

nexus



Energy & Material Cycle of Solid Waste

- Solid Waste to Energy
- Recycling of Solid Waste

MYT[®] *Maximum Yield Technology (MYT) is the most innovative MBT process for the treatment and utilisation of residual household waste*

What is MYT?



- **MYT[®]** is a innovative technology for treatment and recycling of household waste
- **MYT[®]** does not require household-waste separation at source
- **MYT[®]** does not require huge areas of land and is nearly odor free
- **MYT[®]** is based on the experience with the ZAK* methodology, the mechanical-biological waste treatment of residual household waste.
- The **MYT[®]** process aims to gain the maximum energy content of the waste and to utilize fully recyclable energy sources in the form of quality-assured fuels and energy-rich biogas.
- The **MYT[®]** minimizes the emission

*Municipal special purpose association Kahlenberg, Germany

What is MYT?

- **MYT®** consists of a multi-stage (modular) process in which the material flow of residual household waste is divided in:
 - Metals and mineral components
 - Energetically usable components (biogas and alternative fuels) and
 - Water.

A small residue remains, which must be disposed in a waste incineration plant or landfill.

Instead of the exclusive use of landfill or incineration, maximum economic use is made of the waste in the form of raw materials, quality-assured fuels and energy-rich biogas.

MYT[®] *Project of Community Waste Management at Onnut Solid Waste Disposal Center, Bangkok, Thailand*

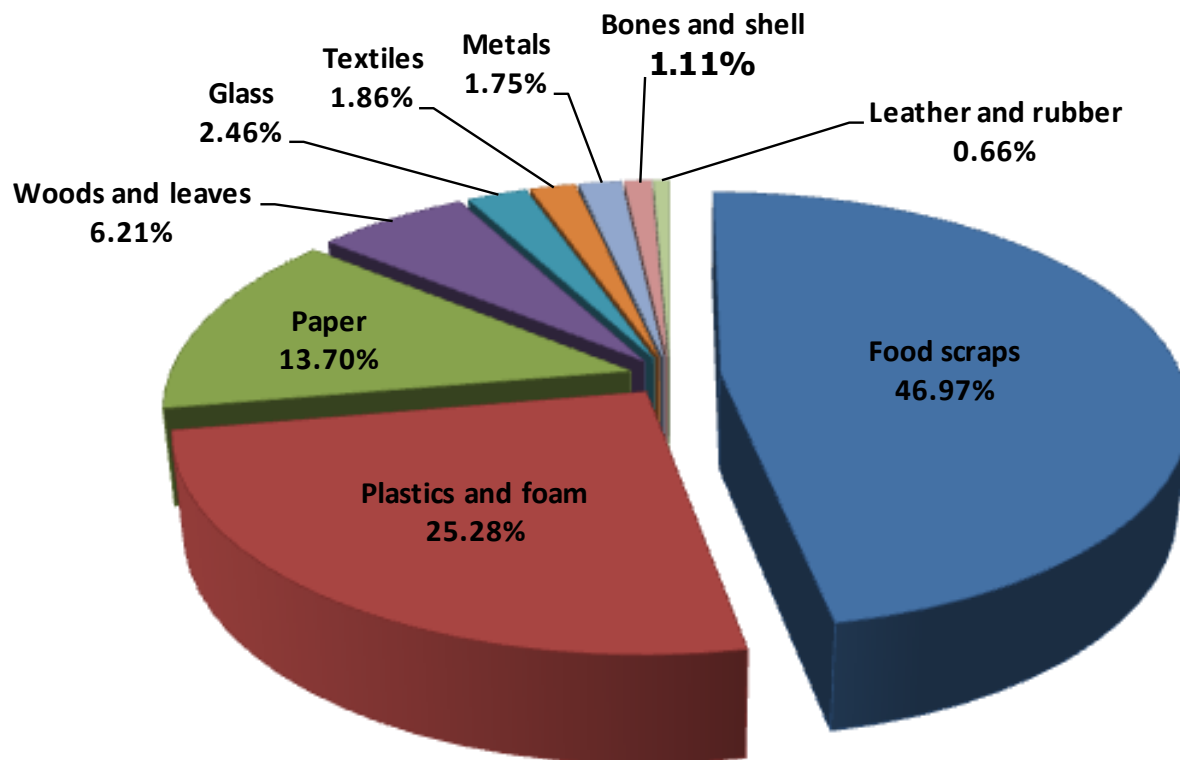


Waste composition:

Average moisture content
from BMA 44.54%

Designed moisture content
54%

Reference:



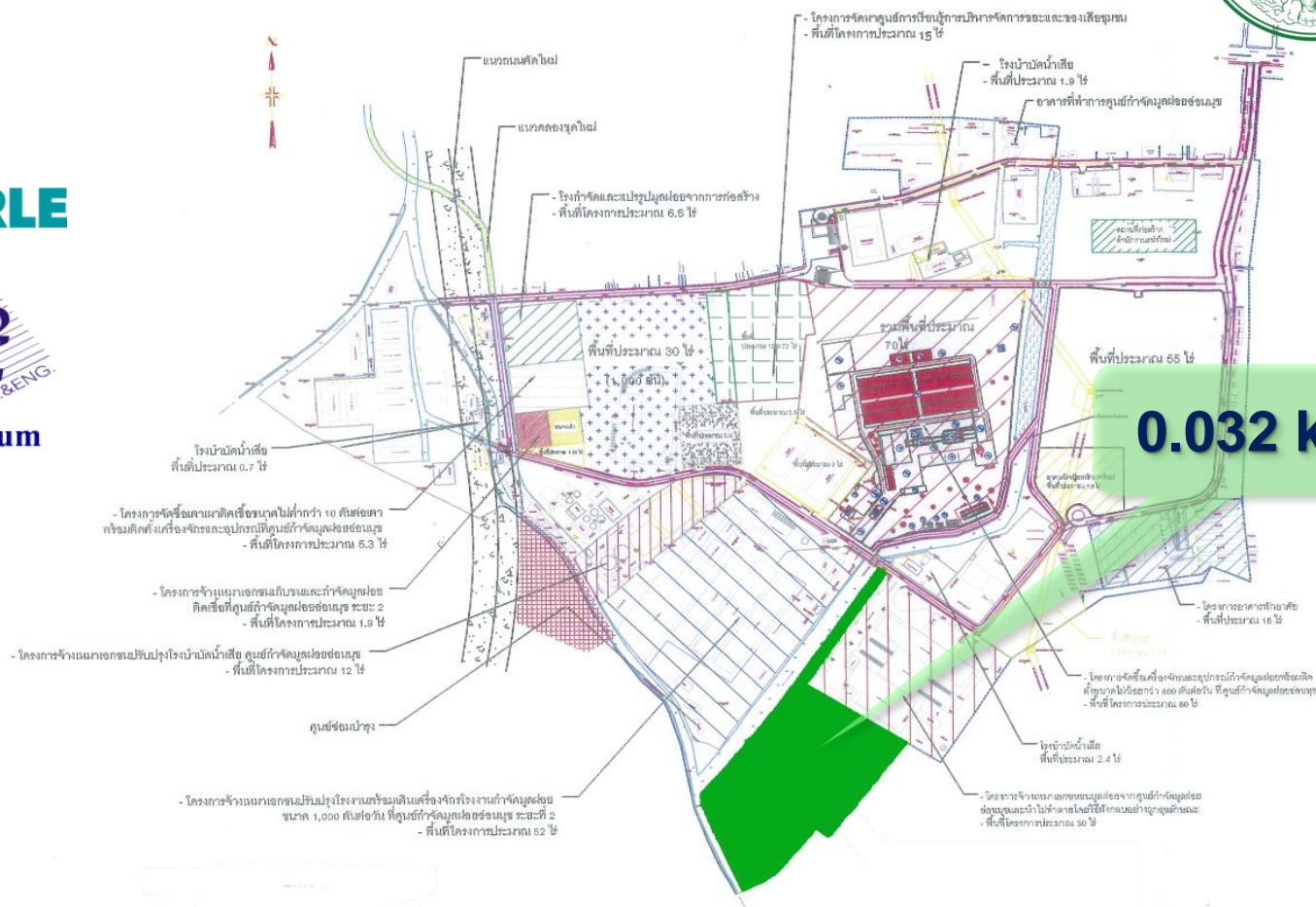
Source:

Research Sub-Division, Solid Waste, Hazardous Waste and Nightsoil Management Division, Department of Environment,
BMA, Fiscal Year 2016.

