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A MAGAZINE FROM THE WORLD
LEADER IN AUTOMATED WASTE COLLECTION

CONCEPT



2:03 NEWS - ALMERE, PUBLIC SPACE IN FOCUS, INNOVATIVE SYSTEM SOLUTIONS - COPENHAGEN, BETTER LIVING WITH HIDDEN WASTE COLLECTION, WASTE MANAGEMENT IN THE DANISH CAPITAL



PUBLIC SPACE IN FOCUS

November, 2003

Public spaces are not only the window of the city but also the interface between buildings and the activities that the city generates. The design and appearance of public spaces determine how well the city interacts. Using public spaces to store and transport waste detracts from the appearance of the city, and restricts the interaction and accessibility of the city's functions.

We are devoting special attention in this issue to the City of Almere, the fastest growing city in the Netherlands and its decision to treat waste collection in the densely built-up town centre as an integral and inextricable component of its public spaces.

Another example of optimising the use of public spaces is demonstrated in the Havnestad project in Denmark, where even the waste handling terminal has been put underground. This means that practically all waste storage and transportation in the area disappears below street level.

All too often authorities, decision-makers, town-planners and architects still see the topic of public spaces as a balancing item in their budgets and plans, with all the consequences that this entails. Many of the present problems in the public environment could have been prevented had there been more of an eye for sustainability and quality in the planning of waste collection.

Envac wants to help improve the design and use of public spaces and the living environment. We hope that the cities featured in this issue will bring inspiration to other cities in their quest to find sustainable waste handling solutions.

The Editor

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CONCEPT

Publisher
Sigvard Karlsson,
President & CEO Envac Group

Editor-in-chief
Jonas Törnblom,
Director Corporate Marketing
jonas.tornblom@envac.se

Editorial board
Jonas Törnblom
Anne Kolbrand
Maria Ståbi



View of Almere's new town centre

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AB Danagårds Grafiska, Ödeshög



ENVAC CENTRALSUG AB
SE-117 84 Stockholm
Sweden
Office address: Bryggvägen 16
Phone: + 46 8- 775 32 00
Fax: + 46 8- 726 18 16
www.envac.net

NEWS

EXPANSION IN THE MIDDLE EAST



This autumn Envac Centralsug AB opened a sales office in Dubai. "In a short space of time, the southern side of the Persian Gulf has become one of the most exciting regions in the world for our waste systems," says Bernt Hederén, local manager in Dubai.

Dubai has been expanding very quickly for some time, but it is not until very recently that they have paid much attention to the environment. As standards have risen, the demand for hygienic and environmentally friendly waste handling has grown.

High temperatures and high land costs mean that household waste cannot be

stored in the open. Envac's underground pipe network is ideal for the gigantic hotel and residential complexes that are being built in the region. It also releases valuable land and eliminates the hygiene problems associated with waste handling.

"The projects are huge, even in comparison with the large building projects we carry out in southern Europe and Asia," concludes Bernt Hederén.

IN-FLIGHT CATERING, DUBAI

Emirates Flight Catering Co LLC in Dubai is about to install an Envac system to handle its kitchen waste. The vacuum system will evacuate in-flight meal waste from all incoming flights, and has a maximum capacity of 45,000 meals per day. Several waste inlets are linked by a single pipe that transports the waste to a central point for collection by a container truck. This installation, the first of its kind in the Middle East, will be completed by summer 2004.

ENVAC SUPPLIES THE WORLD'S MOST MODERN WASTE HANDLING SYSTEM FOR HOSPITALS

The new St. Olav University Hospital in Trondheim, Norway, will have the most modern waste handling system in the world. The first part of the installation will be completed in the autumn of 2004. By 2014 the University Hospital is planned to have 186,000 m² of hospital facilities and to be handling 2,000 tonnes of waste annually. New technology separates waste at source into four fractions (paper, shredded paper, incinerable waste and

plastics). This patented technology requires only one disposal chute for all four fractions. Every floor level has one disposal chute connected to the underground pipe network.





