THEME: OLD AND NEW ENVAC PIONEERS

Old and new pioneers

The world’s first waste suction plant was inaugurated in 1961 at the newly built and ultramodern Sollefteå hospital. Nobody thought that the central vacuum cleaner, which was also to suction waste from the hospital was to become one of Sweden’s most wellknown environmental technology products 50 years later.

Somebody had to blaze a trail. Somebody had to take the risks of introducing a new technology.

In this edition of Envac Concept, we present today’s “Envac pioneers”. We will write about the City of Oslo’s decision to install EnvacOptibag’s smart optical sorting system based on sorting household waste into different coloured bags. We describe Stockholm’s experience of the first self-emptying litter bins installed in an extremely popular park in the centre of the city. The Municipality of Bergen in Norway has also taken a daring and innovative decision - to install Envac throughout the historic old town in parallel with the installation of district heating. Outside Paris the town of Romainville recently inaugurated the first waste vacuum system in France - a pioneering project that has quickly inspired other French towns to take the same course.

We rarely have the opportunity to show our appreciation of these pioneers, who risk so much when they break new ground - not least politically. But courageous forerunners are necessary to make the technological changes required for the sustainable development of our towns and cities.

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Jonas Törnbloom
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In collaboration with YIT, Envac Scandinavia AB has been chosen to supply a waste suction system to the two new suburbs of Kalasatama and Jätkäsaari in Helsinki. The client is the City of Helsinki through its two subsidiaries of Kalasataman jätteen putkikeräys Oy and Jätkäsaari jätteen putkikeräys Oy.

The Kalasatama project will comprise 20,000 people and 8,000 workplaces when it’s completed in 2030. The first part of the project, Jätkäsaari, comprises 1,000 apartments in the Utterhäll district, which will be completed at the end of 2011. At Jätkäsaari, homes for a total of 16,000 residents and 6,000 workplaces will be completed. The project is expected to be finished by 2030. The system will handle four separate waste fractions: organic food waste, newspapers/paper, cardboard/corrugated cardboard and residual waste. The corrugated cardboard will be compacted using resizers and handled together with cardboard packaging in the same fraction.

“La Cité Verte” (The green city) a new development of Quebec City, has signed an agreement with Envac. The agreement comprises the installation of Envac’s waste suction system, which will handle three types of waste fraction (organics, residuals and recyclables). The facility is part of the sustainable infrastructure planned for “La Cité Verte.” 48 inlets for household use and nine inlets for commercial use will be connected to the waste vacuum system. The city’s need for public waste storage will be considerably reduced – spaces that would have otherwise been used for conventional waste collection stations.
Automated waste collection system in Eco City Montecorvo, Rioja

Eco City Montecorvo in the province of Rioja, northern Spain, is committed to sustainable development. Current projects include the construction of solar and wind parks. The city has decided to install the Envac automated waste collection system as part of this infrastructure.

The system will handle three waste fractions: paper, cardboard and residuals. The total pipe network will eventually stretch over 5.2 kilometres. The system’s installation is estimated to cost EUR 5 million.

Envac’s sixth contract in Qatar since 2006

Recently, Envac received an order worth EUR 19.4 million for the installation of a waste suction system in Msheireb Downtown, Doha. The client is Msheireb Properties. This is Envac’s sixth agreement in Qatar since 2006.

The area to be built covers approximately 760,000 m², where homes, shops, offices, mosques, schools, restaurants, hotels and other buildings will be constructed. The system ordered will handle three separate waste fractions.

Envac awarded environmental prizes around the world

Shenzhen
Approximately one month after the termination of the so-called Universiade in the south China city of Shenzhen, Envac was awarded a prize for its excellent service during the summer’s event. One supporting quote given was “first class equipment, first class service!”

The prize was awarded by “the Infrastructure Guarantee Department of 26th Shenzhen Universiade”.

Pearl of Qatar in Doha, Qatar
At the Green Apple Awards 2011, Envac’s flagship project in Qatar, “Pearl of Qatar”, was awarded a distinction. The development won the award in part for its innovative waste disposal system.

