The heart of the Ecolean packaging system is the filling machine, designed for efficient operations. When installing, setting up, operating and maintaining the Ecolean filling line, simplicity rules. Still, we offer a solid training program for all your operation and maintenance personnel. There are several types of Ecolean filling machines – filling portion-sized or family-sized packages for chilled or ambient distribution – all with a small footprint and efficient operations.

<table>
<thead>
<tr>
<th>FILLING MACHINE</th>
<th>CAPACITY</th>
<th>PACKAGE TYPE</th>
<th>DISTRIBUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL1+</td>
<td>Family-sized up to 7,000 packs/hour</td>
<td>ECOLEAN® AIR ECOLEAN® AIR CLEAR</td>
<td>Chilled distribution</td>
</tr>
<tr>
<td>EL2+</td>
<td>Portion-sized up to 12,000 packs/hour</td>
<td>ECOLEAN® AIR ECOLEAN® AIR CLEAR</td>
<td>Chilled distribution</td>
</tr>
<tr>
<td>EL3+</td>
<td>Family-sized up to 7,500 packs/hour</td>
<td>ECOLEAN® AIR ASEPTIC ECOLEAN® AIR ASEPTIC CLEAR</td>
<td>Ambient distribution</td>
</tr>
<tr>
<td>EL4+</td>
<td>Portion-sized up to 12,000 packs/hour</td>
<td>ECOLEAN® AIR ASEPTIC ECOLEAN® AIR ASEPTIC CLEAR</td>
<td>Ambient distribution</td>
</tr>
<tr>
<td>EL6</td>
<td>Portion-sized up to 18,000 packs/hour</td>
<td>ECOLEAN® AIR ASEPTIC ECOLEAN® AIR ASEPTIC CLEAR</td>
<td>Ambient distribution</td>
</tr>
</tbody>
</table>

The filling machines portrayed throughout this brochure may be equipped with additional equipment.
EL1+

FAMILY-SIZED PACKAGES FOR CHILLED DISTRIBUTION

Designed for liquid food and beverage products for chilled distribution, the EL1+ filling machine opens, fills and seals Ecolean’s ready-to-fill, hermetically sealed packages. The EL1+ features a completely re-designed filling zone with four fillers, instead of two as in previous versions – to increase capacity by 140%. Other new features include a re-designed servo system and a new outfeed principle. The design is compact and it is easy to switch between different package sizes. The EL1+ increases product safety and quality with a fully-automated cleaning system of the filling zone.

OPTION: ECOLEAN® SNAPQUICK™ APPLICATOR ERA1

The Ecolean patented reclosing device SnapQuick™ is made of PET and weighs 0.38 g. The applicator connects to the EL1+ filling machine as an integrated part and applies the SnapQuick™ to the package prior to filling. The module is equipped with a reel holder for the SnapQuick™ reel and an unwinding station.

<table>
<thead>
<tr>
<th>Package sizes</th>
<th>500ml, 1000ml, 1500ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>Up to 7,000 packages/hour</td>
</tr>
<tr>
<td>Height</td>
<td>3.7 m</td>
</tr>
</tbody>
</table>

1 UNWINDING
Reels of hermetically sealed packaging material are placed and prepared for splice in the unwinding unit.

2 TOP CUT, SEPARATOR
In the top cut unit, the top strip of the packages is cut away to enable opening. A separator unit separates the packages.

3 FILLING ZONE
In the filling zone, packages are filled with liquid food product and sealed in an (optional) HEPA filtered environment. The handles are inflated with air and sealed.

4 VALVE CLUSTER
Aseptic membrane valves with an option to add steam for sterilisation of filling system.

5 OUTFEED
Filled packages exit through the outfeed unit and are placed onto a conveyor belt.

PACKAGE SIZES
EL2+

PORTION-SIZED PACKAGES
FOR CHILLED DISTRIBUTION

Designed for liquid food and beverage products for chilled distribution, the EL2+ filling machine opens, fills and seals Ecolean’s ready-to-fill, hermetically sealed packages. The EL2+ features five fillers and a completely re-designed servo system using motors instead of pneumatic cylinders. By reducing cycle times nearly 40% from 2.4 seconds to 1.5 seconds, the capacity is doubled, compared to previous versions.

