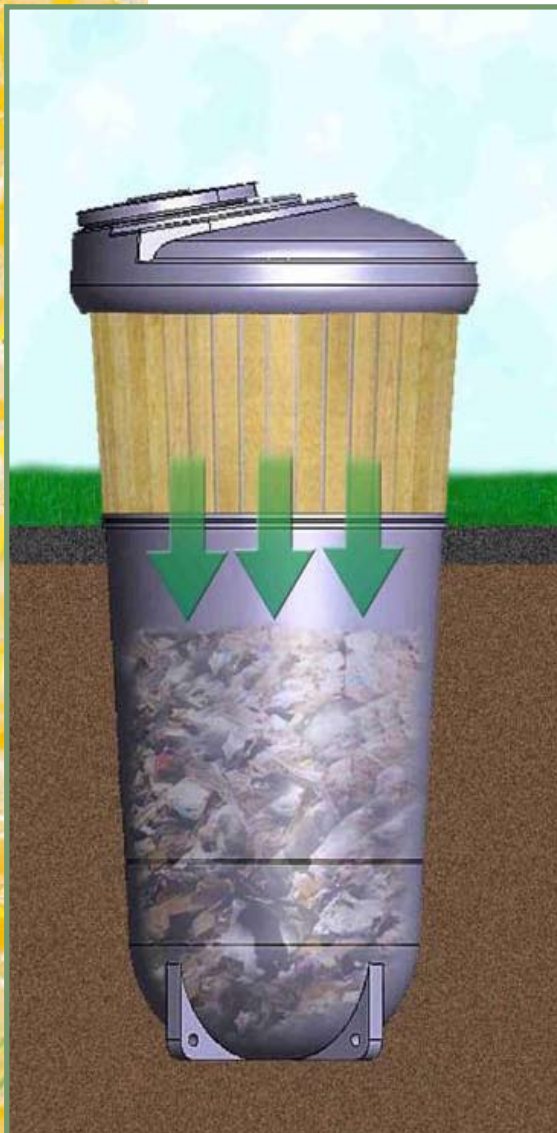


# SILO Deep Collection System

A system for all kinds of waste



Hygienic • Estetic • Space saving  
Reduced emptying costs

# Deep collection system

## Silo

Silo deep collection system uses nature's own forces. The cold underground and gravity forces store and compact the waste under the ground. The big capacity reduces the frequency of emptying and limits the risk of overfilled containers. The result is low emptying cost and a hygienic waste management solution.

## Saving Space

Since 2/3 of the container is under ground, vital space is saved. The waste is compacted continuously by gravity and by the weight of new waste being disposed. These effects make sure that there are no empty spaces within the waste.

You get more waste in a Silo than in a regular container that is above ground. Tests show that the volume gain is about 50%. The compacting effect combined with the fact that 2/3 of the container is under ground means that the total space saving is huge.



Deep collection system is ideal in narrow block areas and streets. The emptying can be done from every angle and from a distance of several meters. The Silo does not need to be at the same level as the emptying car. These features make it possible to build waste emptying stations where big waste quantities are present and space is already limited.

## Hygiene

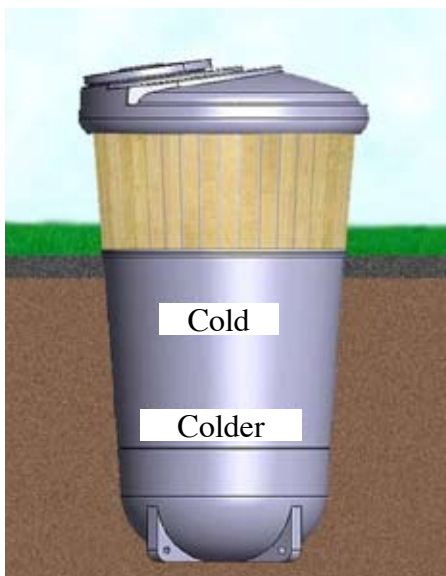
Silo underground waste management uses nature's own forces. The cold underground and gravity forces store and compact the waste under the ground. The low temperature under the soil that stays between 6-8 degrees reduces the growth of bacteria and thereby smell in the summer. The constant temperature makes sure that the waste doesn't freeze in the winter. Vital for the hygiene is that the emptying happens from the bottom down, and not from the top.

The Silo container is versatile and very solid. When the waste is inside it stays there. Pets and birds don't reach the waste. Since the Silo has big capacity, it doesn't get filled over the top as other systems do. This reduces the phenomenon that people are forced to leave their waste beside the container, where pets and birds tend to drag the waste around and pollute the nearby areas. Problems regarding rats are therefore not existing. Where it's clean, it stays clean. This is why it's always clean around Silo stations.