A Green Apple Award is one of the finest environmental distinctions in the world.
The town of Sollefteå is located 200 kilometres south of Umeå and just over 500 kilometres north of Stockholm. It is a small community of just over 20,000 inhabitants in the interior of Norrland County, surrounded by magnificent scenery including forests, mountains and water courses. 50 years ago, a technology was used for the first time and has since become one of Sweden’s most trend-setting environmental technology products - a technology applied in more than 30 countries that is still regarded as innovative.
On 4 October 1961, Sweden’s most modern hospital was inaugurated in Sollefteå. The hospital was designed for 328 patients and 328 staff. The kitchen staff alone consisted of 25 people. The building was constructed on nine floors above ground and three below ground. The total investment amounted to EUR 3.24 million, including staff accommodation.

There was much that was new and modern in the hospital: there was to be TV in most of the wards and all patients would be able to listen to the radio.

**Innovative ideas present new challenges for familiar technologies**

The hospital was to have a central dust suction system supplied by a Stockholm company called Centralsug AB. At that time this central dust suction system was nothing new.

It had already existed in many buildings and workplaces for several decades. However, it was entirely new to link waste management to the dust pipes. The project would become Europe’s largest dust suction system, with 500 suction valves and 6 kilometres of pipes in the walls, connected to a 400 mm waste suction system.

“It will be especially interesting to see how the central suction system will work,” hospital manager Thore Larsson said in an interview with a local newspaper when the hospital was inaugurated. “We know that in many respects it is extraordinarily effective, but we don’t know if it will be sustainable from a purely financial point of view.”

**The best investment ever made by the hospital**

At the end of last year, 49 years after this interview with hospital manager Larsson, it was time to replace the system’s fans. To justify the required investment, Vincent Måström, operating manager, calculated how much the hospital had saved on the waste suction system since its commissioning. He arrived at the conclusion that they had saved the cost of three part-time employees for nearly 50 years.

“It was the best investment the hospital
ever made,” Måström explains with a smile. “The system has run like clockwork. Whilst it is true we have replaced certain parts, such as the control system, and recently a number of valves and fans, much of the original equipment remains in operation to this day.”

**Local incineration of waste**
Originally, the idea was to suck the dust and waste into an incineration plant in the hospital grounds. This was carried out until 1985, at which time the furnace was decommissioned. The small scale incineration of waste was no longer permitted and the oven lacked the required air cleaning technology.

The remaining components from the inauguration include the cyclone, the piping system and the chutes. In 1985, the cyclone was connected to a waste container that was emptied by lorry once a week. In 1971, a new nursing home with 120 beds was also connected to the waste collection system.

Karl Göran Hammarberg, who started to work for the hospital back in 1974, knows the system like the back of his hand. “In principle, it has worked smoothly throughout. Occasionally there have been stoppages in the pipes and we have been forced to fish out mattresses, chairs and other things that do not belong there.”

**Double anniversary**
On 12 October 2011, Sollefteå Hospital celebrated its 50th anniversary. If nothing else, the fact that we can also celebrate 50 years operation of the world’s first and oldest waste suction system demonstrates the sustainability of the technology.

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**Facts about Sollefteå Sjukhus**

- **Country:** Sweden
- **Stad:** Sollefteå
- **Commissioning:** 1961
- **Type of system:** C-system
- **Area of use:** Hospital
- **Number of fractions:** 1
- **Number of inlets:** 7
- **Length of the pipe network:** 500 meters
- **Type of waste:** Hospital waste
- **Current load:** 7 tonnes /week

The plant is equipped with outlets for central suction along the pipe system. However, these are not used today.
Why don’t we vacuum the waste with a central suction system?

