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:

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

- 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

We listen, don’t just hear
We watch, don’t just see
We create, don’t just make
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

Bandera created the most innovative European extrusion centre for packaging and converting.
The House of Extrusion® is a peculiar 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.
Bandera has developed and improved a cutting edge extrusion system for the production of PET sheet and foil from both virgin material and recycled PET. Up to the present, this unique Bandera co-rotating twin-screw technology has been applied to more than 150 extrusion lines for the production of high quality PET sheet and foil. Bandera extrusion line achievable throughput exceeds 2.5 tons per hour. Raw material standard composition - for the twin-screw “core” layer - is 100% recycled PET flakes from post-consumer PET bottles and/or PET skeleton waste from thermoforming and/or PET regrind bottle pre-forms. Bandera customers usually include some virgin PET material as external capping layers (functional barrier: up to 7.5% each layer) to obtain the classic A-B-A structure.

Bandera innovation
a synonym for excellence

Bandera is a worldwide leader in designing and manufacturing top performance flat die PET extrusion lines

Deep knowledge of extrusion process

In-house design and production

Guaranteed plants performances

Full satisfaction of customer need

Competitive and cost-effective

Reliable and robust concept of all the equipment

Experienced & Innovative

Flexibility on engineering

Projected into the future

Serious and well-organised

Performing at the highest levels
Bandera designs and manufactures complete extrusion lines for the production of mono-and multilayer foil mainly for food packaging industry and for the production of rigid films for the industrial thermoforming application.

Bandera is the worldwide leader supplier of twin screw extrusion systems for the production of PET rigid films obtained by direct process avoiding the raw material pre-treatments typically required by conventional technologies.

This patented extrusion systems, combined with the high-tech downstream supply, ensures the following features:

- High output range (up to 2.5 ton/h)
- Wide film production (up to 2 m net)
- Increased thickness range (0.12 to 2 mm)
- in-line mass adding of masterbatches and mineral fillers for composite sheets by using co-rotating twin-screw extruders combined with innovative and precise “loss-in weight” dosing units for raw material
- high speed multi-reel completely automatic winding units for foil lines
- customized lamination system for PET-PE products destined to FFS market
Twin screw technology, the ground-breaking concept for PET processing

During the late 90’s, on the basis of the very limited single screw results obtainable, Bandera R&D Dept. focused its attention on the co-rotating highly vented twin-screw extrusion (HVTSE) technology, specially designed for the direct PET Film production.

Ranging among the world leading twin-screw extruder producers, Bandera has manufactured a dedicated PET processing machine ready for testing within a few weeks...

From the very beginning, results proved to be definitely encouraging for both Bandera and its customers. By the end of 1999, the first PET sheet extrusion line was successfully installed in southern Italy (it featured a double twin screw configuration). Bandera technology was promptly patented.

Since then Bandera has kept on developing its technology. Outstanding results in terms of process flexibility, melt purification and cost-effective aspects have been obtained. Bandera customers are constantly supplying packaging products to world leading food industries.
Twin-screw technology main advantages: *postconsume recycled raw materials and highly polluted industrial scraps*

- Possibility to process 100% PET flakes and/or regrind (thermoforming skeleton) material with initial humidity up to 1.5% (residual moisture) with no need for dehumidifying process. Raw material pre-treatments are space engaging, tricky expensive and time-loosing.

- **User-friendly feeding and dosing equipment**
  Dosing systems designed by Bandera are outstanding for reliability, user friendliness, and maintenance-free construction, resulting in easier management and configuration of raw material feeding and dosing ancillary equipment.

- **Co-rotating screws featuring a special profile to ensure PET polymer gentle processing**, thus resulting in excellent melt control with no thermic and hydrolytic degradation.
Twin-screw technology main advantages:
the energy saving concept

Power saving: power consumption up to ~ 35% lower than conventional technologies.

According to the data provided by several final users, it is noticeable that the Bandera HVTSE technology is definitely more efficient, robust and cheaper to run compared to alternative ordinary technologies available in the market.

These performances are achieved thanks to the process mild of the polymer and avoidance of pre-treatment process by the co-rotating twin screw extruder.

Extruder machine length (42:1 L/D or 52:1 L/D) allows smooth processing, with no material stress.

