



Hamilton Centralized Composting Facility

WE MAKE YOUR WASTE VALUABLE

The past few years Christiaens Group was successful in tendering for designing and building different facilities for composting of organic waste. This resulted in 'In Vessel Composting facilities' around the world which all turned out to be very successful in operation. All different kinds of legislation regarding compost quality and hygiene are proven to be achievable with the used technology. Ranging from end product demands set out by the Canadian Council of Ministers of the Environment (CCME) to British pasteurization requirements with respect to the Animal By-Products Regulations (ABPR), all these requirements were met after only a short period of time after start up of each facility.

In order to fulfill all these different types of requirements Christiaens Group has to be flexible in designing each facility. Almost 30 years of experience in combination with the fact that the Group produces almost every item in a composting facility themselves results in cost effective and successful designs each and every time again.



**Christiaens
Group**



PEEL INTEGRATED WASTE MANAGEMENT FACILITY

[BRAMPTON, ON, CANADA]

Along with key partners Earth Tech and Maple Reinders, Christiaens Group undertook a Design/Built in order to create a new first phase compost facility for the Region of Peel.

60.000 tonnes of residential curb-side collected waste can be processed in this facility on a yearly base. Because of the fact that only the first phase takes place in this facility, in order to assure the required pathogen reduction, the materials are shipped to the Region of Peel's Caledon Facility for open windrow composting.

The tunnels in this facility are equipped with a complex air handling network which allows the operators to use different streams of air (hot, cold) from other tunnels. This system decreases the retention time as well as the amount of air to be exhausted.



HAMILTON CENTRALIZED COMPOSTING FACILITY

[HAMILTON, ON, CANADA]

Together with a highly skilled and experienced team (Maple Reinders, Associated Engineering, Aim Waste Management and Van Kaathoven Groep) Christiaens Group was responsible for the realization of the Design/Build/Operate project: Hamilton Centralized Composting Facility.

This facility turns 60.000 tonnes of residential curb-side waste into a rich, organic soil material – in the City of Hamilton's terms – 'Black Gold'. More important; this facility helps the City to achieve its mandate to divert its solid waste stream by 65% in the year 2008.





CBRM COMPOSTING FACILITY

[SYDNEY, NS, CANADA]

As part of their overall long-term waste management plan, the Cape Breton Regional Municipality (CBRM) collects their organic waste generated in the community separately in order to process it in their newly built centralized composting facility.

Suitably prepared organic material is placed in the phase 1 tunnels which have a capacity of approximately 440 m³. The phase 1 process is designed in order to provide 9 to 11 calendar days of stabilization. The phase 2 tunnels, which have 20-30% more capacity than the phase 1 tunnels, are designed to take advantage of the volume reduction which will occur as the composting process proceeds. They are designed to provide a further 17 to 20 calendar days of stabilization.



FORT McMURRAY BIOSOLIDS COMPOSTING PLANT (UNDER CONSTRUCTION)

[FORT McMURRAY, CANADA]

As part of the expansion of the Fort McMurray Tertiary Waste Water Treatment Plant, the Regional Municipality of Wood Buffalo gave Earth Tech the order to design a biosolids composting plant.

The design population of 85,000 persons results in a facility with 5 tunnels each able to compost 817 m³ of biosolids mixed with woodchips with a total retention time of 21 days.

The Fort McMurray Biosolids Composting plant is planned to be started up early 2008.





ETWALL IN VESSEL COMPOSTING FACILITY

[ETWALL, DERBYSHIRE, UK]

Biffa Waste Services Ltd. and Christiaens Group have realized an In Vessel Composting Facility located at Etwall in Derbyshire. The input and experience of Garbology Ltd.'s Jason Allum and Mike Hayward, as Christiaens Group UK agents, contributed to the successful completion.

This Facility is able to treat over 24.000 tonnes of green waste and kitchen waste per year and will allow Local Authorities to recover up to 20 percent more household municipal waste.

This facility contains 6 sealed concrete tunnels which can be opened from both sides. With this set up physically separated areas are created which prevents cross contamination of the processed materials by the fresh incoming waste.

