



Innovative
Blown Film
extrusion lines



Costruzioni Meccaniche Luigi Bandera S.p.A. is a worldwide leader in the design and manufacture of complete extrusion lines for packaging and converting.

Our history

1947

Luigi Bandera officially established the company and started the history of extrusion in Italy

1950

Costruzioni Meccaniche Luigi Bandera became a joint stock company, scaling up its activities to become an industrial concern

1960/70

Costruzioni Meccaniche Luigi Bandera experienced a remarkable industrial growth developing a wide and diversified range of extrusion products

1980/90

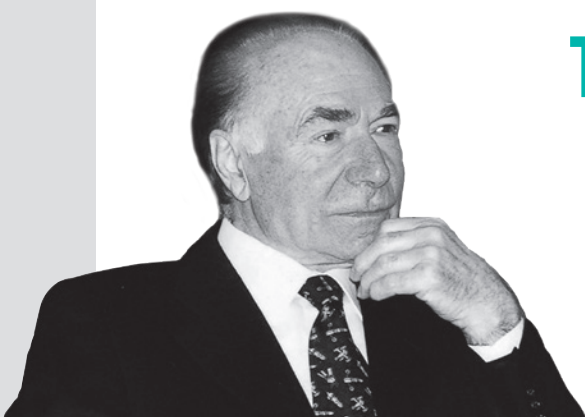
Costruzioni Meccaniche Luigi Bandera was acknowledged as one of the leading companies in the extrusion sector of both Blown Film and Sheet, in Italy and worldwide

2015/2016

Opening of the House of Extrusion, 3000 m² housing R&D and test-running activities on complete production lines

Today

Bandera focuses on **Blown Film** and **Flat Die** extrusion technologies, offering customized engineering services and an after-sales global network





The way we are

Honesty, directness and respect are the main ingredients of our everyday life. Our founder, Luigi Bandera, used to say that the essential asset held by his company is the people and their value.

This powerful thought drives us in our daily approach to business and innovation.

Our mission, Extruding Future Plastics Now®

Establishing Bandera as the most important design and manufacturing centre for extrusion in Europe and a worldwide leader in packaging and converting solutions. Providing production lines featuring state-of-the-art technology for innovative thermoplastic materials.

Top numbers

Our numbers sum up concisely the real meaning of our long term expertise, our know-how and innovative approach.

We are an international company but remain firmly rooted in the Made in Italy tradition. We develop and manufacture unique, customised solutions, to meet specific customer requirements, supporting them from engineering up to installation and after-sales services.

We listen,
don't just hear
We watch,
don't just see
**We create,
don't just
make**

since 1947

experts in extrusion

35,000

extruders installed
running worldwide

54,000 t

of extruded polymers
per day

15,500

active clients all
over the world

55,000

m² production sites

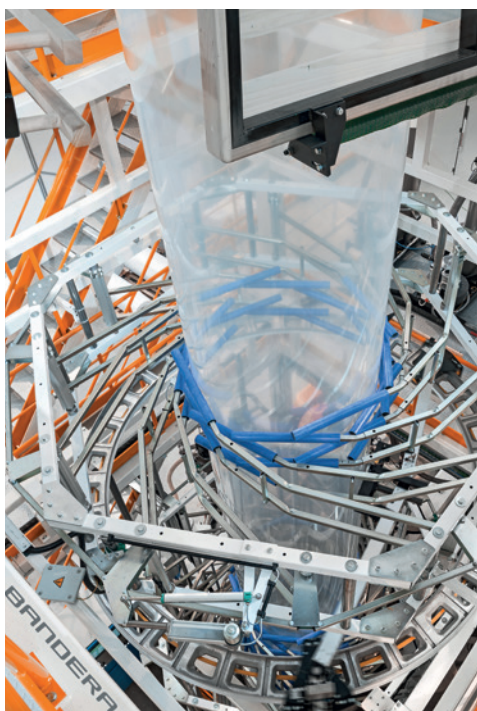
100%

In-house design
and manufacturing





Innovation is a state of mind



Extrusion Intelligence

The concept of **Extrusion Intelligence**[®] is the essence of Bandera's continuous innovative ideas in extrusion technology.