Who first asked this question, which was so crucial to the future of waste management, is not absolutely clear. However, we are certain about who the four people were around the table at Sollefteå Hospital at this decisive moment at the end of the 1950s: they were engineer Torsten Karefelt, hospital construction manager, Olle Genberg, chief architect, Sten Olsson, plumbing consultant, and Olof H Hallström, owner and CEO of Centralsug AB.

They had decided to meet at Sollefteå Hospital to negotiate a new vacuum cleaning system when suddenly discussions took another turn. “If we can vacuum dust from every corner of the hospital through one system, why can’t we do the same thing with the waste?” Nobody had thought about this before and nobody knew if it was even possible. But Olof Hallström picked up the ball.

Inventor and entrepreneur
Per-Olof Ekström, a key person in the company, started to work at Centralsug as early as 1959. Before he died, he spoke of his memories of the early years. “Olof Hallström often had unrealistic ideas which could not be implemented.” But Hallström succeeded in creating an extremely creative environment, which resulted in several unique technological solutions that are today the basis of the technology.

Technical obstacles - a challenge
As a true technological optimist, no technical problem was too difficult for Hallström to solve. A few years earlier, using money he had inherited from the sale of his father’s farm, he acquired the company Ingvar Gustafsson AB, which later was renamed Centralsug AB. The company specialised in the construction and installation of central vacuum cleaner systems. With this experience in his pocket, Olof Hallström returned to Stockholm to work out an answer to a question that still seemed utopian to many people. Hallström kept his word and a couple of weeks later returned with drawings of a waste suction system for the hospital. The rest is history.

In 1961, Centralsug AB installed the first waste suction system in the world at Sollefteå Hospital.

CEO of Centralsug AB, Olof H Hallström, was believed that waste suction was the future. 50 years later, his belief proved to be right.
New general hospital in Sollefteå  
(from the for inauguration 4 October 1961)

In 1949, the county of Västernorrland decided to build an entirely new general hospital in Sollefteå to replace the existing hospital, which by the beginning of the 1940s was already old and obsolete.
Work started on the building of the new hospital in March 1955 and was carried out in stages. The hospital specialises in the following areas: medical, surgical and radiology departments; ear, nose and throat department; medical paediatric department; maternity ward and gynaecological clinic. A consultant ophthalmologist also has links to the hospital. The service divisions include the postoperative department combined with an admission department, a central service department and a central laboratory.
The cost of building and equipping the new hospital with associated heating plant, post mortem department and mortuary was approximately EUR 2.8 million. Staff accommodation was also built in association with the hospital at a cost of approximately EUR 400,000.
The architect for the project was Architect Olle Genberg, Stockholm.
Oslo. Optibag pioneer

Since 2010, households in Oslo have been separating their rubbish at source with different coloured bags for different waste fractions. The bags are deposited in a single container, collected at the same time and then separated at a central station. Optibag source separating systems are found in many parts of Scandinavia, but the Oslo project represents the largest investment yet made in this technology.
A few years ago, when the City of Oslo set bold new climate targets of halving CO₂ emissions from the 1990 level by 2030, rubbish collection was identified as a major challenge standing in the way of achieving the target - not just because waste disposal contributes to CO₂ emissions, but because source separation is a proven method of increasing environmental awareness.

With the exception of separate paper, hazardous waste, metal and glass collections, all household waste was sent for incineration in the domestic plants of Klemetsrud and Haraldrud, or plants in Sweden. A major expansion of district heating in Oslo from the two waste incineration plants was needed in order to meet the target of halving. It was therefore decided to increase the waste incineration capacity of the Klemetsrud plant with a third furnace and to speed up expansion of the district heating distribution network. Considerable increases in source separation and recycling, particularly of all plastic and organic food residues, were needed. But the challenge was to achieve this in existing housing without burdening yards and streets with additional waste disposal containers.

**Experience from other Optibag plants**

EnvacOptibag’s system of source separating waste into different coloured bags for subsequent optical separation in a central facility had already been operational at various sites in Norway and Sweden for several years. Pre-separated waste in different coloured bags are deposited in a common container or in existing rubbish chutes, eliminating the need for extra storage space for the fractions.

