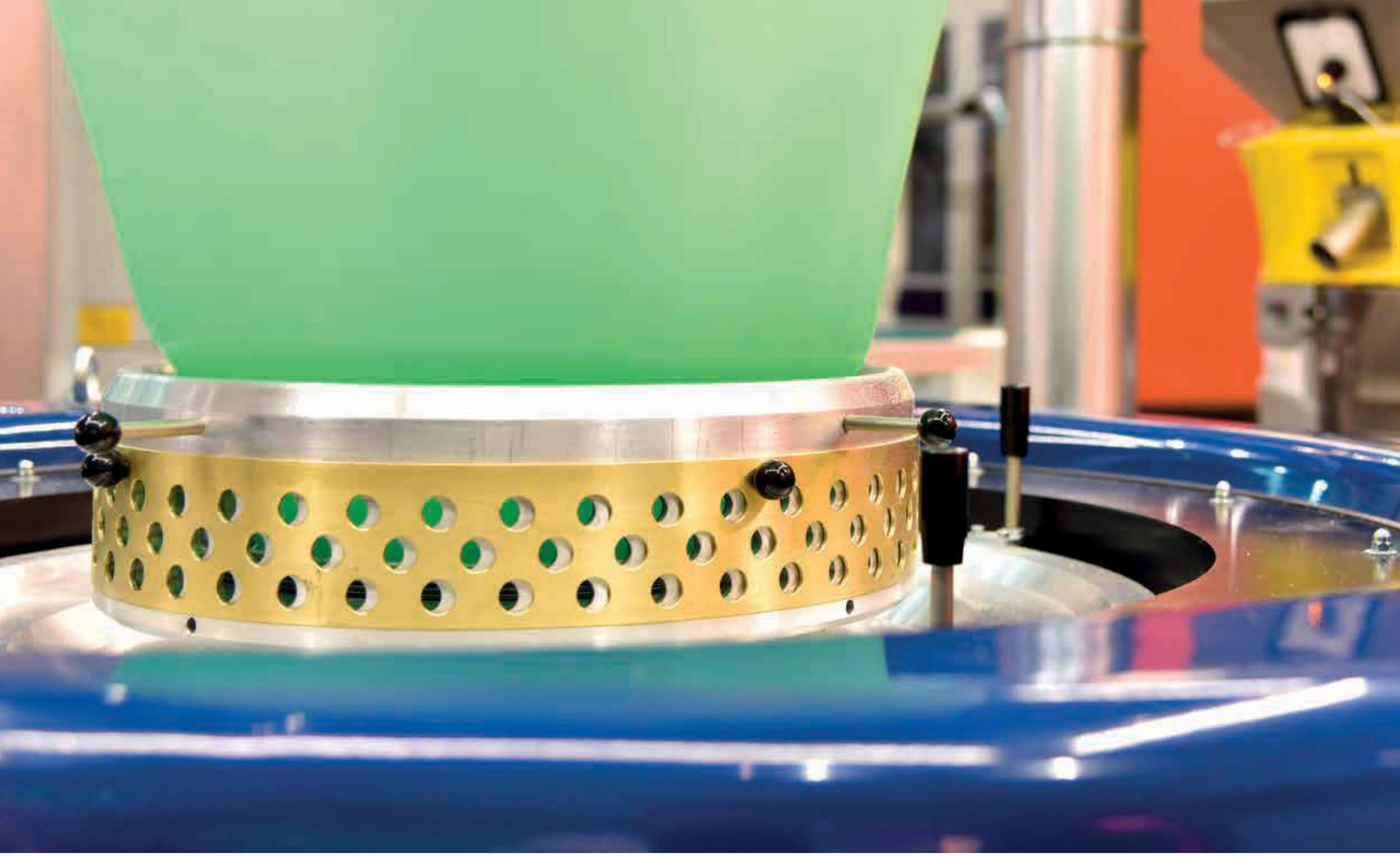
From textiles to plastics

TECOM was founded in 1963 and started out as a manufacturer of machines and accessories in the textile field, but in a short time it moved towards the construction and assembly of equipment for the processing of plastics.

In the early seventies the company consolidated its experience in design and constructing complete plants used for the production of bubble polyolefin films.

Since the nineties TECOM has been intensifying the research for energy saving in the processing of plastics dued to the effects of economic pressure alongside an increased environmental consciousness and customers' support. With the development of new lines dedicated to processing eco-sustainable polymers, TECOM embraces the GREEN evolution creating its own label, GO-BIO, which makes clear its will to pursue a sustainable growth.

In the early 2000s TECOM started to focus its efforts in the production of blown film lines with low environmental impact and high technological level, without forgetting concepts like sustainability and circular economy.



