



Bandera HDB Flex

Heavy Duty Bags / Form Fill Seal dedicated solution

[English version]

BANDERA
EXTRUSION INTELLIGENCE®



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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



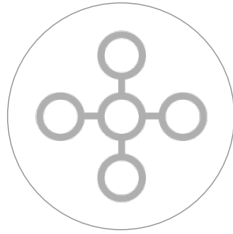
100%

in house
design and
manufacturing

Bandera: a strong focus



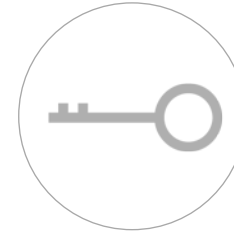
Bandera business in blown film technology
is focused on three main goals



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



Plants for foil
and sheets



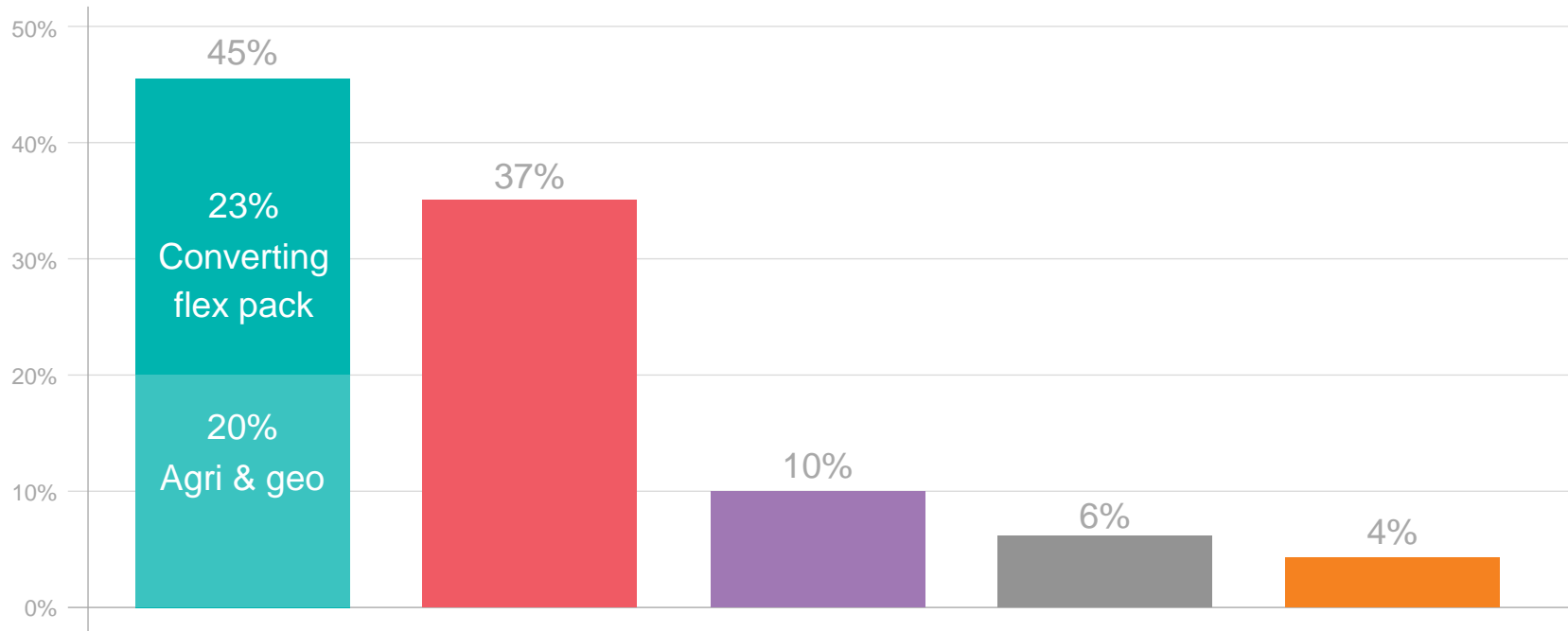
Single extruders
for special
applications



Spare parts



Pelletizing
PET & PVC



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.

