THEME: ENVIRONMENTAL INNOVATORS

NEWS – NEW CONTRACTS IN DENMARK AND SWEDEN  BRAZIL – ENVAC WINS BRAZIL CONTRACTS  SOUTH KOREA – THOUGHTS FROM TWO ENVIRONMENTAL VISIONARIES  DENMARK – MAKING HISTORY WITH ENVAC  SWEDEN – STOCKHOLM ROYAL SEAPORT INNOVATION, AND CARE HOMES – ONE OF ENVAC’S ‘HIDDEN GEMS’  NEW SOLUTION – WEIGHING IT ALL UP
It’s all about people

The constant transformation of our societies - sometimes due to economic booms, sometimes as a result of a recession – often comes down to the initiative and the commitment of only one or two people. However, not all initiatives are good for humanity or for the societies in which people live. Many are characterised by special interests and short-termism which, in turn, can create new problems and conflicts.

It is, therefore, a particular pleasure to recognise people who, with great personal commitment, have acted primarily without self-interest to bring about positive change for society.

Examples of these people, who we will meet in two articles in this issue of Concept, include Dongran Son, President of the Women’s Association of Sooji, and Jang Myungsoo in Gwacheon, just outside Seoul.

Both Stockholm Royal Seaport in Sweden and Parque da Cidade in São Paulo, Brazil, are projects supported by the Clinton Climate Initiative. As global exemplars of sustainability, 18 urban development projects in Europe, Asia, North and South America and Australia are currently in the process of planning and construction. Envac is involved in a number of them and, with over 50 years experience, we are well aware of the effort required to create new sustainable models of this kind.

Not only is it a matter of applying new technology and knowledge, but also people’s ability to cooperate, understand each other’s situations and agree on common goals and approaches without getting locked into traditional ‘tried and tested’ structures.

The challenges we face in urban development, in terms of both environmental and social sustainability, can only be solved through individual commitment, openness and innovative thinking. Unfortunately, we still lack good management models for these relatively complex processes – models that question conventional practices and dare to break free from traditional patterns.

That is why so many good initiatives often fail. And it is precisely why we need to highlight and celebrate those that succeed. It’s all about people, after all.

Jonas Törnblom
Senior Vice President Corporate Marketing & Public Affairs, Envac AB
Envac Scandinavia has been awarded to deliver a stationary vacuum waste system for 1,900 apartments in Vasastaden in Linköping. Linköping is located 200 km south of Stockholm.

The system will collect two separate waste streams, food waste and residual waste. End-users will use green bags for food waste and another coloured bag for residual waste. All bags will be deposited in Envac’s waste inlets and then transported through the system’s underground pipe network to a collection station from where it will be taken by truck to an Optibag plant. There it will be optically separated, processed and the food waste will be used for biogas production.

Envac will be responsible for running the system as well as installing it.

The combination of Optibag and Envac is a very cost effective solution, compared to a conventional Envac system. Depending on the number of separate waste streams, it can reduce operational costs by over 20%.

The first contract at Vasastaden is worth 4 million SEK.

Envac is to install its automated vacuum waste collection system in a 2,200-apartment development in Barkaby, a town in the municipality of Järfälla, which is situated 20 kilometres north-west of Stockholm.

The system will handle three different fractions including residential, plastic and newspaper.

The project, which is worth 33 million SEK, is currently in its first phase of development.
Envac continues international expansion following Brazil contract win

Envac Brazil has landed a double contract win that will see the pioneer of automate vacuum waste collection technology install its system in two of São Paulo’s prestigious projects.

The first contract with Hospital Sírio Libanês will see the Envac system installed as part of the renovation of its buildings, which are situated in the downtown area of the Bela Vista neighbourhood.

Since it was established 90 years ago, Sírio Libanês has become internationally recognised for its commitment to healthcare and is now one of the most prominent hospitals in South America. The hospital’s expansion will double patient capacity and, on completion, provide 650 beds.

The Envac system will be inaugurated during the second half of 2015, when it will manage the collection of regular waste and linen for the entire hospital including the original buildings.

The compact city concept

Inspired by the compact city concept, São Paulo’s Parque da Cidade, a new sustainable urban development, will be the second beneficiary of Envac’s automated waste collection technology.

Envac will handle the waste and litter generated from residential and commercial buildings, a shopping mall and a hotel across three waste streams. The installation will include Envac’s latest technology, the Self-Emptying Litterbin System, which will sit within the park space that intersects the entire development. The system is expected to become operational at the end of 2015.

