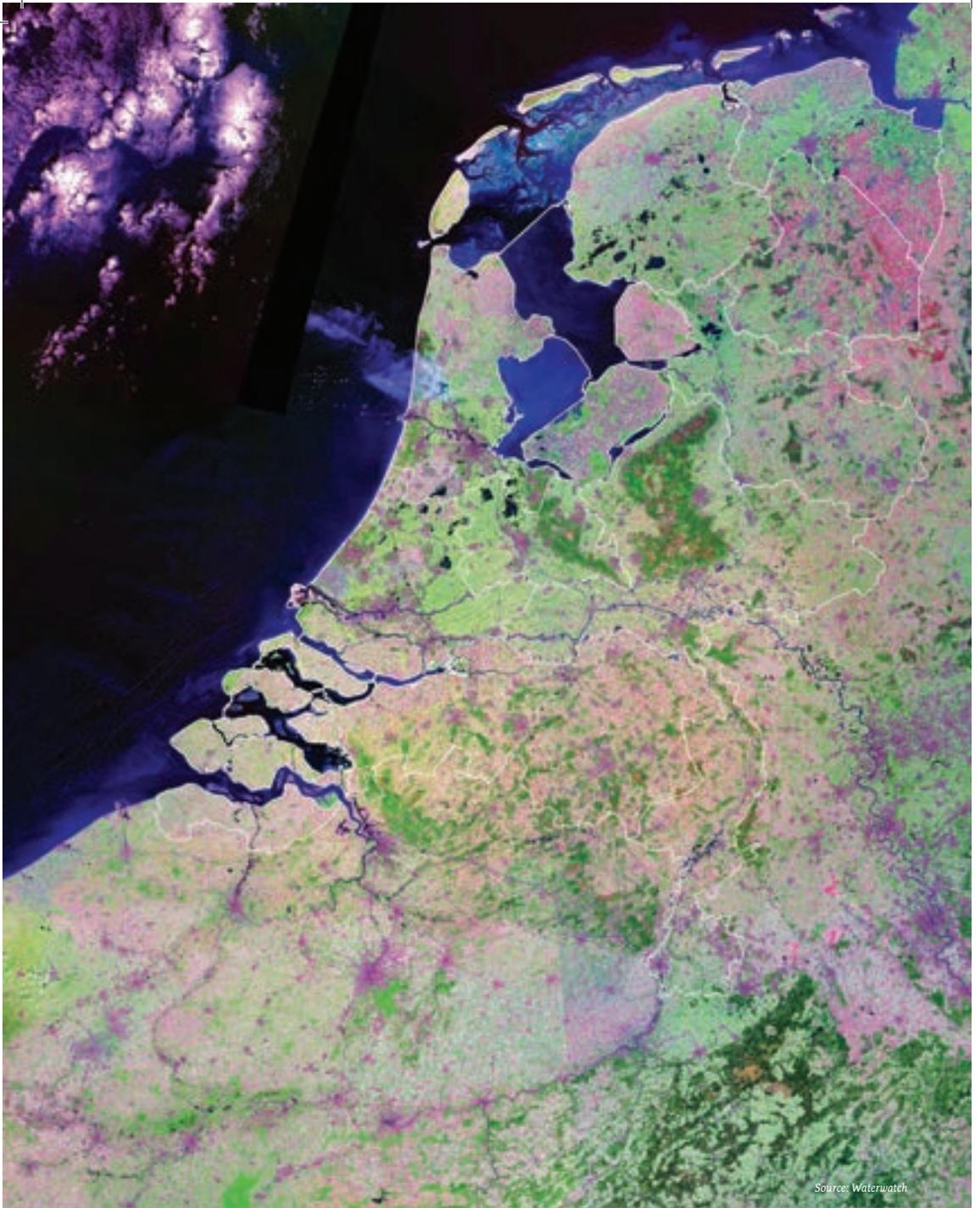


It's a Waste to Waste Waste

The Dutch: Pioneers in Waste Management



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Source: Waterwatch

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The Netherlands





Pioneers in international business





Joop Atsma
State Secretary of Infrastructure and
the Environment

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Good is not good enough

Canada and the Netherlands have strong historical ties. Canadian soldiers fought for our freedom in the Second World War. Many Dutchmen emigrated to Canada in the last century. Over one million of present-day Canadians have Dutch roots.

And our two countries also have strong economic ties. The Netherlands is the second largest investor in Canada and it ranks among the top-10 of Canada's export markets.

Many years of cooperation between our two nations led, among other things, to the signing of a Memorandum of Understanding [MoU] with the Province of Ontario in 2008. This MoU focuses on several important environmental themes, for which cooperation is key if we are to utilise the opportunities on the global market. Waste is an important sector, alongside soil and water.

The Netherlands leads the way

For many years, our country has pointed the way for Europe in waste management: eighty per cent of the total amount of waste in the Netherlands is recycled, sixteen per cent is incinerated with energy recovery and only four per cent goes to landfills [the EU average for landfills is forty per cent]. These figures clearly show that in our country there is wide public support for recycling, and that entrepreneurs in the Netherlands have capitalised on this support. Dutch entrepreneurs are constantly introducing new recycling techniques and methods, in part because this allows them to fulfil the exacting targets set by the government and EU legislation. A better waste policy entails being alert to new developments and innovations, each and every day, under the motto "good is not good enough."

For years now, the Dutch government has been striving to reduce the waste mountain and to combat exhausting non-renewable natural resources. A high level of waste recycling is an important tool in realising these goals.

Improved waste collection is a tool that brings us closer to our goal. There is also much ground to be gained in the area of knowledge of recycling techniques. Although the Netherlands currently has quite a high score already, our ambition is to optimise the use of recycled materials in the chain. This would allow us to reduce the pressure on the environment across the entire chain, from the production of raw materials to waste.

A major element of my waste policy is the expansion of the so-called "materials roundabout". My ambition is to make the Netherlands a large materials roundabout. A roundabout on

which as few resources and materials as possible are lost. By ensuring that even more waste enters the roundabout and undergoes high-quality processing we can derive more value from waste. At the same time, we would add impetus to recycling and bolster our knowledge economy.

Cars, planes and plastics

One sector in which we are an international pioneer, is the recycling of cars. Currently, eighty-five per cent of the weight of a scrapped car is put to use. In other words, eighty per cent in the form of reuse and recycling, and five per cent in the form of incineration with energy recovery.

Another good practical example of innovative use, is using old cooking oil as aviation fuel. Our largest national airline is using cooking oil as fuel for its planes that fly between Amsterdam and Paris. Good for the environment, the climate and reusing waste. I expect the development of these kinds of biofuels that do not compete with food production to really take off.

In the Netherlands and internationally, the reduction of plastic waste is also an important issue. The use of plastic packaging in particular has led to a dramatic rise in domestic and commercial residual waste. In the Netherlands, residual waste is for the most part incinerated at waste incineration plants. In order to also promote the recycling of plastics in the Netherlands, plastic has been collected separately since 2008. By the end of 2012, forty-two per cent of Dutch plastic packaging material should be efficiently recycled. I expect us to achieve this target.

Working together for a sustainable economy

Both the Netherlands and Canada can take a further step towards excellent rather than good waste management. We are setting the bar high. Dutch waste management companies are proving that time and again, every day. With their knowledge and innovative strength we can raise the bar even higher. By sharing knowledge with Canadian partners – authorities and companies – we can join forces in the field of waste management, and work together for a sustainable global economy. With intelligent waste management we can make a difference. We can reduce the pressure on the environment, save non-renewable natural resources and strengthen both our economies. We can and must do this because “good is not good enough!”

Joop Atsma
State Secretary of Infrastructure and the Environment



Hans Horbach
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**A WORD FROM THE CONSUL GENERAL OF THE KINGDOM OF
THE NETHERLANDS IN TORONTO, ON CANADA**

The Netherlands is an acknowledged world leader in waste management. Its own waste chain is particularly well organized. The Netherlands has much to offer to international partners, from expertise in legislation to technology recovering valuable resources for re use.

The Dutch have developed remarkable technologies and are known to be innovators in the waste management industry. For the Dutch, waste is not just “waste” but rather the new oil and some call it gold. Stringent policies, cooperation with industry and trade unions have resulted in a rather profitable recycling industry. Very high recycling rates can be found in various sectors like IC& I waste, C&D waste, e-waste, recycling of large appliances (like refrigerators) as well as in the automobile sector. As an example, the centre of Vehicle Recycling in the Netherlands (ARN) is taking our country to new heights and will help achieve a 95% recycling target in 2015. Our approach is simple: avoid creating waste as much as possible, recover the valuable raw materials from it, generate energy by incinerating residual waste, and only then dump what is left over – but do so in an environmentally friendly way.

With strengths in areas like Energy from Waste (EfW), composting technology, high-tech sorting and separation equipment, the Dutch have become global players. In Canada the Dutch are partnering with local Canadian companies to build world class facilities (like the ones in Ottawa, London, Hamilton, Guelph etc.) .

This brochure provides an overview of Dutch policies, companies and organizations looking to work with Canadian counterparts to share experiences in innovation with Canada. In turn partnering with the Dutch allows Canadian companies to explore new markets in (Eastern) Europe. The Netherlands is a gateway to Europe thanks to its strategic location, excellent logistical infrastructure and state of the art connections, communications and services.