OPTION: ECOLEAN® STRAW APPLICATOR ES4
Attach straws to Ecolean® Air portion-sized packages. Packages are fed horizontally through the standalone applicator. Dual applicator heads apply straws from a reel with hot-melt glue to the back panel of the package, all while eliminating machine stops when changing straw reels or performing maintenance.

Package sizes

<table>
<thead>
<tr>
<th>Size</th>
<th>200ml</th>
<th>250ml</th>
<th>450ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>Up to 12,000 packages/hour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Height 3.7 m

UNWINDING
Reels of hermetically sealed packaging material are placed and prepared for splice in the unwinding unit.

TOP CUT, SEPARATOR
In the top cut unit, the top strip of the packages is cut away to enable opening. A separator unit separates the packages.

FILLING ZONE
In the filling zone, packages are filled with liquid food product and sealed in an (optional) HEPA filtered environment. The handles are inflated with air and sealed.

VALVE CLUSTER
Aseptic membrane valves with an option to add steam for sterilisation of filling system.

OUTFEED
Filled packages exit through the outfeed unit and are placed onto a conveyor belt.
EL3+
FAMILY-SIZED PACKAGES FOR AMBIENT DISTRIBUTION

Designed for filling high- and low-acid liquid food and beverage products for ambient distribution in Ecolean® Aseptic family-sized packages. The easy-to-operate and compact EL3+ machine includes a package reel unwinder with automatic ultrasonic splice and reel change without machine stop. The servo driven fill-and-seal technology maintain simple operations yet with a high production level. The fully automated cleaning and sterilisation system ensures the same level of hygiene at the start of each production cycle.

OPTION: ECOLEAN® SNAPQUICK™ APPLICATOR ERA3
The Ecolean patented reclosing device SnapQuick™ is made of PET and weighs 0.38 g. The applicator connects to the EL3+ filling machine as an integrated part and applies the SnapQuick™ to the package prior to filling. The module is equipped with a reel holder for the SnapQuick™ reel and an unwinding station.

OPTION: ECOLEAN® PACKER
The packer automatically places packages in layers of three units into erected cardboard or plastic cases.

<table>
<thead>
<tr>
<th>Package sizes</th>
<th>500ml, 750ml, 1000ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>Up to 7,500 packages/hour</td>
</tr>
<tr>
<td>Height</td>
<td>4.1 m</td>
</tr>
</tbody>
</table>

1. UNWINDING
Reels of pre-sterilised and hermetically sealed packaging material are placed and prepared for splice in the unwinding unit. The unit contains an automatic splicing device and a buffer magazine, which enables the filler to continue full operation during reel change.

2. PACKAGE STERILISATION
Re-sterilising the outside surface of the packages with 1% peroxide spray and UV light.

3. TOP CUT, SEPARATOR
In the top cut unit the top strip of the packages is cut away, to enable opening. The separator unit separates the packages.

4. FILLING ZONE
In the filling zone, packages are filled with liquid food product and sealed. The handles are inflated with sterile air and sealed.

5. VALVE CLUSTER & AIR HANDLING
The aseptic valve cluster and filling system provide for a safe and efficient filling of the aseptic product. The air handling unit delivers HEPA filtered air and assures a controlled air flow during all states of operation of the filling machine.

6. OUTFEED
Filled packages exit through the outfeed unit and are placed onto a conveyor belt.

PACKAGE SIZES

EAA 500ml    EAA 750ml    EAA 1000ml
PORTION-SIZED PACKAGES FOR AMBIENT DISTRIBUTION

EL4+

Designed for high- and low-acid liquid food and beverage products for ambient distribution, the EL4+ filling machine opens, fills and seals Ecolean’s ready-to-fill, hermetically sealed packages. The easy-to-operate and compact EL4+ machine includes a package reel unwinder with automatic, ultrasonic splicing and reel change without machine stop, four filling stations, a fully automated cleaning and sterilisation system ensuring the same level of hygiene at the start of each production cycle.