TECOM machines: quality products

Standard and “custom-made” plants

TECOM extrusion lines can be dedicated to the production of most different items: film for T-shirt bags, freezer bags, rubbish bags, agricultural films, film for automatic packing machines, shrink film for pallets and many more.

The offer includes the design and construction of **single and multi-layer blown film extrusion plants in various sizes and specific capacities for transforming all types of polyolefins and biodegradable and compostable polymers**.

These plants can be manufactured with a standard layout as well as with a more technological configuration which allows to increase outputs and production. The components used in such lines are what make the difference: alternating current motors with inverter, gravimetric dosed feeding, Inner Bubble Cooling system (IBC), oscillating take off unit with web guiding and automatic rewinders, drives for handling and supervising the whole line.

The customer first

Designers for "custom-made" and innovation

TECOM Group has based its philosophy on the importance of **Customer care** and **Custom made**. Thanks to a skilled team of designers and technicians and advanced computer systems, TECOM can offer a wide variety of plant featuring innovation, personalization and high quality standards complying with European regulations.

The commercial staff in Italy and abroad collaborate with the customers to identify their specific requirements and to integrate mutual experiences. The information is transferred to the technical department where, with utmost flexibility, the project is implemented. Finally, the workshop staff carry out the project by managing the tooling operations, quality control, assembly and in-house testing.

This structure not only follows sales, marketing and promotion but also guarantees a brisk after-sale service in terms of technical assistance and spares supply.

A rewarding sensitiveness

Costs and consumption analysis, plant consulting

The Customer is considered as the most important value and therefore must be supported with constant updating on new solutions and technologies aimed at **reducing production costs**, **efficiency upgrading and environmental care**.

This is why the service offered by TECOM from design to manufacturing and sales includes professional consulting on the choice of the appropriate equipment in terms of quality/price ratio. Customer care also means optimizing the equipment lay-out in relation with the existing limits as well as offering an accurate evaluation of the production capacity, energy consumption and maintenance costs.

Customer support is a constant assistance on the technological process of extruding.

TECOM's blown film lines from 1 to 5 layers

Since the **early 1970s** TECOM has directly supplied blown film plants to their customers all over the world. As a consequence of technical developments made by the company at the **beginning of 1990s** which have been improved and optimezed during the years, TECOM today is able to offer a wide range of reliable and flexible plants equipped with all the systems for the production control.
These systems produce high quality film without any limitation in the choice of utilizable materials such as polyolefins, recycled, biodegradable and compostable.

Thanks to the use of barrier screws, TECOM's lines can transform all types of polyolefin-based raw materials: LDPE, LLDPE, mLLDPE, HDPE, MDPE, PP and all types of compostable biopolymers.

All lines operate extremely efficiently at low cost in relation to production capacity; a subject that is strongly taken into consideration by the customers and represents a decisive reason in favour of TECOM lines.

Single screw extruders

Relying on the experience acquired over the years we continue to refine and improve the construction technology of the extruders to upgrade them to market requirements.

TECOM extruders are compact and solid and guarantee maximum energy efficiency and safety thanks to the high quality components they are made of.

"B" version, slim and compact with minimum side dimensions.
The motor is positioned in the rear part with direct transmission via a flexible joint which is employed on all mono and multi-layer lines, sizes from ø 35 to ø 120.

. Structures

The basic structure of the extruders is constituted of a robust electro-welded steel structure where reducers and motor supports are fixed.
They are fitted with support feet and a levelling system that guarantee a structural stability of the complete assembly.

. Gearboxes

Parallel shaft gear reducers with a high service factor and low-noise performance.
Thrust bearings widely oversized with splash lubrication or forced according to sizes.
Cooling of the oil is by water heat exchangers.

. Motors

All extruders are equipped with compact three-phase asynchronous motors with reed valve pack and constant torque over a wide range of spins, regulated by digital frequency convertors.

. Extrusion barrels

Extrusion barrels are made of bimetallic steel with the possibility of inserting hard-wearing metal inserts on the ends of the barrel in the EXK series.
Heating is by ceramic band heaters whilst cooling is by air fan-blown through aluminium radiant rings positioned between the heating bands.
The steel fairings have double chamber for the recirculation and a connection point for the expulsion of the cooling air.

. Screws

Barrier extrusion screws made of special steel specifically hardened with anti-wear treatment on the thread crests or anti-wear bimetallic alloy screws with high-resistance properties.

Type	Screw diameter mm
EXK 40 B	40
EXK 50 B	50
EXK 65 B	65
EXK 75 B	75
EXK 90 B	90
EXK 120 B	120

Forced feed extruders (grooved barrel)
EXK series – Screw length L/D 30

Single-screw extruders **"EXK"** series, which work according to solid-feed principle, are equipped with grooved feeding bushes made of hardened steel or hard metal with longitudinal and conical channels that follow the direction of transport.
The bushings are inserted into housings equipped with a water-cooling system for the dissipation of the heat.

