



Approved System turns Waste to Profit

*Drum Composting
for manure, sludge, biowaste etc.*

www.ecsab.com

Compost more!

Use waste as a resource

Composting is a natural method to recycle organic waste and return it to nature. Compost works great as a soil improvement material and has many areas of use.

Though the principles for a working compost process in theory are very simple, in practice it is quite difficult to find methods that guarantee a good result for different types of waste. The compost process starts by itself but is complicated to control and manage. Large scale composting requires mechanical processing in order to aerate and mix the material.

Holistic approach gives Profitability

QuantorXL® - Composting in a rotary drum, is a patented, process-oriented method that brings a holistic approach to composting and generates profit through:

- *Approved System* – Gives quality compost with increased value
- *Capacity* – Continuous flow means efficient, large scale composting
- *Simplicity* – Automated and standardized process that is easy to manage
- *Flexibility* – For all types of waste, including manure = Interesting for all

With QuantorXL® you can profitably COMPOST MORE!



From waste to profit

Turning a problem into a business that creates value

Efficient compost process

According to a report from 2005, by Avfall Sverige – Swedish Waste Management, the compost process is often looked upon as materials handling rather than a process for degradation. A conclusion in the report is that the waste management industry most likely would gain by developing a more thorough process-orientation, to optimize composting and reach a higher level of efficiency.* QuantorXL® Drum Composting is exactly that type of process-oriented composting method. It is not only about quantity, but also about quality. You get the possibility to manage the process in a closed system and can quickly produce a high quality end product.

Other methods, such as open air windrows do not give the same possibilities to control and produce a homogenous compost. Solutions that aim to manage the process in a better way, like tunnel or reactor composting, on the other hand, require huge scale and large investments. Problems with odour often make it necessary to locate composting plants in quite remote areas.

*RVF Utveckling 2005:06 "Evaluation of large scale systems for composting and digestion of source-separated biowaste"

Right size

QuantorXL® is designed to offer economies of scale and efficiency, but at a moderate level of investment. It does not require large amounts of waste to become profitable. The completely contained degradation process minimize odour problems, and makes it possible to locate the operation relatively close to urban areas. These factors combined lead to a reduction of costly transports, and this of course also benefits the environment. Approval for all types of waste means that you can offer a complete solution for waste in a certain area, thereby avoiding parallel, inefficient, systems for waste handling.

Double sources of revenue

When composting with QuantorXL® you can generate revenue from two sources. Fees paid by those who leave the waste as well as the sale of the finished compost product. As there is no need to reject any type of waste you can always utilize the full capacity.

The produced compost soil is of the highest quality, free from pathogens and parasites, and can be sold freely on the market as a soil conditioner and fertilizer.



Sell the compost directly to customers, or to a soil producer for further processing

Approved System

Full hygienization raises the value of the compost produced

QuantorXL® Drum Composting System fulfills EU regulations for animal by-products, for composting manure, and is approved by the Swedish board of agriculture through validation. Manure is currently the most heavily regulated waste type in Sweden.

A number of parameters in the QuantorXL® Composting System are considered but the most critical requirement is that for hygienization, i.e. the complete elimination of potential pathogens and parasites. QuantorXL® has been validated to achieve full hygienization when all the material in the composting drum reaches a minimum temperature of 52°C for at least 13 hours without interruption.

How does QuantorXL® achieve this?

The challenge of achieving high-quality composting is the ability to fulfill three key needs, which are all effectively met with QuantorXL® in the rotating, insulated compost drum:

1. *Oxygen* supply is good throughout the process and in the entire compost mass.
2. *Mixing of material* is effective and provides an optimal distribution of active microorganisms, and facilitates the aeration further.
3. *Temperature* can be controlled and kept at the desired level, with no cold zones.

For QuantorXL®, thanks to the efficient process, there is no requirement for specific particle size. This saves time and energy compared to other methods, where extra processing may be required.

What benefits come with the approval?

QuantorXL® composting plant is system approved and certified. All that needs to be done is to obtain approval for the handling and surrounding operation. Then you can receive all types of organic material for composting and have a complete solution for all types of waste. You do not need to decline any waste, such as manure, and so different types of materials can be mixed according to your needs, to provide an optimal process and end product. Nutrient-rich material can, and should be included, to give the compost the best possible value.



Air is blown into the compost by a fan

High Capacity

Controlled compost process through continuous flow

To be efficient in commercial composting you need to reach a certain scale. However, in systems with too large volumes of waste, focus is often more on the actual handling rather than on controlling the process to create a good end product. With QuantorXL® the composting takes place in a closed container, under full control. The volume of the QuantorXL® drum is 125 cubic meters which is optimal in order to achieve the right flow and time in the drum, so that the best conditions for composting are achieved.



Fully automated and easy to supervise

One or several drums!

