Waste Management Overview

Tom Quinn, EHS Manager, Masonite Ireland
Enterprise Ireland – Thursday 3rd April 2003
Agenda

- Company Background
- Waste Issue and the Business Risk
- Key Challenges & Issues for the Business?
- “Delivering Change at a large Business Site”?
- Masonites response - Waste Management Strategy
- Design for the Environment & Integrated Waste Plans
- Identify Critical Success Factors
- Future Trends and Plans
Masonite Ireland

- Located outside Carrick on Shannon, Co. Leitrim
- Commenced operations in 1997
- Cumulative investment of €150 million
- €15 million Investment in Environmental Controls
- A unique, integrated, global building products company
- Largest manufacturer & merchandiser of doors in the world
- One of the largest stand-alone manufacturing facilities in Ire.
- Located on 100 acre site with 15 acres under roof
- 300 Employees – operating to World Class Manufacturing Std.
- Capable of producing 21m door panels per year
- Fully automated, state-of-the-art manufacturing facility
Environmental – Key Facts

- EPA – Integrated Pollution Control Licenced Operation
- Environmental System is modelled on the ISO 14,001 EMS
- Currently implementing ISO 9001:2000 Standard
- Significant Investment in environmental control technologies
- Environmental Team to implement EMS
- Environmental issues are a key priority for the Business
- Developed strong links with the Community
- Good relationship with the Regulators
- Active in assessing and addressing Environmental Risk and/or liability to the business
Drivers

- Legislation (Society)
- Capacity (Infrastructure)
- Cost (Market)

Stakeholders

- Packaging
- Eco Design
- Material Inputs
- LCA

EMS

- Process Optimisation
- Infor. Exchange
- Waste
- Process controls
- Equipment
- Materials
- Employees
- Community
- Contractors
- Suppliers
- Regulators
Key Challenges

- Legislative and Regulatory Compliance Framework
- Infrastructural Deficiencies
- Rising costs and loss of competitiveness
- Legal, Financial and Environmental Liability
- Increasing growth and waste production
- Implementation of National & Regional Waste Plans
- Corporate Responsibilities
- Implications for Inward Investment
- Emerging Regulations (IPPC, Protection of the Env. Bill)
- Delivering an Effective Waste Strategy
- Changing Attitudes and Culture – Behavioural Issues
- Lack of Leadership on the issue
- No defined Road Map
Reduction in Number of Landfill
PROPOSED WASTE MANAGEMENT STRUCTURE IN IRELAND

DOELG
National Policy
Regulation & Funding

EPA
Waste Licensing
Research

Local Authorities
Provision of Service
& Infrastructure

National Waste Management Board
Co-ordination, Monitoring
Review, Advice
Education & Awareness

Producer Responsibility Unit
Advise on Enforcement
& Producer Responsibility

Core Prevention Steering Group &
Core Prevention Team
National Waste
Prevention Programme

Recycling Consultative Forum
Advise on Recycling

Market Development Group
Market Development
Programme
“Delivering Change – Our Approach”

- Where and how do waste streams arise?
- What are their quantitative characteristics?
- What raw material resources are being wasted?
- What are the full costs of treatment/disposal?
- Are there obvious reduction or recycling opportunities?
Waste Management – Key Aspects

WMA 1996

WM Planning
- Packaging
  - REPAK
  - Classification
    - EWC & HWL
- Hazardous
- Non-Haz

WM Licencing & Control
- Facilities
- Movement
- Management
- Permits & Licences
- C1’s & TFS
- Collection permits
- Storage
- Registers
- Labels & Packaging
Policy & Strategy

- Company Policy and Management Commitment
- Resources and Structure
- Analyse our Business model
- Assessment of our Supply Chain & Process
  - Suppliers → Manufacturing → Customer
- Quantify the problem, and Measure/Track Progress
- Awareness and Training Programme
- Implementation plan
- Time Frame and Cost/Benefit assessment
Starting Out – Information Gathering

➢ Design Information:

✓ Process flow/ Equipment lists/ O & M manuals, etc

➢ Environmental Information:

✓ Waste manifests/ emission inventories/ audit reports

➢ Raw material/ production information:

✓ MSDS/ material inventories/ production records

➢ Economic Information:

✓ Raw material costs/ waste disposal costs/ labour costs
WASTE BREAKOUT 2002

WASTE GENERATED: 4329 TONNES

- Recycled: 68%
- Landfill: 30%
- Hazardous: 2%

Tonnes


- Effluent sludge
- Paper/C board
- Metal
- Glass
- Woodchip screenings
- Wood/pallets
- Plastic
- Fluorescent light bulbs
- Batteries
- Computer waste
- Oil filters
- Oil
- Toner cartridges
- COD vials
LANDFILL COST EURO/ TONNE

Waste disposal costs in Euros

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost (€/Ton)</th>
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<tbody>
<tr>
<td>1997</td>
<td>52</td>
</tr>
<tr>
<td>1998</td>
<td>48</td>
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<td>2001</td>
<td>102</td>
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<td>2002</td>
<td>102</td>
</tr>
<tr>
<td>Q1</td>
<td>110</td>
</tr>
<tr>
<td>Q2</td>
<td>150</td>
</tr>
<tr>
<td>Q4</td>
<td>180</td>
</tr>
<tr>
<td>2003</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>200</td>
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Projected cost (proj): 200
Waste Costs - 2002