The EXK series are optimally designed extruders that guarantee high flow capacity, proportional in respect of the screw speed, absence of pulsations, optimum homogeneity of the melt at low temperatures with maximum performance and the best quality of the raw material processed.

This series is particularly indicated for the processing of high molecular weight and regenerated materials.

Traditional feed extruders (smooth barrel)
EXKN series – Screw length L/D 30

Single-screw **"EXKN"** series, traditional smooth barrel extruders, equipped with feeding bushing section with appropriately hardened steel, with conical and longitudinal channels facing the direction of transport.
The bushings are inserted into housings equipped with a water-cooling system for the dissipation of the heat.

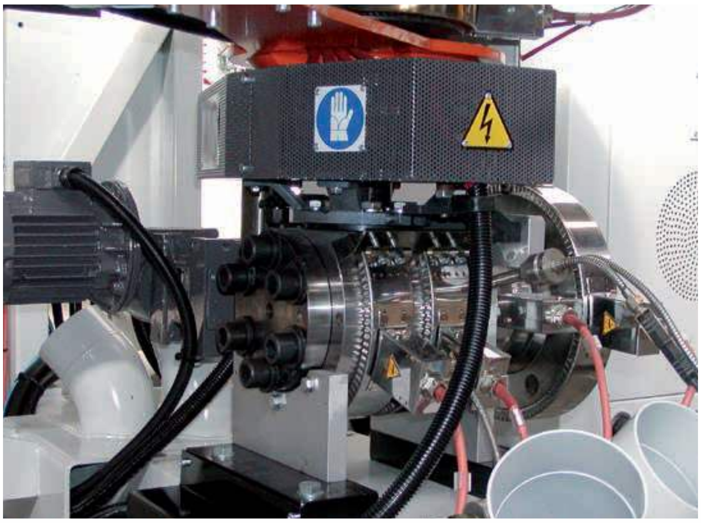
The EXKN extruders have been especially designed to satisfy all the special demands where is required to work with a high-level of mixing capacity and not necessarily with high flow capacity.

Type	Screw diameter mm
EXKN 35 B	35
EXKN 40 B	40
EXKN 50 B	50
EXKN 65 B	65
EXKN 75 B	75
EXKN 90 B	90
EXKN 120 B	120

Screen changer systems

The choice of a suitable screen changer system depends on the application, raw materials and the type of extruder employed.

TECOM offers an excellent screen changer system for all types of processing.



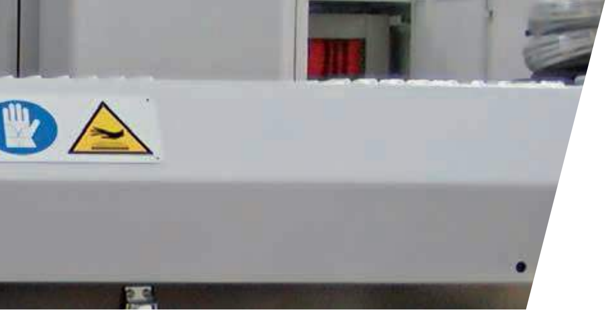
Cartridge screen changer

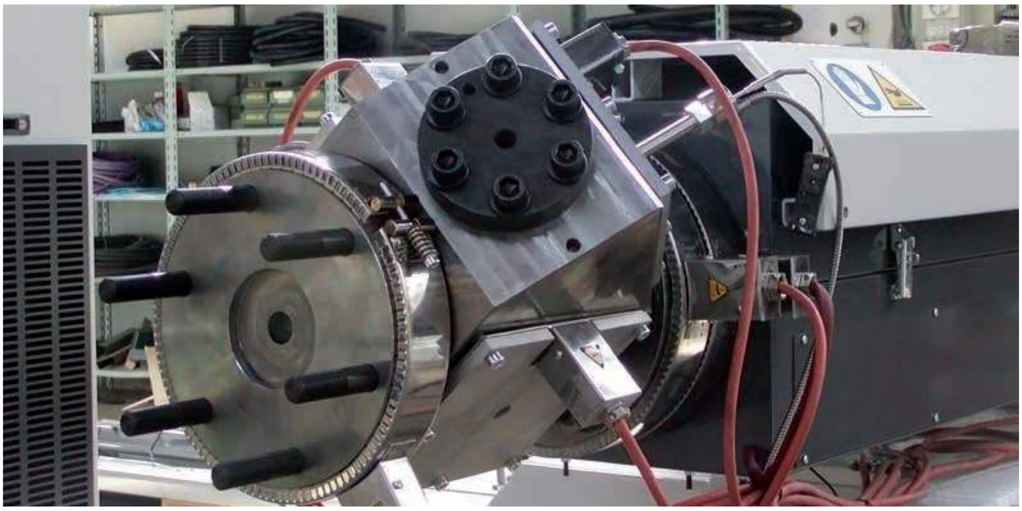
Cartridge screen changer with a big filtering surface **"CS"** series and in-line version **"CSL"** series.

