

FAQ

The Stationary Vacuum System

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General

Which types of users are normally using an Envac system?

Envac provides automated waste collection systems based on pneumatic transportation in pipes for a number of applications. Each application targets one or several types of users. The system solutions are customary designed to cater for the needs of each type of user.

Application	User	User	User	User	User
Residential	Households				
Mixed developments	Households	Office janitors	Retail janitors	Restaurant staff	
Commercial		Office janitors			
Shopping centres			Retail janitors	Restaurant staff	
Hospitals					Hospital janitors
Airports		Airport cleaning staff	Retail janitors	Restaurant staff	

What is the recommended capacity of a system?

For a SVS 500 system the recommended maximum capacity is:

2 km suction distance from the furthest inlet to the collection terminal

8500 dwellings (two fraction system)

20 tons/day per system

These limitations can vary depending type of waste and design of system.

Waste types

Which types of waste can be collected with an Envac system?

All ordinary waste such as newspapers, magazines, clothes, wood waste, plastics, cans, etc can be disposed of to be collected and handled by the system. Around 80% of the daily household waste and commercial/residential waste is "Envacable" waste.

	Paper	Card-board	Cans	Glass	Rigid plastics	Plastic film/poly-styrene	Textiles / linen	Organic food waste	Garden waste	Bulky items	Clinical waste	Hazardous waste	WEEE	Liquid waste	Rest / Residual waste
Residential	OK	OK	OK	OK	OK	c-l	OK	OK	OK	No	-	No	No	No	OK
Offices	OK	OK	OK	OK	-	-	-	-	-	No	-	No	No	No	OK
Restaurants	OK	OK	OK	c-l	OK	c-l	-	OK	-	No	-	-	-	c-l	OK
Food catering facilities	OK	OK	OK	c-l	OK	c-l	-	OK	-	No	-	-	-	c-l	OK
Public realm	-	-	OK	c-l	OK	-	-	-	OK	-	-	-	-	-	OK
Mail	OK	OK	c-l	c-l	OK	c-l	-	OK	-	-	-	-	-	-	OK
Health care - hospitals	OK	OK	-	c-l	-	c-l	Linen OK	OK	-	-	c-l	No	-	-	OK
Ports	OK	OK	-	c-l	OK	c-l	-	OK	-	No	-	No	-	-	OK

c-l= conditional to quantities, system design and processing requirements

Which types of waste can not be collected with an Envac system?

Bulky waste

Furniture's, refrigerators etc. should be collected separately

Combustible articles likely to cause fire or explosions:

Charcoals, burning cigarette butts, oil (such as gasoline, kerosene, cooking oil etc.), portable and disposable spray cans, etc.

Hard articles

Stones, lumps of metal scraps such as scrap iron, large quantities of glass etc.)

Viscous articles:

Binders and adhesives such as paste and rapid binding adhesives.

Spongy articles:

Sponges, cushions, etc., which tend to expand and block the chute and/or the transport pipe.

Dangerous chemicals

Acidic and alkaline solution, etc

Highly moist waste

Food waste from residents can be handled by the system in a separate chute. Large quantities of very liquid food waste will require a separate pipe.

How do you deal with “non-envacable” waste types?

These waste sorts are normally handled by separate collection scheme anyway. Typically cities have instructions for how these waste types should be handled. Often it makes sense to use the Collection Terminal of the Envac system as a bring bank for various “non-envacable” waste streams, using the Envac terminal as a recycling centre.

Collection station

Where should the collection station be located?

There are three criteria for the location of the collection station.

Location	Advantage	Disadvantage
Central in area/pipe net	Minimizes the pipe length Economically advantageous	May be difficult to find good location Logistically often not optimal
Outskirt of living area	Eliminates heavy waste traffic in the centre. Often cheaper land than in the centre.	Longer pipe/suction distances
Logistically right (close to mainroads, right direction to waste treatment plant)	Minimizes transportation.	Longer pipe/suction distances

Which are the different volume sizes for the containers?

The limitations of the containers are set by the maximum weight allowed to be transported. The optimal size of a waste container is depending on the density of the waste, space conditions in the terminal and the expected collection frequency.

Our standard container sizes are

- 20 m³
- 25 m³
- 30 m³

Containers can be made custom-made from 5 m³ to 30 m³.

What is the density of the waste in the container?

Depending of collected waste but normally 350 – 500 kg/m³.