19.2 million inhabitants

With 19.2 million inhabitants, São Paulo is the sixth largest city in the world. Covering 1,522,986 km², 65% of which is regarded as an urban area, São Paulo has the biggest GDP in the country and ranks 10th compared with other cities throughout the globe.

Envac, which is an ideal waste collection solution for densely populated environments, is expected to transform Brazil’s approach to waste management.

Envac Brazil launched its office, located in São Paulo, in 2009. The office falls within the commercial region of South Europe & Americas, which is based in Madrid, Spain.
Interview with Mr. Jang, Myungsoo, ex-president of the construction union for Gwacheon 3

Mr. Jang now always recommends the installation of an Envac system. The development’s tenants and apartment owners share his opinion, however this wasn’t always the case.

Envac waste inlets in the pedestrian area

Mr. Jang launched the project in 1998. The owners of the properties in this area of Gwacheon, just outside of Seoul, decided to tear down the old houses and construct new, modern apartment blocks. At the time, Mr Jang was in charge of the development’s entire construction, from the initial planning through to the development’s execution.

In 2001, the owners commissioned Samsung Construction to carry out the work. In 2003 the old tenants moved out from the five-floor houses so that they could be demolished.

In 2008 people moved in to their new apartments and 50% of the old tenants came back. The original development had consisted of 3,110 apartments. On completion the number had increased to only 3,134 units across towers between 20 and 25 floors high. The reason why only 24 additional apart-
ments were built, despite an increase in the height of the buildings, was primarily due to the fact that the apartments had doubled in size. This left more room for green areas and Gwacheon 3 is now predominantly inhabited by families.

In Gwacheon, as in many other communities around Seoul, the tenants pay for the collection through the purchase of the waste bags that they have to use to dispose of their waste.

Initially, Mr Jang was concerned about the smell and the sight of waste throug-out the area. And so were the developers. It was decided that the system had to be hidden from the residents’ view.

Before the project started there were demonstrations against the proposed location of the collection station and the waste inlets. Many people were afraid that they would generate unwanted smells, which they believed would reduce the value of their properties. As a result, it was decided that the waste collection station would be situated completely underground.

As soon as the project was completed the residents were no longer concerned and there hasn’t been a single complaint about how waste is collected in the area. In fact, Mr Jang claims that the benefits of the system outweigh the initial investment costs by 10:1.

Two waste streams
The system covers two waste streams: residual waste, which is incinerated, and organic waste. Paper, bottles, cans, plastic and glass are deposited in separate bins and collected once week for recycling, which generates an income for residents as recyclable materials have a monetary value in Korea.

None of the problems with conventional approaches to waste collection such as bad smells, vermin and animals trying to find food exist. Conventional bins are collected every day in Seoul whilst the Envac containers in Gwacheon 3 are collected once a week. This reduces the amount of lorry miles generated by noisy and heavily polluting waste collection vehicles.

The process was initially tough as it was hard to convince homeowners of the benefits, even though they had seen good working examples of other Envac installations. Now they are convinced.

How was Mr. Jang introduced to Envac?
It was through the Mayor of Gwacheon City, who had previously been vice Mayor of Sooji, which is where one of Envac’s first larger systems in Korea is installed. The decision to integrate Envac in 2003 was made by the Mayor’s office. As is the case with many new high quality, high density residential areas in Korea, underground waste collection was the preferred waste handling solution. Storing and transporting the waste underground improves the environment for the tenants, according to the Council of Gwacheon, which also helped to fund parts of the system.

On completion, the installation’s ownership was transferred from the developers to the City and the Council became responsible for the operation of the Envac system.

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A tour around the garden of Gwacheon City

The entrance to the apartment building

Entrance for the waste collection vehicle to access the underground waste collection station

Pedestrian area for the residents

Envac waste inlets with the automatic opening and closing function
Facts about Gwacheon 3:

Country: South Korea
City: Gwacheon
Project start: 2007
Project completed: 2008
Type of system: SVS 500
Application area: Residential area
Number of fractions: 2
Length of the pipe network: 2,840m
Type of waste: Organic food waste and residual waste
Waste generation amount per day: 6 tons/day (design capacity)
Actual waste generation amount per day: 3 tons/day
Number of apartments: 3,143
Type of control system: SCADA
Mrs. Dongran Son is the Chairman of the Women’s Association in Sooji - but what does it do? The association currently has 360 members who are mostly housewives and 25-30% of all women in the area are members or participate.

Regular meetings with other association leaders to discuss joint activities

The prime purpose of the association is to help integrate newcomers to the area. The association is based on 100% volunteer work and selling recyclable materials finances the activities. Discarded paper, glass, plastics and metals have a considerable value in Korea. Selling recyclables for charity generates a lot of revenue for the association and Mrs Son says that the waste from 1,700 households generates more than 10,000 USD per year.