MYT *Project of Community Waste Management at
Onnut Solid Waste Disposal Center, Bangkok, Thailand*

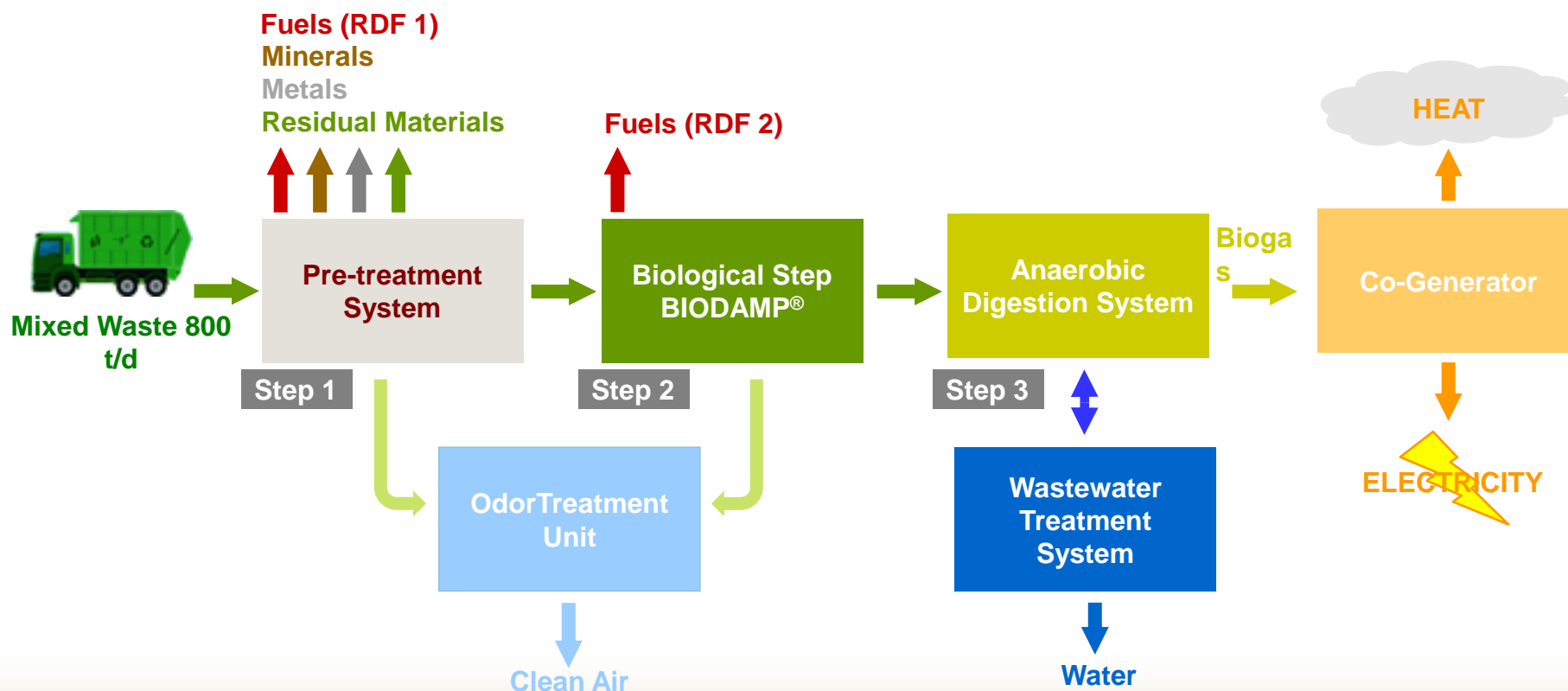


Reference:



0.032 km²

MYT® *Project of Community Waste Management at Onnut Solid Waste Disposal Center, Bangkok, Thailand*



MYT **Maximum yield technology**
Waste Acceptance / Waste Bunker

Reference:



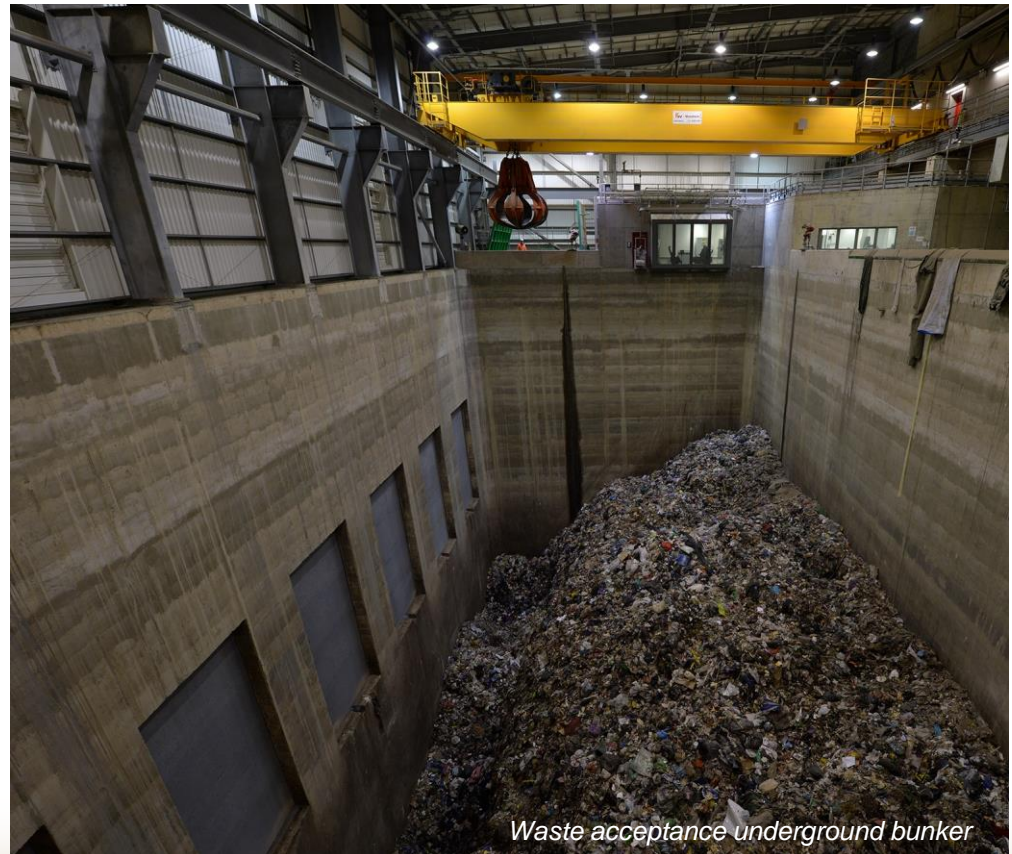
Waste acceptance bunker municipal special purpose association Kahlenberg, Germany

MYT[®] Maximum yield technology

Waste Acceptance / Waste Bunker

Reference:
 **WEHRLE**

- If the water content of the waste is very high (>50%) the waste will be delivered to an underground bunker
- Due to weight compression the waste is drained statically in the underground bunker.
- The wastewater is collected and pumped out to the anaerobic stage.
- Wastewater percentage of about 25% of the delivered quantity of waste.



Waste acceptance underground bunker

MYT[®] Maximum yield technology Mechanical Pre-Treatment

Reference:



Mechanical pre-treatment breaks the waste down automatically into defined fractions, according to differences in material and size.

Mechanical pre-treatment includes the following components:



Process block flow diagram and mass balance

Project of Community Waste Management, Bangkok, Thailand

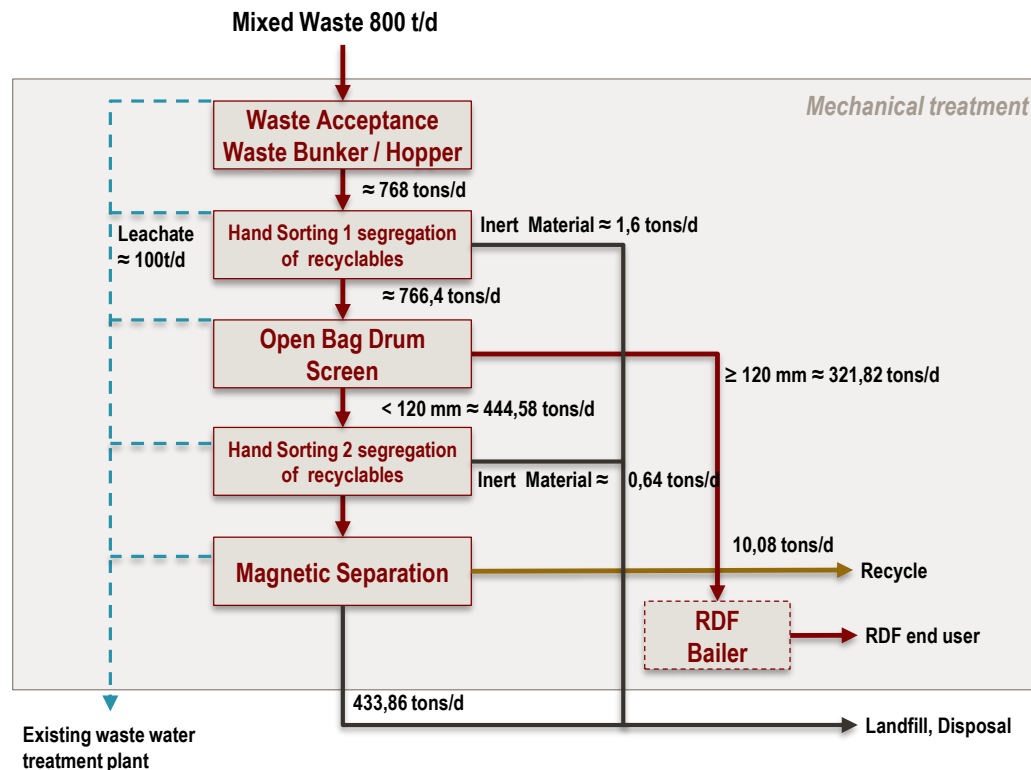
Reference:



WEHRLE



JWE Consortium



Waste Shredder, Magnetic Separator and Disk Separator, hand sorting, Vinh Long, Vietnam

MYT® **Maximum yield technology**
Mechanical Pre-Treatment



Separation of waste into defined fractions:

- Segregation of construction material (*minerals*), bottles (*glass*) and cans (*metals*) from plastics, paper, cardboard and organic matters.



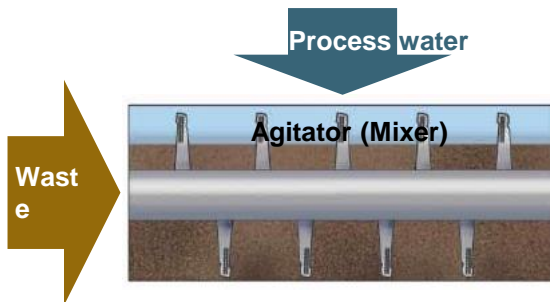
MYT® **Maximum yield technology**
RDF packing system (Baling)

Reference:



MYT[®] Maximum yield technology Biological Step

Reference:



Step 3: Biological Step

The DAMP[®] process (**D**efined **A**erobic **M**ixing **P**rocess)

Function:

- *Hydrolization and percolating out soluble organics*
- *Homogenization of waste*
- *Disintegration of material*