Stores the waste cold and compacted under the ground!



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Miljø & Sikkerhet has delivered waste solutions in Norway since the start in 1989. Today we supply everything within waste management and street furniture both indoor and outdoor.

We have sold deep collection systems in Norway since 1993. Silo is a product from Finland that is sold all around the planet. Today there are over 1000 Silos around in Norway. Silo is a system with different models with various sizes and technical solutions that makes it a complete system for every type of waste.

If you have questions or wish further information, don't hesitate to contact us!

***We promise good service!***

### Safety

Silo complies with all safety standards in regard to the height and measurement of the opening. The fact that the container is sealed means that no fluids will pollute the nearby soil. Reduced emptying reduces the traffic in the area.

A question we often receive is if the system is safe since it is so deep. We answer that we have never heard of any accidents with Silo. There are no sharp or heavy lids that can harm people. The low temperature makes sure that no harmful gasses develop, and should anyone climb inside there is air enough so that the person can survive until help arrives.

The Deep collection stations do not need support buildings like roofs or walls. Since the containers are not moved under emptying the containers last for many years. The system doesn't need much maintenance and is very solid.

The emptying can be done by normal lorry with crane, compacting waste lorry, lorry with container and hydraulic lid and tractor. The waste can be weighed and correct cost can be calculated.

The horizontal angle of the container makes sure that the waste is compacted by gravity and the weight of the waste above. The total amount of waste that goes in to the container is much more than in a regular container with the same volume.

Big capacity means longer time between emptying. In periods where waste disposal is reduced, you will get a significant reduction in emptying costs because with Silo you only have to empty when it's full, even in the summer. With other systems you will have to empty even if not full because of smell that affects the nearby environment. This is why emptying costs are reduced with Silo by up to 50 - 80 % compared to other waste collection systems.

A vital point in regards to cost savings is that Silo stations need little maintenance, both the containers themselves or the surrounding areas. Big capacity means that there is space enough in the container, and that is why waste does not lie around the containers. People tidy up after themselves because it is tidy when they arrive at the station. The hatch prevents disposal of unwanted waste, and that is why Silo stations never have the problem that people leave sofas, washing machines etc. that is often a problem with other solutions.

## Emptying with Quick-system in Oslo



## Lorry with container and crane

This is often the most cost saving option when you are emptying many Silos. In comparison with emptying with a waste compacting lorry, the investment is much less. The reasons for this is that the waste is already compacted and a compacting waste lorry is much heavier, and the capacity is the same.



Lorry with container and hydraulic lid in Hamar

## Campacting waste lorry

Emptying with compacting waste lorry. The advantage of this is that the emptying can be combine with emptying of other waste systems.



Emptying with compacting waste lorry

## Emptying with Quick-System

Emptying with Quick-System goes faster because the lid follows when emptying. The emptying can happen in any of the different ways as described, but you have to use a inner sack if emptying on an open lorry.



Emptying with Quick-System

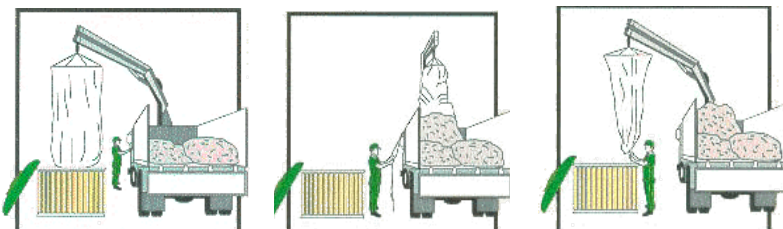
## We promise good



Emptying of BioSilo

## Lorry with crane

When there are not so many Silos that are to be emptied you can use a normal open lorry with crane. Then you would have to use a inner sack. With a lorry it is easy to reach the containers in difficult environments, for example in mountain areas with cabins. You can empty 6-8 Silos that are 5m<sup>3</sup> on one lorry.



## News!

We can deliver level calculating system based on ultrasound. The information is sent to PC or mobil when emptying has to be done.

An other possibility is that the Silo is delivered with a hard-container instead of a lifting bag, so that emptying can be done with the use of the Kinshofer-system.

## Nine Silos in Rådyrveien condominio

The company Miljø & Sikkerhet has delivered the new system that is named Silo deep collection.

- Silo uses nature's forces – coldness and gravity. The waste is stored cold and compacted under the surface says the manager polyethylene of the company Mr. Roy Bjellad. The big capacity reduces the amount of emptying and the problem with overfilled containers. The result is reduced emptying costs and an hygienic waste collection system.

### Space savings.

2/3 of the container is under ground. The waste is compacted constantly by gravity and by new waste that is disposed. This is why there are no empty spaces in the container. Tests have shown that there is room for 50 % more waste in a Silo than a container with the same volume.