Containers are then collected in the conventional way and transported to the separation plant. The Optibag system can also be combined with Envac’s underground waste transport system, enabling the use of a single inlet for several fractions.

An example of this is found in the northern Norwegian town of Tromsø, as detailed in Envac Concept No. 2:06. (see www.envacconcept.com)

Based on experience from Optibag facilities elsewhere in Norway, the City of Oslo’s optical sorting system was implemented on 1 October 2009 with a pilot study in which 20,000 households started to use source separation of food residues and plastic. The first ordinary rollout to 20,000 households started in October 2010 and has since
continued at a rapid pace. Since then, 20,000 new households a month have been provided with bags and information materials. Two types of bags are being distributed to households - blue bags for plastic and green bags for organic food residues. All other waste is placed in ordinary plastic bags or loose in the rubbish bins.

The optical separation plant in Haraldrud separates 30 tonnes an hour with a cleanliness requirement of 97% and a separation requirement of 95%. The blue bags with plastic are sent for plastic recycling and the green bags with food residues are currently sent to a biogas plant in Vänersborg.

**High source separation motivation**

“Households have been highly motivated to start separating waste into the coloured bags,” says Jannicke Gerner Bjerkås, communications manager at Energigjenvinningsetaten EGE (energy recovery department). “Quality varies a little from area to area, so in some areas we need to distribute more information.” The City of Oslo waste management department is responsible for informing the public, distributing coloured bags and collecting mixed waste, while the EGE is responsible for the separation and recycling of waste. “We will reach full capacity of 100,000 tonnes per annum in our existing Optibag plant in Haraldrud on 1 November 2011. At the beginning of June 2012, the next Optibag plant in Klemetsrud will be fully operative,” says Petter Thorbeck, project manager for the separation plant at EGE. The Klemetsrud plant will have the capacity to separate 50,000 tonnes of waste a year.

**Biogas for the vehicles**

At the same time, EGE is building a biogas plant in the Municipality of Nes. The plant is designed for 50,000 tonnes a year and will only break down food residues that can be converted into biogas cleaned for vehicle biogas and residues used as bio-fertilizers. Consideration is also being given to constructing a plant for the production of liquid biogas to facilitate distribution.

**Good example for other towns and cities in the world**

The Optibag system is a central element of the City of Oslo’s waste disposal system and an important part of achieving the city’s environmental targets. No other large town has consistently invested in optical separation more than Oslo. Many towns and cities around the world face similar challenges, implementing source separation in existing buildings without additional storage facilities. Therefore, experience from the full scale expansion of Optibag for 600,000 inhabitants and 340,000 households in Oslo will be of great interest to many densely populated and climate conscious cities. “And so far, things have gone very well,” says Jannicke.

Jannicke Gerner Bjerkås and Petter Thorbeck at Energigjenvinningsetaten EGE show the Optibag plant.
The system

Households and other users, such as restaurants, shops, etc. are provided with coloured bags. Each colour corresponds to a waste fraction, e.g. green is for food residues, red for paper, yellow for paper packaging, blue for plastic and orange for residuals. All waste bags are deposited in the same waste chute/bin/container. They are then collected by an ordinary refuse collection vehicle and taken to the Optibag plant.

The mixed waste bags are emptied into reception pockets and transported by conveyor belt, where the separation process starts. Until then, no bag separation is performed.

Once on the conveyor belt, the bags are automatically sorted using camera technology that recognises the colour of the bags. The bags are transported to a rejection device that recognises the colour and a rejection paddle removes the bags to an underlying conveyor belt.
The belt carries the sorted materials to containers, container compactors, ball presses or to other forms of processing.

**Facts about EnvacOptibag**
EnvacOptibag is a wholly owned subsidiary of the Envac Group. The system was developed in Sweden in 1989 and can today be found at 16 locations in Scandinavia and France. The system is based on a series of proprietary patents for identifying and separating plastic bags based on their colour. In principle, there is no limit on the number of different-coloured bags that can be sorted. Today the greatest number of fractions processed is at the Optibag plant in Eskilstuna, where six separate factions are sorted.