As a globally recognised brand, Bandera is a synonym for technological innovation in extrusion, supplies reliable and cost-efficient solutions and equipment, as well as engineering services, know-how and turnkey installations.

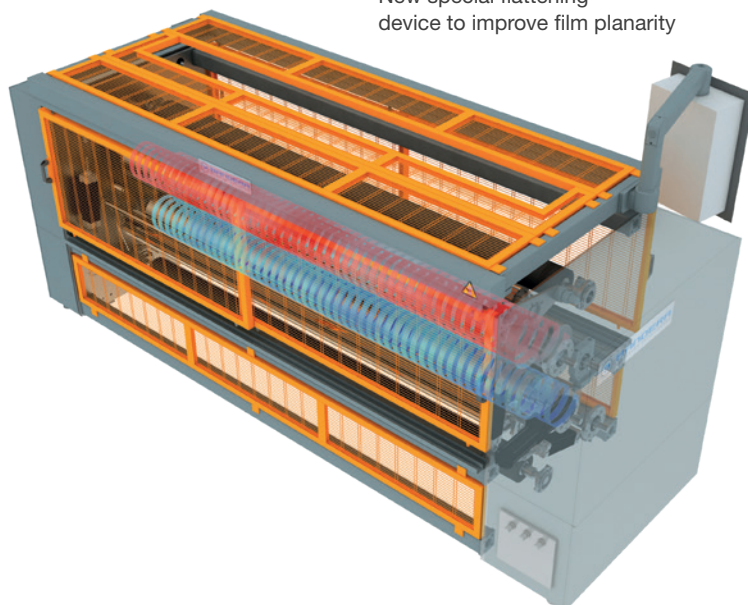
Bandera is capable of gathering its expertise, ideas and innovation from many sources, in order to compete in an environment of increasingly complex technology, to find the best solution for each application.

The House of Extrusion

Bandera created the most innovative European extrusion centre for packaging and converting.

The **House of Extrusion**[®] is a sign of Bandera's vision. Jointly with customers, industry, academia and research centres, Bandera opens the doors the creation of new solutions to anticipate market demand.

New special flattening device to improve film planarity



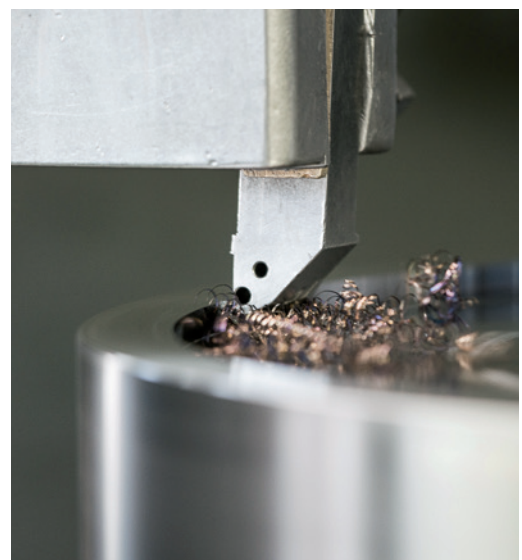
Bandera Blown Film lines production range

Bandera Blown Film extrusion range includes:

- **Smart Flex**® Blown Film lines (1, 3 and 5 layers), characterized by a competitive investment level, maximized flexibility for different applications recipes, power consumption reduction, functional and compact layout featuring frames modularity
- **Techno Flex**® Blown Film lines for the production of multi-layer film (3 and 5 layers) with top performances
- **Barrier Flex**® Blown Film lines for the production of barrier and high-barrier film with symmetrical and asymmetrical film structures (7, 9 and 11 layers)
- **HDB Flex**® Blown Film lines for the production of FFS industrial bags
- **Agri FutureFilm**® Blown Film lines for the production of agricultural film
- **Geo FutureFilm**® Blown Film lines for the production of geomembrane

Bandera innovative know-how and technologies are also applied to cutting edge thermoplastic process for the production of shoppers and bags of different shapes and sizes, as well as shrink film, pallet wrapping and stretch-hood.