Particularly suitable for processing high molecular weight materials such as HDPE and recycled materials giving the possibility of processing at low pressures.

Structured to sustain operating pressures up to 800 bar with a high reliability and simple, reduced maintenance.

Type	Filtering surface cm^2
CS1 - CSL1	85
CS2 - CSL2	176
CS3 - CSL3	314
CS4 - CSL4	424
CS5 - CSL5	760





Manual screen changer

Manual screen changer by lever or with plate by manual hydraulic control, mainly used with clean low molecular weight materials and low operating pressures, considering the reduced filtering surfaces.

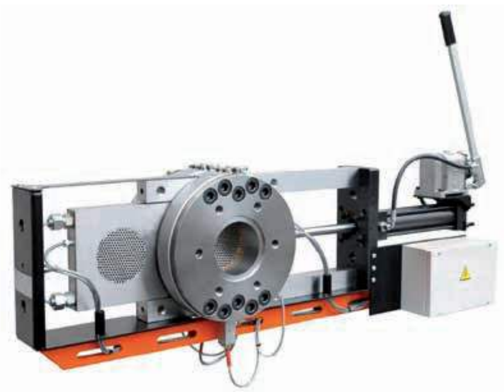


Plate manual screen changer with hydraulic control

Type	Filtering surface cm^2
MF ø 75	44,1
MF ø 90	63,6
MF ø 120	113,0
MF ø 140	154,0

Lever manual screen changer

Type	Filtering surface cm^2
MF ø 35	9,6
MF ø 45	15,9
MF ø 50	19,6
MF ø 65	33,1
MF ø 75	44,1
MF ø 90	63,6

Blown film heads

Over the years, TECOM has developed two series of extrusion heads, both featuring high reliability of the steels utilized, the ease and simplicity of the maintenance and high performance in terms of quantity and quality of the film produced.

Type	Die diameter mm
3÷10	30÷100
3÷15	30÷150
8÷22	80÷220
15÷30	150÷300
20÷40	200÷400
30÷50	300÷500
40÷60	400÷600
50÷80	500÷800
70÷100	700÷1000

Fixed/rotating single flow and double-flow heads – "CFK" series with central feed

This series of heads utilise a central feed system of the melt with spirals distribution to guarantee a perfect dynamic and thermal homogeneity.

They are manufactured in single flow or double-flow versions with the possibility of being mounted onto units that allow them to rotate.

The characteristics that identify them are:

- Low dwell time of the material
- Absence of stagnation points
- Low operating pressure
- Absence of peaks of pressure and speed
- Thermal and dimensional stability
- Internal surfaces completely covered plated
- Perfect symmetry
- Net reduction of thickness tolerances

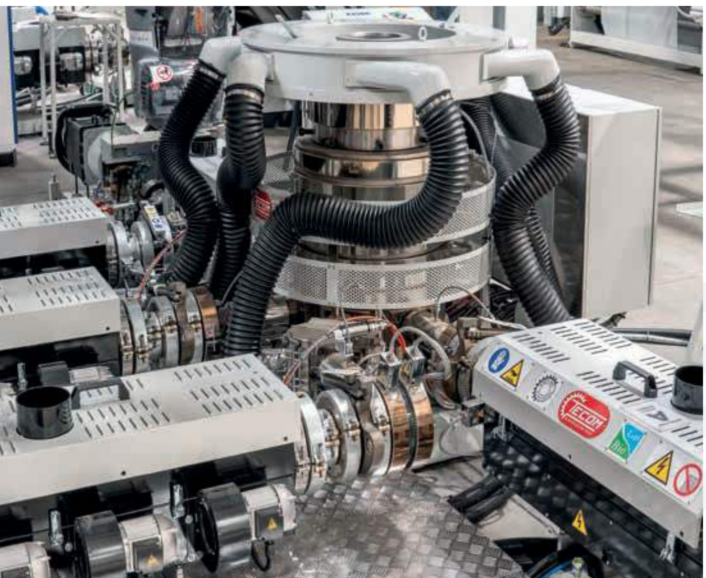
Fixed single flow, tri-flow and coex 3K or 5K heads – "SFK" series with side feed

This series of heads utilise a side feed system of the melt with spirals distribution to guarantee perfect dynamic and thermal homogeneity.
They are manufactured in single flow, tri-flow and coex 3K or 5K versions.