The great advantage of the system is that it enables source separation and increases recycling in existing housing without having to rebuild properties. The coloured bags are usually distributed through convenience stores. Experience from Scandinavia shows that the investment costs for municipalities are low compared with other alternatives and acceptance among users is generally very high. Learn more about the company at [www.optibag.com](http://www.optibag.com)
The objective was to achieve a clean square. “And that’s what we have today,” says a well-satisfied Kenneth Kempendahl on the city’s installation of six self-emptying litter bins from Envac in June this year. “We can confirm that things have improved greatly. The litter bins have never been over-filled. The litter around the litter bins has also decreased despite us having removed more than half the traditional bins.”

Kenneth is a park engineer who works for Södermalm District Administration in Stockholm.

“We received many queries prior to the installation of the system,” Kenneth tells us. Mariatorget is an extremely sensitive environment in the centre of Stockholm and in the centre of a living urban environment. The square borders on Hornsgatan, one of Stockholm’s most frequently used streets with recurrent air quality problems. The objective of installing the self-emptying litter bins was not just to have a cleaner square but also to decrease the number of heavy waste collection vehicles.

The six self-emptying bins on Mariatorget in Stockholm are the first of their kind. They look like the ordinary litter bins used by the city, but they never get over-filled. The litter bins are connected to an underground pipe system which empties into an underground collection container. Each litter bin is equipped with a level gauge which senses how full the litter bins are. When the waste reaches a certain level, the litter bin is automatically emptied when a valve opens and the litter drops down into the pipe system, from where it is sucked to a central container.
“Previously, litter bins were emptied manually twice a day and in some cases up to three times a day. Nowadays a vehicle comes every other week to retrieve the container.” For the city, this means that the number of heavy vehicle movements has been drastically reduced and the emptying costs have decreased. The number of complaints about litter have also decreased.

In the next phase, the surrounding homes and premises will be able to use the underground pipe system for their waste. Inlets will be installed on the pavements. Envac has installed waste inlets in many towns and cities in southern Europe, but this is the first such installation in Stockholm. “It is going to be very exciting,” says Joakim Karlsson, deputy CEO for Envac North Europe. “The experience we have gained from other countries points to this being a highly appreciated solution with reduced noise pollution and better accessibility as a result.”

The system

As normal, users throw their litter in the litter bins. The litter bins are directly connected to a horizontal pipe under the ground, and the waste is sucked away to a collection station located underground.

Facts about Mariatorget

- **Country:** Sweden
- **City:** Stockholm
- **Project start:** 2010
- **Commissioning:** May 2011
- **Type of system:** Litterbin/SVS 400
- **Area of use:** Town centres - public litter bins
- **Number of fractions:** 1
- **Number of inlets:** 6
- **Length of the pipe network:** 180 metres
- **Type of waste:** Residual waste
- **Current load:** Emptied once every other week
- **Number of users:** approx 200/day
- **Type of control system:** Q04
Installing waste vacuum and district heating, in the centre of Bergen

The municipality had only been collecting a single fraction. Inhabitants themselves had to sort their rubbish and carry it to collection containers in the city centre. The load on the city centre was quite significant. But thanks to a new infrastructure solution, the future looks brighter.
Today, Bergen is showing its very best side. The temperature is a couple of degrees above zero, with a deep blue sky and trees lit up by the October sun in amazingly contrasting colours. Located on the coast between the Atlantic and high mountains, and surrounded by an archipelago, Bergen is one of the most scenic cities in northern Europe.

A modern city with a long history

Bergen is Norway’s second largest city with 263,000 inhabitants. It is an old city, founded as far back as 1070, with a rich historic heritage. The hilly city centre is filled with timber houses closely packed around narrow alleys. Due to the density of its wooden housing, the city has been plagued by recurrent fires. Naturally, these unique houses are challenging demanding for a modern infrastructure, not least when it comes to waste disposal. The ever denser inner city business, with growing amounts of waste and a need to offer the same source-separated waste collection options as in the surrounding area, led the city’s politicians to take a unique decision to install a waste vacuum system throughout the city centre.