MYT
technology®

Maximum yield

Biological Step

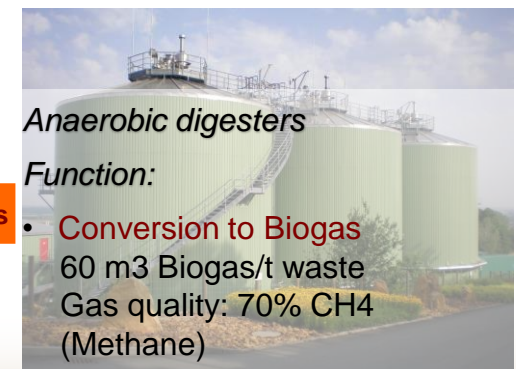
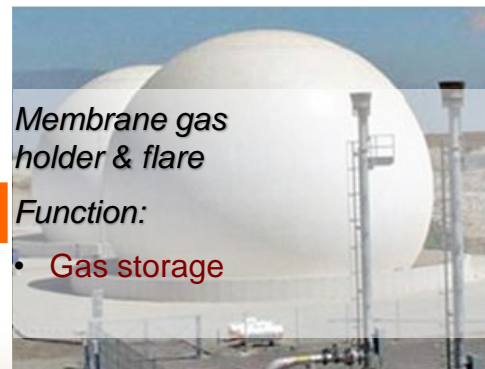
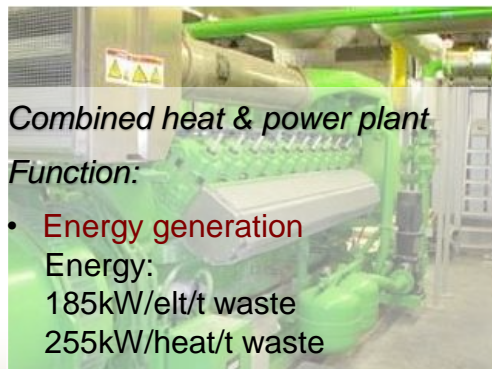
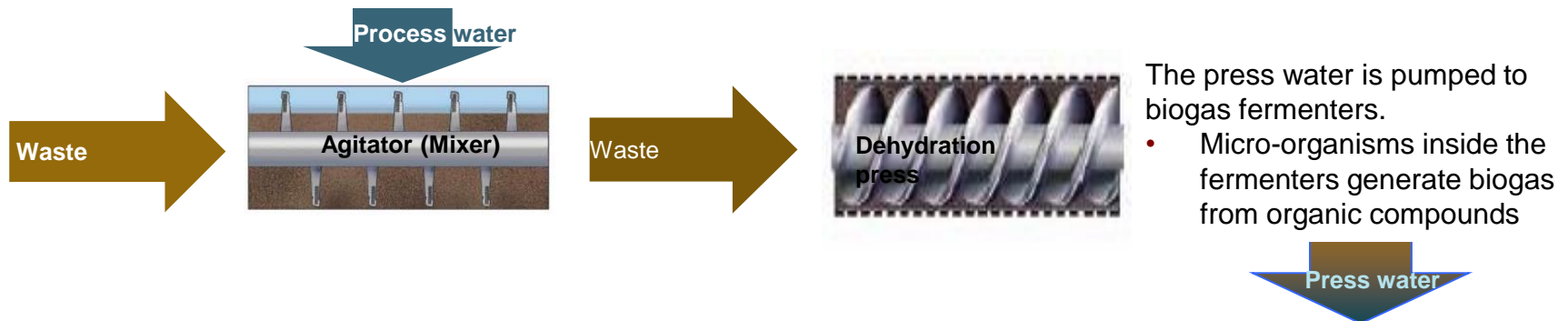
Biological Step - Agitator



MYT[®] Maximum yield technology Bio-gas production

Reference:
 **WEHRLE**

Dehydration of the solids (*mass of crushed and homogenized waste*) for biological drying through presses.





Solids

Biological Drying

Biological drying procedure dries the dehydrated mass of crushed and homogenized waste in an energy-efficient and economical way:

Press water



Water treatment procedure

- clean water (service water)
- water for agricultural irrigation
- nutrient-rich water (liquid fertilizer)

Solids

Anaerobic digesters

Function:

- **Drying of RDF material**
Chemical and biological
stabilisation
Increase of RDF quality & value

MYT[®] Maximum yield technology Mechanical Material Separation

Mechanical Material Separation

Sieving and **sorting** systems break down

- Energy sources (RDF, *Refuse derived Fuels*)
- Minerals

into different grain-sizes.

The minerals can be recycled and used in the construction industry.

The loose & stable, chemically inert and relatively dust free **RDF material**:

- **replaces fossil resources**,
- **supplies industries**, thermal power stations or cement plants with inexpensive, environmentally friendly energy

RDF 0-8mm



Refuse Derived Fuel mid caloric range
(~13,000 MJ/ton)