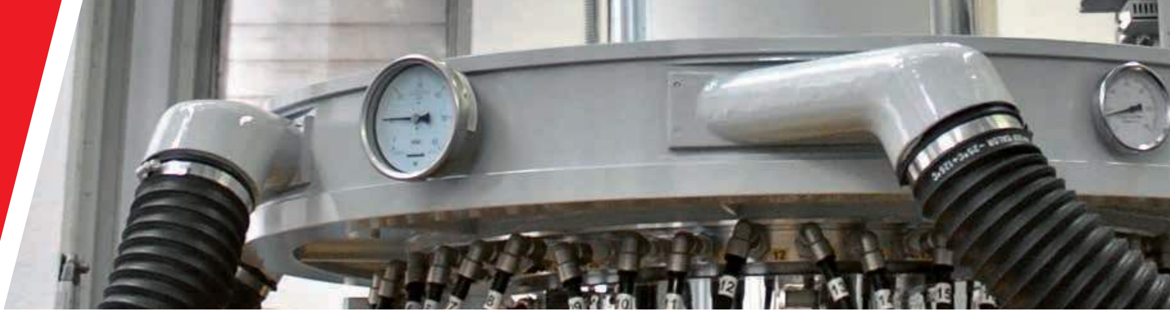
Being fixed, these heads allow a wide passage surface at the centre for the application of IBC (Internal Bubble Cooling).

The main advantages that differentiate them from traditional die heads are:

. Extremely compact structure with consequent energy saving
. Reduced volume of the material inside the head
. Short change times for changing materials and colours
. Reduced operating pressure
. Workability of high viscosity materials
. Excellent distribution of the thickness of each layer
. Internal surfaces completely covered plated
. IBC system with a unique manifold and thermally insulated from the head housing



Type	Die diameter mm
5÷15	30÷150
12÷22	120÷220
15÷30	150÷300
25÷40	250÷400
30÷50	300÷500
40÷60	400÷600
50÷70	500÷700



High efficiency cooling systems

Type	Die diameter mm
KRA15	150
KRA25	250
KRA35	350
KRA50	500
KRA75	750
KRA100	1000

External cooling

All external TECOM cooling rings are suitable to be used with or without internal cooling of the bubble IBC.

The rings are fixed centrally on the extrusion die head to guarantee a perfect operating position.

The rings are available for standard diameters of our dies and with a series of air outlet inserts suitable for all types of material and are fed by fans regulated by digital frequency converters.

- High flow capacity and speed of the air
- Adjustable operating air pressure and flow
- Perfect distribution of the flows
- Adjustable exit double-lip inserts
- Easy adjustment of the frost line height
- Easy adjustment of the bubble shape
- Visualization of the air temperature and air pressure in the ring

IBC (Internal Bubble Cooling) internal cooling

The internal bubble cooling systems **IBC** are constituted of:

- A series of sensors mounted on the calibration cage that control a valve utilized to keep stable the diameter of the bubble.
- Fans regulated by digital frequency converters for the intake and extraction of the air from the bubble.
- Calibrators positioned above the die head that distribute the air inside.

To optimally respond to operating requirements and according to the final product the customers want to obtain, the system can be managed in two different versions one for LDPE with short neck bubble and one for HDPE with long neck bubble. In both versions optimal efficiency is guaranteed in the cooling of the film thereby increasing production and quality.

Bubble calibration system

The calibration cage has the task of stabilising the bubble between the exit of the die head and the conveyor unit.

TECOM offers a wide range of cages particularly suitable for all types of manufacturing, with a number of arms from 6 to 12, electrically controlled, on the basis of the plant type.

The cages are available in two main versions, fixed or adjustable, with electric control and guide rollers constituted of various materials, such as for example POM thermoplastic resin or PTFE (Teflon), silicone, heat-resistant cloth or carbon fibre.

Take-off units

Fixed and oscillating take-off unit

The take-off unit has the task of stretching the film to bring it to the final thickness.
The collapsing system eliminates any folds and carries out the perfect centring on the take-off rollers. Wherever provided, the inversion bars mounted on a rotating platform ensure that any eventual minimum differences of thickness of the film do not cause the formation of protuberances on the surface of the reel.

TECOM's take off units can adapt according to customers' needs or depending on the final product.

- **"TO"** series, fixed take-off units
- **"RTO AB"** series, oscillating take-off units supported with horizontal inversion bars

All plants supplied with oscillating take-off with inversion bars are equipped as standard with a web centre guide unit with ultrasound sensors and visualization of the width of the film.

