

Solid Waste Management Seminar

Enterprise Ireland, Dublin 18th Sept. 2007

Key Messages

- Competition is driven by the opportunity for accelerated return-on-investment in this sector and by the ability to demonstrate “Best Practice” technology to secure long-term access to Solid Waste Streams.
- There has been a paradigm shift in our approach to Waste Management – we must now regard Waste as a valuable Resource, through conversion to recyclable materials, energy (biomass, biogas, RDF), and compost.
- Competence Centres offer businesses the opportunity to engage in higher-risk, longer-term research ultimately to gain competitive edge.
- The IRC and METTTES Networks provide valuable services for building Technology Transfer Partnerships.

Background on Solid Waste Management Seminar

IRC Ireland hosted this one-day event in conjunction with the IRC Network and the Metttes project (More Efficient Transitional Technology Transfer in the Environmental Sector). It focused on Greening Technologies associated with improved Solid Waste Management.

The seminar, chaired by Leon Agnew (Senior Executive, Innovation & Technology Transfer), presented new approaches to dealing with solid waste, including presentations from "Best Practice" installations, which effectively deal with the increasing volumes of waste, and the development of new technologies for transforming waste into valuable resources. Leon is a member of the Innovation Relay Centres' Thematic Group Environment & Renewable Energy.

Market Drivers

The challenge for the EU is that by 2020 it is estimated that there will be 1.8 billion tons of waste produced each year. Today the industry is largely driven by the Landfill Directive and this is stimulating the innovation process towards the development and commercialisation of new, sustainable technologies for converting Solid Waste to Useable Resources.

R&D pays off for Applied Silicate Technologies Ltd

In the EU alone at present there are 250 million tonnes of waste coal which requires a management solution. This creates environmental, waste management and transport issues. AST was founded in 2003 by John Gilbert, and the company has spent its early years developing a new technology to address this problem. The AST FuelForm® system turns fine coal waste (and biomass) into higher value transportable solid fuel. This is achieved by adding environmentally clean reagent to wet coal-fines using a very low energy process. Ultimately pellets are formed that are easily handled, stored and shipped. The company secured the patent for FuelForm® in the UK in 2006 and the worldwide patent is being processed.

Each client pays AST Ltd for an Operating Licence and the supply of necessary chemicals. In return, AST supplies equipment, training, maintenance and technical support.

Paradigm Shift in Approach to Waste Management

Brian Lewis, Environmental Manager at Bombardier Aerospace Belfast, outlined the company's approach to Waste Management, which includes a set of specific, measurable and published objectives. Cost is a key driver given that the cost of waste going to landfill is approaching £100 per tonne. Other influences include Corporate Policy, the ISO 14001 Target and the potential income stream from recycling. Brian says there is a paradigm shift in the approach to Waste Management "Don't ask - "what can we recycle" ask - "What must we send to landfill because we can't recycle"