RDF 30-80mm



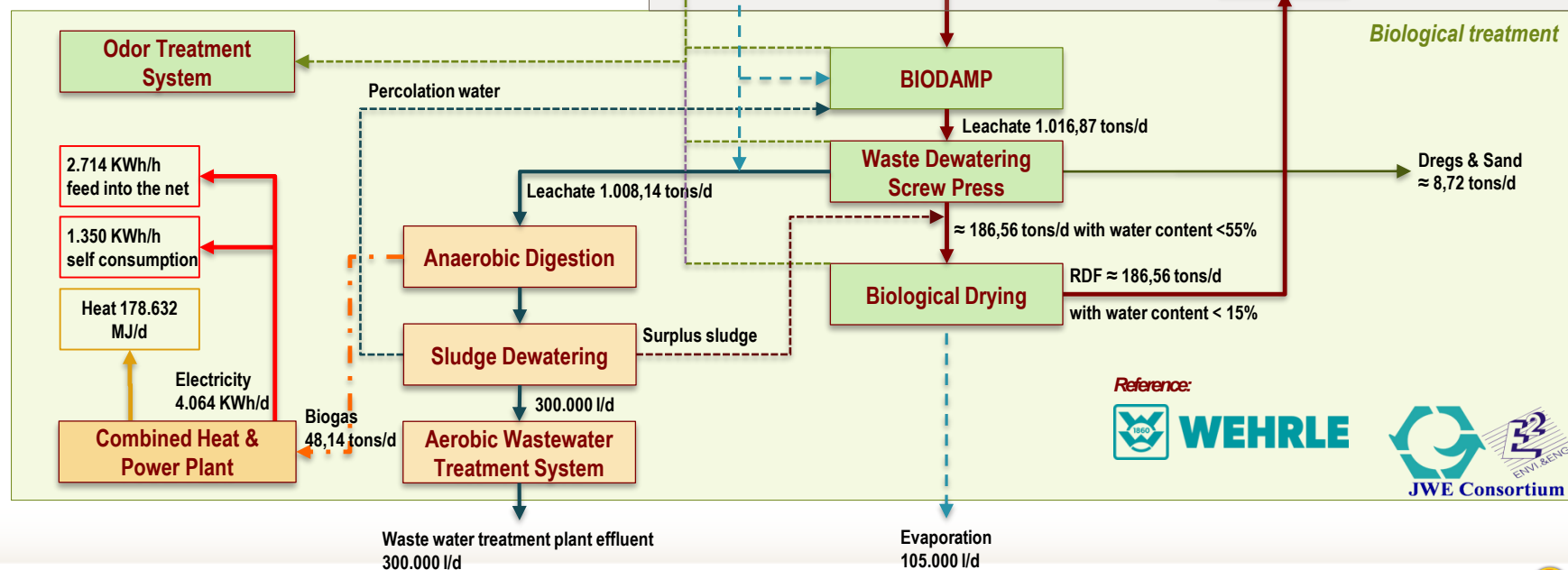
Refuse Derived Fuel high caloric range
(~16,000 MJ/ton)