Collected waste is converted to energy on site

Sooji was the first of the large Envac systems to be families ed in Korea and now 14,000 families (47,000 people) use it. Envac system that handles two waste streams including residual waste, which is incinerated, and non-combustible waste. The combustible waste is incinerated on site in a plant located next door to Envac’s waste collection station. The energy produced from the
incineration is used to provide the area with district heating and electricity.

The waste stream
Examples of non-combustible waste collected by the Envac system include broken items such as glass, ceramics and metals. Food waste is not yet separated, as at the time of installation the separate collection of food waste was not an issue. Other waste including electrical equipment and hazardous waste is deposited in a shed outside each house and collected once a week. Recyclables are put on the streets on the weekend to be collected on Mondays.

As in other areas around Seoul the combustible waste is collected in special bags, which are purchased by the residents. Each 20-litre bag costs about 50 cents (USD).

Unlike many other residential areas around Seoul, there are no problems with smells typically generated from food waste in this area, claims Mrs. Son. This has been the system’s biggest advantage and Mrs. Son would like to see everyone throughout Seoul benefitting from an Envac system.
Making history with Envac

In 1996, the City of Copenhagen broke the mould when it became the first city in the world to retrofit Envac’s automated waste collection system into the public realm in the historic district of Nyhavn.

Over 15 years later Nyhavn has extended the system with six Self-Emptying Litterbins, which line the popular waterfront that accommodates a vast selection of restaurants, bars and entertainment venues.

But what were the key drivers behind the decision to install the system? Was it down to improving the area’s sustainability credentials? Were those responsible for developing the district looking to demonstrate a commitment to sustainable technologies or were there other factors to consider?

According to Michael Toftum, Consultant on the City of Copenhagen’s Nyhavn district, the key driver was to make waste collection more practical. “My role was to futureproof Nyhavn and ensure that every component, from its road infrastructure to its waste management strategy, worked as efficiently as possible”, explains Michael. “Nyhavn’s waste management issues were easy to spot.”

As a historical city with its roots dating back to the 17th century, the waterfront, canal and entertainment district attracts countless tourists each year and during the summer months, the volumes of litter grow in line with the increased footfall.

Remove the hygiene risk

However unlike many modern towns and cities where vehicular access is not a problem, Nyhavn’s narrow cobble stone streets and windy lanes make manual waste collection a challenge - even more so when the streets are lined with tourists. At the same time as Michael and his team were exploring automated vacuum waste collection as an alternative, Nyhavn’s entertainment district was expanding, which was generating additional waste from the cafés and restaurants. “Our decision to install Envac’s underground waste collection system was two-fold”, continues Michael. “Firstly, we wanted to eliminate the cumbersome manual element to waste collection and make the collection process easier for waste operatives employed by the municipality, who by this stage were no longer able to lift the sheer volume of solid waste the area was generating. Secondly, we wanted to remove any hygiene risk and odours that the traditional overfull bins were presenting in order to preserve the beauty of the district and maintain its appeal with tourists.”

To achieve all this within the restrictions of a heritage site, where changes to buildings are strictly prohibited, involved careful planning and rigorous consultation with those who lived and worked throughout the area.

No overfull bins

Since 1996, when the first Self-Emptying Litterbins were installed, litter has been taken off the streets and Nyhavn is now a much cleaner place. Feedback from the commercial residents has been positive, as the cleanliness of the district has improved down
to the fact that the system can handle an unlimited amount of waste, which means the bins are never overfull.

The 8 automated bins currently in place empty an average of twice a day and Michael and his team will consider extending the system as the number of commercial units increases.

**Practicality was the priority**

In a climate where sustainability has become the primary focus, it is important to point out that whilst the environmental factors in the decision to install the system were important, overcoming the practical challenges of manually collecting waste in a historical city was the priority.

“For the residents of Nyhavn, introducing an automated waste collection system within the public realm was a bold step”, concludes Michael. “Yet its consequences have had a positive effect on not only those who live and work here, but for the tens of thousands who visit each year.”
Norra Djurgårdstaden, a sustainable city district

Stockholm, the capital of Sweden, is experiencing a major housing shortage. Based on the success of Hammarby Sjöstad the City is now building a large number of sustainable homes and business premises at Royal Seaport, a district in the north-east of the City. The City launched Stockholm Royal Seaport Innovation in 2010, with the aim of promoting technical innovation and communicating Sweden’s ability to effectively apply environmental technologies to new urban developments.