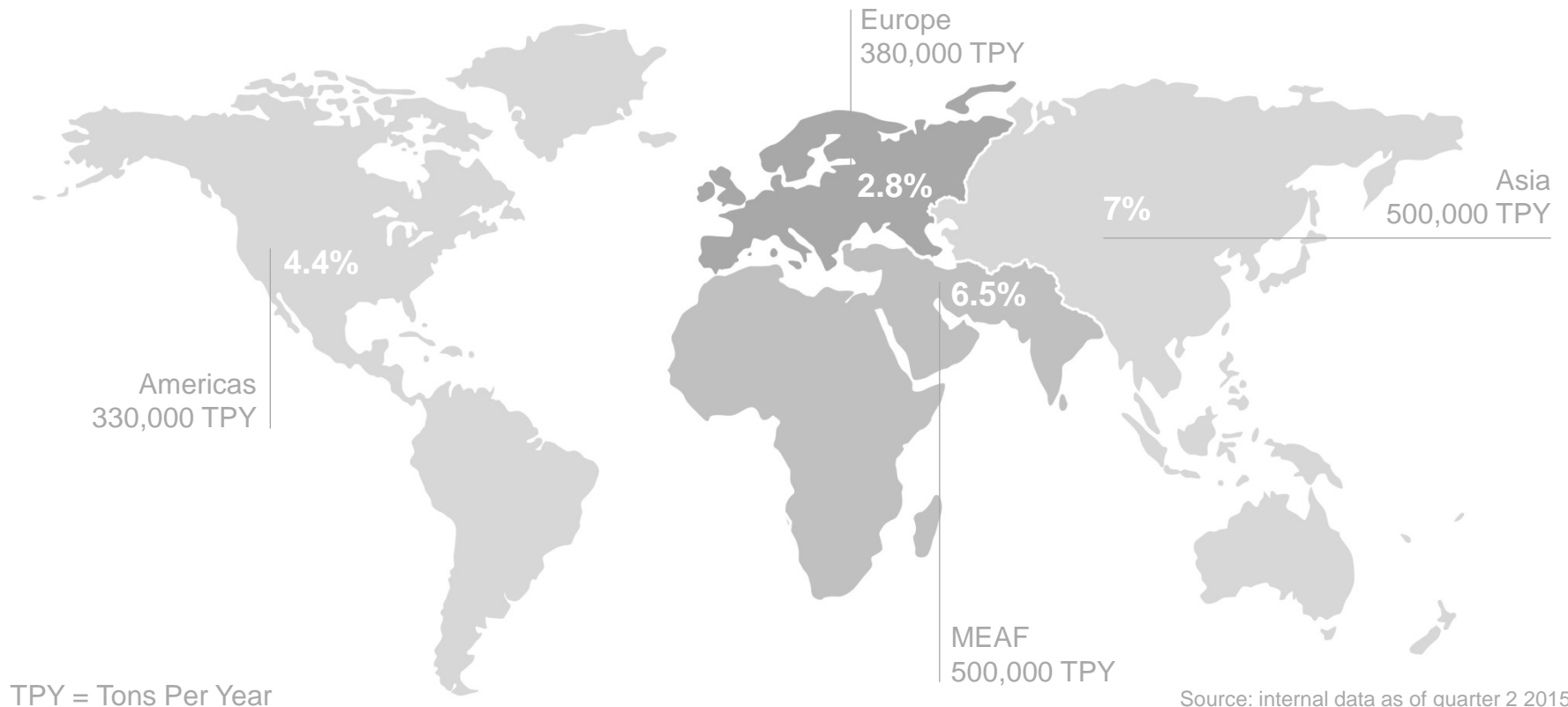


HDB market and growth rates



Global HDB estimated production in 2015: 1,710 kT

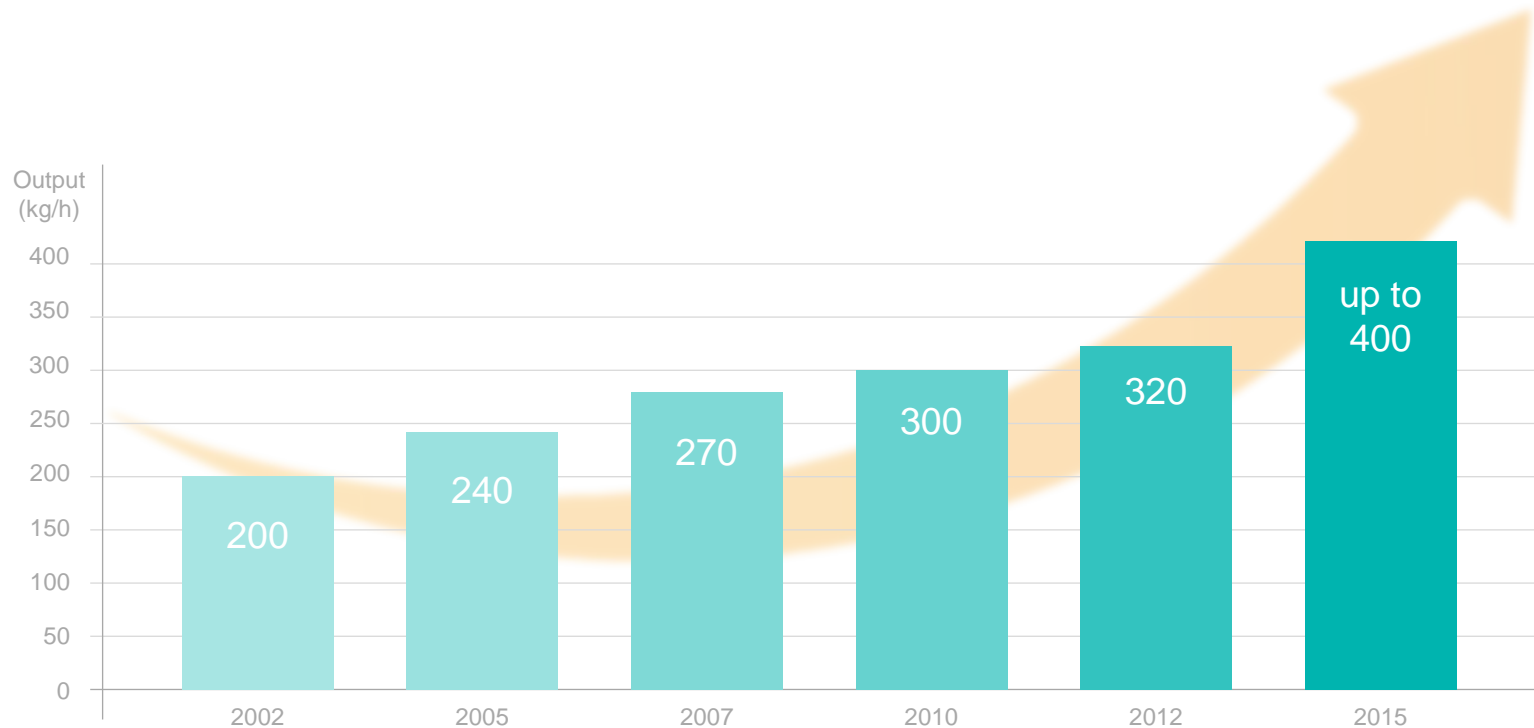
Significant growth rates in **MEAF** and **Asia** regions, where Bandera has