- Single-screw extrusion + crystallization & dehumidification (no degassing)
- Single-screw extrusion + degassing & fast drying
- Single-screw extrusion + degassing unit
- Twin-screw co-rotating extrusion (no dehumidification)
Mission: **safety, energy saving, recycling**

Bandera is focused on two core aspects:
- **Extrusion line safety operation condition**
- **Best energetic efficiency and maximum sensibility to usage of recycled plastics**

In order to provide its customers with:

- **Safe and reliable production lines** delivering top manufacturing and quality performances
- **Minimum power consumption** production lines
- **Dedicated extrusion lines** for the production of finished products made from innovative thermoplastics, thus favoring recycled and biodegradable material transforming

HVTSE extruder

Bandera tailor-made multilayer PET foil extrusion line
Twin-screw technology main advantages: **best flexibility**

- Superior flexibility in extruding alternative thermoplastic materials (PLA - PS - PP) intended for packaging. No screw replacement required, with excellent output levels if compared with single screw extrusion technology and twin screw extruders by other manufacturers.

- **Recipe & colour changeover with no line stop.** Material recipes, formulations and colour changeover are largely eased by Bandera extrusion process (no line shutdown is required). Minimised material residence time and self-cleaning properties of the co-rotating twin screw extruder typically allow for operation cycle completion in 5÷10 min, **thus resulting in significant savings in line running time**, material consumption and waste.

- Extrusion screws consist of mixing and conveying modules assembled on broached shafts. The barrel construction is modular, too, and involves nitrided steel sections.

- **Reduced encumbrance** leads to logistic and infra-structure cost reduction.

- Highly experienced engineers and skilled technicians of Bandera technical and engineering dept. allow Bandera to offer its customers tailor-made extrusion lines.

- **Higher line output from (400 to 2500 kg/h).**
Twin-screw technology main advantages: best melt purification

Enhanced venting sections and empowered vacuum pumps for maintenance-free and high purification results.

Reliable venting and degassing sections with empowered vacuum pumps - 10÷15 mbar residual vacuum - with very low maintenance need and a very high melt purification effect (FDA approved) easy extraction of unwanted volatile materials, interstitial gas, residual moisture, oligomers, aldehydes and any carbonious materials.

Bandera has been a trendsetter, among machine suppliers, in starting such trials and tests several years ago. Bandera achieved its FDA NOL in 2009.

The unique combination of screw profile, extruder length and vacuum system is the core of Bandera R&D efforts. The minimised IV drop in no way interferes with sheet mechanical properties. Melt control at the die is much easier due to its stiffer characteristics, thus resulting in end-product enhanced features.
TECHNICAL DATA

Line Type 3-layer CoEx-Sheet-Line plus lamination - high production

Dosing Unit Loss in weight dosing unit

Extruders Co-rotating twin screw with very long, high vacuum venting unit; TR90 35D single screw with Reiloy 90 mm barrel, air cooled and grooved feeding zones, barrier screws

Die Head 3-layer slot-die-head with decklers

Calender 3 rolls horizontal cooling & polishing calendar stack; integrated lamination or extrusion coating unit available on request

Thickness control Control by air cushion sensor

Haul Off With silicon coating device and dryer are combined in one unique frame

Foil accumulator Double rack with stock capacity 40 m, to slow down line speed during reels changing operations

Winding Automatic Multi-reel winder Revolver Type;

Line Control Touchscreen, Bandera IOE® software

Tele-service Digital modem

Note More options and customised solutions are available on demand

Innovative multi-layers PET sheet complete extrusion line for rigid and thermoformed food packaging, with

- Largest production output
- Availability of net foil width up to 2 m
- Highest level of energy consumption savings
- Fully automatic production skill

Typical applications
General packaging, food packaging, thermoforming foil or similar applications.

RAW MATERIALS

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foil width</td>
<td>Up to 2000 mm net</td>
</tr>
<tr>
<td>Foil thickness</td>
<td>120 - 2000 µm</td>
</tr>
<tr>
<td>Output capacity</td>
<td>Max 2500 kg/h</td>
</tr>
</tbody>
</table>
Multilayer PET/PP/PS rigid film extrusion plant

ALPHA PET

TECHNICAL DATA

Line Type 3-layer CoEx-Sheet-Line plus lamination
Dosing Unit Loss in weight dosing unit
Extruders Co-rotating twin screw with high vacuum venting unit;
            Single screw air cooled highly vented
Die Head 3-layer flat die with internal decklers
Calender 3 rolls horizontal cooling & polishing calender stack; Integrated lamination or extrusion coating unit available on request
Thickness control Control by air cushion sensor
Haul Off With silicon coating device and dryer combined in one unique frame
Foil accumulator Double rack to slow down line speed during reels changing operations
Winding Semi automatic 2-station cantilever winder with drive management by PLC;
            Max reel diameter 1200 mm
Line Control Touchscreen, Bandera IOE® software
Tele-service Digital modem
Note More options and customised solutions are available on demand

Typical applications
General packaging foil, food packaging foil, thermoforming foil or similar applications.

