# Product Environmental Profile

## Getinge Lancer LSS

Laboratory Steam Sterilizer

GETINGE

# Overview

## Getinge sustainability ambitions

At Getinge we take steps to empower our customers to reach their sustainability goals. One way to do this is by looking at how we can make our products and solutions as resource efficient as possible. We are committed to reduce our carbon footprint by setting ambitious targets to become net-zero by 2050 in line with the Science based targets initiative (SBTi).

All manufacturing sites work with Environmental management systems in compliance with ISO 14001.

Read more about Getinge sustainability ambitions on our website [here.](here)

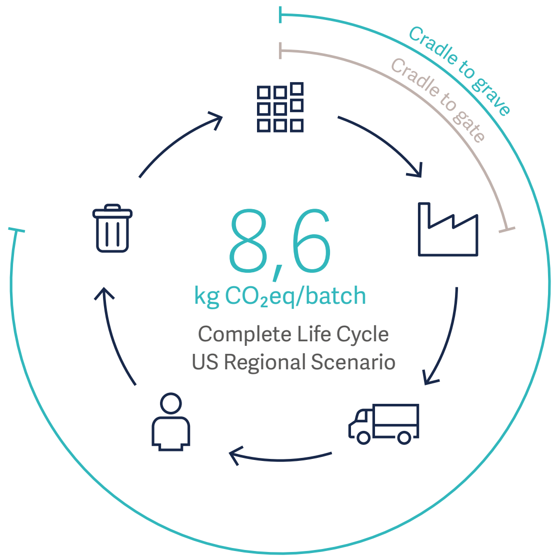
## Ecodesign efforts

Ecodesign is standard practice at Getinge, focusing on using safer and fewer materials, incorporating circular solutions, and reducing media, energy, and water consumption.

The efforts for Lancer LSS have mainly been focused on a more standardized and compact design. The process system has a completely re-designed vacuum system and drain valve with load sensor as standard. ECO system for recirculation of vacuum pump sealing water is included and the possibility to connect the sterilizer to a building circulating cooling water system is standard option. The electrical and control system is completely redesigned using distributed I/O's and safety PLC to handle interlocks.

A new scheduling function has been implemented enabling planning of work and optimizing energy use. The steam generator also has ECO mode reducing the heating elements temperature in standby. The sterilizer can optionally be connected to Getinge FleetView enabling efficient support for optimized operation of the equipment.

## Product climate impact



# Product description

The Lancer LSS steam sterilizer is intended for typical sterilization tasks within laboratory applications i.e. sterilization of hard goods, porous loads and liquids in open containers (closed containers optional).

The LCA results are calculated for the Lancer LSS model with chamber size 480 L but can be used and scaled for the following dimensions. A reference product is a previous model: GSS-L6710.

## Technical specification

| Lancer LSS | Usable Chamber Dimensions | | | Chamber Volume |
|---|---|---|---|---|
| **Model** | Width mm (inch) | Height mm (inch) | Depth mm (inch) | Liters (cu. ft.) |
| **340** | 660 (26") | 700 (27 1/2") | 700 (27 1/2") | 340 (12) |
| **480** | 660 (26") | 700 (27,5") | 1000 (3/8") | 480 (17) |
| **620** | 660 (26") | 700 (27,5") | 1300 (51 1/4") | 620 (22) |

Product is available with integral electrical steam boiler

## Applicable directives and standards compliance for the product

| | |
|---|---|
| 2011/65/EU | RoHs (restriction of the use of certain hazardous substances in electrical and electronic equipment) |
| 1907/2006 | REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) |
| 2012/19/EU | WEEE (waste electrical and electronic equipment) |
| 2024/1781/EU | Ecodesign (framework for the setting of ecodesign requirements for sustainable products) - applicable for specific components only |
| 2023/1542/EU | Batteries and waste batteries |