achieved a strong market leadership



HDB market overview: output



Remarkable output growth thanks to technological innovation applied to production lines



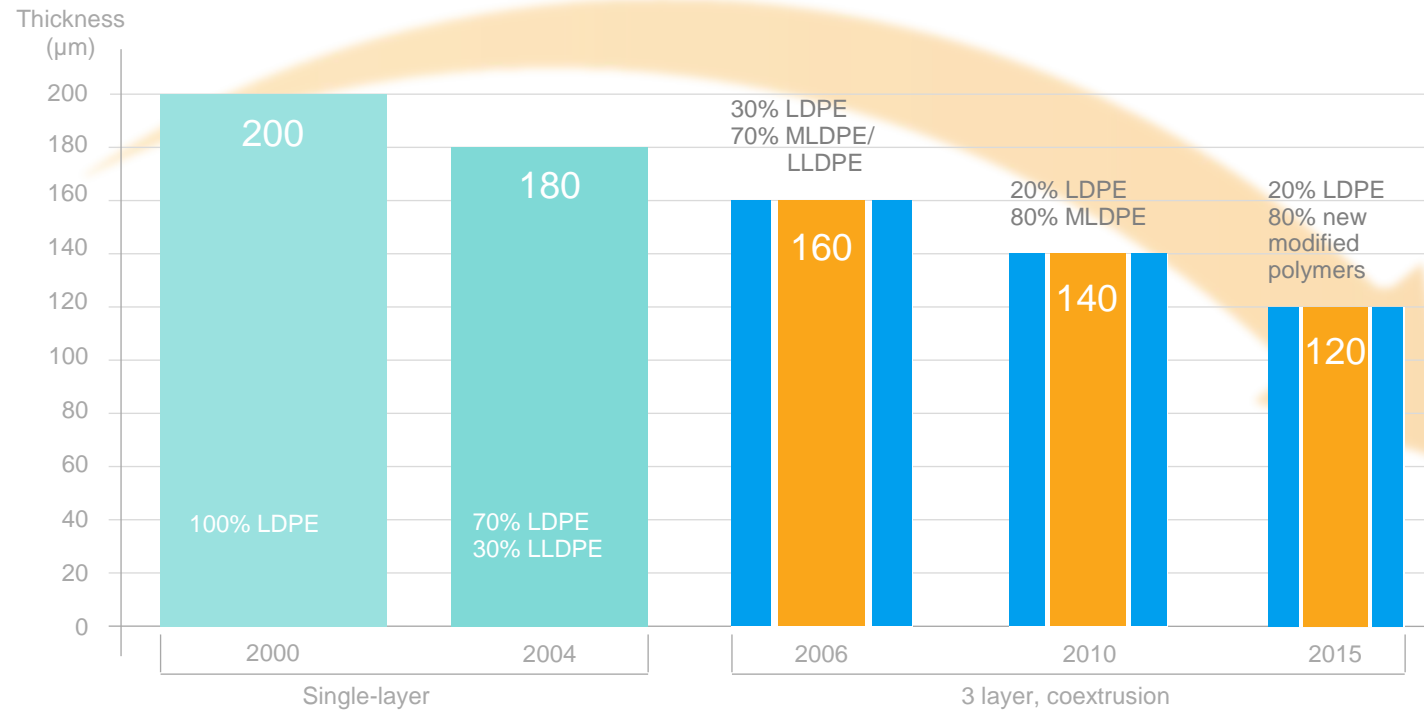
Source: internal data as of quarter 2 2015