What size of a collection terminal do I need?

The size of a collection station varies with the expected quantities of waste and the number of waste fractions (waste streams). It may also vary with turn-around time for emptying full containers (if long turn-around times stand-by containers are needed) and collection frequency (will the full containers be picked up on weekends or do we need a spare container for the weekend volumes?). Other factors of influence are architectural and space confinements, ground conditions, location etc.

This table is a very broad indication of the floor space required for collection terminals for different sizes of installations.

No of households/ dwellings	One waste fraction	Two waste fractions	Three waste fractions
8,500	150-200 m ²	350-400 m ²	500-600 m ²
6,000	100-130 m ²	200-250 m ²	300-400 m ²
> 3,000	50-75 m ²	100-150 m ²	180-230 m ²

The collection terminals can be designed in several floors. They can also be entirely above ground, entirely underground and semi-underground/over ground.

Pipe system

Can glass and other erosive waste be thrown in an Envac system?

Yes it can if it's mixed up with other waste. Envac has developed a calculation tool that calculates the needed thickness of the pipe to secure a minimum life of 30 years. One of the parameters in this calculation is the percent of erosive waste that will be thrown in the system.

The percent of glass or other erosive material should preferably not exceed 10% of the total weight of the waste collected as this requires special system and component design.

Larger quantities of pure glass or other erosive material would require a thickness of the pipe that is impossible to make.

Which material are the pipes made of?

Generally, the straight pipes are made of carbon steel at different thicknesses depending upon the expected waste loads and their erosion properties. The bends are especially sensitive and therefore often made of Boron steel.

The expected erosion factor is the most critical factors for the design of an installation. Envac has, due to our experience from over 600 installations, 40 years of operation and maintenance extensive experience and knowledge in this field.

Do the streets have to be opened to repair a broken pipe?

Usually not in a 500 mm pipe system, the majority of the repair can be done from inside of the pipe by fitting (welding) small plates to the holes. Internal pipe repair can be done in less than 1 day.

If a 400 mm pipe system is installed then the repair has to be done externally, i.e. opening the trenches.

Can the pipes be installed hanging?

Yes, they can. If special requirements have to be met, customary design is made to fulfil these conditions.



What about corrosion?

The pipes are protected with a PE-coating which is normally enough for the installation in trenches. In the case of bends other types of external coatings can be also used, but always according to international standards.

Corrosion of the pipes may appear if they are installed in corrosive environments. In these cases we install anode or cathode protection. This gives sufficient protection and is considerably less expensive than using stainless steel pipes.

Is it necessary to clean the pipe system?

No, usually not. The waste cleans the pipes sufficiently for most applications. If wet and very sticky waste should be transported a cleaning buoy can be used periodically.

What is the air speed of the waste transport in the pipes?

Depending on the density of the waste and the transportation distance it varies between 20 and 25 m/s.

Ground conditions

Can the pipes be installed below the water table?

Yes, the pipes that Envac use are prepared to be installed directly in the ground independently of whether they are below the water table or not. The pipes have a special external protection: a 3 layers polyethylene coating. We are using exactly the same protection as the gas pipes, in accordance with European standards, when the pipe is installed in the ground.

We have a number of installations where the pipe is located below the water table. Some of these installations were built more that 20 years ago and are still in very good condition.

Can the pipes be installed directly into the water?

Yes, they can. We have several installations where the pipe is directly installed in the water. One installation is the Lisbon Waterfront (see picture below).



What about installing an Envac system in an earth quake zone?

In this case we need to consult local expertise. We have some experience from the Taipei Financial Centre project in Taiwan as well as in Burbank, California.

What about ground settlements?

Yes, an Envac system can be installed in settling grounds, but special provisions have to be made.

How should frost in ground be handled?

We have a lot of experience with frost in ground through our Scandinavian installations, so please contact your local Envac sales or technical department for advice.

What about flooding areas?

See above installing the pipe under the water table and in water. If an Envac system should be installed in an area which is exposed to flooding risks special provisions should be made in order to stabilize the pipes.

Inlets and chutes

Do the inlets need cleaning?

The standard Envac waste inlets do not need to be cleaned on the inside. The outdoor inlets, usually has to be cleaned or re-painted on the outside due to weather, stains from waste and or graffiti.

How many dwellings can be supported by one inlet point?