<table>
<thead>
<tr>
<th>TYPE</th>
<th>TONNES</th>
<th>COST (€)</th>
<th>COST/ T (€)</th>
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<tbody>
<tr>
<td>Non Haz</td>
<td>1282</td>
<td>192,300</td>
<td>150</td>
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<tr>
<td>Haz</td>
<td>94</td>
<td>101,031</td>
<td>1074</td>
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<tr>
<td>Recycled</td>
<td>2953</td>
<td>36,077</td>
<td>12</td>
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<tr>
<td>Miscellaneous</td>
<td>N/A</td>
<td>19,690</td>
<td>N/A</td>
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<tr>
<td>Total</td>
<td>4329</td>
<td>349,098</td>
<td>N/A</td>
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</table>

Cost Avoidance: €442,950
Non Hazardous Waste

General Waste

Ash

Paint Sludge

Landfill

Paint Filters Landfill
Hazardous Wastes

Chemical Store

Labelled Drum

Disposal route

Incineration – Finland
Recycled Waste

- Recyclable Wastes
  - Effluent Sludge
  - Woodchip Screenings
  - Paper/Cardboard
  - Glass
  - Plastic
  - Scrap Metal
  - Wood Waste
  - Toner Cartridges
Fluorescent Tubes
Waste Oils
“Delivering Change – Our Approach”

*Integrated approach to Waste Management*

**Input Changes:**
- ✔ Purchasing practices/ Green procurement/ Criteria
- ✔ Chemical Impact Review and MSDS Review
- ✔ EHS approvals for changes to process and equipment
- ✔ Environmental review and approval for Capital Investment
- ✔ Material substitution

**Product Changes:**
- ✔ Review to product and product composition
- ✔ Customer requirements
- ✔ Packaging requirements
- ✔ Energy and waste minimisation
“Delivering Change – Our Approach”

Integrated approach to Waste Management

- **Technology Changes:**
  - Process/ equipment/ automation/ operational settings
  - Process flow diagrams/ Clean technology

- **Operating Practices:**
  - Procedural measures
  - Loss prevention and Yield improvement
  - Management practices
  - Waste segregation
  - Material handling systems
  - Production scheduling and product runs
“Delivering Change – Our Approach”

*Integrated approach to Waste Management*

- **Use, Reuse and Reclamation:**
  - ✓ Return to suppliers
  - ✓ Take back from customers
  - ✓ Process and reclaim on-site
  - ✓ Incorporate waste/ by-product back into the process – product recovery
  - ✓ Waste to energy
Waste - Training

- Training of employees is vital.
- Training in operation of systems & EHS awareness training is mandatory on-site
- Variety of training courses.
- All certification training is tracked and reported to management regularly.
Waste/ Environmental Awareness Week
Pollution Prevention Team

- Cross Department Team
- Team meeting every other month
- Focus on implementation of the EMP
- Seek out opportunities to reduce waste
- Implement improvement measures in their Dept.
- Role of this team is to provide programmes which operations people sustain and develop
- Integration of EMP into the business
Waste Management

Day to Day System

- Dedicated bins with segregation as the key objective
ACHIEVEMENTS – SUCCESS FACTORS

- Implemented an Integrated Waste Management Programme
- Engaged the Employees in the Waste Minimisation Drive
- Reduced Waste on-site by 66% per unit production
- Recycled 68% of waste generated in 2002
- Segregation process and Mindset of employees is Key Factor
- Cost avoidance of €442,950 in 2002
- Conduct regular Audits of Contractors
- Recognised at National and EU level for performance to date
- Compliance with Regulations & manage liability
- Partnership with the Community and Regulators
- Impact on Local Environment has been reduced
<table>
<thead>
<tr>
<th>Award</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety:</td>
<td></td>
</tr>
<tr>
<td>The Ministerial Millennium Health &amp; Safety “Special Merit Award” for innovative Health and Safety Projects.</td>
<td>2001</td>
</tr>
<tr>
<td>Environmental:</td>
<td></td>
</tr>
<tr>
<td>Winners of IBEC National Environmental Award for Industry (EU Sponsored Scheme) “Overall Winner – Clean Technologies”</td>
<td>2002</td>
</tr>
</tbody>
</table>
PROJECT BENEFITS

“Redesign of paint coating process resulting in environmental and economic benefits”

- Invested in new coating (spray) booths
- Converted to alternative coating materials
  - Increased coating efficiency & raw material conversion rate
  - Reduction in waste paint and wastewater generation
  - Elimination of major air emission exhaust point
  - Decommissioning of air abatement system
  - Reduction in air monitoring
  - Reduction in man-hours required to clean the booths
  - Elimination of Gas Fired Infra red Ovens
  - Reduction in energy consumption

Total Cost Savings of Project €3.17 M
CONCLUSIONS

- Costs of waste mgt. likely to continue to increase in the short term
- Landfill Tax, reduction in Capacity & Transport – will lead to further cost increase
- Ban on specified waste to landfill being enforced
- Business should adopt a clean technology mindset – use of less hazardous materials
- Benchmarking of system – cost/ technologies/ National/ EU level
- Addressing variance in waste disposal & recycling costs across the Country
- Need to treat all waste producers equally in terms of waste charges – Polluter Pays
- Further reduction in the number of landfills
- Government to ensure that a modern, efficient & effective waste infrastructure is put in place
- Need to see the full implementation of the Regional Waste Management plans
- Would like to see greater competition in provision of waste services
- Pay per weight for waste
- Need to see significant investment in the waste management infrastructure
- Need to challenge the Regulatory and Judicial timeframe for the development of facilities

- Optimisation of in-house waste reduction & recovery best option