Collapsing systems of the bubble

There are 3 collapsing frame models for the bubble's conveying that offer the ideal system for all work conditions.

- Collapsing frames with high-friction wooden slats
- Collapsing frames with low-friction carbon fibre idle rollers
- Combined collapsing frames with wooden slats and carbon fibre idle rollers

The adjustment of the collapsing angle can be carried out manually or by utilising a motorised system.

Manual or motorised triangles for side gussets are available for every collapsing system.

Take-off cylinders

The width of the take-off cylinders can vary depending on the model from 0.5 m to 5.0 m.

The units are rated in series based on their speed, up to 200 m/min depending on the model.

The take-off units are equipped with two rolls in rubber/steel with the steel cylinder driven by a three-phase asynchronous motor and regulated by a digital frequency converter.
Both cylinders are predisposed for cooling by water.

Winding stations

Contact winders

TECOM's production includes a large range of contact winders, from basic standard versions to fully automatic versions. Winder versions are available with single station with integrated calendar, double back-to-back station with calendar or a bridge version with a calendar unit and cutting units on the upper part.

Furthermore, there are some versions available with a super-imposed double station for reduced overall dimensions.

Winder cylinders

The widths of the winder cylinders can vary depending on the model, from 0.5 m to 5.0 m. The winding cylinders, with big diameter, are rubber coated with ground surface and diamond-shaped grooves.

There are available versions, for special requirements, with winding cylinders made of chromium-plated rectified steel.
The stations are rated based on their speed, up to 200 m/min depending on the model.
All units are driven by a three-phase asynchronous motor and regulated by digital frequency converters.

Winder mandrel guide

The winders are equipped with straight profile side supports, pneumatically controlled levers and fine regulation of the contact pressure.
The standard diameter of the winder mandrel is 3" inches; 6" inch diameter mandrels can be supplied on request.

Transverse cutting system of the film

The transverse cutting system of the film in semi-automatic and automatic models is ensured by a pneumatic cylinder that supports the cutting blade. TECOM produces 2 transversal cutting versions:

- Rear pneumatic cut where the cut occurs before the winding shaft in respect of the direction of the film.
- Front pneumatic cut where the cutting blade oscillates from the resting position to the cutting position. The cut occurs after the winding shaft in respect of the direction of the film.

Standard devices or optional devices

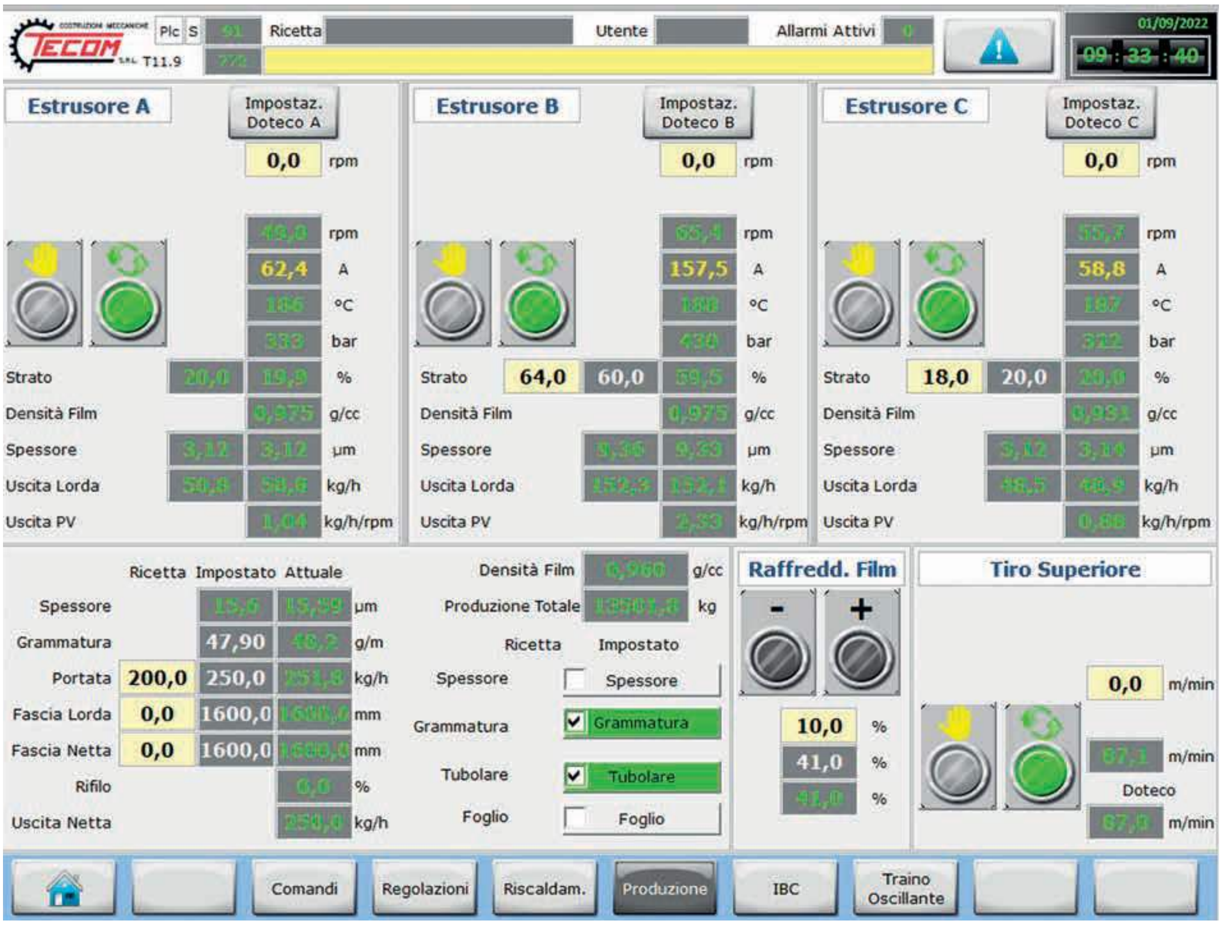
On the basis of the models, TECOM proposes a series of standard devices on the winder stations or available on request to satisfy processing requirements.