One inlet point is a point next inside or outside a house which hosts one or several inlets dedicated to serve that building or adjacent buildings. The number of households connected to one storage point is dependent on their expected waste volume, walking distance, storage capacity in the inlet and size of the system. Typically, 40-80 households are allocated to each inlet point. If there is a need for more this can be solved by expanded storage techniques.

How big waste bags can be thrown in an Envac system?

The maximum size of the waste bag depends on the pipe diameter used in the system. But, in 500 systems, usually bags from residential areas 10-30 litres and from commercial up to 120 liters can be thrown in to the system.

How should one prevent children from entering into the inlet?

An opening larger than 300 mm is generally not recommended for residential areas with unlimited access for all type of users. The inlet door should be positioned at minimum 1100mm above ground. For larger inlet doors (often needed for retail or commercial users) an access control is needed (manual lock or others).

Do the chutes need to be ventilated?

All inside valve/tank rooms should be ventilated, both outdoor and indoor.

Which is the recommended maximum height for the chute in high-rise buildings?

Typically 50 floors - higher buildings may need special solutions.

How does Envac handle multiple fractions in high-rise buildings?

Separate chutes, or separate outdoor inlets for the less frequent waste streams. In certain cases also a specially developed "revolver solution" can be applied, where one chute is applied handling two to four separate waste streams. For more information about its applicability, please contact your Envac office.

General installation

How deep are the pipes buried?

The pipes are generally buried between 1-1.5 m below street level. If there are valves in the street, the depth is normally between 1.5 m-2.5 m

In what lengths are the pipes delivered?

6 or 12 m (straight pipes).

What is the maximum elevation of a pipe?

It is normally recommended not to exceed 20°, both downhill and uphill. There is always a risk that not all waste will be taken away by the air stream if the inclination is larger than 20°. Waste residuals in the pipes may then cause blockages, which have to be cleared.

Can the system be installed in existing buildings?

Yes, it can and often is! Many of our installations are done in so called consolidated areas (city centres), where the adjacent buildings are either directly or indirectly connected. The easiest way is often to install outdoor waste inlets, but also indoor inlets can be used. If the buildings have waste chutes it may be worthwhile to study if it is possible to connect existing chutes to the pipe system.

Can pipes be installed in conjunction with other underground installation works?

Yes, it can and it often makes sense to combine the installation of an Envac system when the streets are opened anyway.



Installation in high-rise buildings

When the first high-rise Envac system was built and where are high-rise systems?

The first high rise system (>20 storeys) was installed in Fanling, Hong Kong 1995-96. It covers 6 building with 4000 dwellings. A majority of the high rise systems Envac has installed are in Asia (e.g. Hong Kong 7 systems with up to 40 floors, Singapore 1 with approx. 70 floor. In Taipei in Taiwan Envac has installed one system in the Taipei 101 Financial Tower with 101 floors).

How are the pipes installed in high-rise buildings?

Same as other systems, both below ground and suspended. However, special consideration should be taken to the valve rooms to allow absorption of gravity forces from waste bags falling from higher floors.

How is source separation best achieved in high-rise buildings?

We recommend installing multiple chutes. If a "revolver" type system (using only one chute for several fractions) is considered a simulation of the disposal capacity of the system should be done. Envac can do such a simulation study as well as provide revolver solutions, if applicable.

Operation

How does a power failure affect an Envac system?

As long as the terminal building is not affected by the power failure the system will keep running. The standard Envac system does not require electrical power in the inlets or in the inlet net. Each inlet is just connected to the terminal with a compressed air pipe and an electronic bus. In some cases, our terminals are equipped with double connections or an autonomous electrical generator.

Which guarantees can Envac provide that the installation runs properly in the future?

Envac offers long term service agreements ensuring proper operation of the installation by specially trained and educated Envac staff. When signing a long term service agreement Envac automatically guarantee the smooth operation of the installation over many years.

How usual are blockages and valve failures in the system?

It happens, but it is not a major problem. A severe blockage, which has to be attended manually, appears less than once a year per installation on average. Blockages that can be removed by the operational system happen more frequently (described below), but those do not imply a reduction in the availability of the system. Envac has special equipment for this and our staff is trained to swiftly remove any eventual blockages.

How is a blockage fixed?

90% of the blockages are solved by increasing the air pressure and this can be done with remote control. Other methods to break the blockage, if not resolved by increasing air pressure, are:

- Using a special buoy
- In extreme situations it can be necessary to clear the blockage manually

How long does it take to fix a blockage?