Bandera is a
worldwide leader
the design and
manufacture of
top performance
Blown Film lines





Smart Flex® series pursues:

- quality
- flexibility
- reliability
- low power consumption
- low environmental impact



SMART FLEX[®]

Blown Film lines, characterized by a competitive investment level, maximized flexibility for different applications/recipes, power consumption reduction, functional and compact layout featuring frames modularity

The achieved cost savings comes from series production, all general costs are split into a large number of lines thus generating an economy of scale at procurement stage.

The SmartFlex[®] series can be configured either in 1, 3 or 5 layers and comprises different versions:

- **Smart Flex[®] Plus:** higher winding quality, given by axial driven mandrel allowing combined winding mode
- **Smart Flex[®] HP:** higher output, given by increased extruders sizing
- **Smart Flex[®] HP Plus:** combining the two above mentioned features
- **Smart Flex[®] HDB:** to combine **Smart Flex[®]** standard products with the production of HDB/FFS films

Smart Flex[®] width range goes from 1200 up to 2600 mm net.

MAIN ADVANTAGES

- Excellent mid- and long-term yield
- Excellent cost effectiveness
- User-friendly line management
- Made in Italy - Made in Bandera
- Best performances in processing biodegradable and compostable materials



SMART FLEX[®] SERIES POSSIBLE APPLICATIONS

- Packaging film (food and non-food film)
- Thermo-shrink film
- Lamination film
- Stretch-hood film
- Converting film





TECHNO FLEX[®]

Blown Film lines for the production of top performance high-tech multi-layer film (3 and 5 layers)

Undoubtedly, film co-extrusion represents the most consolidated technology for the production of advanced multipurpose packaging solutions.

The standard configuration comprises a central high-capacity extruder, arranged with two smaller ones intended for the outer layers.

Techno Flex[®] lines are fully accessorized getting top quality high-tech film through upgraded components. Among them it is worth mentioning the top range winder ESR-9000 series, which allows 3 winding methods: contact, axial and gap.

Pushing on strong customization, Bandera extrusion lines are characterized by production need orientation, **top versatility and safety**, combined with minimized power consumption.

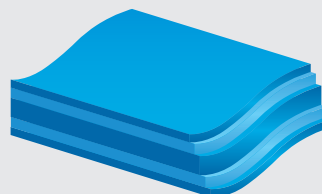
Particularly, the 5-layer configuration is perfect for customers looking for high production flexibility to process PE film with very high production (**Techno Flex[®] PO⁵**), allowing them to produce technical film with outstanding top quality mechanical properties.

Examples of typical 5 layers formulations



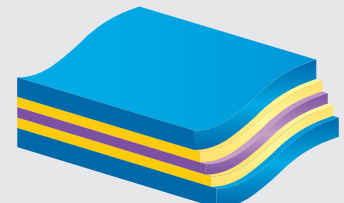
PO⁵ version

5 LAYERS
PE
FUNCTIONAL LAYER
PE
FUNCTIONAL LAYER
PE



FLEX version

5 LAYERS
PE
TIE
PA/EVOH
TIE
PE



Examples of possible applications



The Techno Flex® series production range is wide and comprises, among others:

- film used in top performing converting and printing lines
- film with specific characteristic intended for industrial applications







BARRIER FLEX®

Blown Film lines for the production of barrier and high-barrier film with symmetrical and asymmetrical structures (7, 9 and 11 layers)

Co-extrusion lines of this series are intended for customers manufacturing top class high-barrier technical film for food, medical, pharmaceutical and several mechanical (e.g. automotive) applications.