We have an excellent reputation in doing business and are constantly at the forefront of new developments. The Netherlands and Canada are innovative, creative and reliable partners.

I hope that this brochure will generate interest and lead to increased partnerships and cooperation between the two countries.

Hans Horbach
Consul General
Consulate General of the Kingdom of the Netherlands in Toronto



Introducing the Netherlands



A country that the Dutch created in the delta of three large rivers, flowing into the North Sea... Where two thirds of GDP are earned below sea level... Where there used to be a lake almost two million acres wide where Amsterdam Airport Schiphol is today... Where innovative and daring solutions for water control protect half of the country against the risk of being flooded. It earned us a worldwide reputation...

We know water.

A country that was in need of more land for agriculture... Where land was reclaimed from the sea and kept dry: the famous 'polders'. A country supposedly too cold to grow certain vegetables and flowers... Where greenhouses were invented as a solution to this problem. Where Dutch farmers now produce 2.5 times more food per acre than EU farmers produce on average... **We know food & flowers.**



A country that is the gateway to Europe... Connecting nearly half a billion consumers in the European hinterland to the world's producers... Thanks to the world-class Port of Rotterdam, the internationally praised Amsterdam Airport Schiphol, an extensive network of waterways, Europe's strongest road transport sector and an extensive network of rail links... **We know logistics.**

A country with an open and cooperative attitude... Whose residents have always felt the need to explore what lies beyond its borders... Where the world's first multinational corporation originated in the 17th century. A country where, today, 87% of people who are 15 years or older speak English... **We know international business.**



Source photo's: Rijkswaterstaat; Energising the Future; Europe Container Terminals BV, Rotterdam; NBTC - Esther Veldhuizen

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Worldwide ranking

1st	Production and auctioning of cut flowers and flower bulbs
1st	Number of broadband connections per 100 inhabitants
2nd	Export of agricultural products
2nd	Quality of water transportation
3rd	Density of road network
4th	Largest seaport
4th	Logistics performance Index
5th	Export of goods
5th	Dutch investments abroad
7th	Import of goods
8th	Foreign direct investment in the Netherlands
9th	Export of commercial services
9th	Import of commercial services

Facts & figures

Form of government	Parliamentary democracy, constitutional monarchy
Capital city	Amsterdam
Seat of the government	The Hague
Composition of the country	12 provinces, overseas territories of Aruba, Curaçao and St. Martin
Language	Dutch
Monetary unit	Euro
Population	16,664,011 (January 2011)
GDP	794 billion \$ (2009)
Per capita income	40,852 \$ per capita (2009)
Export partners	Germany 25%; Belgium 12.6%; UK 9.2%; France 8.1%; Italy 4.7%; US 4.5% (2009)
Import partners	Germany: 19.6%; Belgium: 10.0%; US: 8.4%; China: 7.9%; UK: 6.1%; France: 4.9% (2009)
Dutch investments abroad	851 billion \$ (2009)
Foreign direct investment	597 billion \$ (2009)
Command of foreign languages	English (87% of > 15 years old), German (66%) and French (25%)

Sources: Here's Holland Compared, CBS, World Bank, IMF, OECD, WTO, UNCTAD, EIU, IMD Business School.

*Knowledge is power. Sharing knowledge is more powerful. Doing business the Dutch way is doing business with you and for you! It's not about quick fixes or easy money, but about cooperation and consideration of individual needs of partners... Trade is in our DNA. It makes us **Pioneers in International Business.***

Environmental Technologies

Dutch expertise protecting the world's environment

Dutch environmental expertise is most developed in waste processing, water purification, soil remediation, and environmental management and consultancy. Technological expertise is complemented with progressive environmental policies and strong institutional management practices. Waste processing is highly advanced in the Netherlands, with extensive IT-based recycling programmes and sustainable incineration in place of land-filling, as well as pioneering electricity generation from waste materials. The Dutch have also developed cost-effective 'in situ' soil remediation technology that allows for on-site treatment rather than costly soil removal. Dutch companies are highly proficient in the treatment of sewage and wastewater, in developing new technologies and in providing consultancy services worldwide. In the area of air purification, Dutch companies focus on issues like aerosols, measurement and modelling, climate change and foul odours. In the area of noise management, Dutch companies develop noise-abatement facilities (such as special floors, walls and cabinets) and noise measurement technologies. Environmental companies work in close cooperation with universities and renowned research institutions such as TNO, ECN, RIVM, SKB, KIWA, KEMA and Deltares.



Source: Bollegraaf Recycling Solutions

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Key aspects and strengths.....

- In the small and densely populated country of the Netherlands environmental protection has always been a priority. Traditionally, Dutch government, business and academia co-operate closely on environmental solutions, regulations and policies and, correspondingly, have learned how to develop and implement effective national policies that receive broad support.
- The Dutch are frontrunners in soil remediation. Countries all over the world use Dutch technologies for the sustainable and cost-effective remediation of soil contamination with oil, heavy metals and chlorinated solvents like PER and tri- asbestos.
- Renowned Dutch environmental consultancies excel in environmental management, environmental impact studies, environmental and sustainability rapports, and corporate social responsibility strategies.
- A number of specialist R&D institutes and public-private partnerships support innovation in the areas of soil management, water technology, membrane bioreactors, the built environment, and sustainable coastal protection.
- The Dutch excel at wastewater purification, e.g denitrification, sensing, control and monitoring of water systems.
- The Netherlands is at the forefront of a move towards more sustainable and ecological production processes, pioneering Crade-to-Cradle concepts and embracing a bio-based economy that produces non-food items using biological materials.
- Dutch engineering firms are leading with regards to designing embedded environmental services in complex rural, urban and coastal development projects, for example, the Diamond Delta in China, a land reclamation project.

Facts & figures

- In 2009, soil remediation operations were completed at almost 2,000 sites in the Netherlands. In recent years, the total number of completed remediation operations has been rising. In 2009, about 320 million euro were spent on soil surveys and remediation.
- Some 85 percent of Dutch waste is put to good use, via recycling, for example. The Netherlands has the highest percentage of household waste recycling in Europe and the lowest level of landfill.
- Each year, some 2.5 cubic megatons of paper and cardboard are recycled, as well as 410 kilotons of glass.
- Ninety percent of glass in the Netherlands is recycled, which reduces energy costs by 18 percent and the need for raw materials by 30 percent.
- About 55 percent of Dutch environmental technology companies is active in developing new products and services. The companies invest some 8 percent of their revenues in innovation. The new services account for 24 percent of sales.
- In 2004, the Dutch government took the pioneering step of making producers of white goods, brown goods, medical equipment and certain types of lighting, responsible for the collection and disposal of used equipment. This approach inspired a similar EU directive.

A few websites.....

- www.vlm.fme.nl - Trade association of environmental technology (services) suppliers
- www.onri.nl - Association of consulting engineers
- www.nsp-soil.nl - Netherlands Soil Partnership
- www.nwmp.nl - Netherlands Waste Management Partnership
- www.dwma.eu - Dutch Waste Management Association
- www.aquanederland.nl - Association of the Dutch water treatment industry
- www.skbodem.nl - Knowledge institute focused on soil issues
- www.wetsus.nl - Wetsus research institute for water
- www.tno.nl - Dutch independent research organisation

Waste management in the Netherlands

As far as waste management is concerned, the Netherlands is one of the best countries in Europe and perhaps in the world. Lack of space and a growing environmental awareness forced the Dutch Government to take measures early on to virtually eliminate land filling of waste. This, in turn, gave companies the confidence to invest in more environmentally friendly solutions. The Netherlands is willing and is currently assisting other countries that are now starting to make these types of investments so they can prevent the mistakes we made.

In the latter half of the 1970s, waste management was put structurally on the Dutch administrative agenda. It was in the nineties that transition took place from a small scaled, inefficient and regionally organized sector to where we are now: a professional, internationally oriented and increasingly innovative sector. The result is impressive: in 2010 around 80% of the waste is recycled, 16% incinerated and only a small fraction of 3 to 4 % of the waste produced in the Netherlands is land filled.



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The Dutch waste policy has 5 important elements:

1. Order of preference for waste disposal (waste hierarchy)
2. Stringent waste treatment standards
3. Planning on national level (in close cooperation with local governments)
4. Producer responsibility
5. Use of various (economic) instruments to stimulate prevention and recycling.

1. The order of preference (ladder of Lansink)

The Dutch approach is simple: avoid creating waste as much as possible, recover the valuable raw materials from it, generate energy by incinerating residual waste, and only then dump what is left over – but do so in an environmentally friendly way. This approach is known as ‘Lansink’s Ladder’.

The Ladder of Lansink has been the guiding principle from the start: reduce, reuse, and recycle. The order of preference is as follows:

- a. the creation of waste is prevented or limited (prevention);
- b. in the manufacture of substances, preparations or other products, use is made of substances and materials that after the product has been used have no or as few adverse impacts on the environment as possible (design for prevention and design for recovery);
- c. substances, preparations or other products are re-used as they are following their use (recovery through product reuse);
- d. substances and materials of which a product is made are recycled after the product has been used (recovery through material recycling);
- e. waste is used principally as fuel or as another means to generate energy (WtE, recovery as fuel);
- f. waste is disposed of by incineration on land (incineration as a disposal method);
- g. waste is landfilled (disposal: landfill).