That depends very much on the kind of blockage. If it's a blockage that can be solved by increasing the air pressure then it will normally take less than 15 minutes. If the blockage requires manual action it normally takes between one and two hours.

Are special waste bags required in an Envac system?

Only for some special waste fractions as organic waste going to compost or biogas.

Paper bags or corn starch bags are often used. What kind of bag is usually decided by the municipality. Plastic and corn starch bags should have a minimum strength of 50µm and being properly welded and sealed in order to withstand the transportation process. Specially designed paper bag can also be used for the organic food waste. Many recycling facilities have bag openers, which mean that any type of bag can be used for the recycling fractions. For more information, please contact the technical department in your closest Envac office.

What happens if the inlet is blocked?

If for whatever reason a large object blocks the inlet/valve the control system will give alarm and an operator will solve the problem. In the majority of the alarms the operator does not need to go to the blocked inlet, instead he or she can solve the problem from the office by running the system remote.

Are any operators needed to run the system?

Most systems are in operation unmanned. Depending on local requirements there are also systems that are manned.

Recycling

How many separate fractions can an Envac system handle?

There is no theoretical limit to the number of fractions; it is more a question economical feasibility. Often 2-4 fraction systems are installed.

How should the system be designed and installed in order to achieve high recycling rates?

The level of recycling is generally dependent on the following factors:

- Information and feed back to users
- Accessibility of the inlets to the users
- Public control

Continuous and pedagogical information to the users is of paramount importance in order to get high recycling rates. The users must understand why they should recycle and have full confidence in the recycling system and the contribution they make to the environment. Introducing a new technology is often an ideal possibility to change people's behaviour.

The inlets should be easily accessible. It is generally recommended to install locks on the recycling inlets, in order to avoid undisciplined users contaminating the recycling fractions. Also it is recommended that the inlet size opening of the residual (rest) waste fractions is larger than the recycling fractions and located closest to the entrance door/staircase in order to give it higher accessibility than the recycling inlets.

The inlets should be installed so that they receive an optimum of visibility. If you feel your neighbours watching you when discarding your waste/recyclables, you normally behave more disciplined than if no one is watching you.

Which levels of recycling can be achieved with an Envac system?

If these three factors above are fulfilled very high recycling rates can be achieved. Depending on the social and educational structure of the area up to 90% participation and over 95% purity may be achieved.

Which types of recyclables can be transported?

All types of recyclables except large quantities of glass and hard, erosive materials can be handled.

The organic food waste should be handled as a separate fraction to the others.

Dry recyclables can be handled as one stream or as two stream co-mingled fractions. A in a two stream co-mingled fraction often paper is handled separately from the rest of the recyclables. Envac has installations with both one-stream and two stream recyclables.

Can Envac be combined with Optibag – optical sorting?

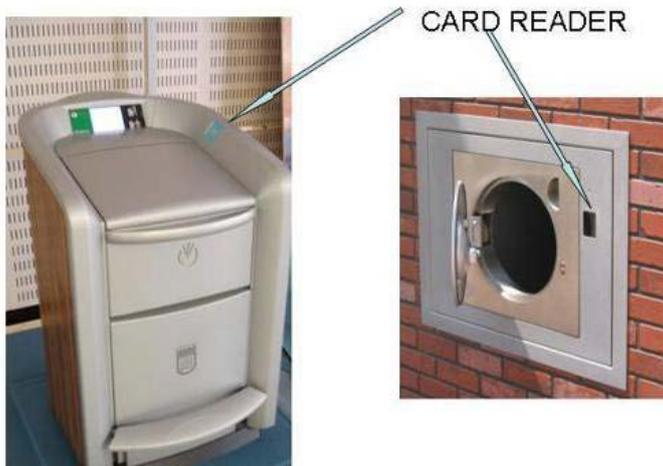
Yes! When there is an optical sorting plant installed or planned to be built it makes sense to combine the Envac system with this facility. If this is done considerable cost savings can be achieved by reducing the number of inlets (all waste fractions, put in different coloured bags, is disposed off in the same inlet). For more information about optical sorting: www.optibag.com.

Commercial Waste

How does Envac handle commercial waste separately from residential?

If the commercial user can be considered as being a “big producer” they will in most of the cases be provided with a dedicated inlet that they can open with their own key, card or transponder.