The films produced with **Barrier Flex®** have a **double and triple barrier**, respectively, with an EVOH central layer combined with PA layers, thus offering a high performing barrier against gases and water vapour.

Besides, Bandera offers extrusion lines capable of ensuring minimized curling effect in case of asymmetric film structures.

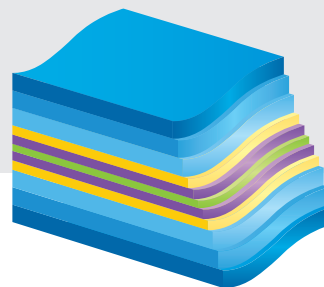
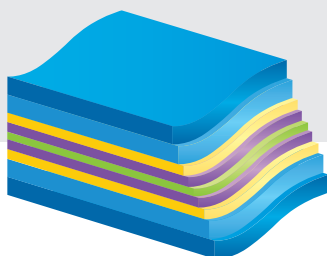
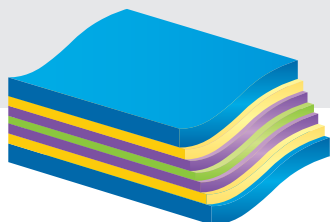


Examples of typical formulations

7 LAYERS
PE
TIE
PA
EVOH
PA
TIE
PE

9 LAYERS
PE
PE
TIE
PA
EVOH
PA
TIE
PE
PE

11 LAYERS
PE
PE
PE
TIE
PA
EVOH
PA
TIE
PE
PE
PE



Examples of possible applications





HDBFLEX[®]

Initial focusing on offering extrusion lines pursuing excellent mechanical characteristics, weldability, processability and printability, today the market trends require minimized film thickness aimed at maximizing product capacity up to 450 kg/h (based on HDB size)

Bandera has taken on this new challenge finding out specific solutions to meet its customers' individual needs, thus confirming - once again - its outstandingly strong customer satisfaction orientation.

Specifically, innovative solutions have been applied in every and each extrusion line section.

HDBFLEX MAIN FEATURES

- Triple-flow cooling ring, which offers a strongly enhanced production capacity when combined with Bandera design extrusion heads
- Specific haul-off units with cutting-edge film cooling system for a better creaseless film surface - a solution setting the pace in innovation in HDB film field
- Integrated thickness control
- Fully-automated winding station, either by contact or by axial winding



Examples
of possible
applications



Bandera provides know-how and innovative technologies

applied to the processing of cutting edge thermoplastic materials for the production of industrial bags (HDB/FFS)

BANDERA
EXTRUSION INTELLIGENCE®

HDBFLEX®

BANDERA
EXTRUSION INTELLIGENCE®
Converting and flexible packaging industry

Process solutions
Technical packaging
Agri-food
HDB (polyethylene film)
Industrial bags and shrink film

Blown film extrusion lines

luigibandera.com







Bandera is a worldwide leader in the production of complete multilayer Blown Film lines dedicated to agricultural film



Nowadays, 5 and 7 layers co-extrusion lines are preferred as they satisfy the current requirements for agrifilm.

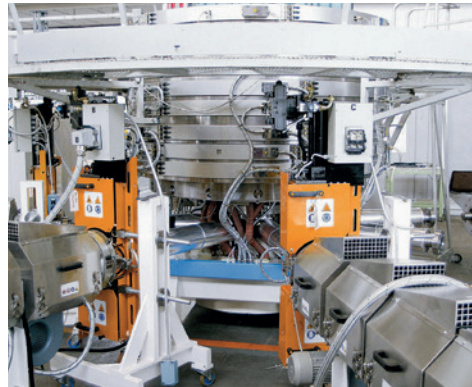
The multi-layer film ensures an enhanced management of raw process materials and optimized additive distribution in every layer, thus increasing film physical and mechanical properties as well as light and heat transmission: as a consequence, the film life cycle is increased.

Bandera agrifilm co-extrusion line flexibility and versatility is increasingly appreciated by customers, considering that, as a matter of fact, agrifilm is a seasonal product.