Dimensions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>35,000 mm</td>
</tr>
<tr>
<td>Width</td>
<td>9000 mm</td>
</tr>
<tr>
<td>Height</td>
<td>6000 mm</td>
</tr>
</tbody>
</table>

RAW MATERIALS

Regrind or virgin PET (APET-CPET-GPET-EPET), PP, PS, PLA or further resins

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foil width</td>
<td>Up to 1450 mm net</td>
</tr>
<tr>
<td>Foil thickness</td>
<td>120 ÷ 1500 µm</td>
</tr>
<tr>
<td>Output capacity</td>
<td>Max 1300 kg/h</td>
</tr>
</tbody>
</table>
Light Duty PET®
Innovative and cost effective PET, PP and PS rigid film extrusion line
new series LDL “2020”

TECHNICAL DATA

Line Type 3 layer CoEx-Sheet-Line
Dosing Unit “Loss-in-weight” dosing unit
Extruders Co-rotating twin screw extruder with high vacuum venting unit or as alternative single screw extruder (PP/PS)
Co-Ex Single screw
Filter Hydraulic continuous
Thickness Control by air cushion sensor
Die Head 3-layer black box plus flat die with decklers
Calender 3 rolls horizontal cooling & polishing calender stack with large middle rolls
Haul Off With silicone coating device and dryer combined in one single frame
Foil accumulator Double rack with stock capacity, to slow down line speed during reel changing operations
Winding 2-station cantilever winder, manual foil cutting and threading, or IN-LINE configuration to direct feed thermoforming machine
Line Control Touchscreen, Bandera IOE® software
Tele-service Digital modem
Note More options and customised solutions are available on demand

Typical applications
General packaging foil, food packaging foil, thermoforming foil or similar applications.

RAW MATERIALS
Regrind or virgin PET (APET-CPET-GPET-EPET), PP, PS, PLA or further resins

<table>
<thead>
<tr>
<th>Foil width</th>
<th>Up to 1300 mm net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foil thickness</td>
<td>180 –1200 μm</td>
</tr>
<tr>
<td>Output capacity</td>
<td>Max 1000 kg/h</td>
</tr>
</tbody>
</table>
Cost effective innovative multi-layer PET/PP or PS/PP complete sheet extrusion line for the production of rigid thermoformed packages (IN-LINE version available)

- Dedicated to thermoforming application (IN-LINE configuration)
- Best thickness range availability
- Limited floor space requirement
- Very competitive price
- Maximum flexibility on raw materials
- Available also with medium/small outputs
- Extrusion section with main co-rotating twin screw extruder or single screw extruder
Rigid film lines for converting application

Agility Line Series

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Line Type</th>
<th>3-layer CoEx-Sheet-Line plus lamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosing Unit</td>
<td>Loss in weight dosing unit</td>
</tr>
<tr>
<td>Extruders</td>
<td>Co-rotating twin screw with high vacuum venting unit</td>
</tr>
<tr>
<td></td>
<td>Single screw air cooled</td>
</tr>
<tr>
<td>Die Head</td>
<td>3-layer flat die with internal deckles</td>
</tr>
<tr>
<td>Calender</td>
<td>3 rolls horizontal cooling &amp; polishing calender stack</td>
</tr>
<tr>
<td>Thickness</td>
<td>Control by air cushion sensor</td>
</tr>
<tr>
<td>Winding</td>
<td>2-station auto revolver winder with drive management by PLC, automatic foil cutting and threading, reel diameter max 800 mm</td>
</tr>
<tr>
<td>Line Control</td>
<td>Touchscreen, Bandera IOE® software</td>
</tr>
<tr>
<td>Tele-service</td>
<td>Digital modem</td>
</tr>
</tbody>
</table>

Typical applications
Form, fill, seal and converting application plus food and thermoforming foil.