ALMERE

“It’s not a new system, but it’s the first time that it’s being used in the Netherlands.”

“Almere is renowned for applying innovative solutions while being committed to building an environment with added value for the future. We’re installing an underground waste transportation system because we want to mix the functions of living, working, shopping and entertaining in the new parts of the town centre - and because we’ve stacked these functions on top of each other.”

“We’ve also decided to connect the litter bins on the street to the underground waste system, because we want to keep the town centre clean, wholesome and safe. The visitor benefits directly from this with streets free from rubbish and litter.”

“On Saturday mornings, the bins in our town centre now start overflowing as early as eleven o’clock. It would be desirable to send a small refuse van out to empty them, but that’s not possible, because there are too many people walking around in the streets. In the new town centre, visitors can throw their empty cans or snack wrappers straight into the bin.”

“We want to keep the town centre clean, wholesome and safe.”

“Putting your household waste bags outside once a week is a thing of the past. Even before the organic waste container under the kitchen sink begins to smell, you can empty it into the disposal chute every night - if you feel like it! For shopkeepers getting rid of their commercial waste, the system works out even cheaper than before.”

“And that’s what I find so good about the whole system - that every user derives immediate benefit from it. And that it keeps our town centre clean, wholesome, safe and attractive.”



Photo: Prospero Communicatie, Almere

Inaugural speech by Almere’s City Mayor, Annemarie Jorritsma-Lebbink, on 2 October 2003.

Grote Markt in Almere - free from waste and litter - putting the pedestrians in the centre.



“We give every innovation that has proven its sustainability and usefulness in practice a chance. The underground waste transport system is a perfect example of that.”



Dingemans Lievense, Town Centre Director for the municipality of Almere

It should come as no surprise to anyone familiar with Almere’s history that the city is the first in the Netherlands to change over to an underground waste transportation system. For many years the city has welcomed new developments with open arms, and the growth that Almere has been experiencing for 50 years is now characterised by its progressive character. But the city does not innovate for innovation’s sake. “We’re always open to new developments,” Lievense declares. “But they do have to be useful and sustainable over a long period. As a relatively young city, we find ourselves in the fortunate position of being able to make that choice. This is often difficult in municipalities that have grown organically. And we are making grateful use of that choice - especially in the realisation of the new town centre.”

PUBLIC SPACES

In this way, the municipality hopes to prevent the problems that other cities have to contend with. One of those is the (in)accessibility of the rubbish. Lievense comments: “In cities that have silted up, the rubbish flows grow bigger and bigger, while the possibilities for collection shrink. Busy traffic flows, etc., mean that refuse vehicles can’t get onto the streets any more, except at inconvenient times. In various foreign cities, such as Barcelona and Stockholm, Envac’s underground waste transportation system has proven ideal for keeping the town waste-free.”

“With the introduction of this system we’re once more showing that to us, urban expansion means more than the preservation of the quality of the built environment. We are giving an impulse to the sustainability and safety of public spaces.”

SUSTAINABLE SOLUTION

How exactly does the underground waste transport system contribute to sustainable spatial development? “In the first place, we are doing away with many refuse vehicles in the town centre,” Lievense answers. And at the same time, this automated waste system ensures that the disposal of waste corresponds to the time when it accumulates. In this system, there’s no place any longer for stray litter, odour

nuisance and noise pollution. It removes the nuisance that local residents and companies experience because of their waste. “Furthermore, we have seen from several other installations that this solution will work for the next 30 years. The misery will not turn up later on someone else’s plate, not even in relation to the maintenance of the system,” Lievense explains. “If you dispose of something in the ground, it must be done properly. You must be confident that the ground will not have to be torn up again and again every six months. Because then you’re just replacing one form of nuisance with another. And that would also entail a lot of extra costs.”



Separate waste inlets for 3 waste fractions.

SAFETY, FIRST AND FOREMOST

Almere, just like every other city, also wants to create a safe environment in which people can work, live and play with enjoyment. “Safety was and is a dominant factor in the development of the new town centre. That is reflected in the large underground car park, which is spacious and well lit. And that vision recurs in the streetscape, which above all must be pedestrian-friendly. So there’s no place any more for big lorries, or for rubbish and stench. Pedestrians can feel at ease everywhere.”