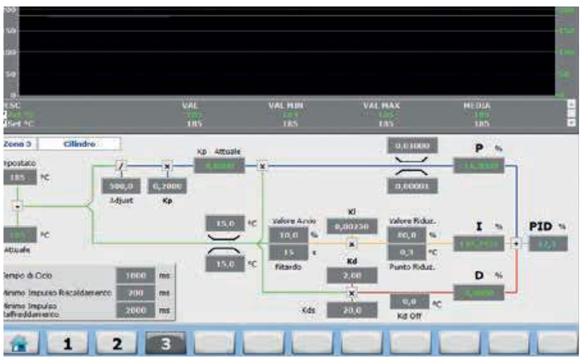
- Space to store 4 winding shaft for each station.
- 6" inch winding shaft
- Antistatic bars
- Device to accelerate the winding shaft before cutting
- Device to unload the reels to the ground
- Electric hoists to position the winding shaft
- Multiple longitudinal cutting device
- Side slitting device with or without air inside
- Haul-off device for the trim
- Trim collection device in axis or with zed system
- Trim suction device
- Web spreader rolls
- Calendar and winder tension control with load cells

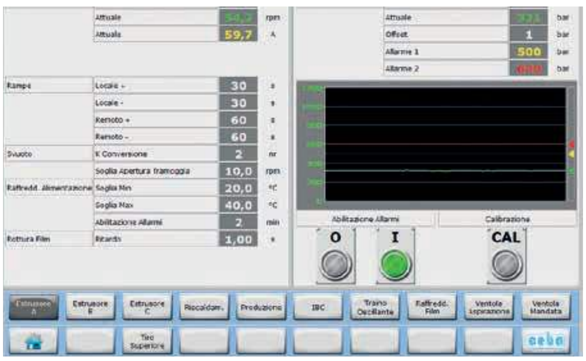
Visualization of the process

The complete plant is represented schematically on operator touch screen panels.

TECOM components are controlled by a PLC and they communicate with each other via the network. The most important processing and operating data are continuously monitored and visualized. The data are entered via the touch screen and shared through the network.
The visualization occurs graphically or by tables, even in the case of advice messages about anomalies or errors.







Accessories to assist the process

Gravimetric weight control

The gravimetric weight control finds its correct application where the average weight/per metre of the product is considered of particular importance. The system automatically regulates the extruder flow and the take-off speed. Independently from the type of resin used, it maintains constant and controlled the weight/linear metre ratio of the film produced in single extrusion or coextrusion. The dosing and control system is substantially composed of a mechanical weighing unit and by computerised measuring and regulation equipment that can manage 6 materials for each extruder. The control also includes the centralised suction system of each single material to be sent to the dosing hopper.
The advantages of using gravimetric control on an extrusion line are mainly:

- Reduction of start-up times
- Excellent repeatability of the processing parameters
- Restricted tolerances of the weight/per metre parameter
- A saving of raw material

Automatic thickness control

The automatic thickness control for plant producing HDPE and LDPE bubble film permits a precise automatic point-point adjustment of the thickness.
This drastically reduces the thickness tolerances along the entire circumference and compensating for the channelling of the melt flow, the imperfect centring of the head and external aerial thermal flows to the plant. All these factors influence the distribution of the thicknesses. The control of the thickness permits a 2 sigma reduction (average value of 6 scansions) even at 50% in the presence of constant processing parameters.
The system foresees the utilisation of a measuring device of the film thickness using a capacitive measuring head placed in contact with the film or in particular situations when it is not in contact.
On the basis of the type of plant, the reading head can be positioned on a rotating unit or directly on the collapsing frame of the take-off unit.