OPTION: NITROGEN (N₂)
Replacing air with nitrogen in the head space of the package, to protect oxygen sensitive products.

OPTION: ECOLEAN® STRAW APPLICATOR ES4
Attach straws to Ecolean® Aseptic portion-sized packages. Packages are fed horizontally through the standalone applicator. Dual applicator heads apply straws from a reel with hot-melt glue to the back panel of the package, all while eliminating machine stops when changing straw reels or performing maintenance.

UNWINDING
Reels of pre-sterilised and hermetically sealed packaging material are placed and prepared for splice in the unwinding unit. This unit contains an automatic splicing device and a buffer magazine, which enables the filler to continue full operation during reel change.

PACKAGE STERILISATION
Re-sterilising the outside surface of the packages with 1% peroxide spray and UV light.

TOP CUT, SEPARATOR
In the top cut unit the top strip of the packages is cut away, to enable opening. The separator unit separates the packages.

FILLING ZONE
In the filling zone, packages are filled with liquid food product and sealed. The handles are inflated with sterile air and sealed.

VALVE CLUSTER & AIR HANDLING
The aseptic valve cluster and filling system provide for a safe and efficient filling of the aseptic product. The air handling unit delivers HEPA filtered air and assures a controlled air flow during all states of operation of the filling machine.

OUTFEED
Filled packages exit through the outfeed unit and are placed onto a conveyor belt.

PACKAGE SIZES

<table>
<thead>
<tr>
<th>Package sizes</th>
<th>Capacity</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>125ml, 200ml, 250ml, 350ml</td>
<td>Up to 12,000 packages/hour</td>
<td>4.3 m</td>
</tr>
</tbody>
</table>

EAA 125ml, EAA 200ml, EAA CLEAR 200ml, EAA 250ml, EAA CLEAR 250ml, EAA 350ml
PORTION-SIZED PACKAGES FOR AMBIENT DISTRIBUTION

Designed for high- and low-acid liquid food and beverage products for ambient distribution, the EL6 filling machine opens, fills and seals Ecolean’s ready-to-fill, hermetically sealed packages. Featuring six fillers the EL6 is Ecolean’s fastest filling machine, filling 18,000 portion-sized packages per hour. The EL6 uses up to 30% less air, water and energy during both production and cleaning, compared to EL4+. To complete the EL6 filling line, optional equipment include a CIP-unit, straw applicator, package buffer unit and package conditioning unit as well as easy configuration to secondary packaging solutions.

OPTION: NITROGEN (N₂)
Replacing air with nitrogen in the head space of the package, to protect oxygen sensitive products.

OPTION: ECOLEAN® STRAW APPLICATOR ES4
Attach straws to Ecolean® Air Aseptic portion-sized packages. Packages are fed horizontally through the standalone applicator. Dual applicator heads apply straws from a reel with hot-melt glue to the back panel of the package, all while eliminating machine stops when changing straw reels or performing maintenance.

PACKAGE SIZES

<table>
<thead>
<tr>
<th>Package sizes</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>125ml, 200ml, 250ml, 350ml</td>
<td>Up to 18,000 packages/hour</td>
</tr>
</tbody>
</table>

Height 4.3 m

UNWINDING
Reels of pre-sterilised and hermetically sealed packaging material are placed and prepared for splice in the unwinding unit.

PACKAGE STERILISATION
Re-sterilising the outside surface of the packages with 1% peroxide spray and UV light.

TOP CUT, SEPARATOR
In the top cut unit the top strip of the packages is cut away. The separator unit separates the packages.

FILLING ZONE
In the filling zone, packages are opened, filled with product and sealed. The handles are inflated with sterile air and sealed.