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

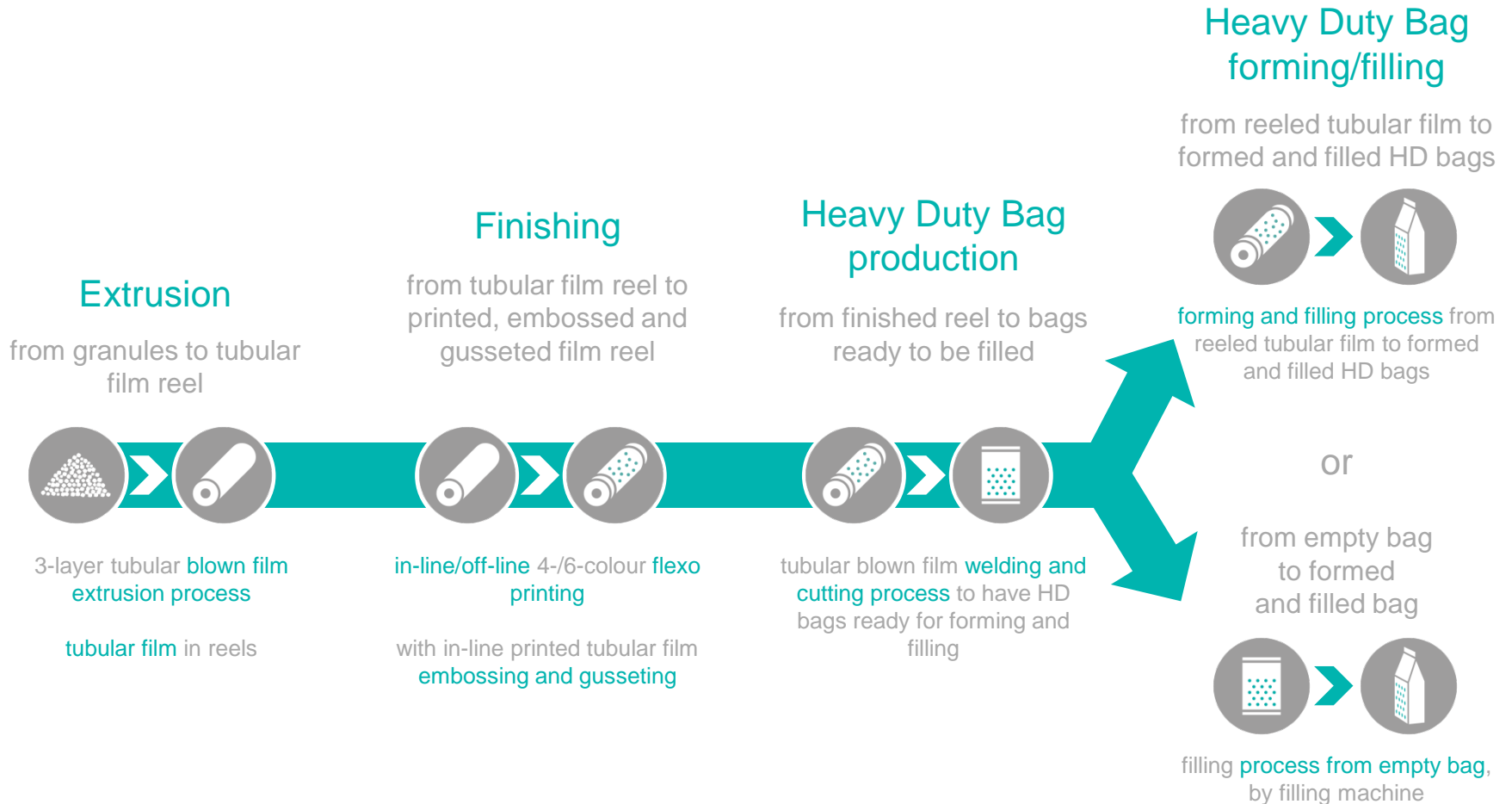
Thickness – 120 to 180 μm

Characteristics

Top mechanical properties
Excellent thickness tolerance
High weldability
Optical properties