Treatment capacity for QuantorXL® varies with the material. For manure, for example, it is approximately 10 000 m³ per year, whereas other waste may require more time in the drum, resulting in lower total capacity. If there is a need for larger volumes, a plant can have several, parallel drums.

What happens in the drum?

The composting process starts when oxygen-consuming microbes generate heat. Other microbes, adapted to heat, enter and start the decomposition of the material. In QuantorXL® the temperature stays between 52-70 °C, when the waste mix is correct. This allows highest possible rate of degradation and the active microbes operate at maximum efficiency without interruption. At this temperature all microorganisms that are not adapted to heat, including pathogens and parasites, die. Also weed seeds lose their ability to grow.

Composting in QuantorXL® requires no additional heating, but the rotation and associated mechanics require some energy. The electricity consumption of a complete plant with one drum is around 20,000 kWh for one year in continuous operation. At the same time excess heat from the composting in one drum is around 100,000 kWh per year at optimal process. This energy could be recycled and used to heat nearby buildings.



Mixing of material and feeding is done once a day

Simplicity in handling

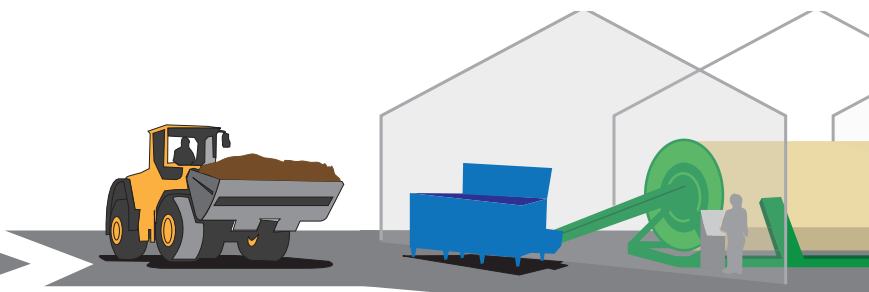
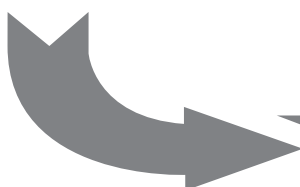
Fully automated, standardized process



Waste, for example food, manure and sewage sludge are handled by an efficient interchanging system with container transports.



Receiving, if necessary mixing with structure material.

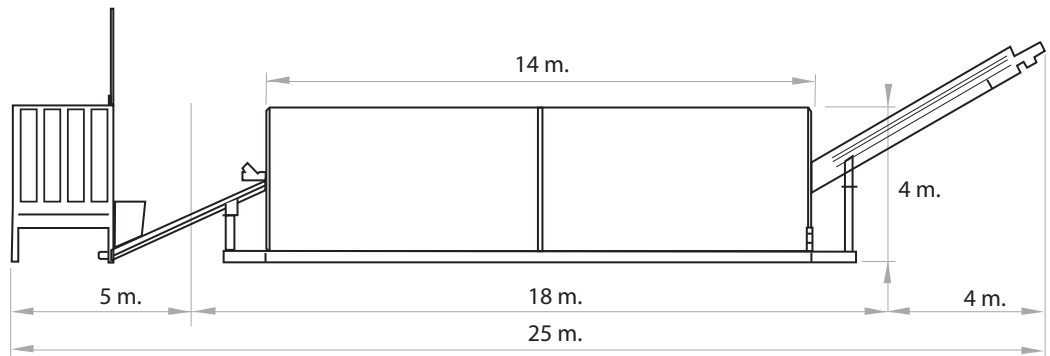


Feeding with composting waste

A QuantorXL® Drum composting system is fully automated and consists of receiving container for waste and structural materials, a complete feeding- and discharge systems, and the composting drum. In the process, material is continuously passing through, i.e. not in batches. The workload is about one hour a day, receiving material, creating a good mix with structural material, checking moistness and filling the feeding system. The amount of preparatory work depends on the desired composition of the end product, and its area of use.

The actual composting takes place inside the rotating drum, which is insulated and aerated by a fan. No addition of chemicals or other matter is required.

The plant is reliable and easy to manage, and the process can be easily monitored, optionally by remote control. Thanks to the automated system no staff or machinery need to work in the compost during the main process, when conditions otherwise wear heavily on both people and equipment. The temperature in the drum stays between 52-70 °C depending on the composition of the material.