**Reduced fire risks**

Primarily, they wanted to remove the waste containers from the streets. The bins constituted a considerable fire risk and impaired both freedom of access and the city’s image. And then they wanted to restrict heavy traffic in the city centre. Because of Bergen’s topographical position, pollution figures exceeded guideline values relatively often. As Laila Mjanger, operating manager and the officer responsible at BossNet, explains, “Up to now, 60-litre containers have been used by households. The municipality has only collected a single waste fraction: residuals. All other recyclable materials must be transported by residents to so-called recycling stations.” These are large metal containers placed on pavements and open spaces.

In 2006, Bergen’s politicians decided to introduce a pipe-based waste collection system. The waste vacuum system
was to be installed in parallel with the installation of district heating in Bergen Centre. Three waste vacuum systems for three different areas of the city centre were planned. Residents were to have street inlets on pavements and publicspaces and commercial users would have their own inlets in or adjacent to their properties. BIR, the municipal waste disposal company, was assigned to design and procure the system. BossNet, a wholly owned subsidiary, was set up for the project. The procurement contract for the first phase was won by Envac’s Norwegian subsidiary, Envac AS, in 2010. The excavations were coordinated by Graveklubben (see page 21).

**User financing**
The waste disposal system will handle three separate waste fractions in two inlets: paper and plastic in the one inlet and residuals in the other. The mixed paper and plastic were separated at a later stage into different fractions. Both households and businesses were to be connected. Commercial users were to have special inlets capable of handling 120 litre sacks, fitted with locks and so-called access cards. This allows the individual registration and billing of commercial users based on the quantity and type of waste disposed.

The installation of the underground waste disposal system will be financed in equal parts by households and commercial users. BossNet will provide initial installation financing by levying an extra annual charge of EUR 17 on all households in the City of Bergen. In addition, all households that use the system will be charged EUR 34 per year. Companies are free to choose to be connected to the underground waste disposal system or not, but they have taken a positive position in discussions so far. It is also important to point out that BossNet is a non-profit company. Laila Mjanger explains: “BossNet is a prime cost based and a competitively neutral company.”

Strolling around the beautiful city centre today, the number of waste containers is striking. This is probably because today is a collection day. But nevertheless, one should be impressed by the city’s decision to install a pipe-based waste collection system in these unique surroundings. We believe the first part will be in operation next year. We look forward to see the result.

Bergen’s narrow streets make the process of collecting rubbish both complicated and time consuming. In winter, rubbish collection is often cancelled.
Along with excavations in Bergen to install district heating, the city will also install waste suction pipes. With careful planning, public transport and other traffic will continue as usual despite the construction work.

**Graveklubben - a unique concept for coordinating underground installations**

Like all other cities, Bergen has a frequent need to dig up the streets and open spaces to repair old infrastructure and install new pipes and ducts. In order to avoid this becoming a permanent burden on the city, all major installation companies have formed an association - Graveklubben.

Graveklubben’s activities commenced in connection with the City of Bergen’s new 2007 directive concerning excavations in the city centre. Graveklubben advises on and coordinates infrastructure installations in Bergen Centre.

The association has a rolling three-year plan in which the various districts have been assigned a different colour code, which reflects the joint installations scheduled for the year. Today, 80 individual players subscribe to the Graveklubben website.

Companies wishing to excavate in the city centre know exactly where and when there is an opportunity to do so. Graveklubben’s planning has not just reduced loads on the city centre, but they have also saved the city a great deal of money. But it is no easy concept to introduce. Many municipalities have tried but few have succeeded. Strong political support and individual effort is needed for a successful concept.