Source: City of Stockholm and BSK Architects
The City of Stockholm is positioned as a citizens’ city. While emphasising democracy, freedom of choice and cohesion, it also presents itself as innovative and expansive. Statistics show that Stockholm’s population was 864,324 in 2011 and it is expected to exceed one million by 2023. With homes in high demand and the ever-increasing expectations of sustainable living standards from residents, developers and politicians, the City of Stockholm is facing growing pressure.

**A world-class city**

In 2007, the City of Stockholm established “Vision 2030 - A world-class Stockholm”, a vision for the City’s development. The aim was to offer a model for sustainable building, nationally and internationally, and to promote Swedish environmental technology. To achieve this vision there are stipulations for sustainable development. The expansion strategy is to build the City inwards and increase its urban density, which offers huge scope for development. The Royal Seaport site enjoys a waterside location, which borders a national park, and is close to central Stockholm.

A minimum of 12,000 homes and 30,000 workspaces are planned. The City of Stockholm and the developers are providing the investment.

The City’s first major development with a distinct environmental profile came in 1999 when it created Hammarby Sjöstad. Here, Envac’s automated vacuum waste collection system plays a significant part in the area’s recycling model, which was one of the features that attracted considerable global interest. Emilie Zetterström is one of Stockholm’s new residents. She says the experiences and lessons learned from construction in Hammarby Sjöstad paved the way for Royal Seaport’s overarching environmental and sustainability programme. She believes that the project can draw on a host of experiences learnt from Hammarby Sjöstad during its planning phase.

The City of Stockholm must:
- Have clear leadership on sustainability issues
- Impose requirements on developers from the outset so that every decision can be based around long-term sustainability gains
- Ensure that everyone involved shares a common vision and that this vision is maintained over time
- Set realistic targets and stay on top of them

“As a newcomer, I was fascinated by what the city had to offer - the combination of city living and being close to green spaces and water. I was particularly fascinated by its ingenious solutions for developing new city areas and infrastructure,” says Emilie

**Marketing Swedish environmental technology**

Emilie is Communications Officer at Stockholm Royal Seaport Innovation, a unit that the City of Stockholm created in 2010. The unit’s mission is to facilitate sustainable urban development and enable businesses, academics and the City to develop solutions that help Stockholm Royal Seaport meet its sustainability objectives. It will also display Swedish environmental technology and system solutions urban development professionals and political decision makers.

Stockholm Royal Seaport Innovation communicates with them via media including www.stockholmroyalseaport.com/innovation, newsletters and Facebook. The unit also participates in conferences, regularly welcomes delega-
reduce the costs associated with energy, materials and waste, and create more job opportunities in the district. Projects currently in progress include smart ICT that enables sectors such as transport, logistics, telecommunications and television to communicate with each other via the same infrastructure. “A host of other development projects are under way including Smart grids that enable customers to control their own electricity consumption, for example. And there are information and communication technology projects, focusing on living and working in the new area, plus an advanced waste management project,” continues Emilie.

**Expand and keep the infrastructure**

If the objectives are to be achieved, users must be able to manage the technology. It cannot be complicated. “Making it easy to do it right” is what counts. When it comes to the eco-cycle, there are stipulations for waste management and the sustainable use of materials. “Envac’s automated vacuum waste collection system increases the scope for waste separation and material recycling. The more that is recycled, the less waste has to be incinerated.”

Developers must use and create opportunities to preserve the area’s existing vegetation, working on the principle of ecological sustainability. One requirement is to build in accordance with what is called the green space factor. Part of this involves irrigation solutions that capture and re-use storm water. Developers are encouraged to use the area’s natural vegetation as a starting point, and then attract natural growth into the district and the planned recreation areas by making use of walls and creating favourable open spaces.

Transforming the former port and industrial zone into an attractive and vibrant urban district has presented many challenges. Work to decontaminate land and establish roads and infrastructure in the area has been in progress for many years. There are already 9,000 existing workers and about 2,200 residents, who will be interacting with the newcomers. Looking ahead, as public transport expands throughout the urban district, more stops will be needed. “This is where one of the advantages of Envac’s system comes in. It goes underground, so it leaves open spaces free for other uses, such as accessible cycle ways and footpaths.”

Emilie Zetterström finds her work as a Communications Officer at Innovation both enjoyable and challenging. “Working at the interface between urban development, research and business is incredibly interesting. The different aspects bring a scale and totality to the complex issues in sustainable building and living,” she concludes.