The automated waste collection system therefore meets the municipality of Almere’s planning vision very well. There was no lack of support for the introduction of the system, as all those involved from the municipality were immediately enthusiastic after making study visits abroad. Lievense says: “Most users, whether local residents or companies, favour this system. And costs for users are no higher than for a conventional system with containers.”



The collection terminal with its futuristic design is a landmark of the city.

FOLLOWING THE EXAMPLE

According to Lievense, underground waste transportation also has a future elsewhere in the Netherlands, for instance in the large-scale expansion of cities. Of course, the construction of the underground infrastructure requires a considerable investment, but that is recouped in the longer term. “Besides, in many urban expansions construction can be combined with the construction of other underground facilities,” Lievense believes. “I’d advise other cities to come and take a look here as soon as possible. Now that this process is in full swing here, other cities can benefit from it, for instance in the field of engineering.”

Lievense is glad that Almere and CentralNed have stuck their necks out, both for his town and for other Dutch towns. “We’ve proved that it’s possible, in spite of existing buildings and soft ground. I can’t imagine that other Dutch cities won’t follow our example.”

FACTS ABOUT ENVAC IN THE NETHERLANDS

In the Netherlands, Envac’s stationary systems are marketed by CentralNed BV. CentralNed is a joint venture between Vermeer Milieutechniek BV (a subsidiary of Dura Vermeer Group NV) and Envac Centralsug AB. CentralNed, founded in 1999, operates from Hoofddorp.

UNDERGROUND WASTE TRANSPORTATION INSTALLATION IN ALMERE. FIGURES FOR THE COMPLETED INSTALLATION.

Premises

No. of apartments	2,732
Office space	208,000 m ²
Shops and stores	112,000 m ²
Restaurants	22,000 m ²
Other	41,000 m ²

Waste fractions - quantities collected

Organic	4 tonnes/day
Paper	6 tonnes/day
Other	20 tonnes/day

Number of inlet points

Outdoor waste inlets	144
Indoor waste inlets	172
Outdoor litter bins	43
Total pipe length	8.5 km



Willem Prins, Project Manager
Dienst Stadscentrum
(Town Centre Service).

Innovative system solutions

Almere will get a new town centre, characterised by a high degree of layering. The lowest layer accommodates traffic functions. Commercial functions are the keynote element in the layer above, with residential functions in the third layer. There is no place for traditional waste collection in the new town centre, according to Willem Prins, Project Manager Dienst Stadscentrum (Town Centre Service).

Almere is the first town in the Netherlands to switch over to an underground waste transportation system. This effectively means the end for the refuse vehicle in the town-centre streetscape. “The upper two layers of the new town centre are intended for living, working and recreation,” Wiltink explains. “The pedestrian takes centre-stage in that area, and large refuse vehicles don’t belong there. The automated waste collection system keeps them at the edge of the town centre.”

SEPARATE FLOWS

The nerve system of the whole complex consists of an 8-km underground system of pipes. Over 350 disposal chutes lead into these pipes, which are placed in



Erik Wiltink, Project Leader underground waste transport system in the municipality of Almere

public spaces and buildings. “The deposited waste is collected in buffers that are emptied on average 10 times per day,” says Erik Wiltink, project leader for the underground waste transportation system. “A waste collection terminal next to the police station at the edge of the town centre takes care of that. This ‘giant vacuum cleaner’ generates an air velocity of 70 kilometres per hour to move the waste over one and a half kilometres. When the whole centre is connected, five waste trucks will be enough to transport the waste from the waste collection terminal to its final destination.”

Although the system consists of a single steel pipe with a diameter of 500 mm, there are separate waste flows, and the system empties the buffers for organic, paper and other waste separately.

Wiltink says: “In October 2003 this process started for the first section of the town centre. It will be another four years or so before all households and companies are connected.