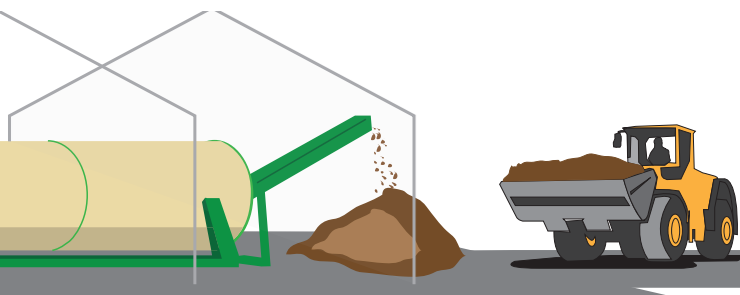


FACTS QuantorXL® (Approximate numbers)

Weight empty drum	20 tons	Capacity/day	15-50 m ³
Weight full drum	80 tons	Energy cons./year	20,000 kWh
Volume	125 m ³	Building size needed	18 x 6 m

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Drum composting about 3 – 14 days create a pathogen free compost



Maturing 1 – 6 months depending on material

Time in the drum is determined by waste type, where, for example, horse manure can be processed relatively quickly while other types of waste may require more time. It also depends on if you primarily want a quick hygienization of the material, or choose to let a greater part of the composting take place within the drum. The material is degraded into a clean compost which is free from harmful bacteria, viruses, weeds and odour. The volume of the material has meanwhile been reduced to around 70 percent of the input volume. Finally the compost is left to mature during one to six months before it is used for further processing.



End product for parks, lawns, private gardens etc.



Flexibility in usage

For manure, sewage sludge and all other organic waste

The unique, patented technology of QuantorXL® supervises, controls, and reinforces the nature's own method. This gives the ability to process difficult and regulated waste, such as manure and sewage sludge, and achieve approved hygienization. The capability to process all different types and combinations of organic waste makes QuantorXL® extremely flexible. It can for example be used to compost:

- *Manure from all types of animals*
- *Sewage sludge and digestate*
- *Vegetable waste etc., from the food trade*
- *Biowaste from households and restaurants*
- *Residue from fish industry*



QuantorXL® is an interesting alternative for many:

Horse breeders and Equestrian facilities.

Farms with large scale animal production.

Entrepreneurs creating a business, by first offering a solution of a waste problem to, for example, food wholesalers or stables in urban areas, and then also being able to sell the final product.

Municipalities that today do not have an adequate management for all waste, or use plants elsewhere, resulting in unnecessary transports.

Composting plants that do not have approved systems for all types of waste. QuantorXL® can be integrated with the existing systems to add a quick initial hygienization, or be used for certain parts of the waste.

Waste management companies that want to expand their activities

Soil producers wanting to secure access and control over an important raw material.

Biogas plants that want a supplement for difficult waste or to use when disruptions occur.

Solutions for all needs

Experience and knowledge put into practice

QuantorXL® is a standardized unit which includes the rotating compost drum, receiving container, and input and output systems. It is delivered as a turnkey system, ready to use, by European Composting Systems AB – ECSAB.

Needs, areas of use and conditions surrounding the facility can differ significantly depending on the customer. We have a broad knowledge and understanding of the needs and issues concerning planning and investment decisions in a composting plant. We have all necessary technical know-how internally in the company. Together with the customer, we design a system that works in practice for each specific situation.

ECSAB works with the customer throughout the entire project, for example with:

- Investment analysis and calculations needed
- Design of best overall solution
- Construction drawings based on existing or planned buildings
- Advice when applying for the necessary permits
- Delivery and installation
- Operational startup in order to ensure a functioning process
- Training and ongoing consultation
- After sales support
- Update of control system (PLC) if new needs arise



The feeding system is designed according to the conditions at each site



The control system is adapted to customer specific needs

ECSAB – European Composting System

Swedish environmental technology company specializing in drum composting

ECSAB was founded in 2006 and patents and sales rights for drum composting were acquired the same year from the Finnish company Rumen Oy. The technology and the system has since then been further developed and in 2009 it received system approval by the Swedish board of agriculture through validation. Together with Rumen Oy more than 100 drum composting plants have been delivered and put into operation in Finland and Sweden.

QuantorXL® Drum composting from ECSAB offers a solution to modern requirements for waste management, recycling and composting of

waste from water purification plants, biogas plants and municipal waste facilities, fish industry, agriculture, stud farms, fur-and poultry farms, riding schools and equestrian facilities, etc.

ECSAB provides high quality, proven and sustainable waste management technology. The need for this technology is large and growing.

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Our vision is to have another 100 QuantorXL® facilities in

operation within a few years! ”



EUROPEAN COMPOSTING SYSTEM AB

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ECSAB office together with sister company RS Produkter





The handling of materials require separated areas for incoming waste and outgoing compost



The size of the receiving container may vary



The drum is fully enclosed, to control the process



Feeding and discharge are to/from the center of the drum. The inside of the drum is covered by layers of a special color to withstand corrosion



Rotation is powered by efficient hydraulics

These are pictures from our reference plants in Rölunda and Mellby Gård, Sweden



Quantor[®] XL
DRUM COMPOSTING

– an efficient method
for turning waste to profit!

ECSAB

EUROPEAN COMPOSTING SYSTEM AB

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