With the same co-extrusion head and minimized set-up times, Bandera co-extrusion lines can produce agrifilm as well as thicker film (e.g. waterproofing geomembrane): a valuable chance to have an all-year-round profitable co-extrusion line, regardless of agrifilm seasonality.

AGRIFILM APPLICATIONS

- Greenhouse cover film
- Silo-bags film
- Silo-stretch film
- Solar sterilisation film
- Mulch film
- Low walk-in tunnel film



Line configuration	Die diameter	Open width
3-layer	up to 2500 mm	up to 24 m
5-layer	up to 2200 mm	up to 20 m
7-layer	up to 2000 mm	up to 18 m

Examples of possible applications





Bandera offer comprises complete extrusion lines with up to 1200 kg/h production capacity, with film thickness up to 3 mm

GEOMEMBRANE EXTRUSION LINES STANDARD CONFIGURATION

- Dosing system
- High-capacity extruder for the inner layer and two smaller extruders intended for the outer layers, arranged with bimetallic barrel and no-wear coated screw
- Co-extrusion head (die up to 2300 mm) equipped with internal bubble cooling system (IBC)
- Fixed haul-off unit, suitably designed for production needs
- Fully-automated winders, 8.5 m width, with automatic shaft extraction and reel downloading

Geomembrane can be textured on one or both sides; a plain strip can be obtained to ease welding.

This product can also be processed with extrusion head for the production of agrifilm.

Bandera geomembrane extrusion lines can be personalised according to Bandera's customers' needs.

WATERPROOFING GEOMEMBRANE APPLICATIONS

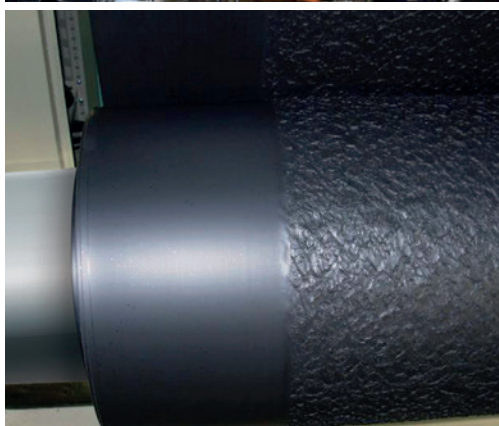
- Landfills
- Tunnels
- Collection tanks
- Water basins
- Irrigation channels
- Extraction mines
- Motorways
- Strengthening works at river and marine water flows
- Dam protections

THICKNESS RANGE

- Min thickness: 0.5 mm
- Max thickness: 3 mm

USEFUL WIDTH

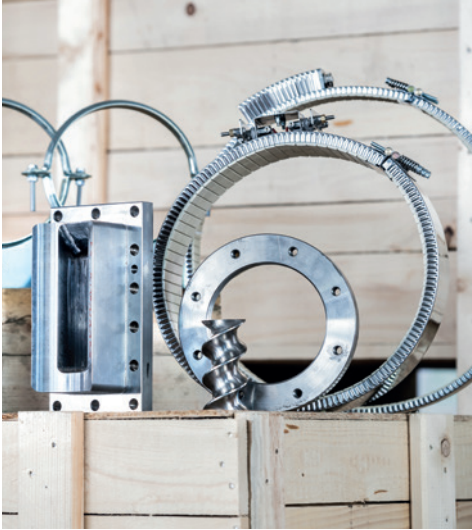
From 6 ÷ 8 m



Geomembrane

is the most unique
product in tubular
Blown Film sector,
**with unique
characteristics**





Why choose Bandera as a technological partner?

Over the past years Bandera has strengthened its leading position in its reference markets worldwide of packaging film, agrifilm and waterproofing geomembrane sectors.

Why choose Bandera?