2. Stringent waste treatment standards

In order to reduce the environmental pressure arising from waste management, stringent standards were introduced. For instance: standards for soil protection from land filling, standards for the quality of secondary materials derived from waste (building materials), air quality standards for incineration, quality standards for organic fertilizers (from bio-waste), a ban on landfill for 35 waste-streams (basically all waste streams that are suitable to be recovered or incinerated are not allowed on landfills).

3. Planning on national level

The realization that collaboration and cooperation is necessary for effective waste management resulted in the establishment of the Waste Management Council in 1990. The Council was established on the basis of a voluntary agreement between the three tiers of government to achieve a joint and coherent approach for the waste management challenge. The Council no longer exists; it was closed down in 2006 because all its targets were met and waste was no longer an important item on the political agenda.

Cooperation between the different tiers of government however, still exists in defining policies, implementation and enforcement.

4. Extended producer responsibility (EPR)

Extended producer responsibility means that producers or importers are responsible, or share responsibility, for the management of the products they have or will put on the market with end-of-life stage. This responsibility can be agreed upon voluntarily (and where desired supported by the Minister in charge with a universally binding agreement on a waste management fee) or through legislation. Instruments for promoting producer responsibility are generally used in combination with other instruments, e.g. the introduction of landfill bans and landfill tax levies.

5. Use of various instruments to stimulate prevention and recycling

There are several financial instruments available such as landfill tax and volume based waste fee systems. A landfill tax, as the name already indicates, is imposed when you want to landfill waste as a last resort. The fee for combustible waste in the Netherlands, at the moment, is 107 Euro per ton, (150 CAD). The total landfill costs of one tonne of combustible waste including operational costs amounts to about 120 Euro (190 CAD).

Another financial instrument that some municipalities use for household waste is volume based waste fee systems, also known as variable waste charging. On average households in the Netherlands paid 250 Euro in such waste fees in 2010, (355 CAD).

Besides imposing fees a good instrument often used is offering a good and approachable collecting system; systems for separate collection of several waste streams, like organic waste, paper and cardboard, plastics and glass. Furthermore, every municipality must have a location where people can bring and sort their waste: the public amenity center.

Very important in this process is, of course, raising public and community awareness: communication and education are essential. Engaging the public at large and providing the necessary feedback on how successful (or not) these separate collection and diversion programmes work and what it means in terms of environmental quality or monetary savings, are instrumental.

Finally, but not the least important: enforcement of legislation. Without enforcement waste management does simply not work. A much elaborated waste tracking and monitoring system is developed in order to support enforcement.

Fields of Dutch expertise

Due to the difficult geo-hydrological conditions for land filling (the Netherlands is a flat country, the delta of large European rivers, with high groundwater tables) land filling, though hardly practiced anymore, is an area of outstanding expertise (e.g. liners and cappings provided by Trisoplast Mineral Liners).

The remediation of old dumpsites also has a long tradition because of the scarcity of space (Afvalzorg, Attero, and VAR).

Gas recovery from landfills

The Netherlands has extensive expertise in the extraction of gas from landfills and landfill sites. Appropriate capping combined with a high-tech gas extraction system allows for optimal extraction of the harmful gases produced by decaying waste in landfills. Innovative techniques developed by Dutch companies allow for faster gas extraction. Moreover, gas recovery at least doubles when using an appropriate capping system, in the development of which Dutch companies have also played a leading role. The gas recovered from a landfill site can be converted to renewable electricity; even after many years the waste still produces combustible methane gas.



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Composting

Already in the early nineties Source Separation and separate processing of organic waste from households and ICI markets became mandatory. As a result Dutch companies have a long proven track record in composting and anaerobic digestion.

Modern high performing in vessel composting facilities have been built recently by companies such as Attero, Christiaens Group, Gicom Composting Systems, Maris and Mavitec, Multriwell, Orgaworld, Vandenbroek International, Van Kaathoven Group, VAR, Waste Treatment Technologies. Some of these companies are well known in Canada. Dorset Green Machines uses waste heat to dry biomass.

Organic waste material can also be digested in a closed system and used to generate electricity or can be converted into LNG/ CNG. Companies with proven experience in the field of wet- dry anaerobic digestion of MSW, Source Separated organics are amongst others Attero, Christiaens Group, Gicom Composting Systems, Maris and Mavitec, Multriwell, Orgaworld, Vandenbroek International, Van Kaathoven Group, VAR, Waste Treatment Technologies.

Advanced waste collection systems

(Separate) Collection of waste, also in historic city centers, lead to the development of advanced collection and logistic systems and vehicles. Nowadays in the Netherlands, especially in the center of large cities, above ground containers have been replaced by underground containers into which inhabitants can put paper, glass, plastic and residual waste for recycling. This system is aesthetically pleasing, more hygienic and above all more efficient (Geesink-Norba, Royal Dutch Bammens). Companies like Sulo and Bammens developed systems for variable charging.

Separation techniques

Separation techniques to purify and sort and separate different waste streams (from E-waste to residual and construction & demolition waste) has a long tradition. Waste can be sorted and separated in different ways, such as crushing and sieving, air separation, magnetic force, Eddy current, heavy media separation, magnetic plates with magnetic liquids, Near Infrared techniques etc. A well spread infrastructure of separation plants exists. These

plants process wastes like construction & demolition waste, commercial & industrial waste, bulky household waste and plastic packaging waste. Dutch companies also have long standing experience in producing Solid Recovered Fuel (SRF) from mixed wastes. SRF is an interesting waste management option that makes optimal use of the calorific value of waste that cannot be recycled.

Outstanding companies in this segment are for instance Bakker Magnetics, Boa Recycling Equipment, Bollegraaf Recycling Solutions, Europe Recycling Equipment, Goudsmit, Machinefabriek Emmen, Nihot, N.M. Heilig, Redox Recycling Technology and Waste Treatment Technologies.

Separation of plastic

Knapszak Benelux. Knapszak is a collection system for synthetic packaging such as plastic foil, EPS, plant pots & plant trays and PET bottles. Knapszak (a recycled plastic bag) and Knapszakholder (tubular steel frame) together make the ideal duo for the adequate collection of these synthetic waste flow



Governmental support for waste treatment

Agentschap NL. NL Agency is the implementing Agency who monitors all waste streams, license hazardous waste collection and waste shipment, operates the waste tracking system, supports all tiers of government with helpdesks and drawing up policies.

Consultants

Internationally well-known are Dutch consultancies like Arcadis, DHV, Grontmij, Royal Haskoning and Tauw who are among the European largest companies with extensive expertise in (feasibility) studies and designing waste facilities.

ICT systems

Dutch companies like GMT (Clear) and NMPO (Vista) offer ict-tools for companies, local and national authorities in the Netherlands and abroad for optimizing collection routing and maintenance of public space. Decistor offers consultancy and software for design and operations management of recycling.

Treatment of hazardous waste and contaminated soil and sludge

Afalstoffen Terminal Moerdijk. ATM treats different waste streams: contaminated soil (>1 mln tons/y), sludge, hazardous waste (paints) and liquid waste (tanker cleaning) in a fully integrated plant with different techniques pyrolises, rotary kiln and water treatment plant .

Road sweepers and city cleaning

Ravo produces top segment street sweepers which are operating from Amsterdam to Rome and Cologne to Barcelona.

Recycling domestic equipment

ATN Environmental Systems and RBP recycling.

EPR

EPR recovery organizations have been set up in the nineties to deal with the different product streams. Government intervened in such a way that collective schemes had to be implemented for consumer waste.

Contrary to other countries, the Netherlands has one recovery organization for each waste stream (instead of several): Car recycling is organized by ARN, recycling of e-waste by Wecycle, collection/recycling of Packaging waste, including plastics by Nedvang (recycling) , collection/recycling of Batteries by Stibat. The recovery organizations are in fact chain managers; they organize and monitor the whole system by contracting out all operation (collection, recycling).

Energy from Waste

Only residual waste that cannot be recycled is incinerated and will generate electricity and steam (also for district heating). Dutch plants are very innovative and are state of the art. That means that there is no risk for dioxin emissions and that they meet high energy efficiency criteria (87% of the Dutch capacity meets the European R1 criteria), which means the facility is recognized as an energy-recovery operation.

Vision for the future

The sectoral waste policy has brought many benefits, and is still necessary, but limitations of present policies are becoming clear. There are few additional gains to reach in traditional waste management policy in the Netherlands. Therefore it becomes imperative to think outside the box and come up with new and creative approaches.

We should bear in mind that the environmental impact generated by current EU/NL patterns of resource use is too high; in other words our ecological footprint is too high. Scarcity in itself has become evident, while we still face an increasing demand for materials (in developed and developing countries).

Therefore, a shift is made from waste policy to materials and supply chains policy: a management of materials that is environmentally friendly, fair and with a secured supply.

Part of our vision is a so called “trias materialis”, which means: replace, reduce, recycle - a kind of order of preference:

- 1) try to substitute high impact materials
- 2) use materials more efficiently
- 3) close the cycle of what you use to minimize the impact (C2C)

This new policy will provide new opportunities for innovation, business-cases and new (international) coalitions.

In this new vision, the Netherlands could be a European hub for the high-grade recycling of materials and products. A plan for a so called “materials roundabout” enjoys widespread support, while the Dutch waste sector gears up to join the roundabout. The Dutch waste sector is ready and prepared to take a leading role in the materials roundabout and waste companies are already manoeuvring to get in the right lane and up to speed.