If the commercial user can not be considered a “big producer”, the commercial users will share an inlet with the residential or with other commercial users. In that case the inlet door is often equipped with a card reader that will open a smaller door for the residential users and a bigger door for the commercial users.



Which types of commercial waste can be handled by an Envac system?

Envac has experience from handling general waste and recyclables from offices, retail units, restaurants and catering facilities, hospitals and nursery homes as well as airports.

Envac also provides special solutions for card board handling as well as for larger kitchen and catering facilities.

Fire and terrorism

What happens if someone throws a cigarette stub in an inlet?

Nothing will happen because inside the inlet there is not enough oxygen to start a fire.

In case of fire, can fire propagate from one building to another via the pipe?

No that's impossible. Each branch entering in to a building is completely isolated by a valve.

How can Envac make the indoor inlets more fire proof?

There are different fire protection regulations in each country. So far our installations have been approved by the fire fighter department in all countries where Envac has a system. The risk of fire is generally appreciated as being less in an Envac system than in traditional chute systems. The reason for this is that the waste is only temporarily stored in the chute. Several times a day it is removed, unlike in traditional chutes where the waste sit in the container at the bottom of the chute for several days, maybe a week. The Envac system is also a closed system. The risk for fire or smoke to spread outside of the system is very low. These benefits over traditional chute systems have led to local fire authorities approving Envac installations, where traditional chute systems have been questioned.

For more information on fire issues, please contact your local Envac office.

Is an Envac system safe against terrorist attacks?

Nothing is 100% safe, but we would say safer than other types of waste collection solutions. Our technology has been installed in airports with high demands on security. The arguments why an Envac system adds extra safety in airports, just as in residential and commercial areas are:

If someone puts an explosive in an inlet it's less dangerous than if it explodes in a public bin, since the valve that will temporarily retain the explosive is located between 1 and 2 meters below the street or ground floor.

If someone puts an explosive in an inlet and it is collected by the system exploding in the terminal it's less dangerous since the explosion will take place in a sealed steel container in a non public space.

Unlike traditional bins, the waste inlets of Envac are fixed installations and can't be moved around. If there is a great concern about terrorism the Envac inlets could be placed in locations which are less accessible and where an explosion underground would have controlled effects on the surroundings.

Trucks

What type of truck is needed to collect the containers?

A truck with a hook lift device is needed.

Who supplies trucks with hook lifts?

This type of truck is available worldwide in ports and operations handling containers. Most waste collection companies also have these types of hook lift trucks. However, a local adaptation of the container frame might be needed to suit local trucks.



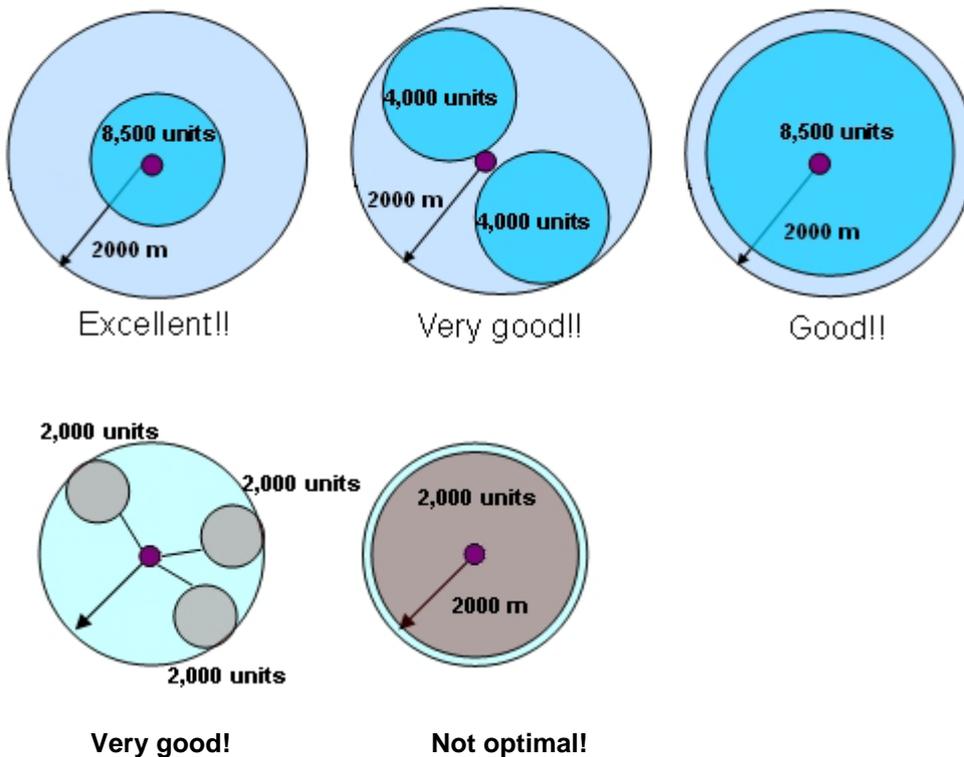
Economy

Which is the minimum size and maximum for an Envac system?