HDB production stages



HDB Flex: Bandera solution

1/2



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





Extrusion line downstream



Cooling ring and calibration cage



Special take-off



Control panel

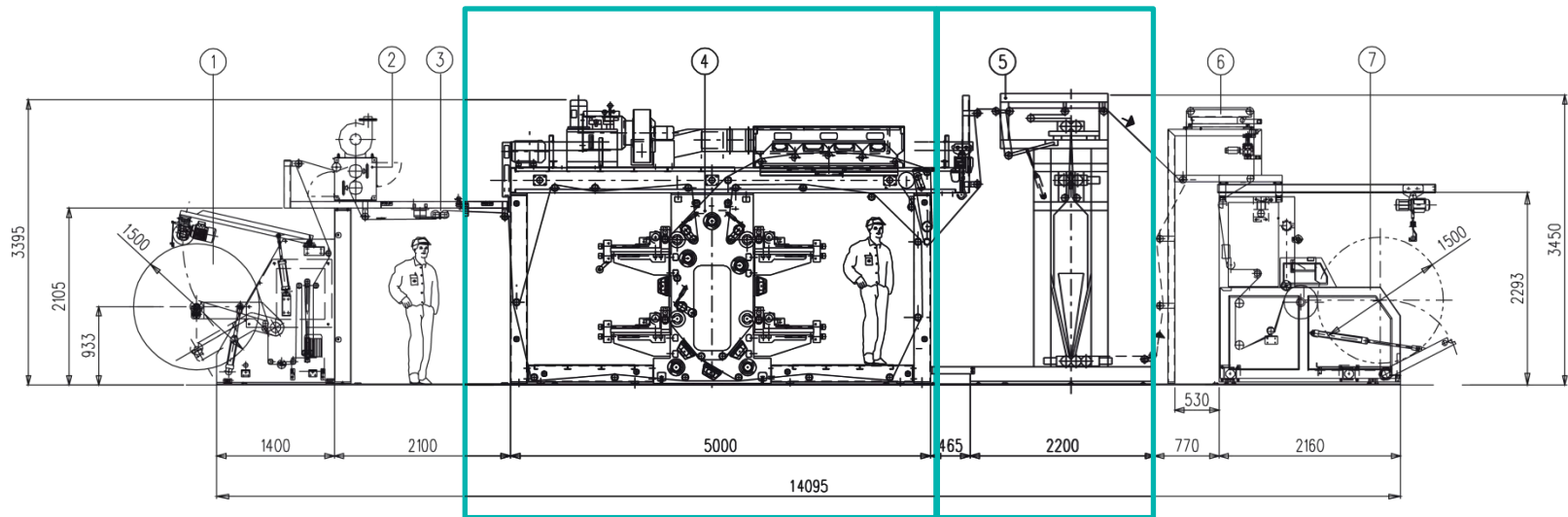


Printing

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



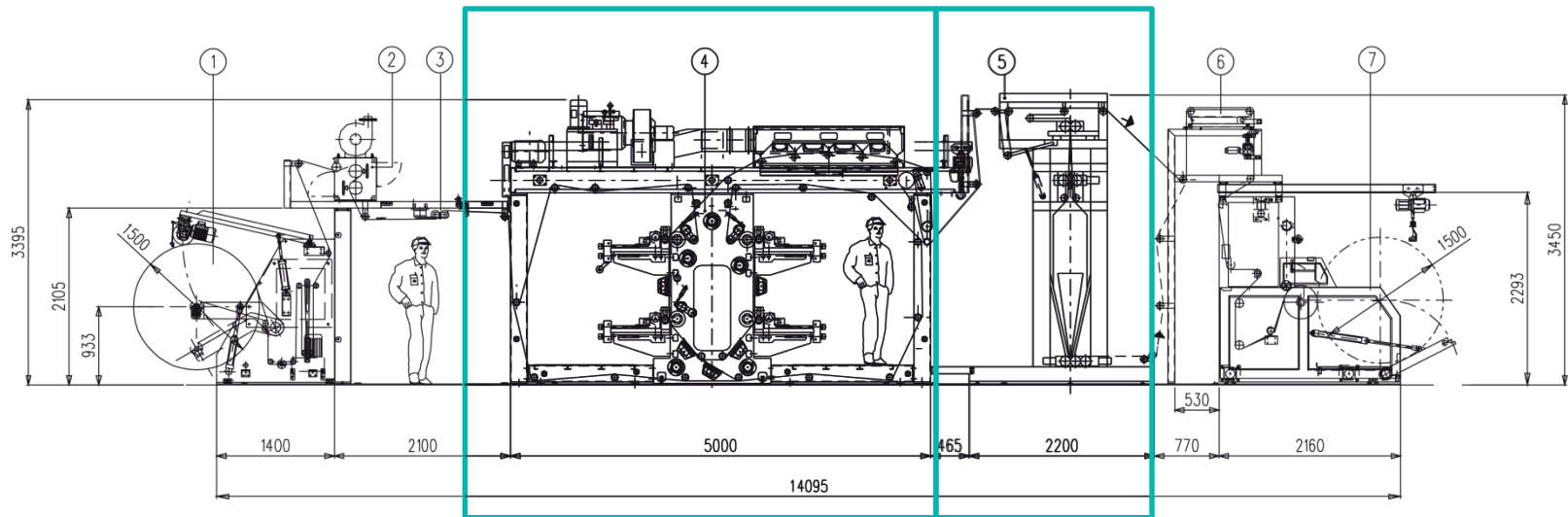


Embossing and gusseting

Post-printing

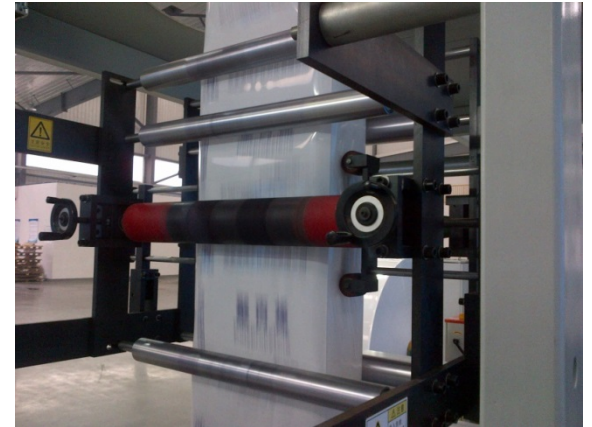
Etching process on 2 embossed or prominent bands to increase friction coefficient between stacked bags