The Netherlands is the obvious European location as it is the European leader in waste management. The Netherlands already manages to recycle more than 80% of its waste and Dutch companies realize that further environmental gains will come from joint efforts to make the whole product chain more sustainable. Innovative combinations of good waste management and eco-design will raise the country's competitiveness. The whole world can enjoy the benefits of our innovations.

For more information please contact



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Company Profiles

AFVALZORG



In the Netherlands **Afvalzorg** is the most specialised company for the design, operation, management, follow-up and final landscaping of landfill sites. We provide support to government bodies and commercial companies in their approach to landfill issues.

Activities with regard to landfill sites include design, construction and operation as well as monitoring and aftercare. Also the redevelopment of landfill sites into new landscapes plays a major role. Further we provide our expertise in the development of innovative projects and also for consultancy and collaboration regarding every aspect of the above mentioned.

Innovation

We are constantly busy with new and innovative waste disposal technologies and new landfill techniques, both nationally and internationally. Afvalzorg is dedicated to materialise the conceptual framework of sustainable landfilling with the aim that future landfills do no longer pose a threat, but offer opportunities.

Knowledge and experience

Disposal of wastes, while not in itself desirable, is nonetheless necessary. Carried out carefully and with the appropriate expertise, the burden on the environment can be reduced to a minimum. Our organisation's knowledge and experience can be a source of added value to many authorities, municipalities and commercial companies in- and outside the Netherlands. For that reason, the dissemination of specific knowledge regarding landfill in countries abroad constitutes one of the main thrusts of our sustainability policy.

To be able to employ our knowledge in the Netherlands as well as abroad, we are a member of the Netherlands Waste Management Partnership (NWMP).

Please read more on: www.afvalzorg.nl
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ARN is the Dutch centre of expertise for recycling in the mobility sector. It has managed the recycling chains in the sector for 15 years and has grown into an expert in the field of recycling and chain management. An important aspect of its role as a centre of expertise is to share the knowledge it possesses. ARN uses its expertise to advise companies and public authorities in the Netherlands and abroad on a variety of issues relating to sustainability.

ARN's expertise encompasses three areas of specialization:

- Recycling: ARN develops environmentally sound and economically feasible methods of meeting the targets for recycling;
- Chain management: ARN monitors, coordinates and supervises the recycling chain;
- Knowledge sharing: ARN gathers and actively shares knowledge concerning recycling and sustainability;

ARN Advisory is the consulting branch of the ARN group and is specialized in projects related to recycling, sustainability and mobility.

The main fields of expertise are:

- Recycling chain management;
- Modeling & footprinting;
- Recycling technology;
- Legislation & compliance.

Projects carried out in the last years are:

- Design of a national scrapping scheme for old cars in the Netherlands (assignment for the Dutch Government);
- National recycling system for mopeds and scooters (assignment for producers association);
- Strategic advice on legal compliance with ship recycling laws (assignment for international superyacht builders association);
- Assistance on national ELV treatment and recycling trial in Ireland (Environmental Protection Agency, Government of Ireland);
- Advice on car recycling and extended producer responsibility (EPR) in Turkey (assignment for Dutch and Turkish Governments and businesses).

ARN

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ATN Environmental Systems is manufacturer of:

- CFC degassing systems
- Refrigerator recycling systems (degassing a fridge in 1 minute)
- CFC cleaning systems (reuse of cooling gas)
- Gas treatment plants (reduction of costs)
- Television recycling systems (separating valuable glass)
- Flat screen separation systems (avoiding workers coming in touch with the hazardous mercury)
- NH₃ (ammonia) draw-off systems (avoiding pollution of the environment)

As a small but highly specialized manufacturer of equipment and installations for the recycling of domestic and industrial electric and electronic equipment we supply our customers worldwide. Located in the more quiet northern part of Holland we find our way into the world. Our main target is taking the recycling of the mentioned goods on the highest possible level. Ongoing innovation, communication with the end-users of our product guarantees the highest possible level. More than 25 years of experience is a good back-up for the young people that are trained in our company. Efficient machines and plants means not only a low level of energy consumption but also an efficient use of human resources. People should work under good conditions in order to achieve a consistent and high production.

We would like to come in contact with companies in Canada that are working in the field of recycling of domestic and industrial waste. More precise, companies that are already recycling these goods or intend to do that in the future.

ATN Environmental Systems

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ATM – For a cleaner world

Waste processing

ATM situated at Moerdijk in The Netherlands owns a number of different processing plants in which it is able to treat a wide variety of (hazardous) waste. The treatment facility has a total capacity of 1.8 million mtns. Hazardous waste can be divided into 3 categories:

- Soil and other materials alike, such as tar asphalt
- Packed Chemical waste and in bulk
- Waste water and (oily) sludge

Waste is accepted on the basis of the European Waste Codes (EWC) for which ATM holds a licence and based on the concentration of the contamination present.

Thermal cleaning

ATM owns a thermal cleaning installation consisting of a rotating drum that is 53 metres long and 4 metres wide. The drum operates at a high temperature, enabling organic contamination to be separated from the soil, and be completely destroyed in the after burner. The gas scrubbing system removes dust and inorganic components. After treatment the clean soil will be used as an official certified building material. The capacity of the installation is 1.2 million mtns.

Pyrolysis

ATM has built a pyrolysis plant (known as the “pyro”) to process hazardous waste. Waste is pyrolysed by heating it up to a high temperature in the presence of a minimum quantity of oxygen. The capacity of the installation is 60.000 mtns.

Waste water

ATM cleans organic contaminated waste water, mainly coming from the refinery and chemical industry, but also from Marpol related activities. After removing the floating particles the waste water is purified in our membrane reactors. The capacity of the installation is 650.000 mtns.

Sludge treatment

ATM operates various decanting systems for treatment of sludges (mainly oil and chemical sludges). After decanting the water is treated via the membrane filtration, the sludge will be pyrolysed and the oil is used as a fuel for the soilcleaning facility. The capacity of the installations is 80.000 mtns.

Ship cleaning

The quay at ATM includes facilities to process 7 vessels at a time. On ATM jetty we accept as well approx. 150.000 mtns of waste water coming from Marpol related business.

International

ATM processes waste from all over the world, not only from European countries, also from countries in South America, Asia and Africa.

Laboratory

In order to assist in the processing of waste, control, research and price setting, ATM owns a well-equipped company laboratory. This laboratory is unique because it is able to analyse many different categories of waste for several types of treatment.

For more detailed information, please visit our website at www.atmmoerdijk.nl

ATM

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Bakkermagnetics BV is specialized supplier / manufacturer of magnetic systems for the recuperation of ferrous and non-ferrous metals from material streams.

Our systems are used to take out the metals in the recycling, recuperation and the biofuel industry.

Bakkermagnetics is able to provide a unique combination of products, expertise and experience in the field of applied magnetism. From the initial idea right through to the final product, our efficient method of working means that integrated quality is guaranteed.

At Bakkermagnetics, we are working continually in order to expand and develop our technical facilities, so that your processes will run more effectively and more quickly, whether you are seeking simple magnets, complete state-of-the art magnetic systems or tailor-made solutions.

We are able to supply magnetic materials and components in all main groups (Ceramic, Neodymium, Samarium Cobalt and ALNiCo) in any format you may require for waste separation and for other aims. We also deliver hi-tech applications in the automotive, electronics, mechanics, care, energy, semi-conductor and medical industries.

One of the principal areas of activities is the development of tailor-made systems for the separation of ferrous and even non-ferrous metals. We provide effective solutions for the waste processing and recycling sectors, as well as for the food, metal and chemical industries.

It goes without saying that our products comply with the highest standards. Our quality assurance systems are certified to ISO-9001 and we are working continually in order to improve our products and processes.

Bakkermagnetics has supplied several magnetic separation systems within the recycling industry in Canada and USA.

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Mission Statement

Royal Dutch Bammens is a leading and innovative partner in the production and sales of metal waste collection systems in Europe and beyond.

Company profile

Royal Dutch Bammens in the Netherlands is market leader in development, production and sales of waste collection systems made of steel. Since its foundation in 1850, Royal Dutch Bammens has continuously strived for innovative solutions to environmental problems. Sustainability, durability and ease of operation are embedded in advanced products and sophisticated production methods. Growing public awareness and active government policies ensure constant development in the market of environmental care. Steel waste containers from Royal Dutch Bammens are galvanised to ensure a long lifetime and can be fully recycled.

The increasing influence of city and landscape architects on the urban environment emphasises the importance of design of street furniture. Royal Dutch Bammens' products and market development policies are driven by these impulses. Besides litter bins and wheelie bins, the assortment of Royal Dutch Bammens contains a range of semi-underground and underground waste container systems for separated collection of different waste fractions. This range has a wide variety of attractive and ergonomic designed insert units. An extensive line of electronic access control devices completes the versatility and efficiency of our systems.

Overall, waste collections products of Royal Dutch Bammens are developed and built considering the environment, the whole chain of waste collection and recycling, never forgetting the user nor the waste collector.