Businesses are free to decide for themselves whether they want to make use of it or not.”

FOREIGN EXPERTISE

For the construction, which started in May 2000, Almere called on expertise from abroad. The Envac system has already been in operation in Sweden since 1960. “We’ve exploited that experience fully, for instance to solve technical problems,” Wiltink explains. “How do you get the pipes into concrete foundations? How do you make sure that the whole system is watertight? And the fire brigade also acquired useful knowledge during study visits, especially about safety.”

“Users need a pass to be able to use the system. If something goes wrong, this means we can see who used the system and when.”

Nevertheless, the underground waste transportation system in Almere is not an exact copy of the systems in Sweden or Barcelona. “The Almere variant is larger than most other installations. Moreover, connecting the litter bins in the street to the system is a global innovation. And our disposal chutes have volume limiters. Dumping more than seventy litres at a time is not possible. This promotes safety and stops users from throwing away items with excessive dimensions. Safety is further enhanced by regulating access to the system electronically. Users need a pass to be able to dump waste. If something goes wrong, this means we can see who used the system and when,” says Wiltink.



Hans van den Vlist, Director General of the Ministry of the Environment is putting the first waste bags in to the system.



Underground waste handling improves housing quality

A new residential district with the focus on housing quality is being built in Copenhagen's docklands. The emphasis is on design appeal, comfort and the environment. All waste-handling facilities, including the waste terminal, are located underground. Space at ground level can thus be used to increase the quality of the housing.



Two large grain stores in Havnstad that are being converted into residential accommodation. The area is being developed by NCC Property Development, and will be connected to Envac's underground waste transportation system.

Copenhagen, November 2003: Two km from the centre of the city, a new residential district is shooting up in the old docklands - Havnstad. More than 1,000 new apartments are being built here, with exciting new buildings alongside restored old industrial premises.

To counteract a long-term drift from Copenhagen's city centre to the suburbs, the municipality of Copenhagen has decided to invest in high-quality residential accommodation. Havnstad is one of many new residential districts planned for the expanding Baltic metropolis.

Attractive locations plus premium housing is the formula tempting wealthy investors and tenants.

"Our strategy is to combine high-quality housing with the very latest technology," says Kenn Amhild of JM Danmark A/S, one of Denmark's

leading construction companies. "An essential part of this venture has been to have state-of-the art waste collection. By putting waste storage underground, and moving waste transportation outside the area, we've not only released large areas at ground level. We've also eliminated many hygiene and working environment problems," adds Kenn Amhild.

UNDERGROUND WASTE TERMINAL

The entirely underground waste terminal is unique to this project. "This solution, using an underground terminal, releases further space. It's also easier to create architectural unity in the area," says Niels-Erik Pedersen, who is responsible for Envac's operations in Denmark.



Niels-Erik Pedersen, MD of Envac DK

UNIQUE FINANCIAL SOLUTION

The property owners and residents have been offered a unique financial solution. The local waste company R98 finances the installation, maintenance and operation of the waste system. The residents pay an annual rent in addition to the charge for refuse collection, which is considerably less than for traditional waste collection. The total annual charge (for rent and waste collection) is on a par with that for conventional waste disposal.

INFORMATION

Key figures for the Havnstad waste collection installation:

Number of apartments	1,041
Number of chutes	57
Inlets	Inlets on every floor
Number of apartments per chute	20-65
System	SVS 350
Number of fractions	1
Diameter of the pipeline system	350 mm
Length of the pipeline system	2.5 km
Waste container	G-system
Area required for conventional refuse disposal , per refuse storage chamber	4-6 m ²
Area required for automated waste collection , per refuse storage chamber	1-2 m ²

Reuse and recycling are the target

Denmark is often regarded as the leading country in waste collection and management. This is very much due to R 98's consistent efforts to improve the working environment for refuse collectors. But thanks are also due to a close co-operation with users, i.e. property owners and households, to increase awareness of environmentally appropriate waste management.