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





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



Bag-making machine – an example



Finished bag – an example

Bandera: expertise and plus

1/2

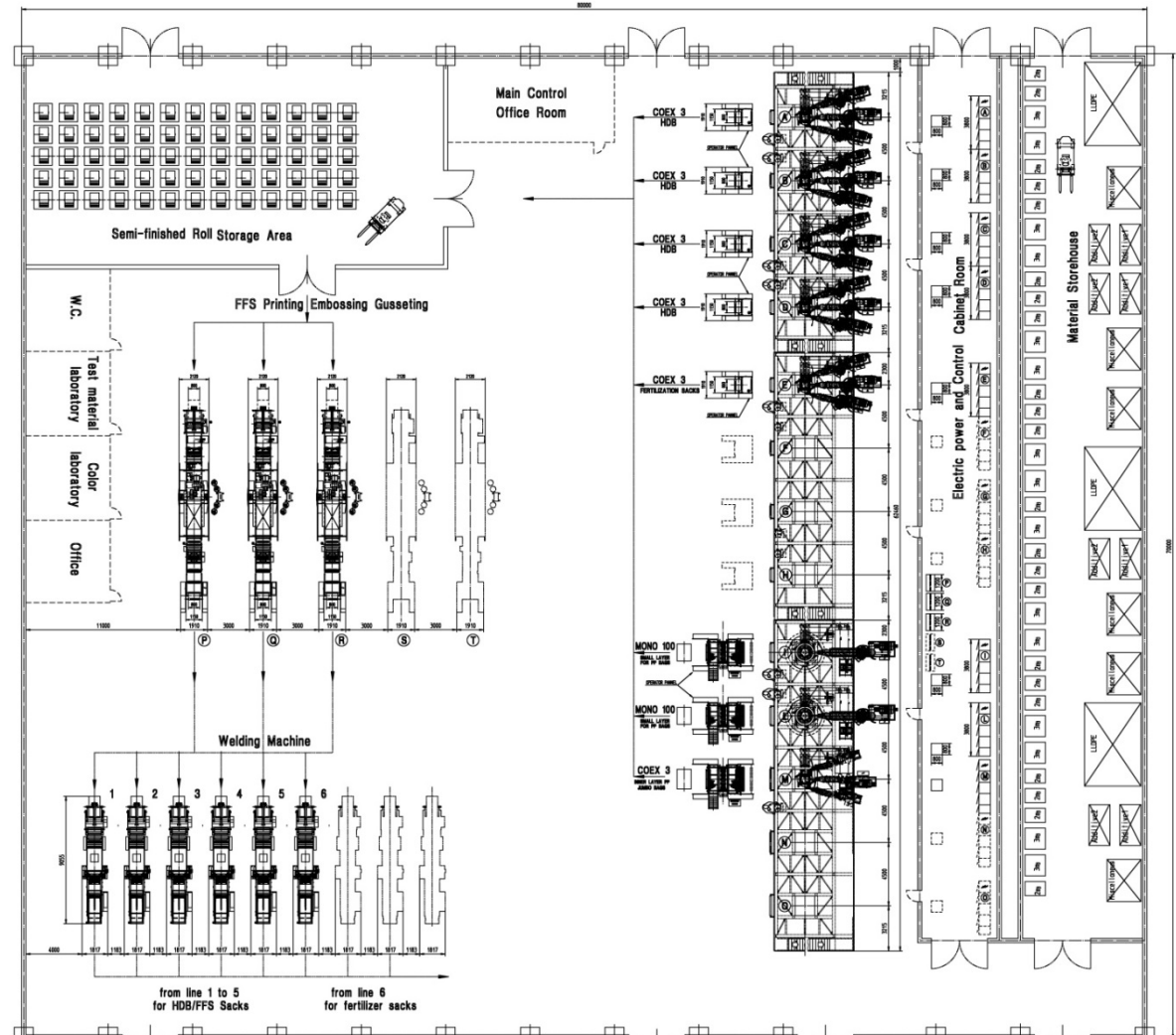


Proven expertise in the
HDB / FFS market

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





Turnkey lines - examples



Finished reels - examples



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