Royal Dutch Bammens today

- 200 dedicated employees
- Strong Research & Development
- Focus on waste collection
- Leading position in the home market
- Fast growing Export business

Royal Dutch Bammens would like to get in touch with

- Partners willing to commit themselves to mission and products of Royal Dutch Bammens
- Partners who are willing to work together with a traditional company with a modern approach
- Companies that are willing to discuss with us how to change waste collection in North America

Royal Dutch Bammens

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BOA Recycling Equipment



BOA Recycling Equipment B.V.

BOA provides solutions, which ensure that our customers can enjoy long-term maximum continuity and productivity.

The products of BOA offer solutions in the following fields:

- Household Waste
- Packaging Waste
- Industrial and Commercial Waste
- Waste paper & Cardboard
- Production waste general
- Production Waste Paper & Cardboard

To serve the above markets, BOA supplies:

- Balers from 43 tons to 225 tons pressure force. BOA can deliver shear balers, mono flap balers and double flap balers with both steel and plastic wiring.
- Bag openers and bale breakers
- Transport solutions and bunker solutions
- Reel splitters
- Shredders for paper and cardboard
- Sorting lines

BOA disposes of operational references in Canada in amongst others cardboard factories. A list can be supplied on demand. BOA is not working with a fixed partner in Canada but is open to potential interested companies.

BOA Recycling Equipment

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Bollegraaf
RECYCLING SOLUTIONS



Bollegraaf Recycling Solutions provides worldwide turnkey solutions for all sorts of recyclable materials. We advise, design, develop, manufacture, install and service total integrated recycling installation. Bollegraaf supplies recycling machinery to the waste paper industry, collectors of industrial waste & household waste and to municipalities all over the world.

In Canada and the USA Van Dyk Baler Corp. specializes in the design, manufacturing and servicing of Bollegraaf Balers, dual & single stream systems, and MSW sorting systems.

Why choose us?

Overall processing costs per ton are lowest in the industry due to:

- High capacity
- Superior material separation using LUBO Screen Technology
- Lowest labor cost per ton (up to 4 tons per man hour!)

Other key factors:

- Acknowledged leader in Optical Sorting capabilities
- Full turnkey support by certified Factory Trained Technicians
- Multi-million dollar spare parts warehouse in North America
- 25 Van Dyk Baler Service Technicians based in North America

Key technologies include: high-capacity pre-press flap Balers, Drum Feeders, ONP Screens, Paper Magnets, Paper Spikes, TITECH Optical Sorting and Shredders. Regional Sales Managers will provide custom designed solutions for each application.

Bollegraaf Recycling Solutions

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Christiaens Group: "tailored waste solutions, based on proven tunnel technology"

Christiaens Group has over 30 years of waste treatment experience by developing, engineering, building and controlling in-vessel composting- and high- and low solids anaerobic digestion plants. Our experience has led to numerous profitable operating facilities in almost all parts of the world. Most rated qualities are our flexibility in combination with the fact that we produce almost every high quality item ourselves.

The past few years Christiaens Group was successful in tendering for designing and building several organic waste composting facilities in Canada. The City of Hamilton, for example, set an aggressive goal by demanding a 65% diversion of their green- and organic waste from landfilling. Therefore our Canadian partner Maple Reinders, together with the City of Hamilton and our Dutch project partner Van Kaathoven Group, executed a benchmark for a "Design/Build/Operate"-project with the aim to implement a new centralized compost facility as part of the City's ambitious waste management plan. The state-of-the-art in-vessel composting facility now processes 60.000 metric tonnes of organic waste per year. The facility includes an administration building, weigh station, receiving area, Dutch process equipment and overhead tunnel filling system, 16 concrete composting tunnels with aerated spigot floors, curing storage area and biofilter. This successful team cooperation between Canadian and Dutch companies lead to the winning of the Waste Management Partnership Awards, presented by the Ontario Waste Management Association.

Increasing attention towards energy from waste will expand the Canadian organic waste treatment market. For certain waste streams, the CO₂ producing composting process can be replaced by anaerobic digestion, with which electricity and heat is generated. This is done in a Combined Heat and Power unit by using the produced biogas. Christiaens acknowledges this extension of technologies and thinks both systems work complementary to each other. This valuable combination reduces the carbon footprint while keeping the similar compost output.

Benefits of our applied proven technologies include a compact facility with all operations under one roof and therewith all weather variables eliminated. A volume reduction of at least 40-50% in a quick composting time with no odour issues.

Contactperson: Frank Geerts

Christiaens Group

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Transform waste management into urban mining

The challenge of the recycling industry is to produce raw materials that can compete on price and quality with virgin materials. These secondary raw materials -solid bulk products- are used as feedstock for the production of energy, building materials or new metals. The accelerating development of this industry leads to a growing demand for unambiguous quality description of materials in contracts, smart design of recycling facilities and flexible operations in order to meet specifications.

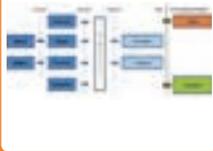
We offer consultancy and software support for design, operations management and contract definition of this 'urban mining'. In partnership with Resource Engineering of Delft University of Technology we developed an approach and a software simulation tool: Decistor SPS (Solids Processing Simulator). Other universities, like the Sapienza University of Rome and the Technical University of Denmark and clients provide knowledge too.

The software and its growing libraries incorporate 25 years of theoretical and practical knowledge in the field of waste handling, liberation and separation.

Decistor is aiming to get in contact with possible clients in Canada who want to optimize their added value in the urban mining chain as well as with equipment suppliers and research institutes who want to exchange professional knowledge. We are aiming to establish a Canadian based office within a few years.

How it works:

Matlib is a library of materials properties. The UOM's are available unit operation models, representing process equipment. The waste is represented by Heaps, described as a mixture of particles. Recycling facilities are designed in flowcharts. The Scheduler links heaps to a flowchart. The technical constraints as well as the costs and revenues are laid down in contracts. The Simulator creates Technical output like the composition of the generated fractions and Economical output, the value of the different fractions. Ecology and Safety parameters are no integrated part of SPS. Instead, Decistor has found partners to add these aspects. The output of SPS can be linked with their tools.





Use waste heat of for drying biomass

Dorset Green Machines is producer of belt dryers from 1998 and aircleaning systems from 1995.

This unique combination gives Dorset Green Machines the opportunity to deliver complete turnkey solutions for processing of sewage sludge, poultry manure, digestate from biogas plants, wood products, waste residues like fluff etc.

Dorset is specializes in the use of waste heat from electricity production by CHP or ORC.

Mostly heat is available as hot water and it's turned into hot air for drying. The air after the drying process is often polluted with dust, smell or/and ammonia.

Dorset produces either chemical or biological air scrubbers to clean the exhaust air in order to submit to the regulations of (local) government.

Mean while Dorset has been world leading in belt drying systems. The company employees 110 people and turnover is € 25.000.000,-. Mainly Europe is now the playground. Turkey, Middle East and US are growing markets for coming years.

Experience in Canada and / or U.S.:

Quebec drying from 2008, Wisconsin from September 2011

Required activities / partners in Canada:

Companies involved in biogas and wastewater treatment

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Europe Recycling Equipment BV is a Dutch based company that imports and develops recycling & forestry equipment for the European market.

We can offer a complete line of machines in order to shred, chip, cut, screen, crush, mix and sort wood, green waste, tyres, plastic and other recyclable material.

Our own European Shredder line will be promoted in Canada We can deliver total solutions, Tire-recycling line, plastic-Washing-line, etc. Also we can deliver separate Shredder, Granulators, Crushers, etc. Also we have developed a totally new chipper line, which we are promoting in Canada at the moment: the Europe Chippers.

For example the C-1175 Europe Chipper. This chipper very much responds to the current demands of the professional chipping industry.

While this market is changing rapidly we felt the need to develop a chipper that corresponds best to the current demands of the professional chipping industry which results in the need for changes and the application of the latest techniques. For example the rising request for high quality biofuel chips has caused a large change in the required chip quality demands.

In Canada we are looking for a serious partner/companies for our Europe Shredder and Chippers.



Europe Recycling Equipment

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GICOM Tunnel composting Systems; for problem-free composting of organics and biological drying of Municipal Solid Waste

Over 50% of people's waste stream in the Western world exist out of organic material. In many Canadian councils this material is regarded as a waste stream indeed, and is still dumped into landfills. Dumping organic waste causes all sorts of unfriendly side effects, varying from harmful gasses, polluted water, CO₂ releases, pests and diseases, and odour. Moreover the organic compounds of today's waste stream are for the major part a very valuable resource for farming, gardening and landscaping. Throwing it away in a landfill is a waste indeed.

Since the late 80's Dutch based company GICOM developed an industrial scaled composting system in which most of these waste streams can be re-used; the tunnel composting system. Just like in nature, organic material is reformatted by bacteria's into a compost. The highly controlled environment in tunnels accelerate this process in an enclosed situation, not harmful for employees, neighbours, other people, animals, machinery, and of course, the environment.

GICOM has been building over 60 Tunnel composting facilities world-wide. Under highly controlled climate conditions organic waste like kitchenwaste, biowaste, cateringwaste, greenwaste, manure, digested residue, Municipal Solid Waste (MSW), abattoir waste or any combination of the above, is efficiently broken down and transformed to a marketable end product. The climate in a tunnel composting system accelerates this process, leading to an efficient and robust process.