"As the principal waste collector in the municipalities of Copenhagen and Fredriksberg, we have a large responsibility for environmental policy," says Ole Breinholt, divisional manager for market relations at R 98 in Copenhagen. "Implementing new EU and national directives with limited resources while maintaining the confidence of our customers is a challenge for the entire organisation."

R 98 has realised that the staff's working environment and competence are crucial to the attainment of environmental objectives. Last year, they were also chosen as Denmark's workplace of the year due to the improvements that have been going on for some years.

R 98 is a long-established company. Founded as a non-profit organisation back in 1898 on the initiative of

property owners in Copenhagen and Fredriksberg, it is responsible today for waste collection from approx. 600,000 people in the Copenhagen region. The main responsibility for the collection of household waste is based on a 50-year contract with the municipalities of Copenhagen and Fredriksberg that expires in 2020.

In Denmark, more and more waste fractions are being separated for collection. The objective is to increase reuse and recycling. Today, R 98 collects ten different fractions of household waste. "We have no post-sorting, and we have clear restrictions on what we can incinerate, so we must get households to sort at source, perhaps more so than in other countries," explains Ole Breinholt. "We must get households to see waste as a resource, and make waste separation accessible.



Ole Breinholt, divisional manager for market relations at R 98 in Copenhagen

Of course, this also entails problems with accessibility and litter in streets and squares, particularly in densely populated areas. I'm convinced that the politicians are aware of this," adds Breinholt. "We would like there to be more public funds for installing underground waste transportation systems, particularly in our city centres. But resources are scarce in economically difficult times, despite many people being convinced that it would be the best solution."



Nyhavn in central Copenhagen is equipped with a stationary waste collection system from Envac.

Envac Danmark A/S is a joint venture between R 98 and Envac Scandinavia AB. Envac Danmark has offices in both Copenhagen and Århus.

Seven stationary waste collections systems have been installed in Copenhagen and Århus, plus the system in Nyhavn and an installation at Esbjerg hospital. In addition to the stationary systems, there are numerous mobile systems in the Copenhagen area and the Århus region.

OUR BUSINESS CONCEPT

We offer efficient and environmentally friendly systems for waste collection. Strong support during planning, installation and operation will guarantee high user availability and flexibility. We strive to be regarded as a reliable long-term partner offering first class quality products.

SERVICES: Feasibility study, Turnkey installation, Service
APPLICATIONS: Residential, City Centre, Hospital, Kitchen, Airport

SCANDINAVIA:
ENVAC SCANDINAVIA AB
BOX 8849
SE-402 71 GOTHENBURG
SWEDEN
TEL: +46 (0)31 65 83 50
FAX: +46 (0)31 51 90 08

ENVAC SCANDINAVIA AB
SE-117 84 STOCKHOLM
SWEDEN
TEL: +46 (0)8 775 32 00
FAX: +46 (0)8 744 13 97

OPTIBAG SYSTEMS AB
BOX 320
SE-595 24 MJÖLBY
SWEDEN
TEL: +46 (0)142 185 00
FAX: +46 (0)142 185 40

ENVAC DANMARK A/S
KLOVERMARKSVEJ 70
DK-2300 COPENHAGEN S
DENMARK
TEL: +45 7025 1885
FAX: +45 7025 1891

ENVAC NORGE AS
ENSJØVEIEN 14
NO-0655 OSLO
NORWAY
TEL: +47 22 08 70 00
FAX: +47 22 08 70 01

EUROPE:
ENVAC DEUTSCHLAND GMBH
HALDESDORFER STRASSE 72A
DE-22179 HAMBURG
GERMANY
TEL: +49 40 646 90 90
FAX: +49 40 646 90 966

CENTRALNED BV
POSTBUS 318
NL-2130 AH HOOFFDORP
THE NETHERLANDS
TEL: +31 23 569 2596
FAX: +31 23 569 2593



HEAD OFFICE:
ENVAC CENTRALSUG AB
Mail: SE-117 84 Stockholm, Sweden
Visitors: Bryggvägen 16
Telephone: +46 (0)8-775 32 00
Telefax: +46 (0)8-726 18 16
www.envac.net

