



## Composting Toilets since 1939



# How does Clivus Multrum work?



Clivus Multrum uses the processes of nature to decompose feces and urine into stable, odorless end products. It uses no chemicals, heat of water, and has no polluting discharge. The composting process follows a natural biological process. It requires good ventilation and some humidity which is important for micro-organisms to do their work.

The process is aerobic and occurs at a wide range of ambient temperatures, even when the outside temperature is well below freezing.

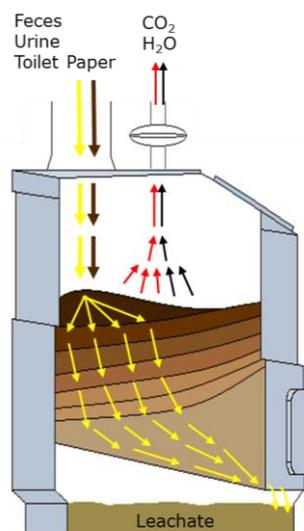
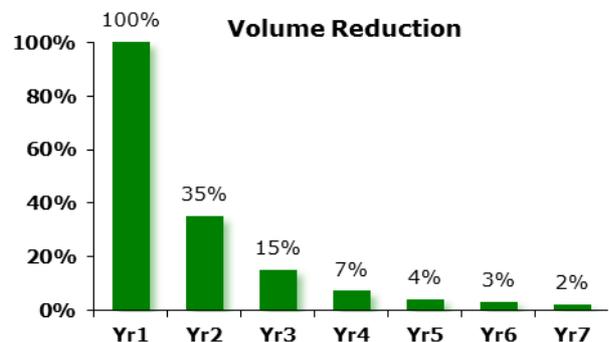
In order to start the composting process a starter bed consisting of peat, wood shavings and soil (adding organisms important for the process) is put in place. Occasionally, as the installation is being used additional wood shavings or material rich in carbon is added to keep the compost porous which is important for the filtering of the liquid and the ventilation of the solid.

## The compost

Most of the solid organic material is converted into carbon dioxide and water, and evaporates. After 5-10 years only a small amount of end product remains

containing the kind of minerals you find in ordinary soil. If the usage compared to the size of the tank is adequate, the compost can remain in the container for several decades.

The processed compost when removed from the tank can be used in gardens as soil.

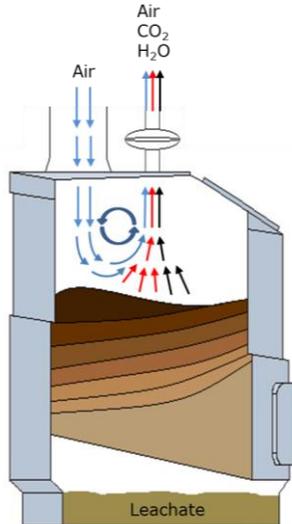


## The leachate

The liquid (mainly from the decomposition of urine) goes through an important biochemical change. It passes through the composting heap and through the starter bed to the sloping bottom of the tank. When it finally reaches the storage chamber it is transformed into a stable, odorless, saline solution. It is a balanced high-nitrogen liquid fertilizer suitable for grass, trees and flowers. The liquid should be mixed with water before use. The leachate is biologically stable and can be stored if necessary.

## Ventilation

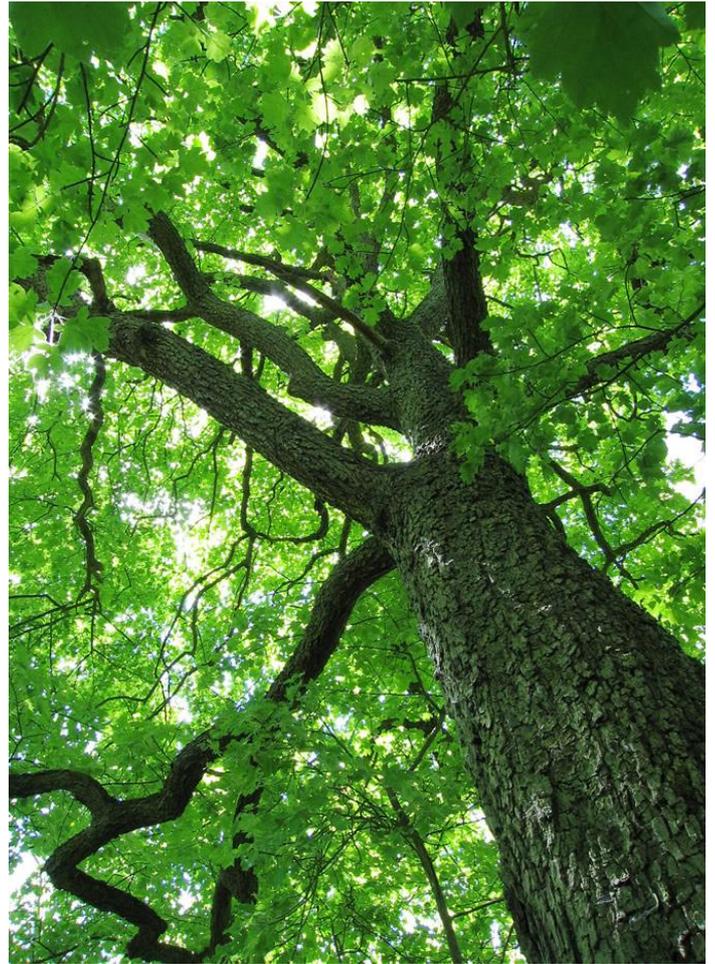
A flow of air is sucked down the toilet fixture, through the compost chamber. The air flow is necessary to avoid foul odors in the bathroom, and to add oxygen to the composting process.