- Roy Bjelland explains that the compacting effect combined with the fact that 2/3 is under ground, means that the total space savings are huge.

The low temperature under ground means that the growth of bacteria does't start and that reduces the smell from the waste in the summer. At the same time the low temperature stops the waste from freezing in the winter. Silo only needs to be emptied when it's full both in the summer and winter.

### Three wastepoints

In Rådyrveien condominio they use Silos with inner sacks that has a 5000 l volume.

- One sack has the same capacity as 11 of the old 600 litre wastebins. In the condominio we have 187 units, but we only need three waste

stations says janitor Runar Kristiansen.

Every station has a width of 7,5 meters and has three Silos

- If we had the old waste bins and wanted the same capacity we would have a row that would be 32 meters at every station. The space we have saved is impressive says the janitor.

### The end of mice and pets

Since the condominio was new in 1954 the inhabitants have disposed their waste in the front entrance. Then it was smelly and dirty.

- There wasn't a day without me killing a mouse - 365 days a year, says janitor Kristiansen. Now he is happy that he doesn't have to smell the smell of diapers, shrimps etc. that was a problem before.

- All these advantages are one thing, another is that it is cheaper in use than the old system. Splendid, if you ask me, says the janitor.

Johan Lea has lived in the condominio since it was finished in 1954.

- It is lovely to get rid of the old waste system. The new one is brilliant. He is also very glad on behalf of janitor Runar that he knows has had a hard time with the old waste system.

- Every day I have rearranged the bins accordingly to which was full. Every winter I have dragged the bins through the snow to the waste emptying car. It is not hard to realise why I'm so pleased with the new system.

# Deep Collection creates a clean environment



Rådyrstreet in Oslo



Condominio in Lillehammer



Condominio in Lillehammer



Sinsen condominio in Oslo



Condominio in Lillehammer



Grubbheia Silostasjon in Mo i Rana



Frognerpark in Oslo



Recreation area

We promise good service!

## Mixed waste

Since 2/3 of the container is under ground, vital space is saved. The waste is compacted by gravity and by the weight of new waste being disposed. These effects makes sure that there are no empty spaces within the waste.

You get more waste in a Silo than in a regular container that is above ground. Tests show that the volume gain is about 50 %. The compacting effect combined with the fact that 2/3 of the container is under ground means that the total space saving is huge.

Since smell is not a problem, emptying is only needed when the Silo is full. This is very important at rest areas along highways, camping places and recreation areas. There is enough capacity so that the waste stays inside the Silo.

## Paper

Silo 3.000 litres: 500 - 1 000 kg paper  
Silo 5.000 litres: 800 - 1 600 kg paper

The collection result is dependent on the quality of the waste. Silos paper appature prevents the disposal of other waste and the quality of the paper will stay the same until emptying.



## Glass/Metal

Silo 1.300 litres: 450 - 500 kg glass/metal  
Silo 3.000 litres: 500 - 1000 kg glass/metal

Big capacity means less emptying and pollution of the nearby areas. The transport becomes more efficient because most of the glass is broken already. Deep collection of glass and metal is done with a spesial lifting bag that is extra strong.

The Silo collects glass quietly. That is very important in areas where people live nearby. That the Silo is sealed means that no fluid pollute the soil around.



Silo station in Mo I Rana

## Organic Waste

The BioSilo is a clean and efficient way of handling organic waste. There is a tank under the container where fluids from the waste is collected. Air can flow through the container and helps drying out the waste. The low temperature under ground in combination with the flow of air reduces the smell from the waste. The use of a compost paper sack makes the BioSilo a very hygienic way of handling organic waste.



## Construction

### Container

- Solid polyethylene container.
- Rotational molded.
- 100% waterproof.
- Don't rust and maintenance free
- The visible part of the container is coated with a wooden panel.

	Capacity	Diametre	Installation depth	Visible high	Recomended waste
Silo 5	5 m3	1820 mm	1750 mm	1250 mm	Mixed waste, paper, beverage cartons
Silo 3	3 m3	1500 mm	1750 mm	1250 mm	Mixed waste, paper, beverage cartons, glass/ metal
Silo 1	1,2 m3	1150 mm	1750 mm	1250 mm	Mixed waste, paper, beverage cartons, glass/metal
BioSilo	0,6 m3	1150 mm	1750 mm	1250 mm	Organic waste

### Lokk

- Robust polyethylene lid, maintenance free.
- Grey as standard.
- Aparature for the different waste.
- Aparature is self-closing
- Quick-system in galvanized steel.

### Lifting bag

- Doubled layer, fireproof sack in polyethylene.
- Lifting bag for glass and metal
- Lifting capacity from 200 - 1400 kg (6:1)



### Different lids and solutions



Standard lid



Spesial apparture



Apparature for paper



Lid support



Hinge for pad lock

Appartures for the different waste!