Read more about Stockholm Royal Seaport Innovation’s work at www.stockholmroyalseaport.com/innovation.
Envac - a part of Stockholm’s Royal Seaport eco-cycle

Similar to how the underground nature of sewage, water and electricity all play a role in modern day infrastructure, Envac will make waste collection a utility at Stockholm’s latest sustainable development - by placing it underground, too.

Envac will manage three waste streams including paper, plastic and residual waste.

On completion, there will be 365 inlets connected to the central waste collection station, which will service over 5,000 apartments. Envac will also be responsible for the ongoing service contract on the project’s first phase of development in Hjorthagen.

**Self-Emptying Litterbins in phase 2**
Phase two will see Envac’s Self-Emptying Litterbin System integrated into the development, when over 100 bins will be installed and connected to the underground pipe network.

**Energy neutral waste collection**
Envac aims it to deliver the world’s first energy neutral waste collection system in the Royal Seaport. This will be achieved by applying new optimisation software for the design and operation of the system. Also, some of the energy used to transport the waste underground will be captured and recycled as hot water.

Combining patented energy efficiency measures, energy recovery and using available system surfaces as solar collectors will result in energy consumption needs unprecedented for a waste collection system.

Plan Overview Stockholm Royal Seaport.
Source: City of Stockholm (2010)
Care homes - One of Envac’s ‘hidden gems’

Over the years, Envac’s Swedish and Danish organisations have installed 30 waste transport systems in care homes, a sector that spans residential, care and nursing homes for the elderly. They have never been a sales priority as the contracts were relatively small compared with the considerably larger installations in new residential areas. However, our interest in this application is increasing because of the demographics of rapidly aging populations across Europe and large parts of Asia. So, in summer 2012, Envac carried out a customer survey to better understand how automated waste systems function in care homes in Sweden.

Six care homes with Envac systems in the Stockholm area were studied. Respondents completed a questionnaire about their general views on waste management and the Envac system in particular. The care homes in the survey ranged in size from 50 to 250 beds. Two of them use Envac’s mobile vacuum system whilst the other four use Envac’s stationary system - a system that seems better suited to care homes than the mobile system.

The biggest waste challenge facing care homes is incontinence pads. Heavy, bulky and smelly, they can easily become a health and safety issue. Disposing of used pads as quickly as possible, as opposed to storing them in bins on site until they are collected, is a priority.

All the healthcare staff in the homes surveyed are directly involved in waste management. In some cases, residents themselves deal with their waste. Cleaning staff also have to deal with waste that is not covered by the vacuum system. Waste managed by the vacuum system is collected once a week and other waste is generally collected at similar intervals.

“We are pleased that no one needs to touch the waste, and that you can dispose of it on the floor you are working on instead of having to go down to the refuse room.”

Sabbatsberg care home

In all the cases surveyed, the vacuum system manages only what is called residual waste as there is currently no facility for sorting waste using the vacuum system. Conventional waste bins are used for all waste sorting.

We asked the personnel involved at the six care homes how they felt about the
Weighing it all up

Envac’s latest product will increase waste management efficiency and reduce costs.

Envac has now created a user-friendly tool to improve waste minimisation and separation at source - the new Inlet Weighing Solution.

Put simply, the waste of each individual to use the system is weighed at disposal. This is made possible by the use of unique ID cards that correspond with each user.

The higher the amount of waste, and the lower the amount of recyclable materials, the more it costs society.

Vacuum system being able to manage sorted waste, too.

They were all in favour. The fractions that should be sorted are paper, packaging and food waste.

“We avoid having bin men popping in and out of the building, and the nasty smells associated with traditional waste collection methods.”

Blackeberg care home

The main advantages of the vacuum system are that there is no need to transport waste manually, there are no overflowing bins and it saves time. Improved working environments and hygiene standards are often cited as the key benefits. According to the survey, the improvements that most people would like to see made to their automated system include larger waste inlet doors and sorting facilities.

We are grateful for this feedback on how our system functions. Feedback from users is essential in all product development and crucial to the product’s long-term success.

Less waste
Designed to help end-users and plant owners become more aware of the waste they generate as well as provide a visible way in which to control and measure their expenditure on waste collection, the system is simple yet effective.

Future-proofing developments
Envac’s Inlet Weighing System is expected to play a role in meeting global waste reduction targets. And, as these targets increase the more relevant the system will become.

Simple to use, easy to measure
The system is not language-dependent, which makes it universal. It’s easy-to-access reporting and monitoring functions also mean that important information such as the total weight and cost of waste deposited over any given timeframe can be accessed at the touch of a button.
We have offices in the following countries:

For detailed information visit www.envacgroup.com