Envac stationary vacuum systems have been installed in areas with as little as a few hundred dwellings. We generally recommend, however, not considering such small areas if this is the first installation in the city. A minimum size that is economically feasible for the first Envac installation in a city is 1000 dwellings (or equivalent of commercial/retail/ restaurant waste), depending on density.

You could have a very compact area (high density) with just 3000 meters of pipe giving service to 8.500 dwellings(typical case of an area with high rise buildings); or 6000 meters of pipe just serving 5,000 units (low density). Remember that you should not serve a point at more than 2000 meters from the terminal.

● Terminal



Important: Since the breaking point of the system from the cost effectiveness point of view starts with more than 1,000 units, there is no need to build all the dwellings in just one phase: the system has the capacity to grow step by step according to the rhythm of the development.

How high should the density of the area be?

The density of the area is the first parameter to be considered when a vacuum system should be designed. In general, anything less than 3 floors buildings are not economically feasible. The higher the density the better and above 50 dwellings/hectare it often makes economical sense to consider a stationary Envac system.

When we approach an area to be analysed, we should know how many dwellings, residential units, square meters of office, restaurants, hotels, retail, etc that will be built in the area. Using appropriate ratios, finally we will know how many “dwellings equivalents” we will have in the area, and thereby, the total waste production.

The maximum distance from the terminal to a disposal point should be less than 2000 meters.

We are generally considering that each unit or dwelling equivalent has between 1.3 and 3.2 inhabitants and that each one produces around 1,3 kg of waste per day.

The length of the pipe is normally not a technological factor but an economical one.

How many years is the payback time?

It depends on the application, size and density of the area, alternative waste handling/collection costs and several other factors. Mostly, it depends on the value of the released space Envac often can provide. The payback time can be anything from one year to twenty-five years depending on these factors. Your local Envac office can assess the payback time of the installation, comparing it with other waste handling alternatives.

Who is paying, owning and operating a system?

This is different from country to country, city to city and even between projects.

Three examples from three projects in different countries:

Barcelona (Spain)

Who is paying for the system? (capital investment)

Private inlet nets: are always paid by the developer

General net (pipes in the streets): always paid by the developer of the area

Terminal: In all cases, paid by the City

Who owns the system?

Private inlet net: each building is the owner of his own inlets and net connection to general net.

General net and Terminal: the City is the owner

Who is operating the system?

The citizens of Barcelona pay a property tax that includes a waste fee. Envac has a contract with the City and is carrying out the operation & maintenance of all its installations and is paid directly by the City on a monthly basis. Each building pays a yearly fee directly to the City in exchange for the maintenance of the underground waste collection equipments they have.

Hammarby Sjöstad (Stockholm, Sweden)

Who is paying for the system? (capital investment)

The developers get together and form a company (shares according to the amount of flats they plan to build). This Company is the owner of the system: pipes, terminal and also the pieces of equipment installed inside the buildings.

Who owns the system?

When the developer sells the houses their shares are transferred to the housing association (owners of the building).

Who is operating the system?

Envac is normally doing the O&M and invoice the company that was formed by the developers for these services.

The city has a lower waste collection fee for all neighbourhoods serviced by the underground waste collection system (typically 50% of the normal fee in Sweden).

The total amount resulting from the addition of both payments result in about the same amount of money that the rest of residents are paying in other areas of the city in which there is no underground system.

New Wembley (London, England)

Who is paying for the system? (capital investment)

The developer is financing the whole installation (general net, inlet net and terminal).

Who owns the system?

The developer.

Who is operating the system?

The operational costs will be financed within the estate management fee for both households and commercial operators. Residents are paying the normal property tax (council tax), which includes the costs for waste collection.

Nevertheless, the estate management company is saving a very important amount of money since with Envac system they do not have to spend money on employees and equipment to handle the waste in the apartment blocks.