### Colors



Wooden panel



Blue granite



Green granite



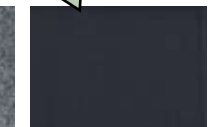
Reed granite



Grey granite



Dark grey granite



Aluminium panel

**Signs are available for the different types of waste.**

## Installation

The container is placed 1,7 m under the surface. If there is a risk of high water level in the groundwww., the container is fastened by filling cement or big stones around the bars at the bottom. Fine gravel is filled around the Silo and softly compacted.



## Living areas

When the big living areas were planned about twenty years ago they didn't take into account the space that is needed for waste collection in the future. With Silo deep collection system you get enough capacity where the space is limited. With smart placing of the Silos the amount of emptying is reduced and so are the costs and traffic by waste collection cars. The Silo looks nice in the environment and is liked by both the users and the ones that do the emptying. With Silo, vital space can be used for other more important things such as space for children to play etc.



## Recreation areas, cemeteries and rest areas

Resting places along highways have over the years changed over into beautiful places where people spend much time. Where the highway authorities have shifted over to Silo the travelers are very happy because the place is no longer smelling. With Silo there is enough capacity in the high seasons and no need to empty before the Silo is full in the low seasons. This is why Silo is so cost effective. These areas demand a high grade of estetic and hygiene is vital. With Silo pets and birds do not reach the waste and the capacity is big enough even for the most popular days during the high seasons.





Harstad Brygge



Rådyrveien condominio in Oslo

## Silo Sub

SiloSub is a deep collection system where the whole container is under ground. Above ground there is only one normal size waste bin visible.



## Installasjon

Installing the Silo Sub is similar to installing normal Silos, the difference is that the whole container goes under the surface. The top is mounted on the platform that is placed on top of the container. Water will not go into the container.



## Emtying

Emtying Silo Sub is the same as with regular Silos. There is a safety fence that raises around the Silo Sub when emptying.





Hovin



Skøyen Hagen



Hammrestadgaten



Hovin



Hovin Borettslag i Oslo

# Other products

Waste bins



Waste bins



Waste bins in stainless steel



Benches



Shelters



Ashtrays



## Flower planters



## Flower towers and planters



## Benches



## Bollards



## Streetsigns



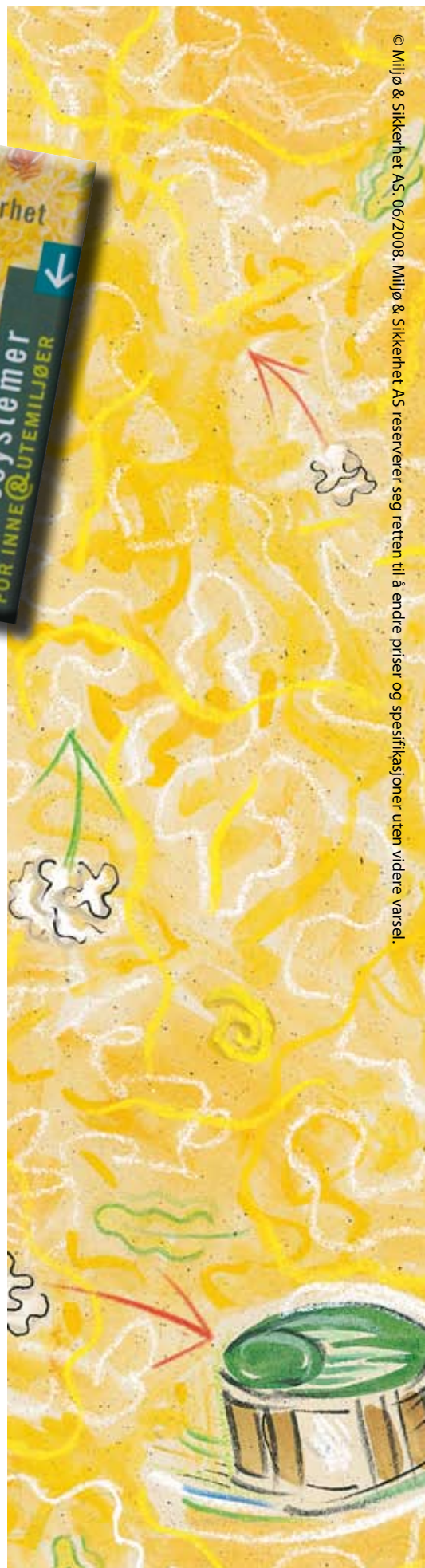
## Grit/sand boxes



## Waste collection



# Silo do Brazil



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Roy Bjelland

**We promise good service!**

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