Innovative multi-layers PET sheet complete extrusion line for rigid and thermoformed food packages, with very high production output
- Fully automatic operation including PE film lamination process
- Complete with raw material feeding equipment and automatic winding unit even in limited floor space requirement
- Whole complete production platform with “plug & play” modular installation
- Dedicated to short production slots avoiding scraps

RAW MATERIALS
Recycling or virgin PET (APET-CPET-GPET), PP, PS, PLA or further resins

<table>
<thead>
<tr>
<th>Foil width</th>
<th>Up to 860 mm net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foil thickness</td>
<td>180 ÷ 900 µm</td>
</tr>
<tr>
<td>Output capacity</td>
<td>Max 550 kg/h</td>
</tr>
</tbody>
</table>

Dimensions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>12.000 mm</td>
</tr>
<tr>
<td>Width</td>
<td>9000 mm</td>
</tr>
<tr>
<td>Height</td>
<td>5000 mm</td>
</tr>
</tbody>
</table>
New packaging solutions
Lamination process

PET IN-LINE PRESSURE ROLL LAMINATION SYSTEM

IN-LINE LAMINATION WITH
POLYETHILENE FILM

OFF CALANDER LAMINATION

OFF CALANDER LAMINATION WITH
EVOH BARRIER FILM

Final products / main applications for PET + PE
(Barrier) foil - some examples
New packaging solutions
In line extrusion coating

IN-LINE COATING TECHNOLOGY

The **IN-LINE coating** system allows the user to have full flexibility in terms of raw material choice and management, thus resulting in large potential reduction of production costs compared to standard multi-layer film technology.

Standard PET foil - usually featuring A-B-A structure - is afterwards (slightly) pre-heated and coated with barrier layers (**EVOH** and **tie resin**) and/or PE layers.

All resins are processed through small single screw extruders mounted on a dedicated support frame. Coating is by an automated multi-manifold die and special designed chill roll equipment.

**The adhesion between PET and PE barrier layers is extremely high** - in all probability the best on the market. The IN-LINE coating system has further widened Bandera expertise in this field, thus becoming one of Bandera’s flagships.

Bandera technology can be applied to PP and PS sheet and retrofitted to existing extrusion lines.

Customised and innovative structures are available on request.
The ultimate innovative solutions: lowering packages weight

STRUCTURAL FOAM PET SHEET TECHNOLOGY PATENTED

Bandera has recently focussed on the foam PET sheet field with the application of its ultimate co-rotating twin screw extruder (52:1 L/D).

Current foam PET sheet is produced by processing virgin PET with foaming agents; latter being very expensive, production costs are high. Furthermore, final products have proved to be almost un-recyclable and inefficient cost wise.

Bandera has based its latest research on physical foaming (i.e. by gas injection) using recycled PET flakes (from post-consumer and industrial waste), i.e. significant cost savings on raw materials and the total recyclability of the product.

AMAZING FLEXIBILITY

A standard Bandera PET rigid sheet extrusion line can be versatility converted to foam PET sheet production (universal extrusion twin screws design for both rigid and foam PET production) by adding an appropriate gas injection system and process adjuvants. To obtain a superior quality foam PET sheet, Bandera is able to supply dedicated extrusion equipment to optimize the whole extrusion process.

The same principle can be developed by using alternative resins such as PLA, PS,...

NEW CONCEPT: FROM 1 TO 5 LAYERS STRUCTURAL FOAMED SHEET (ALPHA VELPET)

- Virgin compact
- Flakes or regrind compact
- Foamed flakes regrind
- Flakes or regrind compact
- Virgin compact
E-PET film

Results obtained by Bandera R&D are definitely interesting and encouraging. Typical PET density is $1.33 \div 1.35 \text{ kg/dm}^3$. In case of ABA or BBB structure (B layer being 100% Post Consumer Waste - mixed with industrial skeleton waste) weight reduction values are the following:

- **Total sheet thickness**: 0.3 $\div$ 1.4 mm
- **Density achieved**: 0.5 $\div$ 1.15 kg/dm$^3$

Weight reduction rate strongly depends on final application. Significant production cost savings have been achieved by replacing rigid box liners with foam liners. Bandera has once again confirmed its trendsetting attitude - the development of new products is combined with cost savings and environment friendly commitment focussed on turning plastic materials into eco-friendly lower weight packaging, in high demand by both food and non-food markets.