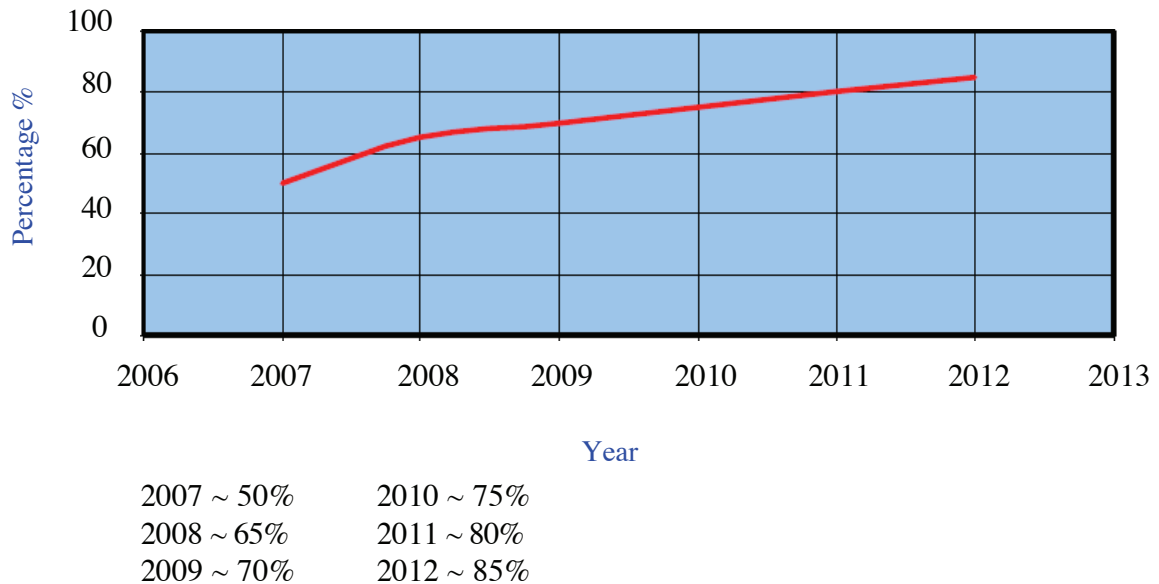
Plastics are now sent outside the UK/Ireland for processing and there's the potential for 25 tonnes per month to be recycled. Carbon Fibre is a valuable material which was sent to landfill, but is now re-processed in England. Bombardier faced a significant challenge in dealing with hazardous waste when a local facility closed down, largely due to issues around the transport of the waste, and the rising cost of treatment chemicals. A solution was found by working with Clinty Chemicals, who built and now operate a facility on Bombardier's site. The benefits are many and the volume of hazardous waste has been reduced by some 2000 tonnes per annum. Overall advantages include:

- 80% reduction in purchase of process chemicals
- 60% reduction in process downtime
- Reduction in rejected parts
- Useful by-product for Clinty Chemicals

Brian says "Ultimately we were able to create a win/win by working closely with the waste contractor - where both parties benefit from reduced dependence on landfill."

Bombardier Aerospace Belfast

(NON- HAZARDOUS WASTE RECYCLED)



Agricultural Manures - no longer waste

Eoin Carton of Teagasc, and Brian Hyde EPA, outlined the challenges facing the agricultural industry in terms of managing agricultural pollution. The presentation quantified the scale of the problems, outlined the opportunities for solid manure treatment, and highlighted the issues concerning land-spreading.

In Ireland, 70% of nutrients ingested by farm animals end up in manure. During grazing this is normally recycled into the soil, but manure collected from indoor feeding must be managed – at present this amounts to 40.6 million tones, 19% of which is solid. There are many valuable nutrients in this material, including nitrogen, phosphorous and potassium, so the challenge is to recycle in an efficient, sustainable manner, and to “win back” the nutrients.

Bovine manure is widely spread across the country mostly on farm land. Manure from pigs and poultry is more concentrated across certain regions, and while it can be used as mushroom fertilizer, the quality is variable. This also gives rise to the challenge of managing spent mushroom compost. Ovine manure(from sheep) is localized but can usually be used on the farm.

There is a significant opportunity for solid manure management processing in the Dairy & Cattle, and Pig & Poultry sectors, where to date there is no definitive solution that effectively helps to increase competitiveness for Irish farmers, while reducing environmental impact. This will become critical as new directives are applied.

Land-spreading is one proven solution where the organic matter is treated and the nutrients can be absorbed by the soil, however, stringent regulatory controls apply in order to limit the potential impacts on water, air and soil. There are three key guiding principals in the application of land-spreading;

1. There must be a benefit to agriculture from the spreading of industrial organic waste e.g. the provision of nutrients gives healthy crops and animal growth
2. There should be no compromise in Food Quality in terms of human or animal health - it is essential to take a conservative approach in assessing activity.
3. Environmental quality must not be compromised.

Supports Available

The seminar outlined some of the relevant supports available to Irish businesses involved in Waste Management. These include:

- **The Innovation relay Centre** www.innovationrelay.net
- **E.I. Competence Centres** www.competencecentres.ie
- **The Metttes Project** www.metttes.eu
- **EU supports for Collaborative R&D projects**
- **Online Tools with** www.techsearch.ie

1. Competence Centres offer Industry strategic research resources

IDA Ireland and Enterprise Ireland have launched a new concept in research support and this may prove highly beneficial to the waste management sector. Martin Hussey, Enterprise Ireland outlined the objective of these “Competence Centres” as follows; “To achieve competitive advantage for industry in Ireland by accessing the innovative capacity of the research community”.

