An Alternative SWM Technology
A PRESENTATION to the CRSWP SWMP Steering Committee
July 21, 2009
Introduction

• Why we are here?
  – Present an **Alternative Technology** for SWM
  – Sistema Ecodeco®

• Who are we?
  – Ecodeco® Group researches, designs, constructs, and manages plants and equipment for the disposal of waste

• Who is here today?
The presentation

A brief History
Our Technology
Our Projects
A Case Study
The presentation

A brief History
Our Technology
Our Projects
A Case Study
Our History

• Ecodeco® was born in Lombardy, Italy, in the second half of the 1970’s
  • consequence of early environmental legislation
  • goal was to assist firms in modifying their productions processes in order to obtain fewer by-products, or by-products that could then be used by others

• Founded by the Giuseppe Natta, son of world famous scientist Prof. Giulio Natta, winner of the Nobel Prize in Chemistry in 1963
Our History

• In the early 1980’s, Ecodeco® implemented an efficient modular system of activities that made it possible to recover or properly dispose of almost 20 million tons of industrial waste in the last 20 years.
Our History

• In the 1990’s, Ecodeco® began the development of the Biocubi® Process
  – allows the elimination of the degradable component of the residual fraction of MSW and use its energy to produce, a dry, stable, easily transportable waste with a higher energy content (Amabilis®)
Our History

Pavia, Italy

• As of today, Ecodeco® has developed a system of installations including Intelligent Transfer Stations (ITS®), Activated Bioreactors and integrated plants
  – represent a combination of proven innovative concepts, procedures, and methods

• Today, Ecodeco® is a main player in the area of waste management in Europe.
The presentation

A brief History

Our Technology

Our Projects

A Case Study
The Technology

• The Origin of Waste
The Technology

• The Origin of Waste
The Technology

• The Origin of Waste

Improperly dispose of the waste
The Technology

• The Origin of Waste

“Properly” dispose of the waste
The Technology

• The Origin of Waste

“Use” the waste
The Technology

- The Origin of Waste
The Technology

- Using/Recovering the Waste

Recycled through direct usage
Recovered through source separation
Residual Fraction
The Technology

- Using/Recovering the Waste

- Recovered by Direct Usage
- Recovered via Source Separation
- Residual Fraction

- Energy
- Plastic
- Metal
- Paper
- Compost
- Glass
The Technology

• The Recovery Process - BIOCUBI® Process
  – The fermentable organics in the waste are used for drying the Residual Fraction of Municipal Waste Through Aerobic Digestion
The Technology

• The Aerobic Treatment of Waste
  – Bio-drying by controlled ventilation

Shredded Waste

Organic Fraction (20~40%)

Aerobic Treatment

130°F

Water evaporates, captured, then purified through Biofilter
The Technology

- The Material Obtained is the Amabilis®
  - Odorless
  - Dry
  - Clean
  - Stabilized
  - Sanitized

100 lbs of Residual Fraction
30 lbs of Clean Water
70 lbs of Amabilis®
The Technology

• What happens to the Amabilis®

70 lbs of Amabilis®

Option 1

Option 2

Further Refinement

(50lbs) Secondary Fuel

(20lbs) Landfill/Cement Kiln

30% Reduction
The Technology

- What happens to the Amabilis®

Further Refinement

Mechanical Separation

To Recover:
- Secondary Fuel
- Ferrous Material
- Non-Ferrous Metals
- Heavy plastic and other inert materials

Extraction through Conveyor
Screening
Upper-sieved Separation via Air Drum Separator
Shredding (secondary shredder)
Removal of Ferrous Material via Magnets
Separation of Non-Ferrous Metal
Compaction of Secondary Fuel Recovered
The Technology

• The **Advantages**
  – Technology is proven and reasonably spread in Europe
    • Compared to Thermal Gasification
  – Relatively economical
    • Compared to mass burning and mechanical processing of waste
  – Requires relatively less capital
    • Compared to mass burning
The Technology

• The Advantages (Continued)
  – Consistent with your SWMP objectives
  – Private sector interest already generated (Buzzi Unicem USA)
  – Provides multiple solutions
  – Possibility for future expansion, upgrade and integration with other technologies
  – Lower CO$_2$ emissions than coal when used as secondary fuel
The Technology

- Implementation

- Facility Size: 7.5 Acres

- Lot Size: 20 Acres
The Technology

- Implementation (Continued)

  - Estimated Capital Cost
    - $64 mm or $14/ton/year
  - Estimated Cost of Operation
    - $38.0/ton/year
The Technology

• Implementation (Continued)

Design and Construction

36 Months
The presentation

A brief History 
Our Technology 
Our Projects 
A Case Study
## Our Projects

### In Italy

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Bio-drying</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incoming waste</strong></td>
<td>Municipal Solid Waste (Household and similar Commercial); Organic Fraction</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>120,000 t / year of Municipal Waste (Household and similar Commercial) &lt;br&gt; 4,600 t / year of Organic Fraction</td>
</tr>
<tr>
<td><strong>Area being served</strong></td>
<td>Province of Biella</td>
</tr>
<tr>
<td><strong>Beginning of activities</strong></td>
<td>May 2003</td>
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</table>
Our Projects

• In Italy

<table>
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<tr>
<th>Purpose</th>
<th>Bio-drying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming waste</td>
<td>Municipal Solid Waste (Household and similar Commercial)</td>
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<tr>
<td>Capacity</td>
<td>80,000 t/year</td>
</tr>
<tr>
<td>Area being served</td>
<td>Province of Pavia</td>
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<tr>
<td>Beginning of activities</td>
<td>February 1996</td>
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<tr>
<td>Management</td>
<td>Fertilvita s.r.l.</td>
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Our Projects

- In Italy

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Bio-drying and refinement section for energy recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming waste</td>
<td>Municipal Solid Waste (Household and similar Commercial)</td>
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<tr>
<td>Capacity</td>
<td>75,000 t / year</td>
</tr>
<tr>
<td>Area being served</td>
<td>Province of Lodi</td>
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<tr>
<td>Beginning of activities</td>
<td>May 2000</td>
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<tr>
<td>Management</td>
<td>Bellisolina S.r.l.</td>
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Montanazo Lombardo
## Our Projects

- **In the United Kingdom**

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Bio-drying and refinement section for energy recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming waste</td>
<td>Municipal Solid Waste</td>
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<tr>
<td>Capacity</td>
<td>180,000 t / year</td>
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<tr>
<td>Area being served</td>
<td>East London</td>
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<tr>
<td>Beginning of activities</td>
<td>April 2006</td>
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<tr>
<td>Management</td>
<td>Shanks Group plc - in collaboration with Ecodeco®</td>
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Our Projects

• In the United Kingdom

Dumfries & Galloway (Scotland)

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<tr>
<th>Purpose</th>
<th>Bio-drying and refinement section for energy recovery</th>
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</thead>
<tbody>
<tr>
<td>Incoming waste</td>
<td>Municipal Solid Waste</td>
</tr>
<tr>
<td>Capacity</td>
<td>65,000 t / year</td>
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<tr>
<td>Area being served</td>
<td>Dumfries &amp; Galloway</td>
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<tr>
<td>Beginning of activities</td>
<td>August 2006</td>
</tr>
<tr>
<td>Management</td>
<td>Shanks Group plc - in collaboration with Ecodeco®</td>
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Our Projects

• In Spain

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Bio-drying; production of High-Quality Compost</th>
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<tbody>
<tr>
<td>Incoming waste</td>
<td>Municipal Solid Waste; Organic Fraction</td>
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<tr>
<td>Capacity</td>
<td>70,000 t / year of Municipal Solid Waste; 33,000 t / year of Organic Fraction</td>
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<td>Area being served</td>
<td>Cervera del Maestre</td>
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<td>Beginning of activities</td>
<td>2012 (Expected)</td>
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<td>Management</td>
<td>Teconma S.A. and Azahar S.A. - Ecodeco®</td>
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THANK YOU!