



Bioganix Ltd

January 2005

The background image shows a large-scale industrial composting facility. It features several large, horizontal, cylindrical rotating drums, likely used for turning and aerating compost. The drums are supported by a complex metal framework. The lighting is somewhat dim, with a strong light source from the left, creating a hazy atmosphere. The overall scene is industrial and focused on the mechanical aspects of compost production.

Annual Conference
Compost Association Ireland-Cre
On Farm Composting

7Y

- A co-operative group of 450 farmers.
- Provides machinery sharing services to its members
- Machinery Hire
- Relief labour
- Training Services
- Group commodity buying
- Office support services
- Logistics and Contract services
- IT Sales & support
- Consultancy

The background of the slide shows a large-scale industrial composting facility. It features several large, horizontal, rotating drums or rollers, likely used for turning and aerating compost. The structure is made of metal and is situated in an open or semi-enclosed area. The lighting is bright, suggesting an outdoor or well-lit indoor environment.

Why are farmers interested in composting and waste recycling?

WE Have Everything you need to do the JOB

- Concrete pads
- Machinery
- Knowledge
 - Land



**REGULATION (EC) No 1774/2002
OF THE EUROPEAN PARLIAMENT AND OF
THE COUNCIL**

of 3 October 2002

**laying down health rules concerning animal by-
products not intended for human consumption**

The Waste Issue

- EU regulations now ban the land-filling of certain types of food waste.
- The EU Landfill Directive forces Local Authorities to recycle waste and divert from landfill.
- Land-fill tax is rising by £3/tonne per year.
- Public perception favours recycling.
- Composting is a preferred method of recycling for many Local Authorities
- Licensed composting plants are an approved method of disposing of food waste that is banned from land-fill

Company Aim

To develop a process for biotransformation of waste materials into a composted product for use as an agricultural fertiliser.

Revenue to be derived from a “gate fee” for disposal of the waste products and also from sale of the manufactured compost.

Bioganix – The Company

- Bioganix is a wholly owned subsidiary of 7Y Holdings Ltd.
- 7Y Holdings Ltd. is owned by the former members of 7Y Machinery Ring Ltd, a co-operative Industrial & Provident Society of 450 farms and rural businesses in Herefordshire and surrounding counties.
- 7Y Holdings Ltd owns all the issued shares in Bioganix and also in 7Y Services Ltd. All three companies are collectively known as “the 7Y Group”.
- 7Y Services Ltd provides logistical support, office services, training, group buying and other services to each of its 450 members.
- Bioganix was formed in order to work towards creating a new business, diversified from the core agricultural businesses of the 450 shareholders.
- Bioganix draws on the agricultural knowledge and expertise of the staff and shareholders of the 7Y Group. The land resources of the shareholders and experience of crop growing with organic manures of the 7Y Group are a vital ingredient for the success of Bioganix.

The alternatives for land-fill diversion

System	Compliance with Landfill Directive	Advantages	Drawbacks
In vessel composting	Full Diversion and Compliance	Proven technology. Full recycling Good Public perception	Relies on source separation of the rubbish
Anaerobic Digestion	Full Diversion and Compliance	Some energy production	Relies on source separation of the rubbish
Mechanical and Biological Treatment (MBT)	A variation on composting; relies on being able to divert some of the resultant material	Ability to accept mixed MSW	Very few suitable uses for the low grade organic fraction other than land-fill cover
Energy from Waste (burn)	Only if the plastic content is reduced to below 2%	Ability to accept mixed MSW	Public perception is very much against burning waste.
Autoclave	Only if the sterilised material can then be re-cycled.	Ability to accept mixed MSW	Limited uses for the separated organic fraction
Energy from Waste (Pyrolysis and gasification)	Only if the plastic content is reduced to below 2%	Potential ability to accept mixed MSW	Largely un proven technology. Very expensive capital build

UK's only operational true in-vessel composting plant

- Bioganix Ltd have designed, built and operated the UK's first true in-vessel composting plant at Wharton Court near Leominster in Herefordshire
- The company has been operating successfully for 3 years
- The Bioganix plant was one of the first to be fully licensed and is still the largest UK plant
- Bioganix is currently processing over 8,000 tonnes of "high gate fee" food industry waste per year
- All compost produced is sold to farmers at over £3/tonne, although the company does subsidise these sales to some extent.
- The pilot plant is now cash generative and is making an operating profit of 9% of sales

In Vessel Composting and ABPR

- ABPR compliant composting of all food materials must be done in-vessel.
- Alternative UK standard allows lower standards for catering waste.
- UK standard is a derogation from EU; it can be withdrawn or altered without further legislation.
- Retail and commercial food waste is full Category 3 and must be treated to full EU standard.
- In vessel composting is still relatively new to the UK; confusion still exists over what constitutes a vessel.