Odor is mitigated to a high degree through the combination of sealed tunnels, negative air pressure, high flow aeration system, a totally sealed air handling system and a compost process biofilter.

The facility is in operation since April 2007 and gained positive release by the Veterinary Officer within a few weeks. The Facility is now being operated in close communication with the Veterinary Officer. ABPR approval is expected in the nearby future.

Jason Allum and Mike Hayward
of Garbology Ltd.





- Log Out
- Temperature & Oxygen
- Temp. & Fan & Dampers
- Fan & Pressure
- Default



PHASE 1 COMPOSTING

Once the tunnel is completely filled, the composting process commences. In order to comply with the regulations set out in the ABPR the control system enters the 'kill stage' after reaching 60°C on both compost temperature and air inlet temperature.

The testing period of this facility has shown that as soon as the air inlet temperature gets above 60°C all the materials are above 60°C. This was indicated even more by the additional temperature probes which were located at the bottom of the tunnel adjacent to the outside wall. During the testing period a total number of 8 temperature probes were used to measure the compost temperature throughout the entire pile of compost. Additional manual compost temperature measurements were carried out on the identified critical spots to take the last doubts away. It is safe to say that the Christiaens In Vessel Composting System can fulfill all the requested temperature profiles throughout the entire tunnel.

The retention time in the phase 1 tunnels varies from 5 to 10 days, depending on the amount of feedstock coming into the facility.



PHASE 2 COMPOSTING

In order to comply with the ABPR, the set out temperature profiles have to be met twice. Therefore the materials are transferred from the phase 1 tunnels to the second phase tunnels where they are treated in the same way as in phase 1. The second phase was tested in the same way as the phase 1 with the same satisfying results. The retention time in the phase 2 tunnels varies from 5 to 12 days depending on the amount of feedstock coming into the facility.

MATURATION

Because of the relative short retention time in combination with high composting temperatures the degree of composting is relatively low, therefore requiring additional maturation of the compost. After the materials have been processed through the tunnels they are put into windrows outside on a concrete pad. After a certain period of time the compost is mature enough to get PAS100 accreditation.





SESA SPA

(UNDER CONSTRUCTION)

[ESTE, PD, ITALY]

In 2006 Christiaens Group has started to extend the existing SESA SpA composting facility located in Este. The extension comprises the construction of 4 new tunnels and the modification of 10 bunkers. The newly built tunnels are 8 meters wide and 56 meters long. These tunnels are equipped with the same robust air handling system as Christiaens Group is known for. The modified bunkers are converted into tunnels which makes it possible to recirculate the air and by doing so minimizing the amount of air to be exhausted.

The plant itself is very diverse. It contains, next to the composting tunnels, an anaerobic digestion plant where they convert different types of waste of organic origin into energy. Next to this, SESA is currently construction a waste water treatment plant on the Este site in order to purify all the different streams of waste water before discharge.

BIOMAN SPA

(UNDER CONSTRUCTION)

[MANIAGO, PN, ITALY]

The latest facility which Christiaens Group is realizing is Bioman SpA. Located in Northern Italy, near the city of Maniago, a facility is being built comprising 18 tunnels. This project is carried out in close communication with Wilbert Smeets and Ing. Angelo Mandato, from Bioman.

Initially 6 of these tunnels will serve as biofilter, future expansion will retrofit these 'biofilter tunnels' into normal composting tunnels. Furthermore the construction is designed in such a way that it is possible to install automatic filling equipment in the future.

Each tunnel at Bioman SpA can be filled with approximately 1250 – 1450 m³ of organic waste. Eventually, anaerobic digestion tanks will be installed at this facility in order to produce sustainable energy.





BIOBOX

The BioBox is a portable compact system designed for service the compost needs of smaller communities, individual generators and waste water treatment plants. This innovative design combines efficiency, portability, flexibility and economy. The system allows compostables such as food waste, organics, biosolids etc. generated at various locations, to be transported and centrally processed.