## Pathogens

Pathogenic organisms in the feces and urine which if un-checked may cause disease are eliminated during the composting process by soil bacteria and other organisms.

The liquids go through a process of nitrification. The end result is a brownish fluid, pathogen free, and rich in ammonium nitrite and ammonium nitrate, with a faint smell of earth.



# Composting Tanks



## M150

H x D x W = 150 cm x 115 cm x 79 cm

### Capacity:

- 1000 liters total
- Max. 850 liters compost
- Max. 100 liters leachate
- Starter bed is ~150 liters

Made of durable black recycled (and recyclable) polyethylene. The walls have a 6 mm thickness.

*Made in Sweden*

## M100

H x D x W = 100 cm x 115 cm x 79 cm

### Capacity:

- 650 liters (total)
- Max. 500 liters compost
- Max. 100 liters leachate
- Starter bed is ~150 liters

Made of durable black recycled (and recyclable) polyethylene. The walls have a 6 mm thickness.



*Made in Sweden*

# Toilet Fixtures

## CL300

H x D x W = 16 cm x 53 cm x 40 cm

Color: White (glossy)

This waterless toilet fixture is mounted on a bench, right above the composting tank. The stool connects to a 250mm discharge pipe.

Made of glass fiber and polyester resin, with a gelcoat (pigmented polyester resin) finishing – stainless steel inside.



*Made in Sweden*



*Made in Sweden*

## CL400

H x D x W = 46 cm x 53 cm x 40 cm

## CL410

H x D x W = 34 cm x 53 cm x 40 cm

Color: White (glossy)

This waterless toilet fixture is mounted right above the composting tank. The stool connects to a 250mm discharge pipe.

Made of glass fiber and polyester resin, with a gelcoat (pigmented polyester resin) finishing – stainless steel inside.

## CL500

H x D x W = 46 cm x 52 cm x 39 cm

Color: White

This micro-flush (~0.5 liter/flush) toilet fixture can be mounted with up to 70 cm displacement from the composting tank. The stool connects to a 76mm/3 inch discharge pipe which may be installed with an angle up to 45 degrees. The water connects with a standard 0.5 inch NPT connection.

The bowl is made of porcelain. The toilet fixture has a foot-operated mechanical flush mechanism which seals the discharge pipe.



*Made in USA*

## CL510

Same as CL500 but with vacuum flush which can carry the discharge up to 15 meter horizontally or up to 1.8 meter upwards. The toilet fixture comes with a vacuum source which operates at 12V-6A or 24V-3A.

## CL700

H x D x W = 46 cm x 47 cm x 38 cm

Color: White

This vacuum flush (~0.5 liter/flush) toilet fixture can be mounted with up to 15 meter horizontal or up to 1.8 meter upward displacement from the composting tank. The stool connects to a 38mm/1.5 inch discharge pipe. The water connects with a standard 0.5 inch NPT connection. The toilet fixture comes with a vacuum source which operates at 12V-6A or 24V-3A.

The bowl is made of porcelain. The flush is operated with an electronic switch.



*Made in USA*

# Clivus Multrum Installation



The diagram on the right shows a typical Clivus Multrum installation using an M150 composting tank and a CL400 toilet fixture.

Depending on the specific circumstances on location, we provide an offer for the materials and installation.