Reactor vessel



Assembly of Bioganix Vessel No1



Installation of Bioganix Vessel No.1



Some other ABPR Requirements

- **All** material in a vessel must be subjected to the full temperature/time treatment.
- Reception of waste material must be in a fully enclosed building.
- Birds and vermin must not be allowed access to un-treated and partially treated material.

Main Waste Reception Building



Entrance to Processing Area





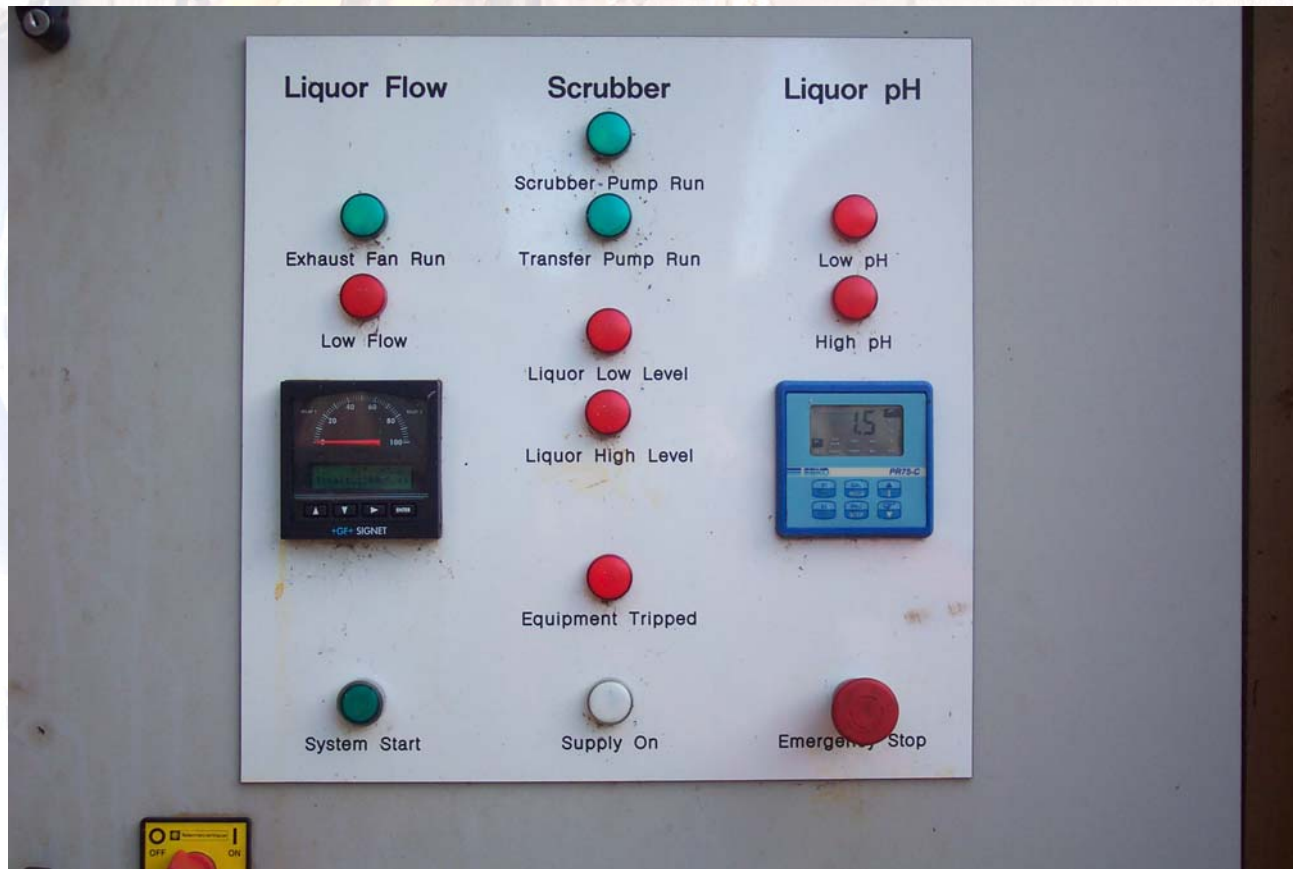
Odour control

- Green Waste composting emits lower levels of odours.
- The addition of food wastes increases odour production by many orders of magnitude.
- Processing large quantities, hundreds of tonnes per day, vastly increases odour issues.
- All buildings must be kept under negative air pressure, to prevent fugitive odour.
- Comprehensive treatment of exhaust air for ammonia and odours is essential.

