Zero Waste, Renewable Energy & Environmental Stewardship: Thermal Recycling®

How long do we want to “waste” a renewable resource?

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Analysis of the Current WTE Situation:

• Today
• Technologies
• Approach
• Support
• What the Future Holds
Today

- No new facilities!
- Why?
  - Low energy prices
  - Ongoing pollution **concerns**
  - Lack of education
  - Wrong Priorities – Zero Waste -> landfills
  - Out of sight out of mind attitude
  - Political dilemma (Kyoto vs. public)
  - WTE industry has no credibility
  - Idealistic mind set
Today

• What is changing?
  – climate
  – energy prices
  – resource depletion
  – public awareness
  – political support
Today

• Political environment (example Sacramento)
  – At stalemate with environmentalists
  – No direction
  – No compromises
  – Industrial Concerns
  – City of LA – a new approach?
Today

• Past 20 Years in Germany ....
  – High capital expenditure
  – Material recycling and energy recovery of waste + (avoidance) – priority
  – extended producer responsibility
  – Stop land filling of biodegradable waste
    June 1st 2005
  – Contribution to climate protection (one of 2 countries that will achieve Kyoto)
  – German model for European Union
Today

• US Developments:
  – Climate Change (Kyoto Objectives)
  – Financial Dilemma
  – Presidential attention on alternative energies (?)
  – Waste Management promoting their WTE division, Wheelabrator
WTE Technologies

- Gasification
- Pyrolysis
- Hydrolysis
- Composting
- Mechanical Biological Treatment
- Biogas

=> Incineration / Mass Burn
Germany’s experience with alternatives:

- Work on homogenized wastes
- Pyrolysis, Gasification, Hydrolysis, Anaerobic Digestion, Mechanical Biological Treatment, Composting, Biogas …
- All require some type of disposal afterwards (incineration/treatment at very high temperatures)
- High capital expenditures – little (if any) return
Approach

- Need for new policy
- Paradigm shift
- Stepping outside the “Box”
- Political leadership
- Offering Thermal Recycling® as a part of the solution not “The Solution”
What is Thermal Recycling®?

- Highest energy delivered into grid
- No landfilling
- Maximum Recycling – 100% recovery
- Most efficient GHG reductions
- Lowest emissions (every 64000 tons of MSW disposed = emissions of one car equipped with a catalytic converter)
- The next step toward a sustainable society
- Model for the European Union and Germany (endorsed by Green Party)
Marketable products of the process:

- Energy in form of electricity and / or steam
- Non-Ferrous Metals
- Ferrous Metals
- Hydrochloric Acid @ 30%
- Gypsum – higher grade than natural
- Salts – for industry use
- Fly & Boiler Ash (1%)
- Bottom Ash / Slag
Environmental Demands:

1) No competition with recycling ✓
2) No harmful emissions ✓
3) Oil independence ✓
4) Energy recovery ✓
5) No landfilling ✓
6) Economic performance ✓
7) Protection of natural resource ✓
8) Respecting the rights and existence of future generations ✓

Total Score: 100% = Passed ✓
Support

• Educated Leadership!
What the Future Holds

• Oil prices continue to rise
• Energy demands grow
• Climate change will escalate and cost $$$$$$$$$$
• Continued focus on waste avoidance and recycling
• Environmental opposition will diminish because of common ground interest (German model)
• Thermal Recycling® will play a vital part in achieving recycling and Kyoto objectives
• Cities and counties will set the pace to achieve landfill diversion goals – eventually 100%
Final Thoughts

• We need to continue our efforts to minimize waste production
• Not all waste produced can be recycled
• But we should not waste our waste - it is too valuable
• Landfilling is neither environmentally responsible nor is it economical – All we do is leave future generations a legacy of irresponsibility!
Example: Bottom Ash
(not mixed with boiler or fly ash)
Bottom ash ‘up close’
‘Size Matters’
Applications of Bottom Ash

– Construction of roads (big & small)

– Stabilization of road surfaces

– Stable Foundation Base: Container Terminals, Warehouses, Shopping Malls, Office Buildings, Schools, etc...

– Earthwork measures
  (Noise protection barriers and embankments)
Container-Terminal Altenwerder, Hamburg (3 million TEUs annually)
Application of ash during construction
“If you are not part of the solution you are part of the problem”

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