VALVE CLUSTER & AIR HANDLING
The aseptic valve cluster and filling system provide for a safe and efficient filling of the aseptic product. The air handling unit delivers HEPA filtered air and assures a controlled air flow during all states of operation of the filling machine.

OUTFEED
Filled packages exit through the outfeed unit and are placed onto a conveyor belt.
**Auxiliary Equipment**

**Ecolean® Straw Applicator (ES4)**
- Provides filled portion-sized packages with straws, using hot-melt glue to the package back.
- Dual applicator heads reduce the risk of line stop and enable maintenance of one applicator head at a time during full production.
- Capacity: 18,000 packages per hour.
- Exterior dimensions: H 2.5m, W 3.7m, L 1.4m.

**Ecolean® Package Buffer Unit (EMA4)**
- Placed between filling machine and downstream equipment to eliminate unnecessary waste caused by a quick stop.
- Simplified sampling for quality control.
- Exterior dimensions: H 1.2m, L 1.2m, W 2.4m.

**Ecolean® CIP Unit (ECIP1)**
- Automatic CIP unit designed for Ecolean filling machines.
- Maintains cleaning time, detergent temperature, flow and concentration.
- User-friendly and cost-effective.
- Exterior dimensions: H 1.8m, W 0.8m, L 1.2m.

**Ecolean® Package Conditioning Unit (EPC4)**
- Ensures that the external surface of the package is clean and dry, prior to secondary packaging, including automatic conveyor cleaning.
- Featuring a compact design and enclosed cleaning area.
- Exterior dimensions: H 1.7m, W 1.0m, L 0.7m.
Ecolean line solutions find the best possible solution and configuration for every filling line. This support division discusses, evaluates and fulfills every customer need, when it comes to finding the most suitable equipment for your filling line. Ecolean line solutions give tested recommendations for different package sizes and types, as well as suggestions to secondary packaging solutions.

LINE DESIGN
In our effort to provide the customer with the most fit line solution, we aim to assist in line design, line configuration and line performance. For example by recommending tested marking and labeling equipment, weighing format checks, conveyor solutions, palletizers, stretch wrapping or pallet labeling among other equipment solutions.

SECONDARY PACKAGING
Customised secondary packaging solutions, both cardboard boxes and plastic crates, available upon request. Tested and verified integration with both the Ecolean packaging format and the Ecolean filling lines. Detailed overview of all secondary packaging solutions available for the Ecolean filling machines, and take shipping, display, multipack and shelf ready needs into consideration.

- Regular Slotted Case
- Tray & Hood
- Wrap Around

One of many tested suggested secondary packaging solutions.
A LIGHTER APPROACH

SMALL FOOTPRINT AND HIGH CAPACITY, EASY OPERATIONS AND ADVANCED TECHNOLOGY

ECOLEAN PACKAGES
The lightweight Ecolean packages for chilled and ambient distribution are suitable for pasteurised liquid dairy products and non-carbonated beverages, both high and low acid. The packaging material is based on the Ecolean material technology and comes with a full Food Contact Approval Certificate. Ecolean material manufacturing is certified to BRC/IOP, ISO 22000 and ISO 14001.

DISTRIBUTED ON REELS
The Ecolean packages are pre-converted and hermetically sealed at the Ecolean manufacturing plant. All aseptic packages are pre-sterilised using electron beam treatment and the ready-to-fill packages are supplied and distributed on reels.

EASY SHIFT BETWEEN SIZES
The Ecolean filling machines are designed with efficiency and easy operations in mind – a fact proven with the flexibility of an easy and quick-switching process between packaging sizes.

YOUR EFFICIENCY MATTERS
The reason for constantly improving our own performance, as well as the Ecolean filling machines, is for you and your production results. With a small footprint yet high capacity, easy operations yet advanced technology, Ecolean offers a lighter solution when it comes to Total Cost of Ownership as well as the every-day efforts of the machine operators.