# Product environmental impact with focus on Climate impact

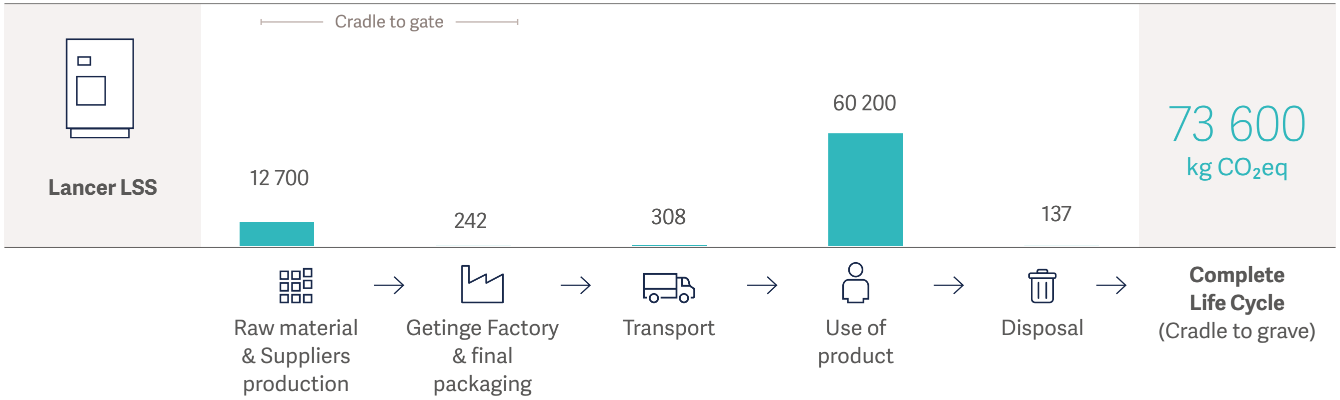
The environmental impact of the Lancer sterilizer in a lifecycle perspective comes mainly from the electricity consumption in the use phase. The new features included in Lancer have reduced energy use by 2381 kWh/year and the climate impact with -15% $CO_{2eq}$ (US case).

The choice of energy sources for electricity generation is critical and using renewables can reduce the use phase impact by 90%. Raw materials and manufacturing of components is the second largest environmental impact in general except for customers who already use renewables (scope 1-2) where the manufacturing footprint becomes largest.

The large steel weight and electronics that have high emission intensity have the largest contribution to the cradle to gate footprint.

## **Global warming Potential** (GWP100a)

kg $CO_2$eq




### Regional Scenarios (kg$CO_2$eq)

| | Raw material & Suppliers production | Getinge Factory & final packaging | Transport | Use of product | Disposal | Complete Life Cycle |
|---|---|---|---|---|---|---|
| Europe | 12 700 | 242 | 215 | 41 800 | 137 | **55 100** |
| US | 12 700 | 242 | 308 | 60 200 | 137 | **73 600** |
| APAC | 12 700 | 242 | 205 | 57 800 | 137 | **71 100** |
| **Renewable Scenario** | 12 700 | 242 | 102 | 7 300 | 137 | **20 500** |

### Recommendations to reduce the Climate impact

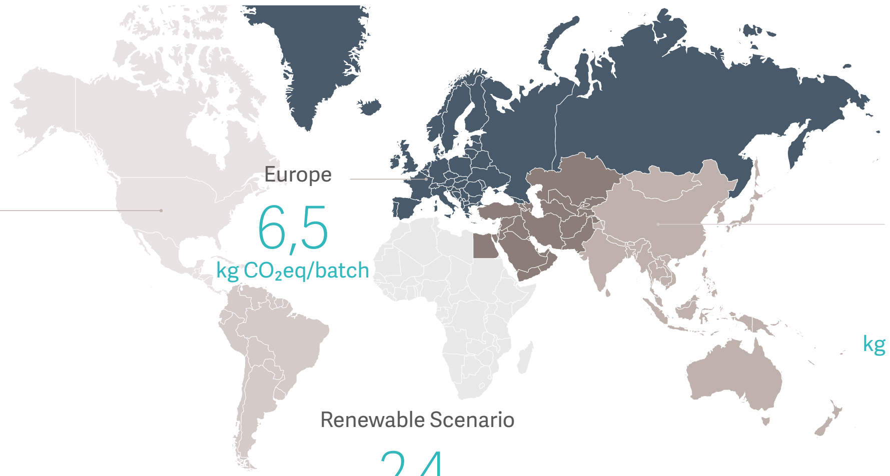
- Choose renewable energy sources for operation
- Include relevant options to enable resource efficiency; energy, water and heat recovery
- Make sure that ECO mode is installed as default for operation and train operators
- Work with product maintenance to ensure lifetime and efficiency
- Request continuously lower manufacturing footprint; use of renewables and raw materials with best in class climate footprint.

