Preparation of biological waste and MSW using the OREX Press
The “problem”

Municipal solid waste has always been considered a problem to be solved as quickly as possible disposing of it in the landfills.

If we change the approach to the waste, it is possible to find a rich source of recyclable materials and energy.
Municipal solid waste as a resource is composed of three main product groups:

- Recyclable materials
- Organic fraction
- Dry fraction
MSW contains
• 40-45% biodegradable waste
• 55-60% residual waste
• 25-30% of the total amount is water

Biological waste contains
• 70-80% biodegradable waste
• 15-20% residual waste
• 65-75% of the total amount is water
How can we process biological waste and MSW?

Once the potential of the different components of the waste is identified, it is possible to design the recovery process:

» recycling of materials
» energy recovery from the wet fraction
» energy recovery from the dry fraction
The extruder press

- The pressure extrusion process performed by db Technologies consists of high-pressure treatment of Municipal Solid Waste.
- The waste is squeezed in special extrusion chambers fitted with holes in the external surface.
- As a result of the high pressure, the organic part of the waste is extracted through the holes and physically separated from the dry one.
From waste to energy: the heart of the process is **the press**

VMpress develops two different machines:

- MSW/domestic waste
- biological waste
db technologies is developing 3rd generation press:
The OREX Press

• The MSW is loaded into a chamber;
• the material is compressed at extremely high pressure;
• cellular materials behave similar to a liquid and are pressed from the waste, which is a perfect start for digestion;
• what remains is a dry waste fraction with a higher caloric value.
The dry fraction of the OREX Press

The dry fraction from the extruder press can be used as RDF in grid burning plants or re-used as recyclable material.

It is composed of plastics, cardboard, wood and inert materials.

Its main characteristics are:
- humidity: 18-20 %
- low heating value: 12.000 – 16.000 kJ/kg
- inert content: sand, stones, glass 25 %
- density: 0,5-0,8 t/m³
The **dry fraction** from the OREX Press

From the press-extruded dry fraction it is easily possible to produce high quality **RDF**, because of its high pressure treatment.

The several following processes are:
- screening
- wind sifting
- optical sorting
- magnetic separation
The wet fraction from the Orex press

The wet fraction squeezed out of the extrusion chambers can be put into anaerobic digestion plants for the production of biogas.

Its main characteristics are:
Humidity: 55-85 %
Organic substance content: 65-85 %

Higher biogas yield and shorter retention time in comparison to other processes
The wet fraction from the Orex press

- The material that is extruded from the waste is broken and opened up for digestion;
- the material is extruded so it contains no large items;
- Not much contaminants inside;
- it is easily transportable;
- total solids 30-35%, so less water in dry fraction;
- perfect for dry digestion.
Equipment of db technologies BV for preparing wet fraction with:

- Hopper
- Cyclone
- Sink tank
Equipment of db technologies BV for preparing dry fraction with:

**Screening with Lamella Wave screen**

Top deck: lamella grid for coarse screening  
Bottom deck: flip-flow screen
Equipment of db technologies for preparing dry fraction with:

**Ballistic Wind sifting**
- Hard parts bounce and roll on conveyor
- Lighter parts are lifted up by the air flow
Equipment of db technologies for preparing dry fraction with:

**Star screen**
- separates fine material from the dry fraction
- separates large fraction from the compost
Project Ventspils  Latvia

- sorting with Orex press
- cleaning system
- wet AD system
Project Ventspils, Latvia

- Sorting out the recyclables
Thank you for your attention

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