- Unrivalled expertise in manufacturing complete Blown Film extrusion lines
- Worldwide appreciation
- Pace-setting **know-how** from the collaboration of **leading packaging companies and expertise in small-, medium- and large-sized Blown Film extrusion heads manufacturing**
- Wide extrusion head range
- Extended expertise in winding units
- Rooted collaboration with tested reliable **sub-suppliers**
- Timely and efficient aftersales service
- **ISO 9001:2000 certification**

A responsive and efficient Customer Service

- **6 After-sale service centres** for a worldwide assistance
- **Top class on-site technicians** specialised in installation and start-up
- **Customised procedures training** for new applications
- **Scheduled interventions** for extraordinary maintenance
- Cost effective spare parts packages
- **Reclaiming** of existing machines and **revamping** of complete extrusion lines
- **Cognitive Extrusion® with IoE Internet of Extrusion®** for continuous intelligent maintenance.



IoE Internet of Extrusion[®] Condition Monitoring

Efficiency and reliability at hand.

IoE Internet of Extrusion[®] Condition Monitoring is the quickest and most intuitive web based Human Machine Interface.

HMI provides detailed information in real time on the status of the line to ensure that it is consistent and reliable.

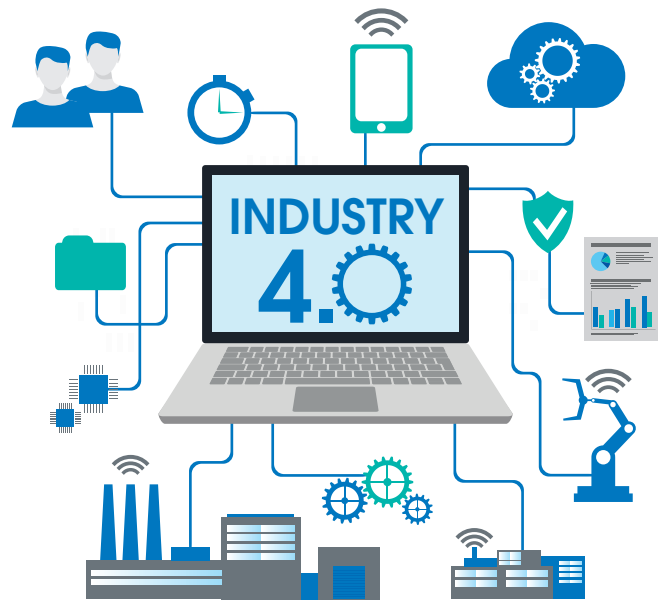
The data can be stored in the cloud or in the local storage memory.

The operator can remotely access to the information instantly and securely.

The main features of Bandera HMI are:

- **Production efficiency** and full control of machine operation
- **Complete traceability** of raw materials
- Control, management and **certification of production lots**
- **Complete connectivity** and integration with MRP systems
- **Native Web Based Technology** design in HTML 5
- Industrial Panel **PC Multi-touch gestures**
- **Diagnostic** for predictive drives maintenance
- Personalized **remote monitoring APP**

Bandera plays a leading role in helping the customer, to reach the highest levels of efficiency in long terms runs following the best procedures of **OEEE - Overall Extrusion Equipment Effectiveness[®]**.



With your most innovative Bandera extrusion line, within the market of flexible films for printing, converting and packaging, will drastically reduce **energy consumption**, extensively widen the usage of **multilayers films**, process new **biodegradable raw materials**.

And now, **exclusively with Bandera**, the **OEEE - Overall Extrusion Equipment Effectiveness**[®], can be speed up by the specific instruction protocol Bandera **Deep Training**[®] to the operating personnel.

Cognitive Extrusion[®] handles data, information and knowledge produced around the clock by our line sensors, allowing via **IoE Internet of Extrusion**[®] the management of planned, preventive and predictive maintenance.



Blown
Film lines



Rigid Film and
Sheet lines

Top packaging
and converting solutions

BANDERA
EXTRUSION INTELLIGENCE[®]

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Extrusion Intelligence

Visit our website and learn about our products
luigibandera.com/products/blown-film

COMPANY WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =