MECHANICAL AND BIOLOGICAL TREATMENT PLANT
THIVA, GREECE
# Mechanical and Biological Treatment

<table>
<thead>
<tr>
<th>INPUT</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal Waste</td>
<td>32.000 Tn/year</td>
<td></td>
</tr>
<tr>
<td>Preselected Recyclable Waste</td>
<td>1.700 Tn/year</td>
<td></td>
</tr>
<tr>
<td>Preselected Organic Waste</td>
<td>1.850 Tn/year</td>
<td></td>
</tr>
<tr>
<td>Green Waste</td>
<td>1.300 Tn/year</td>
<td></td>
</tr>
<tr>
<td>Sludge</td>
<td>7.000 Tn/year</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Recyclable Materials</td>
<td>7.000 Tn/year</td>
<td></td>
</tr>
<tr>
<td>Compost and CLO Production</td>
<td>7.500 Tn/year</td>
<td></td>
</tr>
<tr>
<td>Energy Production</td>
<td>5.000 MWh/year</td>
<td></td>
</tr>
</tbody>
</table>
The mission: Transforming Waste into Resources
Municipal Waste Treatment

- MSW
  - Mechanical Separation
    - Recyclable Materials
  - Anaerobic Digestion
    - Bio-oxidation Process-Maturation
      - Refinery
        - Energy
          - CLO
Biowaste Treatment

- Preselected Organic Wastes
  - Shredding
  - Green Wastes
  - Anaerobic Digestion
  - Bio-oxidation Process-Maturation
  - Sludge
  - Energy
  - Refinery
    - Compost
Waste Reception

- MSW (green bin)
- Preselected Recyclables (blue bin)
- Preselected Organics (brown bin)
- Sludge
Mechanical Separation Line

- Capacity 20 Tn/H
- 1 Line
- Based on Optical sorters
Mechanical Separation Line

Bag Opener → Preselection Cabin → Magnet → Trommel → Shredder

Ballistic Separator

Optical Sorters

- Paper Film
- PET PP/PS TETRAPAK

Ferrous Materials

Biological Treatments

Small fraction

Medium fraction

Big fraction

Eddy Current

Non-Ferrous Materials
Biological Treatment

- 6 dry anaerobic digestion cells
- 4 composting cells (WATT’s patented technology)
- 2 hybrid cells (WATT’s patented technology)
- Wastewater Treatment Plant: RO
Anaerobic Digestion Cells

INPUT
- ~ 23,000 Tn/year Organic Fraction MSW

OUTPUT
- 20,000 Tn/year Organics
- 2,200,000 m³/year biogas

CIRCLE DURATION
- 21 days
Anaerobic Digestion
Composting Cells

BASED ON WATT’S PATENTED TECHNOLOGY

INPUT

- 20,000 Tn Organics from Anaerobic Digestion
- Sludge

OUTPUT

- 15,000 Tn Organics for Maturation

CIRCLE DURATION

- 14 days
Hybrid Cells

BASED ON WATT’S PATENTED TECHNOLOGY

Anaerobic followed by Aerobic digestion inside the same cell

INPUT

- 1.850 Tn/year Organics
- Green Waste

OUTPUT

- 1.500 Tn/year Organics for Maturation
- 112.000 m³/year biogas

CIRCLE DURATION

- 35 days
Waste-water Treatment

- Capacity 50 m3/day
- Processing water from
  - Aerobic treatment
  - Dehydration of sludge
Biogas Management

INPUT
- 2,200,000 m³/year biogas
  - 1,500,000 Rich in CH₄
  - 700,000 Poor in CH₄

OUTPUT
- 5,000 MWh/year electrical energy
- 2,400 MWh/year thermal energy
Biogas Management

- Anaerobic Cells
- Hybrid Cells
- Poor in CH4 Biogas Storage
- Rich in CH4 Biogas Storage
- Flare
- CHP
- Active Carbon Filter
- Chiller
- Electricity
- Thermal Energy
- Anaerobic Digestors
PRODUCTION OF CLO AND COMPOST

INPUT

- 11.340 Tn/year
- Capacity 8tn/h
- Equipment used:
  - 2 stage star screen
  - Densimetric table
  - Air separator
Summary

1 ton of waste

- Biogas: 57 NM3
- Recyclable Materials: 160 kg
- Electricity: 114 kWh
- Thermal Energy: 55 kWh
- Compost/CLO: 170 kg
- PET
- PP/PS
- TETRAPAK
- Paper Film
- Metals
THANK YOU