



Innovative
Blown Film
extrusion lines



Costruzioni Meccaniche Luigi Bandera SpA is a worldwide leader in designing and manufacturing complete extrusion lines for packaging and converting.

Bandera history

1943

the first extruder was manufactured in Luigi Bandera's first workshop

1947

Costruzioni Meccaniche Luigi Bandera officially started operating

1950

the company turned into a **joint stock company**

1960/70

between 1960 and 1970 the activities expanded to an **industrial scale**

1980/90

through 1980s and 1990s the company became an **acknowledged leader among the extrusion equipment manufacturers**

now

Bandera, currently managed by **Franco and Piero**, the founder's sons, has recently focussed its product range on:

- **Blown Film extrusion lines** (packaging/converting/agrifilm)
- **Flat Die extrusion technology for rigid thin films and thick sheets**





The way we are

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

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

Our mission, Extruding Future Plastics Now®

Bandera's mission is to establish itself as the most important centre for extrusion in Europe and a main global player.

Keeping a strong focus on manufacturing production lines featuring state-of-the-art technology for plastic materials in the Blown Film and foil and sheet sectors, will make it the pioneer of extrusion in the future.

Top numbers

Our numbers say in brief what our long term expertise, know-how and innovative approach really mean.

Although we are an international company, we remain firmly rooted in the Made in Italy tradition.

We develop and build unique tailor made solutions to meet our customers' needs precisely and support them from engineering to installation and after sales.

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

25,000

days of experience
in extrusion since 1947

15,550

active clients
all over the world

35,000

extruders installed
worldwide

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 extrusion technological innovation, reliable and value for money solutions and equipment, supplying engineering services, know-how and turnkey installations.

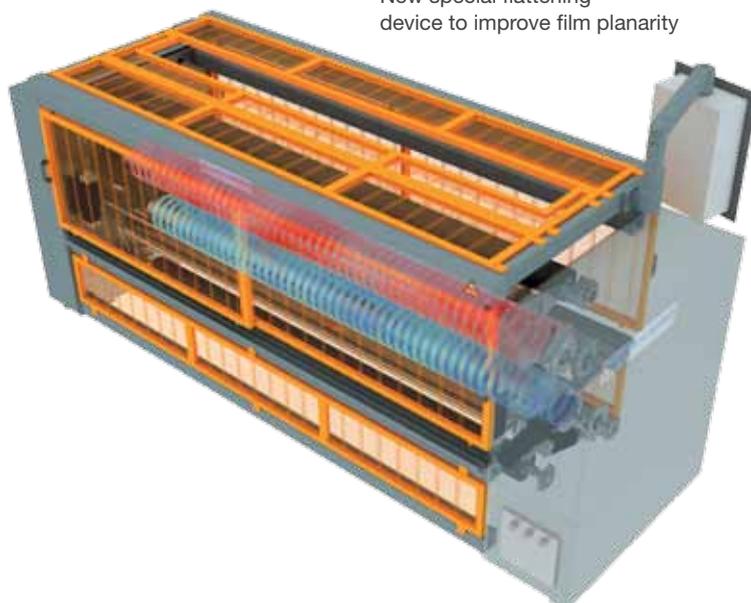
Bandera has the capacity to gather together its own expertise, ideas and innovation from multiple disciplines in order to compete in an environment of increasingly complex technology to find the best solution for each application.

The House of Extrusion

The most innovative European extrusion centre for packaging and converting is Bandera.

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

New special flattening device to improve film planarity



Bandera Blown Film lines production range

Bandera Blown Film extrusion range includes:

- **SmartFlex**® 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
- **TechnoFlex**® Blown Film lines for the production of multi-layer film (3 and 5 layers) with top performances
- **BarrierFlex**® Blown Film lines for the production of barrier and high-barrier film with symmetrical and asymmetrical film structures (7, 9 and 11 layers)
- **HDBFlex**® Blown Film lines for the production of FFS industrial bags
- **AgriFutureFilm**® Blown Film lines for the production of agricultural film
- **GeoFutureFilm**® 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 in
designing and
manufacturing**
top performance
Blown Film lines





SmartFlex® series pursues:

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



SMARTFLEX®

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:

- **SmartFlex® Plus:** higher winding quality, given by axial driven mandrel allowing combined winding mode
- **SmartFlex® HP:** higher output, given by increased extruders sizing
- **SmartFlex® HP Plus:** combining the two above mentioned features
- **SmartFlex® Bio:** to process biodegradable and compostable materials
- **SmartFlex® HDB:** to combine SmartFlex® standard products with the production of HDB/FFS films

SmartFlex® 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

SMARTFLEX® 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.

TechnoFlex[®] 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 (TechnoFlex^{PO5}), allowing them to produce technical film with outstanding top quality mechanical properties.

Examples of typical 5 layers formulations



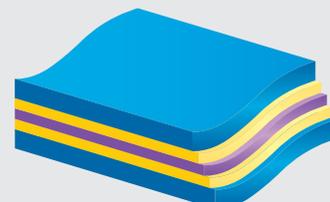
PO5 version

| 5 LAYERS |
|------------------|
| PE |
| FUNCTIONAL LAYER |
| PE |
| FUNCTIONAL LAYER |
| PE |



FLEX version

| 5 LAYERS |
|----------|
| PE |
| TIE |
| PA/EVOH |
| TIE |
| PE |



Examples of possible applications



The TechnoFlex® 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







BARRIERFLEX®

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 BarrierFlex® 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.

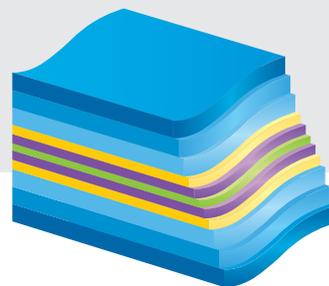
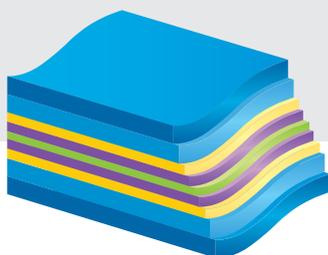
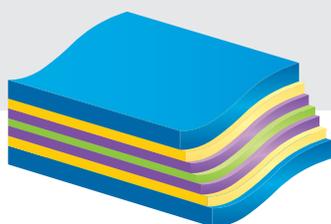


Examples of typical formulations

| 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[®]

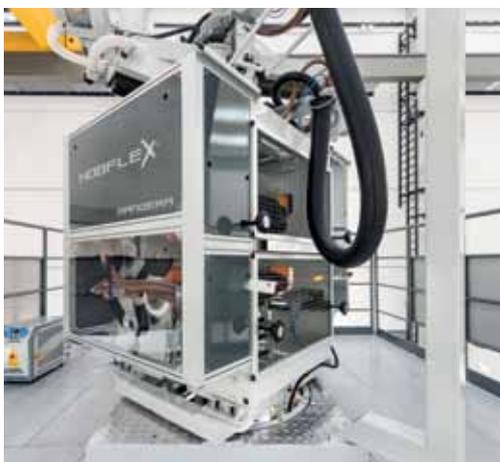
Initial focusing on offering extrusion lines pursuing excellent mechanical characteristics, weldability, processability and printability, today the market trends require minimized film thickness aimed at maximizing product capacity up to 450 kg/h (based on HDB size)

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)



HDBFLEX

BANDERA
EXTRUSION INTELLIGENCE
Covering and flexible
packaging industry



Show my industrial zone

<http://www.bandera.com>





AGRI FUTURE FILM®

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





GEO FUTURE FILM®

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

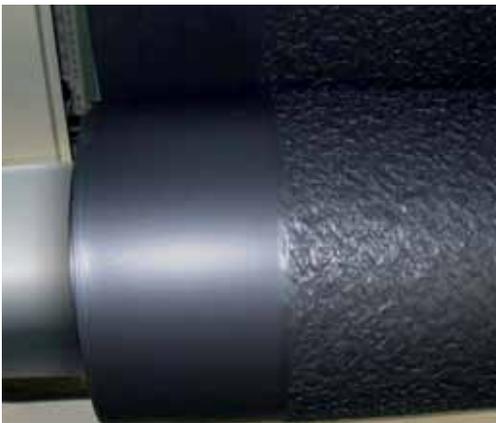
- Landfills
- Tunnels
- Collection tanks
- Water basins
- Irrigation channels
- Extraction mines
- Motorways
- Strengthening works at river and marine water flows
- Dam protections

THICKNESS RANGE

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

USEFUL WIDTH

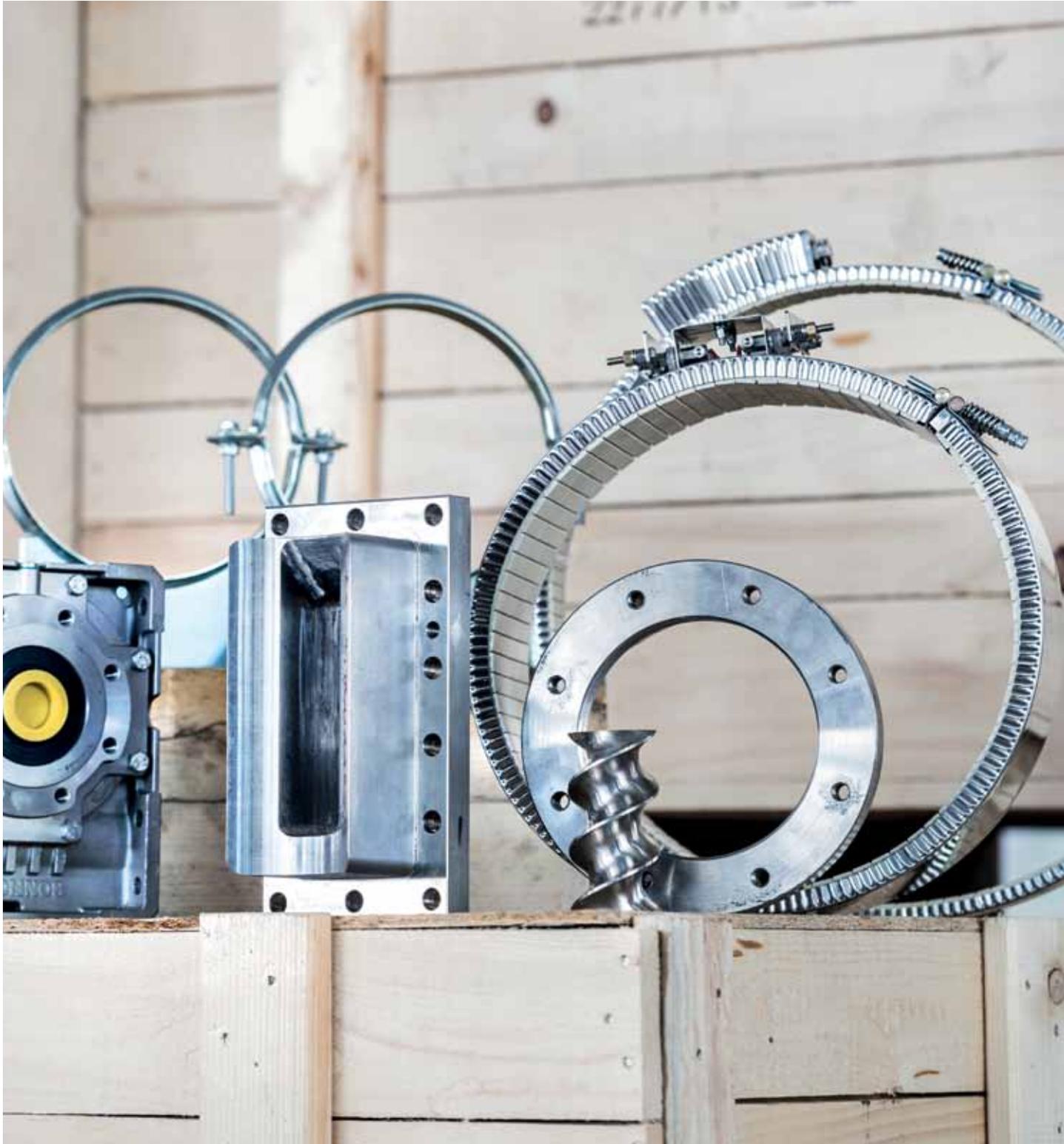
From 6 ÷ 8 m



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



You and Bandera, inside the new markets 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**, speed up the **Overall Extrusion Equipment Effectiveness® (OEEE)**, by the specific instruction protocol Bandera **Deep Training®** to the operating personnel.



Blown
film lines



Rigid film and
sheet lines

Top packaging
and **converting** solutions

BANDERA
EXTRUSION INTELLIGENCE®

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

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