These Centres are collaborative entities established and led by industry and resourced by highly capable researchers who are empowered to undertake market focused strategic research for the benefit of industry.

Competence Centres are designed to benefit Irish companies with a technology focus and a strategic vision for R&D activity. They offer businesses the opportunity to engage in

higher-risk, longer-term applied research where the outcome is clearly an increase in competitiveness. Companies will also have access to resultant Intellectual Property.

Interested businesses can find out more at www.competencecentres.ie

2. The Metttes Project

Dr. Mark Azzopardi from Malta Enterprise spoke about the Metttes project, “More Efficient Transnational Technology Transfer in the Environmental Sector” which is co-funded by the EU. The goal is to improve the effectiveness of technology transfer methodology.

It’s a 2 year project, due for completion in July 2008 and there are four European partners from Germany, Italy, Hungary & Malta.–Partners and 10 IRC’s involved, including IRC Ireland. The activities include;

Regional Demand Profiles (RDP)–Focus on technical requests rather than offers
Best Available Techniques–Experts specifically identify technologies
Matching Events in regions of demand–Half day seminars / Brokerage
Dissemination and website – visit www.metttes.eu

Dr Azzopardi says “Essentially if you are looking for an environmental technology, we can look for you.”

3. The Innovation Relay Centre

Sabrina Wodrich (Technology Transfer Broker from Zenit), gave a comprehensive overview of the Innovation Relay Centre Network, and the associated Thematic Group Environment (TGE). The TGE is now the largest of the 14 Thematic Groups, and is represented by more than 60 Technology Transfer specialists from 23 countries.

The Innovation Relay Centre is the largest Technology Transfer Network in the world, and is hosted in 71 centres, in 33 countries including Israel, Turkey and Chile. To date, the IRC has assisted in over 12,500 Technology Transfer negotiations.

The full programme of IRC services can be accessed through www.innovationrelay.net

4. EU supports for Collaborative R&D projects

Ian Bernard, EuroEnviron Manager, Oxford University outlined the UK Technology Strategy and the European approach to Collaborative R&D and Technology Transfer.

A new Technology Strategy Board has been established as a Non-Government Department, with a planned staff of 75 people. Its goals are to drive forward the Government's Technology Strategy and over the next 5 to 10 years to encourage and enable high-value, knowledge-based design, manufacturing & services. There are four areas of activity:

1. Innovation Platforms
2. Key Technology Areas
3. Emerging Technologies
4. Technology Programme
 - a) *Knowledge Transfer Networks (KTNs)*
 - b) *Collaborative R&D*

In terms of Collaborative R&D, the UK Collaborative R&D Programme was established to encourage business and research communities to work together so that new products, processes and services can emerge. It is supported by national funding and by funding from the EU. It is a member of Eureka, the European Collaborative R&D programme.

The UK Collaborative R&D Programme is the primary delivery mechanism for Technology Strategy. It holds regular competitions for funding of Collaborative R&D projects and it is managed through a dedicated website, which includes a searchable database of current projects and funding guidance. See

www.dti.gov.uk/innovation/technologystrategyboard/page40221.html

Framework 7 (FP7) is the EU's main instrument for funding research in Europe (2007 to 2013). It is made up of four main programmes:

- Cooperation
- Ideas
- People
- Capacities

Eureka is a pan-European collaborative R&D network with 38 participating countries (not limited to the EU). It operates with Clusters, to build European competitiveness and umbrellas, which are thematic networks which focus on specific sectors or technologies. Visit www.eureka.be

EuroEnviron is the environmental Eureka umbrella. It was previously based in Denmark, but the UK took over the Secretariat in April 07. EuroEnviron offers free facilitation on

- Collaborative R&D Projects
- Generate Project
- Seek Eureka Seal of Quality

Visit www.euroenviron.com

For Knowledge Transfer Networks, visit www.ipm-ktn.org