The picture shows the GICOM designed and installed facility at John Wade Group in the UK. With bio-drying tunnels Municipal Solid waste is dried, so it can be sorted out easily. Out of 1 ton householdwaste, 1/3 is evaporated, 1/3 is recycled, by which the recycled materials are sold, and 1/3 is left as a residue. In this last 1/3 fraction there is still building material and high caloric matter available. A sustainable alternative for both incineration and landfill.

In Canada GICOM is looking for Councils or Waste management companies that want to build a facility for treatment of waste containing organics with an experienced and reliable partner.

GICOM b.v.
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GlobalMatching



Global Matching specialises in Export promotion of Dutch environmental equipment and technology. Organizing trade missions, participations at exhibitions and individual matchmaking.

In the period 2007 – 2011 Trudi van Spankeren organized 8 environmental trade missions to Canada. She also organizes matchmaking for inbound trade missions.

In the last 12 years she built up an excellent track record and an extended network in the environmental technology field. Until 2008 she was sector manager of Vereniging van Leveranciers van Milieutechnologie. (VLM) (Association of Suppliers of Environmental Technology, The Netherlands). See for more information the profile of VLM in this booklet . She is now Export Manager of VLM.

Profile of Commercial Contactes wanted

- Environmental Industry Associations
- Ministries of Environment or Trade

Global Matching

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Knapzak Benelux is a Dutch based company with a track record of more than 15 years as supplier of the collection and recycling industry. Knapzak is producing a broad variety of bag holders and (perforated) bags for selective decentralised collection of (industrial) plastic packaging waste.

Knapzak Plastic Collection System consist of a transparent Knapzak made of plastic (LD/MDPE) bags that are hung in the Knapzak holder, a robust tubular steel frame.

Our systems are used in the following industry sectors: distribution warehouse operations, automotive industry, construction industry, agric/food production and processing plants, wholesalers, furniture manufacturers, electronic distribution centres, plastic bottle recycling depots, food and beverage distribution and retail chains/centres and any industrial / office operations that generates large volumes of plastic material waste streams.

The Knapzak System can be used in all places (work places) where large amount of plastic foil, EPS or other synthetic packaging materials are produced or waste is generated.

Your waste hauler or paper/cardboard collector will take away Knapzacks for you at "low" rates. Plastic foil, thanks to the perforations in the bags, can be transported in a compressed state, together with paper/cardboard, in a crusher or a compacting container. You thus get rid of two waste flows at the same time. Knapzak and Knapzak holder together make the ideal duo for the adequate collection of synthetic waste flows with the following benefits:

- Clean and fast decentralized collection;
- Optimal density of plastic foil in the Knapzak;
- Simple, inexpensive removal of your choice;
- Small investment and low costs as well for waste haulers as their clients.

Knapzak is promoting its products on the Canadian market for about 2 years and is represented in Canada by:

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We are looking for waste Haulers, redistributors, big industries, retail chains, distribution platforms etc who wants to optimize and reevaluate their plastic waste flows.

Knapzak Benelux

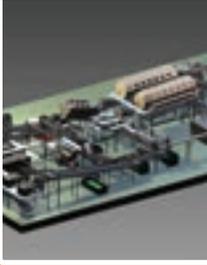
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MF Emmen B.V. is one of Europe's key players in the field of engineering and building recycling plants for more than 15 years. It's a traditional Machine Factory (MF) and has its roots in the bridge building industry and machines building industry of any kind and all sizes. In the nineties they started developing recycling technology and entered this industry successfully. MF Emmen B.V. has been playing an important role in the development of recycling technology since the early days after the waste treatment policy started to change.

MF Emmen B.V. produces one of the best drum screens and conveyors themselves, designed to last with limited maintenance and with the highest up-time. With our quality standard we are confident enough to give a mechanical warrantee of five year on our drum screen body.

The MF Emmen B.V. components are combined with other leading brand components, such as shredders, wind-shifters, infrared detection systems, ferro and non-ferro separation systems, etc. to put together a high-quality recycling plant.

Their engineers belong to Europe's best recycling plant designers and builders with several references all over Europe. Plants have been built in amongst others the Netherlands, United Kingdom, Ireland, Germany and Italy. They have built recycling installations in each segment of waste recycling with capacities varying from 20 Tons/hour input up to 60 Tons/hour input.

MF Emmen B.V. also has its first reference in Canada and they expect to expand their business in Canada in the coming years.

What MF Emmen B.V. can do for you? They can help you to find a custom made solution for your waste. Whether it's Municipal Solid Waste, Industrial Waste, Construction & Demolition Waste, Electronic Waste or Compost, they have the knowhow and experience to separate it into marketable fractions. A waste separation plant built by MF Emmen B.V. is designed to be both profitable and social justified.

MF Emmen B.V.

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Growing environmental awareness makes responsible waste management indispensable. Anticipating this development a new system for landfill gas (LFG) extraction was introduced in 2009: Multriwell®.

The Multriwell system

The Multriwell solution for landfills consists of the Multriwell® horizontal and vertical gas extraction system combined with a Trisoplast® mineral capping system. This cost effective and superior technology allows for controlled and highly efficient landfill gas extraction.

Main properties

The patented Multriwell technology was introduced and first applied in 2009. Flexible vertical Multriwells are pressed into the waste body in small grids, with horizontal Multriwells installed on top for gas transportation to a technical unit for conversion into renewable energy. The grid pattern is a very important feature of the system, as its high density activates a bio-reaction within the waste resulting in a much higher gas produce.

The Trisoplast capping that is installed on top of the Multriwell construction consists of an approximately seven centimeter thick mineral layer that is up to 1,000 times less permeable for fluids and gasses than one meter of clay. It prevents the loss of gas into open air.

Practical elaboration sites show that the LFG collecting performance of the Multriwell system is much better than traditional gas extraction systems. LFG extraction from the waste triples or quadruples if the Multriwell system is used, resulting in faster and more homogeneous settlement and faster achievement of landfill inertia. Moreover the Multriwell system requires a lower investment for installation and aftercare compared to traditional gas wells.

The North American market

As environmental protection is becoming more and more important the North American market has enormous potential. Awareness is increasing that regardless of how sparsely populated contamination is a threat to nature, particularly for future generations. Despite strong regional differences the level of environmental protection with regards to landfilling is increasing at present.

We are searching for business partners involved in landfilling or carbon trade who appreciate the high potential of Multriwell, both financially and environmentally, and are able to market our product.

Multriwell

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With more than 65 years experience, **Nihot** is a proven market leader in the supply of specialist air separation Technologies.

We are active in numerous projects for the separation and segregation of materials within the waste processing sector.

Controlled air is one of the core technologies of Nihot. It is versatile, offers greater flexibility than mechanical separation technologies and it guarantees high separation efficiency.

Our product range includes Windshifters, Drum Separators, Rotary Air Separators, Film Vacuum Systems and Industrial Dust Suppression.

References in North America:

- Zanker Road, San Jose, CA, SDS 1000, C&D
- American Waste, Kalkaska, MI, SDS 1200, MSW
- Bestway Recycling, Los Angeles, CA, SDS 500-C, Glass Clean up
- Bulk Handling Syst. Eugene, OR, SDS 500- C, Mobile Test Unit
- Greenwaste, San Jose, CA, SDS 1400, MSW
- Bulk Handling Syst. Eugene, OR, WS-V 500, Glass
- St Lucie County, St Lucie, WS-S 1000, C&I
- P & N, North Bergen, WS-S 1200, C&D + C&I
- Chesapeake Chesapeake, VA, WS-S 1200, C&D

References in Canada:

- Sims, Mississauga, ON, SDS 650-C, WEEE
- WMI Toronto, Toronto, CA, WS-S 1000, Commingled

References in Mexico:

- Suga Bestamix, Juarez, Mex. SDS 2000, MSW

Nihot is looking for agents/ distributors in the Canadian market. Our Canadian partner should be dealing with, and be capable of, the marketing, selling and servicing of our equipment range in Canada.

Our customers would be local and International System Integrators, Original Equipment Manufacturers (OEM's), Recycling companies both private and government owned.

Nihot is part of Stibbe Environmental Division in Laren (NL), which also includes BOA Recycling Equipment B.V. in Enschede (NL) and Vandenbroek Thermal Processing B.V. in Barneveld (NL). BOA is supplying Balers, Bag openers and Transport solution.

Vandenbroek is supplying Trommel dryers and Belt dryers.

**Nihot Recycling
Technology**

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Since longtime the Netherlands is a country known for its advanced and successful waste management solutions. The Netherlands leads the way in Europe with waste management: 83 % of the total waste in the Netherlands is recycled, 14% incinerated with energy recovery and only 3% is land filled (EU average is 40% landfill).

The Dutch ministry of Infrastructure and the Environment is among other things responsible for the national waste management policy and the National Waste Management Plan (NWMP). Every administrative body must take account of the National Waste Management Plan when exercising powers relating to waste. This will add to clarity and helps to ensure uniform licensing and enforcement for waste treatment and processing facilities in the Netherlands. An important part of the plan are the minimum standards. A minimum standard gives the minimum level of quality of the treatment or processing of a specific waste or category of waste and is intended to prevent waste being treated or processed

Implementing government policy on innovation and environmental issues like energy, waste and spatial planning is the core competence of NL Agency (agency of the Ministry of Economic Affairs, Agriculture and Innovation). NL Agency's waste management department is assisting Dutch and foreign stakeholders, including governments, trade associations and knowledge institutes with their waste treatment issues. Their advice includes: legislation, including enforcement as well as monitoring waste flows and progress in developments. Best practices in waste management is one of their key experiences. The Agency has a broad network of Dutch companies, knowledge institutes, research institutes, research centres, trade associations and governmental bodies.