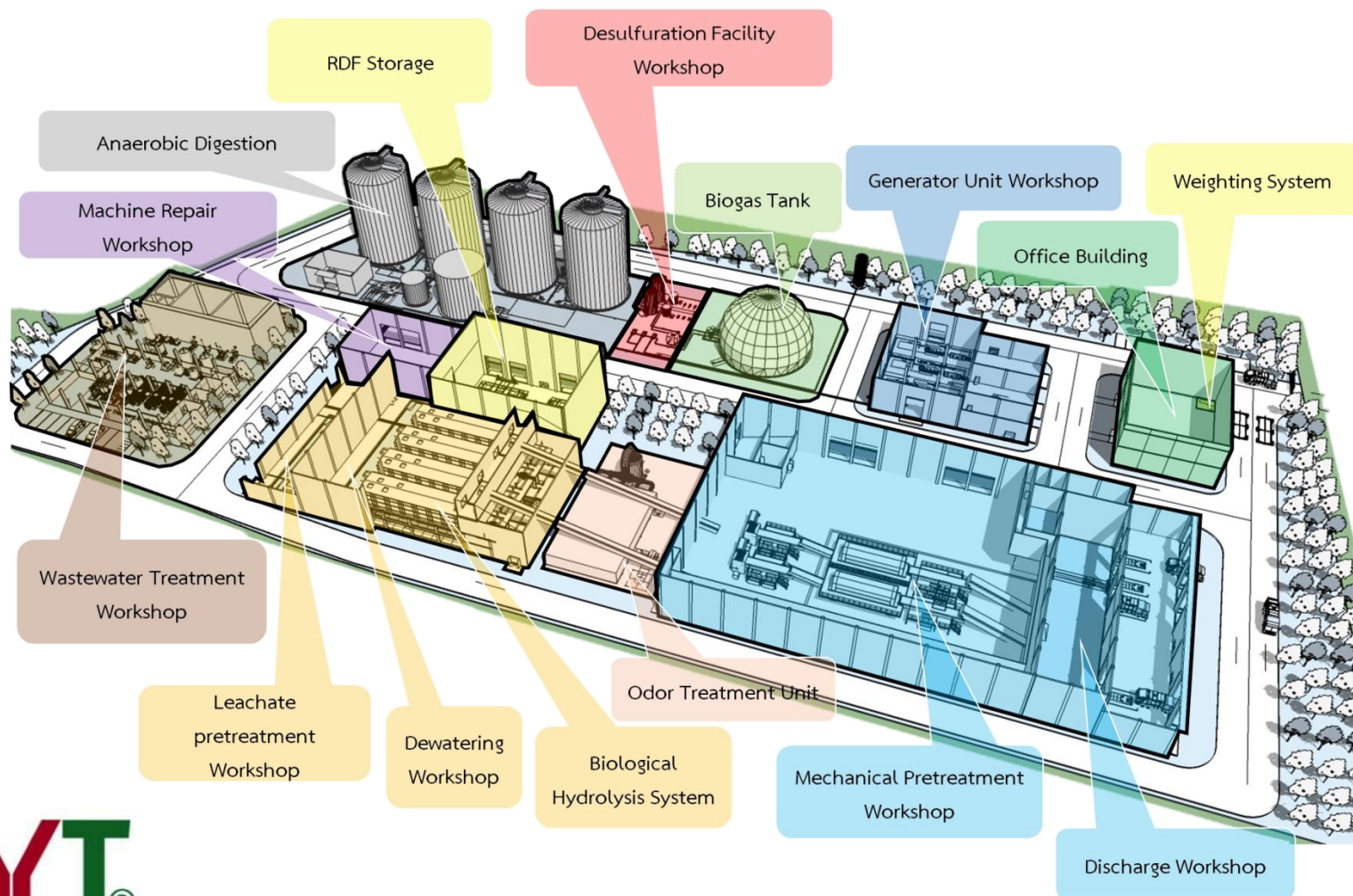
Minerals



Process block flow diagram and mass balance

Project of Community Waste Management, Bangkok, Thailand







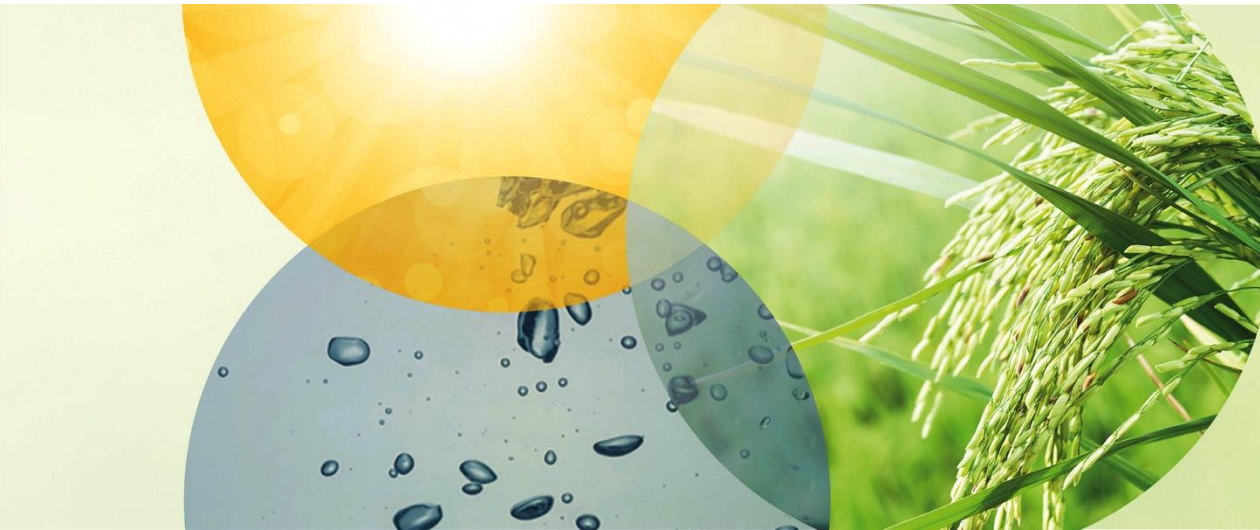


Maximum yield technology

develops residual household waste into an energy resource of the future

MYT - Energy resource of the future

- **MYT® plants are energy-self sufficient** and use **regenerative energy sources**
- The **MYT® process extracts the maximum energy potential** from household waste and makes it available for further utilization.
- **MYT® produces alternative fuels**, which bring a significant reduction of fossil-based energy sources.
- **MYT® produces bioenergy** that is used in an economical and environmentally-friendly way.
- MYT® produces bioenergy that can be transported reliably, flexibly and to suit needs.
- **MYT supports** the goals of the **Paris Climate Agreement** and of the **NDC**



*„It is not enough to know,
one must also apply;
it is not enough to want,
one must also act. “*

Johann Wolfgang von Goethe

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