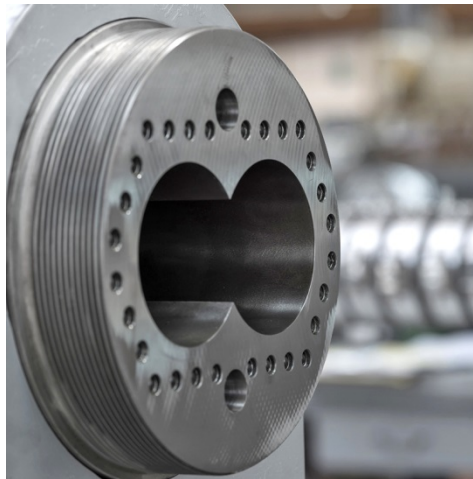


3 production sites covering a total area of 55.000 m²

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





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

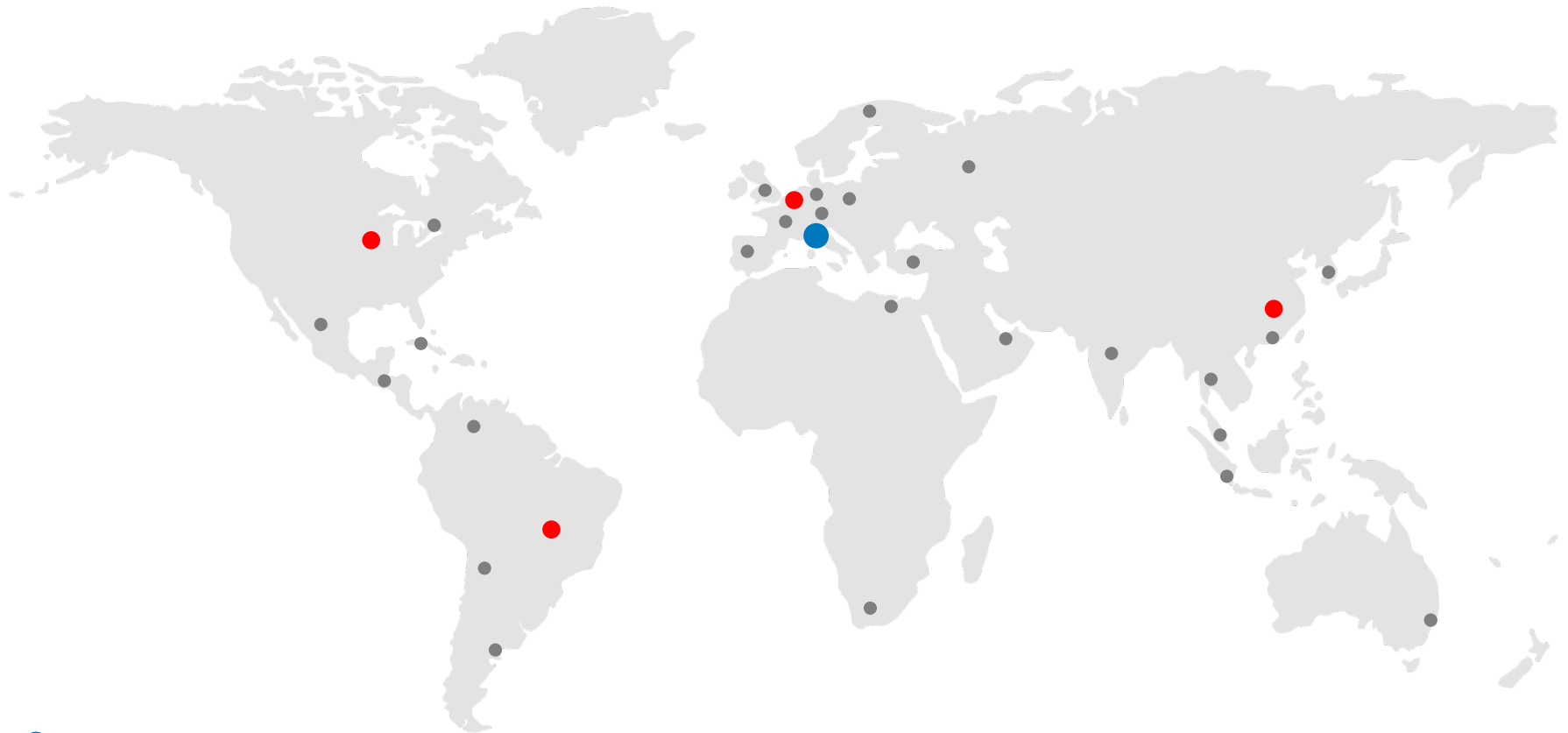
A **responsive and efficient customer service** is one of the essential strengths of a global business dealing with complete production lines located throughout the world