Chemical Odour Scrubbing



Scrubber No.3 Control Panel



Biofilter





Bio-filter medium



Compost Markets

- Bioganix's parent company, 7Y, has many years experience of marketing organic composts and fertilisers.
- 7Y markets, delivers and spreads over 100,000 tonnes per year of composts and fertilisers.
- 7Y has strong links to similar farmers groups throughout the UK.
- Bioganix has run a series of field trials on compost use and continues to develop new products and use techniques.

Compost Markets

- Bioganix compost contains 50Kg of pure Nitrogen in every tonne.
- It also contains 8Kg of P and 8Kg of K
- Artificial Nitrogen fertilizer costs 43p/Kg
- Total value of nutrients per tonne of compost is over £26.
- Compost can be delivered and spread for under £13/tonne.
- This has the potential to reduce the cost of wheat production by £5/tonne (10%)

Note that 50% of 2005 Bioganix Production (at current production rate of 6,000 tonnes per annum) has already been sold forward.

Bioganix compost used in Oilseed Rape production



The effects of Bioganix Compost one year after application



Bioganix on tour at Glastonbury 2004



Bioganix Composting Experience

- The Bioganix Leominster plant has been in operation for three years.
- It has processed a wide range of waste products.
- Bioganix carried out extensive trial work for Bath Council on composting mixed Green and kitchen waste.
- The Leominster plant is currently undergoing a major expansion and re-fit.

A working solution

A large, cylindrical industrial composting vessel is shown in a factory setting. The vessel is made of metal and has a complex structure with various pipes and supports. The background shows a large industrial facility with a high ceiling and structural beams.

Bioganix have used the Wharton Plant as a test-bed to resolve the major technical issues associated with in-vessel composting.

- Sanitisation
- Odour
- Legislative compliance
- Mechanical reliability
- Compost disposal and marketing

Intellectual property

- Patents have been applied for on certain key components
- Know-how to manage odour associated with composting “difficult” materials
- Know-how to design, build and operate true in-vessel composting solution
- Know-how to dispose of resultant compost in large volumes
- Own the data (re in-vessel composting) needed to gain planning permission and win tenders
- Knowledge of the “recipes” needed for composting

Bioganix: 6 Key Points

- UK has major waste problem, physically and financially.
 - Both legislation and cost are driving waste towards new solution providers.
- Composting is a preferred method of recycling.
 - Public perception of composting is good
 - Local Authorities specify composting as a desired method of waste treatment.
- Bioganix has an experienced management team
 - All the team players have wide knowledge of large scale project management.
- Bioganix composting complies fully with all relevant legislation.
 - Bioganix operates to the highest EU Standards
 - Many alternative composting systems rely on a narrow interpretation of UK legislation
- Bioganix has already developed markets for the end product.
 - Unlike many proposed composting plants which rely on developing difficult markets into garden centres.
- Bioganix has a full working scale plant in operation with 3 years experience and data.
 - Unlike most alternative waste disposal solutions, this is tried and tested in the UK

A photograph of a large-scale industrial composting facility. The image shows several large, cylindrical rotating drums arranged in a row, supported by a complex metal framework. The drums are covered in a dark, possibly plastic or rubber, material. The lighting is bright, creating a high-contrast scene with some overexposure on the left side. The overall atmosphere is industrial and technical.

So why are we
Composting On Farm?

The background image shows a large-scale industrial facility, possibly a refinery or chemical processing plant. It features several massive, horizontal cylindrical tanks or storage vessels, some of which are partially obscured by a complex network of pipes, walkways, and structural steel beams. The lighting is somewhat dim and industrial, with a yellowish tint. The overall scene conveys a sense of large-scale manufacturing or processing.

They can import the food.

But they can't export the waste