**Facts about Bergen**

**Country:** Norway  
**City:** Bergen  
**Project start:** 2006 (contract 2010)  
**Type of system:** SVS 500  
**Area of use:** Household and commercial  
**Number of fractions:** 2 (residuals and paper/plastic waste)  
**Number of inlets:** 465, divided into two stations (300 residuals and 165 paper)  
**Length of the pipe network:** 11,318 m (5945 + 5373)  
**Type of waste:** residuals and paper  
**Number of users:** 7 718 appartments + commercial 11,6 tonnes/day Total: 30,7 tonnes/day  
**Type of control system:** SCADA
Envac in France moving ahead

There is intense a firm to sustainable and futuristic urban renewal in the areas of Romainville, Issy-les-Moulineaux and Batignolles around the periphery of the French capital. Collaboration between Envac, Veolia and other parties has received wide acceptance by politicians and decision-makers, and there is also great interest in Envac’s solutions in other parts of the country.

In the latter part of 2011, Envac France has been greatly affected by three important events. Firstly, in October a new automated waste management system was inaugurated in Romainville, east of Paris, after just over one year’s work. In 2009, the corporate group of Veolia/Envac/Eiffage/Reichen was granted the contract.

In the first phase, 2,600 households were connected to the collection station with waste collection consisting of two fractions: recyclables and residuals. A large part of the residential property in Romainville consists of subsidised housing.

At the moment, there is an urban renewal project in the blocks concerned, which includes the renovation of the road network, the demolition houses, the installation of open public areas and energy performance enhancements in both commercial and residential buildings.

The inauguration was followed by an open house event, which was extremely popular with its many visitors, including both local residents and curious neighbours from the surrounding blocks. Under the plan, the project will be expanded a new installation possibilities open up.

The First Movac system in France

Today, Envac France is in the process of installing a mobile waste disposal system in Issy-les-Moulineaux, a town just south of Paris. The corporate group of Veolia/Envac/AT&E won the tender for the Movac solution in 2010 and the site of the project is an old military fort. The 12 hectares inside the walls are to
be converted to a new urban district with housing, shops, and corporate and public installations. Two waste fractions will be collected: household waste and recyclables. The Movac lorry will have its collection points outside the walls and when everything is ready will collect waste from 8,400 households.

**Envac in the city of Paris**

Finally, the City of Paris has just chosen the Veolia/Envac/de Villers corporate group for the planned new urban district in Batignolles, northwest of Paris, which will be the last major area within the city limits to be urbanised. It was previously a railway shunting yard and logistics junction. The studies upon which our system is based began in 2004 at the time Paris was applying for the 2012 Olympic Games. The area is of symbolic importance to the City of Paris, and the aspiration is for Batignolles to be held up as a model both inside and outside France.

**Facts about new Batignolles**

- The new public park is to be named after Martin Luther King
- It will include a mixture of housing, shops, companies and other businesses
- The development will include a mixture considerable proportion of subsidised homes
- The building of the new Palace of Justice. The relocation of the main office of the Paris police will relocate the district

**Figures:**

- 54 hectares is the overall area of the completed project
- 10 hectares dedicated to the public park
- 3400 new homes, of which half will be subsidised
- 140,000 m² of offices
- 118,500 m² for the Palace of Justice and the head office of the police (5,000 employees)
- 30,000 m² shop and service premises
- 39,000 m² for public services

The main contract comprises waste collection from the equivalent of 4,500 homes. The budget for Envac's part is EUR 6 million and consists of:

- 4,650 metres of pipe
- 175 rubbish chutes inside buildings and 21 outside to be used by cleaning services and the emptying of existing buildings’ waste containers
- Two waste types (household waste and recyclables) and the option to add one more fraction (biodegradable waste)
- The individual recording of waste amounts for companies, and possibly also for residents in the future

The project can be extended with waste collection equivalent to 1,200 homes (company premises). The work will start in 2012 and commissioning is scheduled for early October 2013.

Other tender procedures are in progress, showing that there is clear interest in the Envac system throughout the French market.
We have offices in the following countries.  
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