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



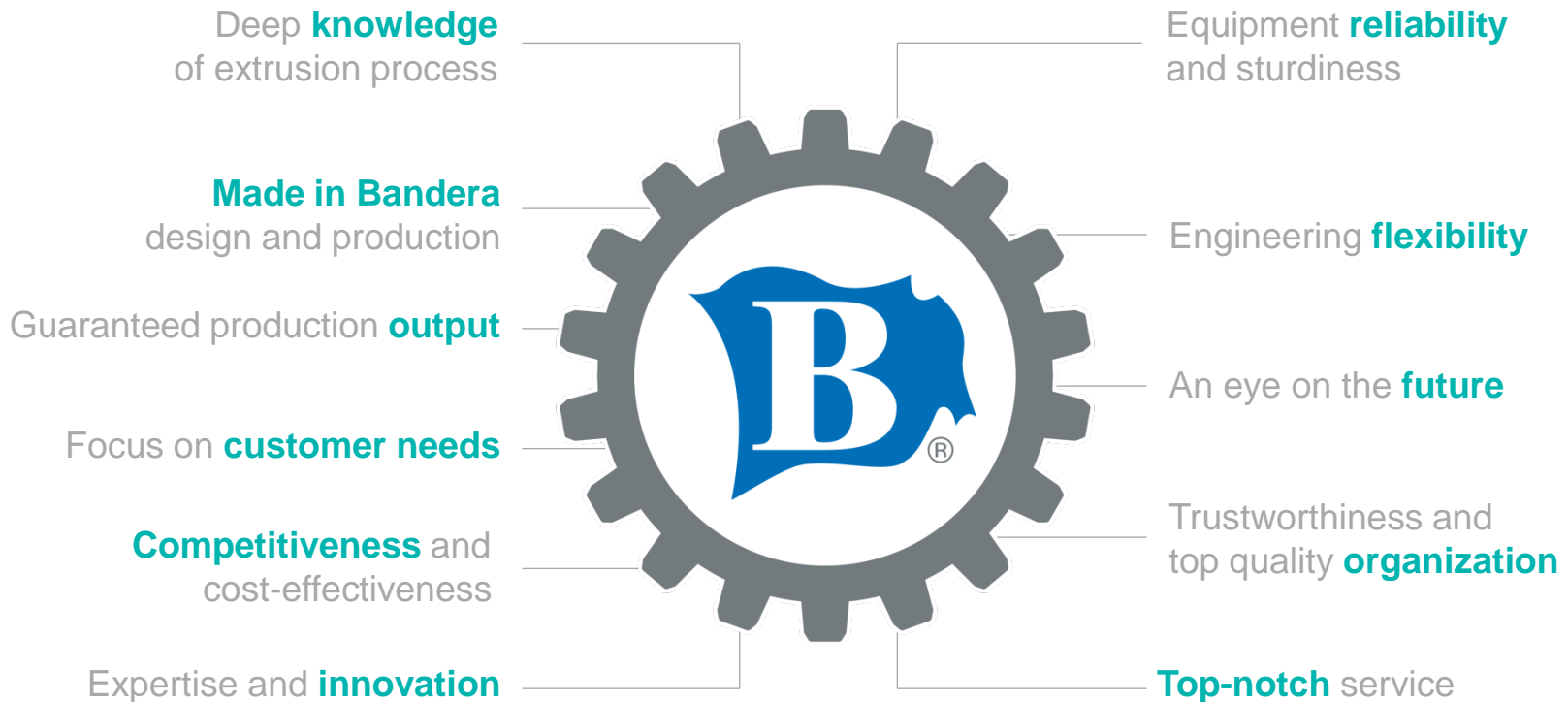
- Headquarters
- Service centres
- Sales exclusive offices

Source: internal data as of December 2015

Bandera, a synonym for excellence



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





Thank you

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Please consider the environment before printing

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