The Ministry of Economic Affairs, Agriculture and Innovation together with NL Agency promotes sustainable development and innovation and a transition from waste management into sustainable material management. Therefore we support and facilitate Dutch companies and Enterprises to bring their expertise to a higher level.

NL Agency

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From Concept to installation...

N.M. Heilig B.V. builds durable installations and components. High level theoretical knowledge in combination with years of practical experience guarantee high quality technical products

N.M. Heilig has acquired a name as a specialist in the design and construction of elaborate installations. A lot of installations are supplied as turnkey solutions. In addition, the building of components is an important aspect of our production program.

Projects:

- Coal, sieving, drying and washing installations
- Sand and gravel installations
- Recycling and waste processing
- Soil conditioning installations
- Crushing and sieving installations

Components include:

- A variety of transport systems
- Bunkers and silos
- Dosing machines
- Windshifters and air separators
- Wash-drums
- Ferro/non-ferro separation
- Sieving
- Drum screens
- Steel constructions
- Ship loading and unloading systems

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N.M. Heilig

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The Netherlands Waste Management Partnership, abbreviated as NWMP, was established in November 2008. The NWMP is a public-private partnership, and comprises the entire chain of companies in the waste management sector.

The NWMP aims to promote cooperation among companies in the waste management sector and between these companies and the Dutch government. By pooling knowledge, skills and efforts, the Dutch Waste Management Sector has much to offer to its clients on foreign markets. Besides the facilitation of export opportunities, the awareness for sustainable solutions and a cleaner environment is an other main objective of the partnership.

The NWMP hosts three types of members

Dutch suppliers of environmental equipment in waste management

- Separation / sorting
- Composting / digestion
- Containers / collection vehicles
- Land filling
- ICT

Consultancy:

Waste management Operators

Apart from supplying equipment and consultancy, the NWMP hosts operators of waste facilities with international interest and ambition, who like to share their knowledge and look for investment opportunities.

Service providers

Producers responsibility for many products like End of life vehicles, Waste of electric and electronic equipment, batteries and accumulators, car tyres etc. has been introduced in the 90 's and has been the model for the EU regulations. The NWMP hosts service providers of producers responsibility for these waste streams: ARN (Car Recycling Netherlands), NVMP (Netherlands Association for Metalelectrical appliances).

The strengths of NWMP:

- Close cooperation between public and private sectors
- Single point of contact for all international partners
- 'One stop shop' for embassies and consulates of the Kingdom of the Netherlands
- All links in the waste chain are represented
- Integrated solutions: legislation, enforcement and practical aspects
- Focus on high potential markets
- Extensive market information and export channels
- Joint export delegations and trade fair visits
- Local knowledge and networks.

Contact us

The NWMP welcomes all questions and requests from either public or private parties. Please contact our secretariat and we will assist you to find a proper answer to your inquiry.

NWMP

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Orgaworld (www.orgaworld.com) is a innovative and fast growing International organization in the field of Organic Waste Processing. Its focus is to process Source Separated Organics, ICI waste, Residential Waste, MSW and waste water into valuable end-uses e.g. energy, fuels and compost products. Orgaworld is using its proprietary technologies: MBT, wet and dry anaerobic digestion, tunnel bio-stabilization, aerobic (tunnel) composting, waste water treatment. Orgaworld forms part of Shanks Group Plc. (www.shanks.co.uk). Orgaworld designs, builds, owns and operates all of its facilities in the Netherlands, UK and Canada and is seeking to rapidly further expand in its current markets as well as in the US, and Asia

The company currently is processing > 1,4 mio mio tonnes of organic waste annually.

Please contact

Ward Janssens
Director International Business

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RAVO: The inventor

Located close to Amsterdam, RAVO has been producing street sweepers for over 45 years. RAVO (part of the family owned FAYAT Group to which famous brands like BOMAG belong) is the proud inventor of the compact vacuum street sweeper. Many years ago this concept was launched and has been improved ever since: with the RAVO 5-Series as result. A sweeper with the highest proven uptime against the lowest lifetime costs in the market. A world class sweeper designed and engineered with the input of our most important stakeholders; Rome, Helsinki, Berlin, Bangkok, Madrid, Bordeaux, Barcelona, Amsterdam, or in short: Our customers!

With a worldwide market share in the compact segment of 41% in 2010 and proud winner of the Berlin sweeping test (with a proven uptime of over 99% over 12 months testing) RAVO keeps on setting new standards.

RAVO: Your preferred partner

At RAVO we listen to your needs and your ideas. Together with our dedicated, trained distributors we are there to help you to exceed your expectations and to overcome all your challenges. Since we know that the condition that your equipment must be able to work 24/7 is not a premium but a basic condition for you. To proof our trust in the quality of our product we offer a standard warranty of two years or 2000 hours on every sweeper that leaves our factory.

Everyone at RAVO has one aim only: to please the customers. From our product quality to our outstanding after-sales service, customers can always rely on us. We go that extra mile to serve them better.

RAVO: Commitment to a green future

But our commitment goes further, we work together with universities and industry professionals to create a sustainable sweeper. We are there to help you to achieve your green goals, quicker than you thought you ever could. From the materials we use, the workplace we offer, to the emissions that our sweepers exhaust, sustainability is always a priority.

Contact

Cees van der Put, Export Sales Manager RAVO
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TripleE™

fridge recycling
technology



Triple E™ a new level in best available technology

Recycling refrigerators helps the planet ahead – taking back and eradicating CFC-containing coolants and blowgas helps stop the depletion of the ozone layer. Today's fridge recycling is more than just CFC recovery! Dutch RBPrecycling's innovative TripleE concept is a state of the art approach towards today's fridge recycling challenges.

Emission free

Standard fridge recycling technology recovers only 80% of the gasses from the processed units. The other 20% is emitted during daily operation and during process interruption. Yearly the average plant fails to collect 10 to 20 tons of fridge gasses which are emitted into the atmosphere – jeopardizing the initial goals of fridge recycling! TripleE lines are designed to avoid any emission of fridge gas under any circumstances!

Explosion safe.

Today over 50% of the recycled fridges are post-CFC era and carry isobutane and cyclopentane, two gasses with high energy potential. Processing these fridges in standard shredders causes these gasses to mix with air, forming a highly explosive mixture. TripleE lines are equipped with Process Atmosphere Control keeping inside shredder gas conditions below the Lower Explosion Level ruling out all danger of explosions and fire.

Energy Smart

TripleE technology collects isobutane and cyclopentane separately from CFC's thus enabling the deployment of their energy potential. The gasses are delivered in purities in which they can be used – without further treatment – to fuel generator sets.

TripleE benefits

- Substantial cost savings on energy and fridge gas processing
- High efficiency processing due to dedicated process design
- Meeting all today's and future standards for gas emission and safety

RBPrecycling

is a Dutch company in the field of recycling and related. Services range from research and feasibility studies to the delivery of turn-key lines. Results are gained from broad experience with shopfloor practice and from out-of-the box thinking, all founded on a solid knowledge base. RBP uses a sound network of specialized suppliers, all leading in their own specific field.

RBPrecycling is owner of the TripleE™ concept for fridge recycling – see www.rbptriplee.nl for more details.

Contactpersoon:

Rogier de Bode - managing director

RBPrecycling

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REDOX Recycling Technology is a worldwide operating supplier of recycling systems, based in The Netherlands.

A REDOX sorting line might include various units like deposit hoppers, conveyors, shredders, trommel screens, air separators, ferro sorters, stretch deck screens, non-ferro sorters and sorting cabins.

REDOX has made a very clear choice to act as a total project supplier with related engineering and project management solutions.

(In cooperation with REDOX Water Technology, REDOX supplies industrial waste water treatment equipment as well)

As a result of having our own manufacturing facilities for both recycling equipment (www.redox-rt.nl) as waste water treatment equipment (www.redox-wt.nl), REDOX can manage all projects and maintenance with short delivery times worldwide.

The engineering and production of material recovery facilities for solid waste (C&D, C&I, MSW) is done by REDOX without any concession to reliability and durability.

**REDOX Recycling
Technology**

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Royal Haskoning, founded in 1881 in the Netherlands, is an independent international consultancy with technical roots.

Its consultants, architects and engineers advise on a very wide range of projects relating to spatial planning, infrastructure & transport, architecture & building, building services, industrial installations, project management, water & water management, environment, coasts & rivers, ports and maritime systems.

Private and public sector clients all over the world call on Royal Haskoning for its expertise and experience and because it focuses on the sustainable interaction between people and their environment. The solutions sought and implemented by consultants at Royal Haskoning always go “beyond sustainability”.

Royal Haskoning operates in 17 countries, and has 3900 employees and 57 offices. Our North American office is located in New Orleans, United States of America.

We have been active in the Canadian market and worked together with Canadian consultancy firms. It's our ambition to increase our activities in the Canadian market especially within the field of sustainable waste management, resource management (closing the loop) and the development of waste-to-energy facilities. We have a vast experience in these fields and do accelerate in understanding or preparing the business cases of our Clients.