## Ecodesign ambitions for Getinge Life Science Sterilizers

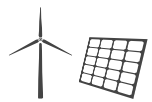
Getinge continues to look for opportunities to further reduce the Climate impact of our products and operations by for example:

- Increase the efficiency of energy and utilities in use
- Reduce the mass of the products
- Include more raw materials with low climate impact
- Optimize manufacturing efficiency; use of energy and utilities, material use
- Enable low carbon transport to customers
- Provide high quality customer service and maintenance support – through remote solution support process optimization and rebuilds and upgrades offering

## Complete Life Cycle per Region



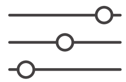

## Climate impact of alternative use case and weight reduction



↓72% $CO_2$eq

**Using renewable energy sources**

Switching to renewable energy sources for use of the product is the by far most effective way to reduce the climate footprint from sterilization.
The product is available with an integrated electrical steam boiler and otherwise compatible with in-house facility/utility systems.



↓15% $CO_2$eq

**Use ECOmode as default for operation**

Using ECOmode as default setting for operation increases the energy efficiency. The ECOmode reduces the heating elements temperature in standby and includes system for recirculation of vacuum pump sealing water. New scheduling functions makes sure that heat is readily available when needed.


↓100 kg

**Reduced weight**

The product has approximately 100 kg lower weight in standard configuration. This is reached with a more standardized and compact design. The process system has a completely re-designed vacuum system and the electrical and control system is completely redesigned using distributed I/O's.

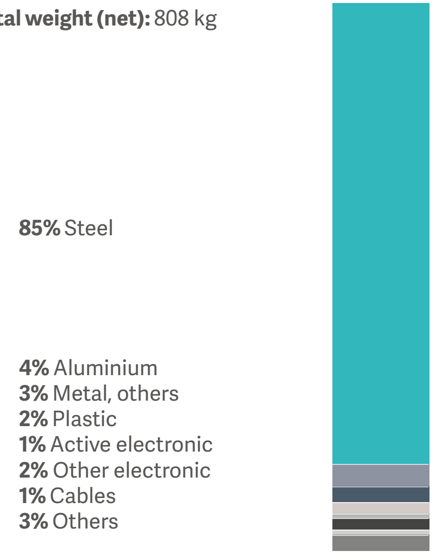
# Main assumptions of the LCA study (LCI parameters)

The product is designed and manufactured by Getinge Sterilization AB in Getinge Sweden. The composition is derived from the bill of material (BOM) and all raw material are modeled with specific data for the material flows and processes used for manufacturing and supply of spare parts. Regional average approach has been used for choice of energy, transport and raw material datasets.

Energy use in the actual Getinge manufacturing unit (scope 1-2) is fully renewable (ie. electricity from solar and hydropower and biogas for steam production with Guarantee of origin (reference year 2022). The outbound transport, use scenario and end-of-life for the main markets are simulated for the main markets as below. All transports have been calculated based on road and ocean freight.

