Flex Lamilines

Lamilines for cut sizes production

Bottero
Glass Technologies
Flex Lamilines

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Since the first line in 1989, Bottero has always been partner of Companies worldwide for laminated glass production. In 25 years, Bottero has reached and maintained an undisputed technological leadership in laminated glass process, serving all the multinational Companies and developing top-performance devices for maximum productivity and highest quality. Today, all this know-how is available also in custom size production at an affordable price. Because quality is not a compromise!

25 years of experience
52 lines worldwide
Complete process know-how
**1st Bottero LamiLine**
LES glass size
Automatic PVB unwinding (6 rolls)
Manual PVB trimming
Output glass cycle time = 60s

**Cycle time 52s**
JS/LES glass size
Minor quantity of small pieces
Automatic PVB unwinding 10 rolls
Automatic PVB trimming
Interleaved PVB

**1st Bottero JS LamiLine**
JS/LES glass size
Automatic PVB unwinding
Automatic PVB trimming
Hydraulic nip rolls
1st Bottero Flex LamiLine
Custom size line
New automation design

Cycle time 38s
Fully-Auto solution with robots

1st Flex
07
10

Flex 2.0
Flex LamiLines 2.0
New generation equipment
7 lines installed in 12 months

Cycle time 45s
JS/LES glass size
New generation equipment
New Auto PVB unwinding
New auto PVB trimming
Stacker machines

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WHY CHOOSING US?

Bottero flex Lamilines are the most advanced custom size laminated assembly systems in the market today. The nip rolls and Ovens which are provided as standard are the same ones running all over the world by the most important glass manufacturers. The IR oven and the patented mechanical press system on the nip rolls are only two of the several patents and innovation which guarantees the best final result of the lamination process.
**Ovens**

Oven modules are equipped with IR lamps and upper/lower full convection system (forced air) to allow every kind of glass (coated, tempered, multiple layers) to be perfectly pre-laminated. Upper lamps are adjustable in height, to give an extra regulation to manage both thin laminated glass and special glasses such as multiple layers or tempered, requiring a special recipe.

**Nip-Rolls**

Nip-rolls from Bottero are specifically designed to guarantee kind of glass shape and dimension. The mechanical torsion able to press in a uniform way from the center to the edge pre-laminated glass.
Nip-Rolls

Nip-rolls from Bottero are specifically designed to guarantee complete flatness of the pressing surface, for each kind of glass shape and dimension. The mechanical torsion bar device, and the high-pressure press system are able to press in a uniform way from the center to the edges of each nip roll, thus giving a perfect result to the pre-laminated glass.

Software

By means of HMI panels along the line, all the main functions and parameters are easily adjustable. In the assembly area, a main panel allow to manage the recipes and main data of the line in real time. The remote assistance device, standard on each flexlami line, allows Bottero service to remotely connect to the line all over the world.
Bottero is producing laminated glass lines both for stock sheets high capacity production and for the custom market of cut to size laminated glass. These lines are capable of easily manufacturing different product types irrespective of dimensions, shape and make-up. This key factor is achieved by implementing a strategy focusing on quality, reliability and total flexibility of the manufacturing plant.
Fully-Auto Solution

Available configurations

- In-Line configuration
- U configuration

1. Manual loading
2. Washing machine
3. Squaring conveyor
4. Overhead transfer
5. Assembling conveyor
6. PVB storage
7. Oven
8. Nip-rolls
9. Manual unloading
A. Automatic loading
B. Overhead PVB Storage
C. Automatic PVB trimming
D. Automatic Unloading
UNIQUE FEATURES

Flex lami-line is equipped with the most advanced solution for the pre-lamination process as the nip roller with anti-torsion system and the forced air convection furnaces. Besides it can be easily adapted according to customer needs with optional and accessories as automatic loader, additional PVB rolls, automatic PVB foil application, cutting and trimming... Bottero is capable to provide the complete turnkey package including autoclave, climatic room and all the needed accessories.
**Washing System**

- Totally stainsteel
- Ready for Low-e
- Antistatic system
- Up to 12 m/min of washing speed

**Squaring & Glass Positioning**

- Mechanical reference for both sides
- Automatic shape squaring & positioning
- Automatic suction cups exclusion
- High accuracy & repeatability of plates positioning
Squaring & Glass Positioning

Mechanical reference for both sides
Automatic shape squaring & positioning
Automatic suction cups exclusion
High accuracy & repeatability of plates positioning

Assembling

Automatic film cutting according to plate length
Servo assisted laying task to avoid film stretch
Multi laying
PVB rolls positions from 3 to 30
Assembling Area Configurations