Our new society with increasing demands for resources (like minerals, oil or gas) requires new ways to deal with our waste and our resources. Royal Haskoning is convinced of the added value of the Cradle to Cradle® concept. The road to this concept offers sustainable and creative solutions to problems that our society faces. We look at different ways to gain return on investment. In this way we contribute to the ecological ambitions of not only our own generation, but that of generations to come.

Contact:

Mr R. (Ronald) de Vries. Director Advisory Group Waste Management and Energy Technology

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Tauw is an independent European consulting and engineering company specialised in the design, improvement and management of the natural environment, built-up environment and infrastructure.

Tauw is an expert and leading company in the field of environmental consultancy, spatial development, civil engineering and the monitoring of environmental quality. A key area of Tauw is Waste Management. In The Netherlands Tauw has been closely involved in all steps of the development that has lead to the current high level of Waste Management. We couple high profile expertise on policy making and legislation with practical solutions for our clients. We assist central and regional authorities to develop policies and legislation. Our expertise and knowledge is of value to those authorities that wish to divert waste from landfills and stimulate recycling.



We assist companies to improve their processes. Tauw has developed a unique method to improve the performance of Energy from Waste plants. We analyse the performance of sorting processes on the basis of sound methods and protocol. These include standards for sampling which Tauw has developed for European standardisation. At current we are for instance closely involved in the recycling of packaging waste. We also cooperate with companies to find new solutions. Tauw developed a unique and patented method to treat incinerator bottom ash.

We assist authorities to develop waste policies and legislation. Our services to local authorities include such issues as biomass for energy, waste collection, optimum waste management and combating street litter.

Tauw likes to team up with consultancy firms in Canada. We think that our expertise, build on decades of waste management in The Netherlands, will be of great value in the still developing Canadian waste management situation. So far, our experiences in North America concern incidental projects. We like to find a structural basis with Canadian colleagues.

Tauw

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Trisoplast Mineral Liners International BV is a rapidly growing company that in the past fifteen years has shown international leadership in environmental protection and structural waterproofing with an innovative sealing material that can confidently be called the modern standard for environmental protection: Trisoplast®.

Trisoplast is a highly effective and durable mineral barrier, existing of more than 99% natural materials. It has become the preferred mineral barrier for landfill and mining applications in an increasing number of countries world-wide. Its simple (on-site) production and processing make Trisoplast suitable for a wide range of other applications including remediation, tailing ponds, industrial sites, tank parks, sludge depots, underground constructions, waterways, dams, ponds et cetera.

The North American market has enormous potential, especially since environmental protection is becoming more and more important. Awareness is increasing that despite of being sparsely populated contamination is a threat to nature, particularly for future generations. In spite of strong regional differences the level of protection with regards to landfilling as well as mining is increasing at present. The former being more regulated by the authorities whereas the latter is more in the hands of the mining industry. The markets for high performance sealing systems outside the two above mentioned have not been looked into by us so far, but we are convinced that potential in other sectors exists.

We are generally looking for partners with experience in the promotion and installation of high performance products used in geotechnical and civil engineering applications. Since the success of our mineral sealing system Trisoplast is based on performance and value for money rather than just price, the marketing and sales is generally done by sufficiently trained sales engineers who understand the needs of the project and can identify and explain the benefits in using a high performance system like Trisoplast. Even if the initial costs for such a system might be higher significant savings can be achieved in the long run as well as a much higher level of environmental protection.

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The Van Kaathoven Group is a Dutch family company in business for over 50 years and has proven itself as an innovative niche player in waste processing and in recycling residual waste flows into new products.

For example, it produces cat litter from organic waste and makes biofuel from food remains in its own in-house facilities. In 2010 Van Kaathoven developed a new collection vehicle with 3 compartments which can collect 2 fractions of recyclable materials and 1 waste fraction at the same time. We help our customers to reduce their waste flows and give them insight into the weight, type and frequency of their waste. The customer pays only for the kilos presented, and not for empty space.

We believe in separating waste at the source and have developed an unpacking factory for supermarket returns whereby we are able to extract organic material from any type of packaging (glass jars, tins, soft and hard foil/tetrapak and we can even separate solids such as peanut butter from the jar). We can then make pure raw materials and/or energy from them. We are increasingly offering our customers added value by assisting them in preventing waste and the unnecessary loss of valuable raw materials and nutrients.

The emphasis here lies on ease of use and sustainability, by using innovative logistical solutions such as those we have implemented in the Restaurant of the Future in Wageningen.

In 1990, as first in the world, Van Kaathoven started composting organic waste in an in-vessel system. In Canada the Van Kaathoven Group is participating in 2 state-of-the-art composting projects in Hamilton and Guelph. Our partnership with City of Hamilton, Maple Reinders, AIM Environmental Group and Christiaens Group received the Ontario/Netherlands Waste Management Partnership Award in 2006.

Van Kaathoven's thinking and way of working is based on local solutions, as well as on the chain philosophy, and will be increasingly focusing on closed recycling loops and working towards **"a world without waste"**. It's a challenge that we gladly wish to take up in collaboration with like-minded partners.

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About VAR

For over 25 years VAR has been making a successful effort to achieve 'Results from Recycling'. For organisations involved in waste processing and recycling - both inside and outside The Netherlands - VAR can be an interesting partner. The proceedings at the VAR facilities, on a 75 hectare area near the Dutch town of Apeldoorn, are followed with keen interest by both domestic and foreign parties. Five divisions take care of separating corporate waste into logical flows, to be processed into compost, biomass, clean surface water, construction materials and sustainable fuels and energy.

VAR Engineering

All installations and techniques employed by VAR have been designed and implemented by the VAR Engineering division. The extensive technical and logistic expertise available within VAR is also made available to third parties. On behalf of governments and fellow waste processors in the Netherlands and abroad, this division is hard at work developing, realising, implementing and optimising waste processing installations. Depending on the wishes of the client, VAR Engineering can be called in on a project basis (for consulting, engineering and/or project management) or to supply a total concept for specific waste processing systems, from supplying the technology right through to logistic design of the installation. Over the past few years, VAR Engineering has undertaken projects in Lebanon, Russia, Germany, Belgium and elsewhere.

VAR translates its experience into practical solutions. We offer our services in all stages of the project.

VAR Engineering supplies the following products and services:

VAR supplies knowhow and technology in the fields of Composting, Anaerobic Digestion, MBT, sorting, landfilling and recycling of building and demolition waste.

Outside the delivery of components or turnkey installation we also supply consultancy like the development of waste treatment strategies and waste treatment plans.

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VAR

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What we do

The VLM aims to create market opportunities both at the home market and abroad for the environmental technology sector. In order to achieve this we maintain a strong network with people and organizations that matter. Much is achieved by national and international cooperation. For members the VLM is the spider in the web, the central point to address their questions and concerns. Information and communication are important instruments for the VLM. The VLM detects relevant developments in the branch of trade and responds proactively. She informs her members and involves them in her activities and makes out a case for the successful development of the environmental technology sector.

A strong network

Environmental problems are often complicated. Through cooperation companies are better able to develop and offer solutions. VLM provides a meeting place, where people can be introduced and get to know each other. This regularly leads to innovative new products, better solutions for environmental problems and finally to more successful companies. Besides activities for all members, VLM also provides sections for members to discuss specific themes. Currently the VLM includes sections for: Waste, Soil, Sustainable Energy, Air and Water. Many other activities are executed in cooperation with other organizations such as FME-CWM, NWMP, NSP, NWP, AgentschapNL, CBS, departments and embassies and so on.

International trade

The Dutch market for environmental technology had been satisfied for years. Therefore most companies in this sector have an international orientation. Every year VLM organizes several trade missions and matchmaking activities and offers collective participation to trade fairs. Moreover VLM offers her members much international marketing information especially for the environmental technology market.

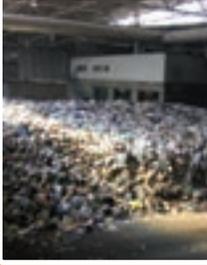
VLMs goals

- Creating market opportunities for Dutch environmental technology at home and abroad;
- Keeping up a wide network of organizations that aim for comparable or adjacent goals in order to further the interests through cooperation and participation;
- Gathering and distribution of specific branch information;
- Stimulating the development of Dutch environmental technology by timely involvement of suppliers in R&D-programs;
- Influencing governments concerning laws and rules specifically affecting our members;
- Informing our members about developments in rules, incentive measures and technology;
- Distributing Information on the suppliers' knowledge and experience;
- Serving the interests of the members by participating in national and international networks.

More information about VLM see: www.vlm.fme.nl (in Dutch) or www.environmentaltechnology.nl

VLM

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WTT is a European market leader in design, build and commission waste treatment plants

WTT has a broad experience in composting, dry and wet AD, MBT sorting and RDF/SFR production plants

WTT has built over 70 complete plants in almost all European countries, Australia and Taiwan

WTT does closely follow the developments in the search for sustainable energy and did develop high-tech solutions to process biogas from waste and/or RDF/SRF, of all which WTT has large scale projects in operation

It is WTT's desire to expand its business into North America and therefore she searches for business partner/agent to cooperate and/or mutually work together on projects in WTT experience in North America

WTT

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Colofon

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