#extrusionsynergy

Blown, Bio-green and Flat Die Technology

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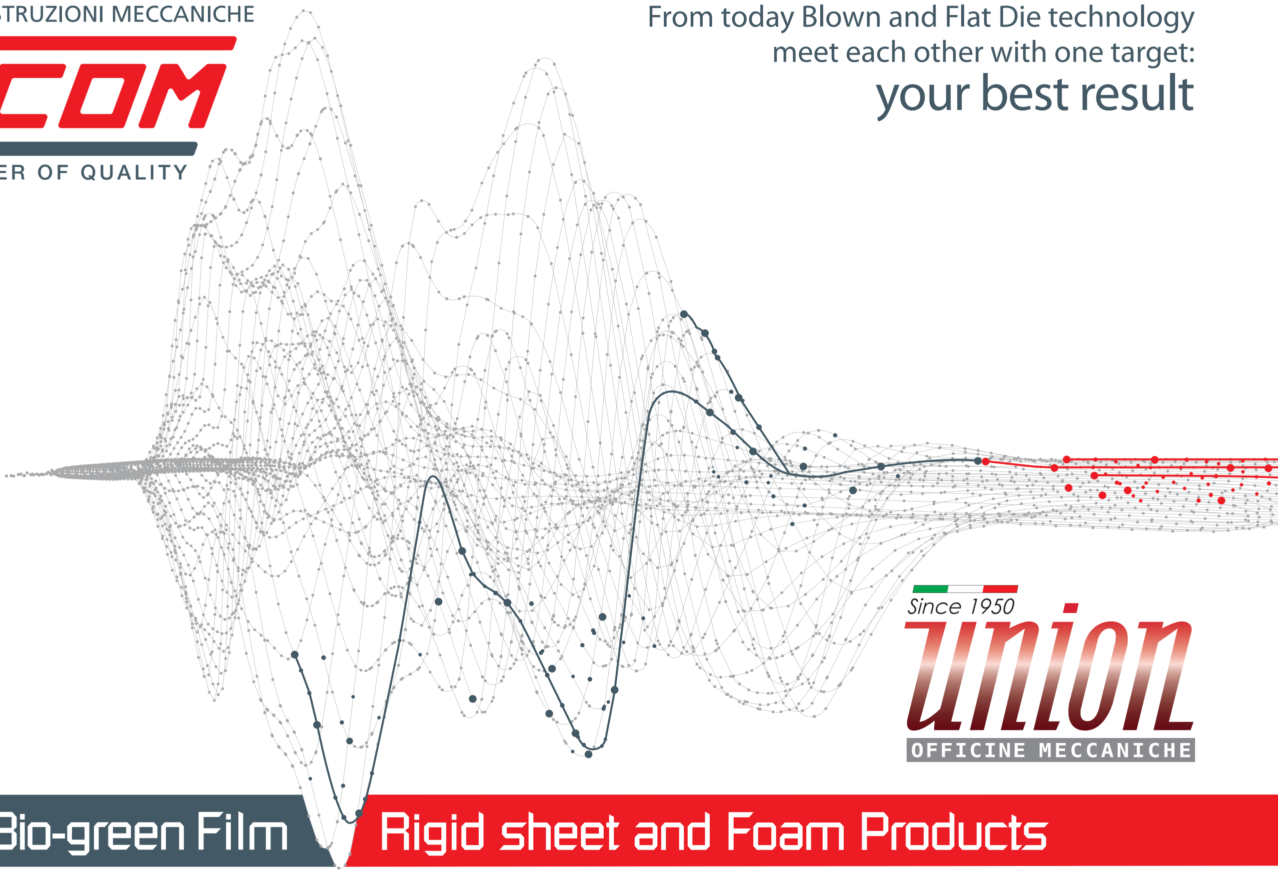
From today Blown and Flat Die technology
meet each other with one target:
your best result



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OFFICINE MECCANICHE

Blown and Bio-green Film

Rigid sheet and Foam Products

COSTRUZIONI MECCANICHE TECOM S.R.L.
Via Sant'Ambrogio, 10
21057 Olgiate Olona (VA) - Italy
T: +39 0331 635.421 - F: +39 0331 624.377
tecom@tecom-it.com - **tecom-it.com**

Go Bio™

SINCE 1963 AT YOUR SERVICE

All our extrusion lines are able to process
biodegradable and compostable blown film.

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