 PET foam final products/applications
- some examples

<table>
<thead>
<tr>
<th>STANDARD COMPACT PET SHEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>R APET V</td>
</tr>
<tr>
<td>R PCR PET</td>
</tr>
<tr>
<td>R APET V</td>
</tr>
<tr>
<td>Density</td>
</tr>
<tr>
<td>Sheet thickness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NEW STRUCTURAL E-PET SHEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>R APET V</td>
</tr>
<tr>
<td>R PCR PET</td>
</tr>
<tr>
<td>PCR E-PET</td>
</tr>
<tr>
<td>R PCR PET</td>
</tr>
<tr>
<td>R APET V</td>
</tr>
<tr>
<td>Density</td>
</tr>
<tr>
<td>Sheet thickness</td>
</tr>
</tbody>
</table>
The crucial innovation challenge for Bandera is to substitute standard raw materials to produce more packaging products in recyclable PET using ABA new structure to ensure best surface quality.

For this reason Bandera has launched the **Lighter Packaging** campaign.
Advantages of Bandera as technological partner in flat die technology

Over the recent months Bandera has managed to strengthen its leading position on packaging market worldwide - the supply of several A-PET, C-PET, PET-G, PP, PS and PLA sheet extrusion lines has ranked the renowned Italian company on top of major extrusion companies. Several Bandera customers are major suppliers of packaging products for the most important food industries worldwide, outstanding for the following:

- **Great expertise in running complete extrusion lines** featuring 120 ÷ 150 µm minimum thickness
- **Possibility to combine single screw** vented extruders to produce A-B-A configuration external layers (no need for dehumidification)
- **Great number of references worldwide** (major converting companies)
- **Unique experience in PE and PE/tie/EVOH** processing through film lamination and extrusion coating
- **Employ of automatic dies** with great results on sheet planarity performances
- **Great experience** in providing automated multi-reel winders (2, 3 or 4 reels on the same shaft)
- **Wide experience in integrating ancillary equipment** (including global line supervision with PC up to raw material handling and conveying)
- **Accredited sub-suppliers/vendors** of special electronic components supported by dedicated service
- **Experienced and prompt customer care**, supported by training and after sales service (prompt reaction to customers’ needs - live emergency service and teleassistance)

Thanks to its expertise and engineering skills, Bandera provides full and prompt technical support for revamping, upgrading and refurbishment projects. Bandera’s offer range includes special equipment such as “drilled” designed calender rolls, extrusion screws, barrels and single components, flat dies and relevant accessories, several downstream ancillary equipment obtained - from specific proprietary design and manufacture process (either standard or customised as per individual requirements).
OEEE
OVERALL EXTRUSION EQUIPMENT EFFECTIVENESS CONCEPT

OEE - Overall Equipment Effectiveness - index has originally been applied to Lean Production System. Bandera OEEE has now been adapted to film extrusion production working on 3 key concepts:

• The availability index is the parameter for line exploitation in respect to overall available time thus obtaining line **EFFECTIVE OPERATING TIME**, i.e. machine running time

• Efficiency index which is the parameter for line output performance. At run time line should produce a given quantity of product (good + scrapped, in kilos), according to machine rated output

• Quality index which is the parameter for line production quality and it is given by quotient of scrap quantity (in kilos) by total production quantity (in kilos).

Such inches are aimed at enhancing maintenance efficiency to minimize downtimes due to failures through machine operation or maintenance instructions accompanied by diagrams and images called One Point Lessons.

A responsive and efficient Customer Service

• 6 after-sale service centres for a worldwide assistance
• Over 24-months warranty upon request
• 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
• Reclaiining of existing machines and revamping of complete extrusion lines
• IOE® - Internet of Extrusion for continuous maintenance.
Close to our customers

Headquarters

- PET lines sold in the world 2000-2016

- Service centres
  - Germany
  - Brazil
  - China
  - Indonesia
  - Canada

Top loyalty level

More than 150 complete PET lines installed worldwide, since 2000, with full customers’ satisfaction
Bandera developments in North America PET and PLA

From the end of 2010 up today Bandera assembled several HVTSE corotating twin-screw extruder at the largest north American processors in the thermoformable PET and PLA rigid film extrusion sector. Downstream line section has been designed and manufactured by PTI Processing Technologies International LLC. Bandera and PTI Processing Technologies International LLC entered a 10-year agreement for the supply of the extrusion lines within North American region. Besides a PLA foil output to reach 2500 kg/h, the large sized extruder is equipped with a powerful cutting-edge degassing unit for the extrusion of top-quality PET foil.
You and Bandera, inside the new markets of PS/PP/PET and PLA rigid and semi-foamed packaging films, will drastically reduce energy consumption, extensively widen the usage of recycled and biodegradable materials, process challenging new applications for lower weight packages 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.

Rigid film and sheet lines
Blown film lines

Top packaging and converting solutions