Bandera HDB Flex

Heavy Duty Bags / Form Fill Seal dedicated solution
Contents

03 / Bandera corporate overview

07 / Heavy Duty Bags and Bandera solutions

19 / Bandera, top technological partner
Bandera history

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 (packaging/converting/agrifilm)

• rigid sheets with flat die technology
Bandera top numbers

25.000 days of expertise in extrusion

15.550 active clients all over the world

35.000 extruders installed worldwide

100% in house design and manufacturing
Bandera business in blown film technology is focused on three main goals

- Designing safe and reliable production lines to offer top quality performance, in compliance with EC safety rules
- Ensuring minimum energy consumption levels for production lines
- Extrusion lines for finished goods made from innovative thermoplastic materials
Product line shares

- Plants for blown film: 45%
- Plants for foil and sheets: 23%
- Single extruders for special applications: 37%
- Converting flex pack: 20%
- Spare parts: 10%
- Agri & geo: 6%
- Pelletizing PET & PVC: 4%

Source: internal data as of December 2015
Bandera blown film extrusion

Techno Flex plus extrusion lines are essentially employed in flexible packaging, converting and lamination industry for the production of multi-layer film

Smart Flex extrusion lines are intended for shrink film, converting and lamination

Agri and Geo multilayer extrusion lines for the production of agricultural film and geomembrane

HDB Flex 3 layers equipment is mainly used for the production of film for industrial bags (Heavy Duty Bags)

A series of machinery relying upon the strength of competitive level of investment, high output, enhanced thickness range, maximised flexibility and efficiency, and minimised energy consumption.
Global HDB estimated production in 2015: 1,710 kT

Significant growth rates in **MEAF** and **Asia** regions, where **Bandera** has achieved a strong market leadership

**TPY** = Tons Per Year

- **Americas**: 330,000 TPY (4.4%)
- **Europe**: 380,000 TPY (2.8%)
- **MEAF**: 500,000 TPY (6.5%)
- **Asia**: 500,000 TPY (7%)
HDB market overview: output

Remarkable output growth thanks to technological innovation applied to production lines

Source: internal data as of quarter 2 2015
HDB market overview: thickness

Thickness trend - at unmodified mechanical properties

Downgauging film thanks to R&D investments by raw material producers

Source: internal data as of quarter 2 2015
Heavy Duty Bags

Applications
Chemicals (polymers)
Agriculture (fertilizers)
Food (pet and animal food, flours)
Minerals (salt, sands)

Size
Width – 350 to 800 mm
Gusseting depth – 50 to 120 mm
Thickness – 120 to 180 μm

Characteristics
Top mechanical properties
Excellent thickness tolerance
High weldability
Optical properties
HDB production stages

Extrusion
from granules to tubular film reel

3-layer tubular blown film extrusion process
tubular film in reels

Finishing
from tubular film reel to printed, embossed and gusseted film reel

in-line/off-line 4-/6-colour flexo printing
with in-line printed tubular film embossing and gussetting

Heavy Duty Bag production
from finished reel to bags ready to be filled

tubular blown film welding and cutting process to have HD bags ready for forming and filling

Heavy Duty Bag forming/filling
from reeled tubular film to formed and filled HD bags

forming and filling process from reeled tubular film to formed and filled HD bags

or

from empty bag to formed and filled bag

filling process from empty bag, by filling machine

Bandera HDB Flex. Heavy Duty Bags / Form Fill Seal dedicated solution _ 12
HDB Flex: Bandera solution

Coextrusion line composed by:

18-component loading and gravimetric dosing system
1 extruder, 100 mm Ø, 160 kW AC motor
2 extruders, 65 mm Ø, 75 kW AC motor

3-layer blown film die head, 180 mm Ø

Special dedicated IBC system, 8-sensor ultrasound system for automatic film width control

High efficiency cooling ring with automatic 45-segment thickness and height adjusting system

3 bubble guide cages

Special cutting-edge take-off unit 800 mm wide, with cooling rolls suitable for HDB film production

Automatic single-station winder with additional cooling rolls

Corona treatment unit
HDB Flex: Bandera solution

Extrusion line downstream

Cooling ring and calibration cage

Control panel

Special take-off
Finishing

Printing

6- or 4-colour (3+3 or 2+2) flexo printing from reel to reel

Off-line process, except for specific needs that require printing to be in-line with extrusion

As a standard, manufacturer logo and product ID are printed
**Finishing**

Embossing and gusseting

**Post-printing**

Etching process on 2 embossed or prominent bands to increase friction coefficient between stacked bags

Gusseting: preforming to give bag a size that is functional to logistics
Finishing

6-colour flexo printing with in-line embossing and gusseting system

Embossing system

Gusseting system: detail
Bag-making machine

Welding unit

Stand-alone line for the production of bag with welding and cutting (sealed bottom) stages, starting from the finished reel.
Proven expertise in the HDB / FFS market

Highly customised solutions, particularly designed to meet specific customer’s needs

Designing of turnkey extrusion projects based on the long term expertise and know-how

Bandera is the only supplier of lines complete with extrusion, printing, embossing and gusseting, thanks to our partner Bfm
Bandera: expertise and plus

Turnkey lines - examples

Finished reels - examples
100% Bandera

In-house manufacturing of extrusion system main component parts, thus ensuring top quality and making spare parts readily available – even for non-standard machinery.

Over the years, Bandera has acquired in-depth knowledge of thermoplastic rheology, resulting in state-of-the-art finished products.

Digital simulation and design allow a pre-project check on any system performance.
Manufacturing departments

3 production sites covering a total area of 55,000 m²

Specific area dedicated to mechanical and electrical assembly of both single extruders and complete extrusion lines

Specialization in screw, cylinder and extrusion head manufacturing

The House of Extrusion®, Bandera brand new R&D Centre, fully dedicated to wet tests
Extensive use of CNC machine tools for the manufacture of screws, cylinders and extrusion heads
Organisational quality

Quality is crucial, at every production step - design, manufacturing and technical service

Prior verification of material excellence and monitoring of suppliers

Ongoing checks on the product at every production stage, and quality control of finished products

Material and product identification and traceability, and ongoing testing of measuring and testing instruments

Since 1998
The House of Extrusion®

Bandera brand new centre housing R&D activities and wet tests on complete production lines

Newly opened in May 2015, it is the result of a 4 million Euro investment
After sales service

Bandera relies upon a dedicated team of top-notch technicians specialised in complete production line installation and start-up, and customer staff training.

A responsive and efficient customer service is one of the essential strengths of a global business dealing with complete production lines located throughout the world.

A global network and a capillary presence worldwide through Bandera sales offices and exclusive representatives all over the world.

Thanks to its IoE – Internet of Extrusion® – proprietary technical service system, Bandera is able to have a truly global reach.
Bandera, local and global at a time

Headquarters
Service centres
Sales exclusive offices

Source: internal data as of December 2015
Bandera, a synonym for excellence

A worldwide reputation of trustworthiness, integrity, and high business standards

- Deep knowledge of extrusion process
- Equipment reliability and sturdiness
- Made in Bandera design and production
- Engineering flexibility
- Guaranteed production output
- An eye on the future
- Focus on customer needs
- Trustworthiness and top quality organization
- Competitiveness and cost-effectiveness
- Top-notch service
- Expertise and innovation

Bandera HDB Flex. Heavy Duty Bags / Form Fill Seal dedicated solution
Thank you