Standard Solution
Nip-Rolls

Heavy mechanical system
Advanced rolls design
Full pressure distribution and parallelism between rolls independently to the width of plates
Symmetrical design of the roll
**Heating Area**

Modularity design
Easy customization
Vertical adjustment of the upper lamps for process tuning
Forced air with reserved fans for each side
Lamps driven according to the glass tracking
Independent tuning of each IR lamp
High efficiency IR lamps
Up to 50% of energy saving
High insulation & Easy maintenance
Full temperature distribution
Patent system to adjust the upper IR lamps
Assembling Area Configurations

Main Oven
2 modules

Nip-Roll #1

Main Oven
3 modules

Nip-Roll #1

Pre-Oven
Nip-I #1
**Line Supervision**

Touch panels along the line  
Full control of line & process  
Production based on recipes concept  
Remote connection included in basic solution
OPTIONS

Bottero Flex Lamilines offer come with a set of options to fulfill all the most common requirements of the laminated glass industry. Automatic features, increased productivity and reporting and supervision system are the biggest differentials of the Bottero proposal.
Automatic Laying System
Patented system
PVB stretch-free device

Automatic Trimming
Task operator free
Automatic thickness adjustment
High performance cutting wheels with special shape
Automatic trimming starting from 22.1

Automatic Handling
AIR/TIN side loading & unloading
Automatic spacers management
Repacking functionality
Heavy load

Software Packages
Reporting system
Job optimizer
Customized solution for ERP integration

Autoclave & Services
In cooperation with all main suppliers
Turn-key contractor

Clean Room
High performance Clean room for interleaved PVB
20°C and 25% of relative humidity
Energy saving
Integrated data management

Patented system
PVB stretch-free device

In cooperation with all main suppliers
Turn-key contractor

High performance Clean room for interleaved PVB
20°C and 25% of relative humidity
Energy saving
Integrated data management
TECHNICAL FEATURES

From small glasses to big sheets, a Bottero Flex Lamiline is a modular system which is completely configurable, according to each customer needing. Most of the options and the upgrade can be added even later with a simple and effective intervention.
### Technical Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass sizes (min)</td>
<td>350 x 180 mm (14” x 7”)</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>3 - 19 mm (8/64” - 48/64”)</td>
</tr>
<tr>
<td>Type of glass allowed</td>
<td>Float</td>
</tr>
<tr>
<td></td>
<td>Low-e</td>
</tr>
<tr>
<td></td>
<td>Tempered</td>
</tr>
<tr>
<td></td>
<td>Coated</td>
</tr>
<tr>
<td>Glass thickness output (MAX)</td>
<td>100 mm (4”)</td>
</tr>
<tr>
<td>Glass weight output (MAX)</td>
<td>1350 kg</td>
</tr>
<tr>
<td>Interlayers thickness</td>
<td>0,38 mm (1/64&quot;)</td>
</tr>
<tr>
<td></td>
<td>0,76 mm (2/64&quot;)</td>
</tr>
<tr>
<td></td>
<td>1,14 mm (3/64&quot;)</td>
</tr>
<tr>
<td></td>
<td>1,52 mm (4/64&quot;)</td>
</tr>
<tr>
<td>Type of interlayers allowed</td>
<td>Interleaved PVB</td>
</tr>
<tr>
<td></td>
<td>EVA</td>
</tr>
<tr>
<td></td>
<td>SentryGlass Plus*</td>
</tr>
</tbody>
</table>
**Most Common Sheet Dimensions**

- **min glass sizes**
  350 x 180 mm  
  (14” x 7”)

- **MAX common size**
  4000 x 2600 mm  
  (157” x 102”)

- **MAX common size**
  5000 x 2600 mm  
  (197” x 102”)

- **MAX common size**
  6000 x 2600 mm  
  (236” x 102”)

- **MAX common size**
  4000 x 2800 mm  
  (157” x 110”)

- **MAX common size**
  5000 x 2800 mm  
  (197” x 110”)


MAX common size
6000 x 2800 mm
(236” x 110”)

MAX common size
5000 x 3300 mm
(197” x 130”)

MAX common size
6000 x 3300 mm
(236” x 130”)

MAX size
On demand

non size
00 mm
110”

Bottero
Glass Technologies
Overall Dimensions

- 8000 mm
- 13500 + 19500 mm
- 34000 + 45500 mm
The images and data in this catalogue are only indicative and never override the contract engagement of Bottero S.p.A. For photographic reasons the products is often shown complete with accessories that are not part of the standard equipment of the machine.