ENVAC FRANCE
C/O TELIGENT
14, BD MONTMARTRE
75009 PARIS
FRANCE
TEL: +33 (0)1 48 00 1818/89 90
FAX: +33 (0)1 48 00 1819

ENVAC CENTRALSUG AB
PORTUGUESE BRANCH
ALAMEDA DOS OCEANOS,
315.02D ESC. 7
PARQUE DAS NAÇOES
PT-1990-217 LISSABON
PORTUGAL
TEL: +351 21 895 89 20
FAX: +351 21 895 89 21

SPAIN
ENVAC IBERIA S.A.
PARQUE EMPRESARIAL
"EL CARRALERO"
PARCELA N° 3
CTRA. MAJADAHONDA -BOADILLA, KM 7
ES-28220 MAJADAHONDA
MADRID
SPAIN
TEL: +34 91 457 06 11
FAX: +34 91 457 03 16

REGIONS:
ENVAC IBERIA S.A.
DIPUTACIÓN, 276-2º-1º
ES-08009 BARCELONA
SPAIN
TEL: +34 93 342 64 33
FAX: +34 93 412 16 45

ENVAC IBERIA S.A.
AVENIDA LEHENDAKARI
AGUIRRE, 11-4ºP- Dpt 11
ES-48014 BILBAO
SPAIN
TEL: +34 94 447 46 60
FAX: +34 94 447 29 11

ENVAC IBERIA S.A.
AVENIDA INNOVACIÓN s/n
EDIFICIO HÉRCULES 1º, MÓDULO 5
ES-41020 SEVILLA
SPAIN
TEL: +34 95 425 06 52
FAX: +34 95 426 04 04

ENVAC IBERIA S.A.
COCHABAMBA, 24-1º
ES-28016 MADRID
SPAIN
TEL: +34 91 443 03 06
FAX: +34 91 344 09 53

ENVAC MIDDLE EAST FZE
PO BOX 502154
DUBAI, UAE
TEL: +971 4 3910 298
FAX: +971 4 3904 659

ASIA:
ENVAC FAR EAST Ltd.
RM 4401, 44/F,
CHINA RESOURCES BUILDING
26 HARBOUR ROAD
WANCHAI, **HONG KONG**
TEL: +852 2869 8838
FAX: +852 2739 7121

ENVAC FAR EAST LTD.
SHANGHAI
OFFICE 1501, GUOLU (CTS) MANSION
1277 BEIJING XI ROAD
200040 SHANGHAI
CHINA
TEL: +86 21 322 208 58
FAX: +86 21 627 910 04

ENVAC FAR EAST Ltd.
TAIWAN BRANCH
C/O SWEDISH TRADE COUNCIL
RM 0812 INTERNATIONAL TRADE
BUILDING
333 KEELUNG ROAD, SEC 1
TAIPEI 110, **TAIWAN**
TEL: +886 2 2757 6573
FAX: +886 2 2757 6723

ENVAC SINGAPORE PTE Ltd.
161 LAVENDER STREET, #02-10
SINGAPORE 338750
TEL: +65 6292 51 23
FAX: +65 6292 29 30

ENVAC (M)SDN BHD
LOT 216 B, 2ND FLOOR,
PODIUM BLOCK,
FABER TOWERS
JALAN DESA BAHAGIA, TAMAN DESA
58100 KUALA LUMPUR
MALAYSIA
TEL: +60 3 7984 85 57
FAX: +60 3 7984 85 59

ENVAC CENTRALSUG AB
KOREAN BRANCH
5F, KYOBO BUILDING
1-16, PYOLLYANG-DONG,
KWACHON-SHI
KYONGGI-DO, 427-040
SEOUL, KOREA
TEL: +82 2 507 2702
FAX: +82 2 507 2704

NORTH AMERICA:
ENVAC INC.
15680 KILMARNOCK DRIVE
FORT MYERS
FLORIDA 33912
USA
TEL: +1 941 768 3610
FAX: +1 941 768 2484