Please contact us when you are considering installing a Clivus Multrum:

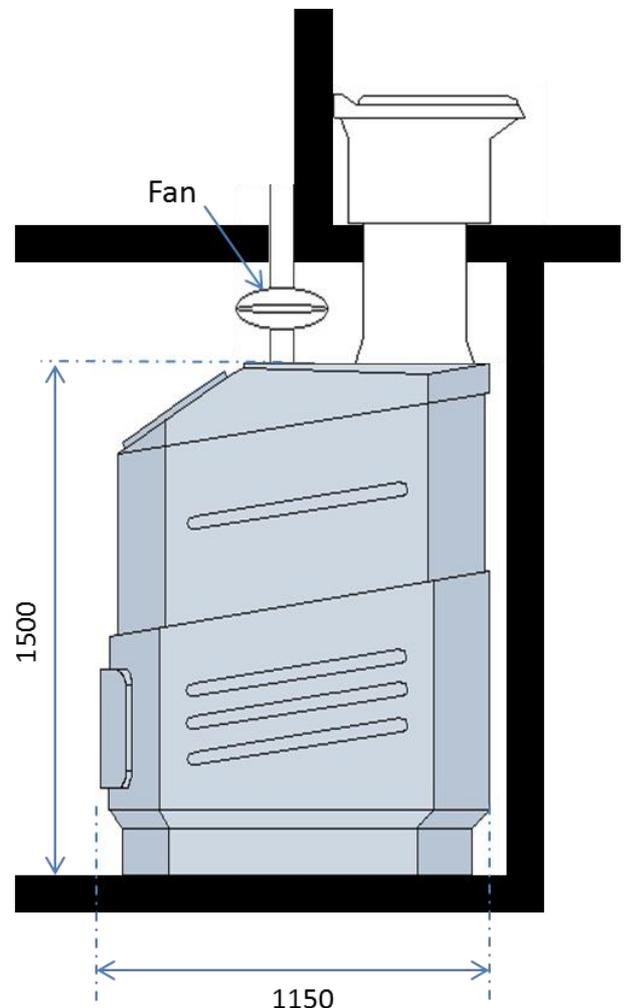
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Through our partners we can offer full turnkey installations, including cabins.



# Reference Projects

## The Archipelago Foundation

The Stockholm Archipelago is a beautiful area in the Baltic Sea off the coast of Stockholm consisting of thousands of small islands.

The Archipelago Foundation (Skärgårdstiftelsen), founded in 1959, owns and manages approximately 15% of a total area of more than 1000 km<sup>2</sup> with the objective of preserving the natural and cultural heritage of the archipelago.



In 2006-2007, as part of an EU-project to improve the toilets on the islands, Clivus Multrum installed more than 40 toilet facilities on islands that can be reached by ferry.

## Susedalen, E6 Motorway Service Area

The Susedalen service area along the E6 motorway is situated South of Falkenberg in the Southwest of Sweden and operated by the Swedish Road Administration (Trafikverket). King Charles XVI Gustaf opened it in November of 1996.

Environmental protection was an important consideration for the design of the service area. E.g. surface water from the road is captured in catchment areas to protect the surrounding areas from the pollution by road salt, etc.



The toilets were built with stainless steel stools connected to Clivus Multrum units placed in the basement.

As the service area attracted more visitors than originally estimated, Clivus Multrum re-built the facility in 2003. It is now dimensioned for several hundred visitors a day.

## Bronx Zoo Eco-Restroom (New York)

The Bronx Zoo has been educating and entertaining visitors since 1899. The Zoo's 256 acres makes in the largest urban zoo in the United States. It hosts two million visitors annually and is home to more than four thousand animals. Owned and operated by the Wildlife Conservation Society, the Zoo has a strong focus on environmental conservation. That focus has been applied to an interest in sustainable building practices at the Society's zoos.



Restrooms near the Bronxdale entrance needed replacement due to a failing septic system. A new septic system at the site was rejected due to concern over the potential for pollution to the nearby Bronx River. A sewer connection was considered but was also abandoned due to the huge cost of tunneling under the Bronx River Parkway. Instead, the Zoo decided to install a Clivus Multrum Composting Toilet System consisting of 10 composters. In addition to saving money, the Clivus systems capture and recycle the nutrients in human waste and use only minimal water for flushing.



The Eco-Restroom accommodates more than 1/2 million visitors per year. The 15 foam-flush toilets use only 6oz. of water per use, resulting in a savings of more than one million gallons of water each year, as compared to conventional low-flow (1.6gpf) toilets.

## The DANO-project

Canoeing in Dalsland and Nordmarken, an area with many lakes and rivers in central Sweden, is a great experience attracting many tourists from Sweden and abroad.

Sanitation around the camp sites was a major challenge as existing facilities could not cope with the volumes, in turn causing pollution of the surrounding areas.

Since the inauguration in 2000, the DANO-area has developed 103 camping-sites with more than 140 operational Clivus Multrum installations.