Already three of these systems are installed. One in the Netherlands at the Van Kaathoven Groep composting facility in St. Oederode. Another one is installed in France for the company Apinor. The third was purchased by Nigerian company Shaw Environmental & Infrastructures Ltd.



MSW PROJECTS

In the past year Christiaens Machines B.V. has again delivered and started up 3 MSW tunnel filling and emptying equipment for Linde LKCA. Linde on it self has sold it's waste management department to STRABAG. The new owners were impressed by our equipment and assured us that they would like to continue the good relationship with the Christiaens Group. The 3 projects are situated in Lille France, Fridhaff Luxembourg and Erfurt Germany.



RABA Erfurt Ost

Project	Country	Year of completion
egw Kreis Borken	Germany	2000
Ecoparc Barcelona	Spain	2002
Villena	Spain	2003
egw Kreis Borken	Germany	2004
MBA Cröbern	Germany	2004
MEAB Berlin	Germany	2005
Cap Lorient	France	2005
Chantier CVO Lille	France	2007
Region Luxembourg	Luxembourg	2007
RABA Erfurt Ost	Germany	2007

egw Kreis Borken





Christiaens Group

THE POWER OF COMBINED EXPERIENCE

MUNICIPAL SOLID WASTE (MSW)

Austria	ASA Abfallservice GmbH & co Nfg KG ESG Stad Linz MBA St. Pölten	Halbenrain Halbenrain Linz Sankt Pölten
Finland	Kujalan Komposti Oy	Lahti
France	Chantier CVO Cap L'Orient	Lille Caudan
Germany	MEAB egw RABA Erfurt –Ost MBA Cröbern	Berlin Borken Erfurt Leipzig
Luxemburg	Region Luxembourg	Fridhaff
Spain	Ecoparc 1 VAERSA Regio Valencia	Barcelona Villena Valencia

BIOWASTE

Belgium	DDS-Verko	Dendermonde
Canada	City of Hamilton Region of Peel Cape Breton Regional Municipality	Hamilton, ON Brampton, ON Sydney, NS
Germany	Schneider Emsland WGV WKG	Gießen Meppen Quarzbiehl Würzburg
Italy	Sesa Spa Bioman SpA	Este, PD Maniago, PN
The Netherlands	Kaathoven Kaathoven Ogar RAZOB RAZOB	Bladel St. Oedenrode Oude Pekela Acht Deurne
UK	Viridor Waste Management Ltd. Enviros Biffa Waste Services Ltd.	Beddington Deerdykes Etwell

ANIMAL MANURE

Belgium	Op de Beeck La Vrijsen	Antwerp Bree
The Netherlands	Van Rens Nies Peelen Janssen Vaessen Meevis Van der Kruys-Pennings Classens Tewierik Philips Bongers Van Geneijgen	Hegelsom Kelpen Meerlo Meerlo Nederweert Nederweert Oirlo Raalte Swartbroek Weert Weert
Portugal	Cooperativa Avicola do Centre S.A. Cavican	Santiago da Guarda Bidoeira de Sima
USA	GPRA Thoroughbed Training Centre Inc.	Boynton Beach

BIOBOX

France	Apinor	Harnes
Nigeria	Shaw Environmental & Infrastructures Ltd.	Lagos
The Netherlands	Van Kaathoven Groep	St. Oedenrode

SEWAGE SLUDGE

Canada	Banff WWTP City of Prince Albert Regional Municipality of Wood Buffalo	Banff, AB Prince Albert, SK Fort McMurray, AB
Spain	GTR GTR	Barcelona Blanes
The Netherlands	GMB GMB	Tiel Zutphen
UK	Anglian Water	Ipswich
USA	BFI	Unity

ANAEROBIC DIGESTION RESIDUE

Germany	aha avea	Hanover Engelskirchen
France	Valorga International	Calais

Christiaens Group

Witveldweg 104 - 106 -108
5961 ND Horst - The Netherlands

christiaensgroup@christiaensgroup.com

www.christiaensgroup.com

tel. +31 (0)77 399 95 00