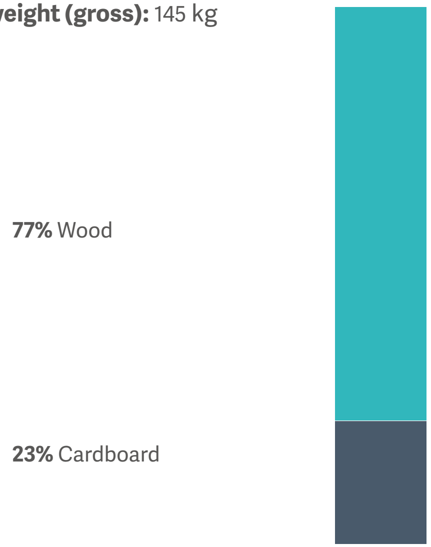
## Product

**Total weight (net):** 808 kg

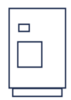



## Packaging

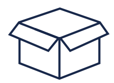
**Total weight (gross):** 145 kg



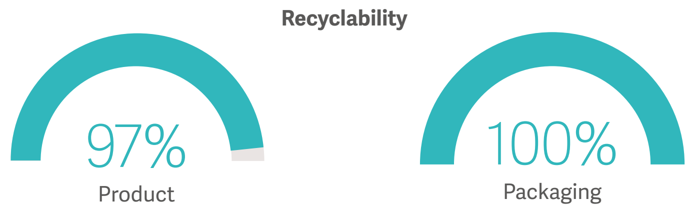

## Material indicator

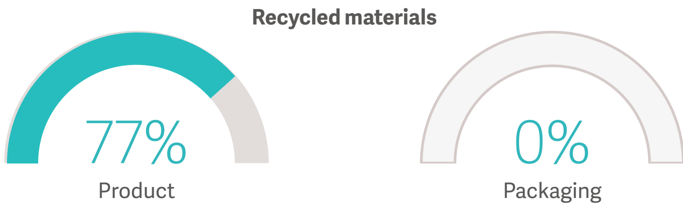


808 kg
Total mass of the product (net)



145 kg
Total mass of the packaging




The following materials are considered recyclable: Steel, Alu, Bronze, Brass, Copper (except cables), Cardboard, Paper, Thermoplastics (PMMA, PVC, ABS, PC, PS, PET, PE, PA, PP, POM). Thermosetting plastics, elastomers and other materials not listed are considered non recyclable. Recycled content evaluated in the study but requires documented trail in the value chain.

## Modelling typical use case scenarios

The impact from use of sterilizers is extremely sensitive to variances in key parameters for customer set-up such as intensity of use (cycles per day, work days a year, load), which type of goods to be sterilized, technical systems in the facilities for resource generation and re-use. The results in this study are calculated for a typical use scenario based on Getinge Sterilization experience and recent customer cases. Steam is in this case generated with an external but in-house electrical boiler with a conversion factor of 0,75 kWh electricity to 1 kg steam including transformation losses (pragmatical).

Note that all units are configured to order and multiple standard option features are available to lower the utility use.

| Energy & utility use per working day | | Based on |
|---|---|---|
| 163 | kg sterile goods | Full load in 4 cycles (mix of hard goods, porous and liquid open).<br>Av load: 42 kg/cycle |
| 4,1 | kWh electricity | Using scheduling functions and ECOmode optimizing pre-heating and standby (12 hours) |
| 63,6 | kg steam | Using scheduling functions and ECOmode optimizing pre-heating and standby (12 hours) |
| 925 | l/day cooling and pump water | Note: Not accounting benefits of recirculating water or connection to a cooling water system which is optional |
| 1,6 | Nm³ pressured air | |

Note: Utility Data Sheet is available for every product type and order when configuration is set

| Energy & utility user per 10 year lifetime | |
|---|---|
| 358 | ton sterile goods |
| 8800 | cycles |
| 220 | Workdays per year |
| 9020 | kWh electricity |
| 140 | ton steam |
| 2040 | m³ cooling and pump water |
| 3520 | Nm³ pressured air |

Note: this is a typical case though the technical lifetime of the product is much higher.

| Summary of the data for energy generation used for each region | |
|---|---|
| USA | Grid electricity MRO, US only; large share of natural gas |
| Europe | Grid electricity RER: EU 27 average |
| APAC | Grid electricity Singapore |
| Renewable energy | Swedish grid renewable certificates; 60% hydropower and 40& photovoltaic |

## The LCA and Ecodesign methods

Product Environmental Profile (PEP) communicates the results of a Life Cycle Assessment (LCA). This is a methodology for assessing environmental impacts associated with all the stages of the life cycle of a product, process, or service. I.e. for a product environmental impacts are assessed for the raw material extraction (cradle) followed by the whole value-chain further processing, through the product's manufacturing (gate), distribution and use, to the recycling or final disposal of the materials it is composed of.

The LCA study follows requirements in ISO 14040 and ISO 14044 and has been 3rd party verified by AFRY. The SimaPro software version 9.5.0.1 and the EcoInvent 3.9.1 allocation, cut-off by classification has been used. Environmental impact has been calculated with the "CML-IA baseline V3.09 / EU25" method as implemented in SimaPro with minor adjustments.  All LCA studies include holistic analysis of all relevant environmental impacts used for eco-design input. Further details can be available upon request, contact responsible PLM/R&D team.

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With a firm belief that every person and community should have access to the best possible care, Getinge provides hospitals and life science institutions with products and solutions aiming to improve clinical results and optimize workflows. The offering includes products and solutions for intensive care, cardiovascular procedures, operating rooms, sterile reprocessing and life science. Getinge employs over 12,000 people worldwide and the products are sold in more than 135 countries.


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