Also the costs for the commercial users for their waste collection are typically higher with conventional collection than with the Envac system. It has been discussed to use some of these gains to lower the estate management fee for the households.

How high are the investment costs?

This varies from installation to installation, city to city and country to country. In Europe, North America and in more affluent parts of Asia the investment costs of an Envac system typically are in the range of 0.5 and 1% of the building construction costs.

Environment

Does the system spread odours or contaminants?

The exhaust air from an automated waste collection system is normally not very contaminated. However, depending on the type of waste, collection frequencies and the ambient temperature, conditions may develop which are favourable for a biological decomposition of the waste. In these cases odorous compounds will be generated.

Depending on the quantities and nature of the waste, the location of the terminal building and other local conditions a number of measures are taken to eliminate any nuisance.

A thorough analysis is done to predict the likelihood that odours and other compounds of nuisance may be spread to the environment. Meteorological data such as wind characteristics and inversion phenomena, local standards on air quality and so called odour threshold appreciations are used to guide the design of the exhaust system. Activated carbon filters with high efficiency are used to remove odorous compounds. Dust filters are always installed to capture dust and particles in the exhaust air.

How do Envac treat the used air?

Transport air is normally filtered to reduce suspended particles and depending on local conditions and requirement an odour filter might be applicable. Envac generally uses two types of odour filters; activated carbon (AC) or scrubbers. Internal tests have shown that the AC is more efficient both related to odour reduction and operating cost.

What and how big are the environmental advantages with an Envac system?

Our biggest environmental advantages are the fact that an Envac system doesn't use trucks as much as a manual collection system. This advantages results in the following:

Less diesel consumption.

Comparisons that have been made shows that with an manual collection system the total driven kilometres with the truck is up to 30 times longer then with an Envac system. This results in much higher CO₂ and particulate emissions in the area.

Fewer trucks in the area.

Comparisons that have been made show that with a manual collection system the total time a truck needs to be in the city area is up to 7 times longer then with an Envac system. This results in higher risk for accidents.

Better working environment.

With an Envac system no humans needs to push, pull or lift or even be close to the waste or any containers and bags. This results in a much better working environment and less work injures (improved occupational health and safety).

Does a vacuum system consume electricity?

Yes, but compared to manual collection with trucks the energy need is less. Envac ensures that the design of each installation is optimised from an energy perspective. Envac Service has the knowledge and provides services to make sure that the energy use during the operation phase is kept as low as possible.

How much CO₂ emissions does an Envac system lead to?

CO₂ emissions from electricity production are usually much lower than for fossil based fuels such as diesel. How much lower depends on each country's electricity mix. Since all Envac systems are run on electricity, the CO₂ emissions are directly correlated to the electricity mix in the particular country.

Can Envac installations use photovoltaic cells to generate electricity?

Yes, where conditions are favourable for PV cells these can be installed both on the collection terminal roof and on the outdoor inlets in order to generate electricity. The economical feasibility of these installations depends on the price of the electricity and the capacity of the installed cells.

Can Envac do an Environmental Impact Assessment (EIA)?

Yes, Envac can provide you with comparative data for an EIA of the vacuum system installation and alternative collection systems.

Is an Envac system sensitive for very high or low temperatures?

Our system has been designed to run under the worst conditions: either with temperatures higher than 45 Celsius degrees like in Dubai or below -30 like in Sweden. The sensitive equipment for the outdoor inlets can be equipped with heater device in very cold places.

How much noise does a vacuum system create?

Noise is usually not a problem. The noise levels during the short intervals when the system is running at the inlets are hardly noticeable. There can be a little noise at the air valves. If the air valve is installed in an area which is very sensitive to noise silencers can be installed.

In the terminal the noise level can reach levels between 60 and 80 dB. In the exhausters room the noise level can reach over 100dB, that's one of the reasons why nobody should be in the exhauster's room when the system is running

Normally, the noise level in the pipes is low. Only occasionally glass can create higher level of noise in the pipes (rattling sound). Taking in to consideration that usually pipes are installed underground, parking places or other insensitive places and that the system is running only a few times each day no special noise measures are usually needed. Never the less in some cases under request of the customer the pipes can be isolated.



ISO

Is Envac an ISO certified company?

Yes, the Envac group is an ISO 9001:2008 certified company. Our installations can be ISO14000:2004 certified, concerning operation and maintenance.