



Waste Fermentation and Sand – no Problem?

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- 1. Anaerobic digestion of OFMSW**
- 2. New Demands on Biomass Treatment**
- 3. Mechanical Treatment**
 - **Pre-treatment**
 - **Contraries Removal**
 - **Dry Anaerobic Digestion**
 - **Wet Anaerobic Digestion**
 - **Wash Processes**
- 4. Progress in Wet Mechanical Treatment**

Anaerobic Digestion of OFMSW

Anaerobic Digestion has been widely implemented over the past 20 years alongside composting. Substrates range from sewage sludge to OFMSW.

1920	Sewage Sludge
1975	Manure
1985	Organic Industrial Waste Co-Fermentate
1990	Biowaste
1995	OFMSW



Technical requirements for plant equipment increase with the proportion of „contraries“ such as glass, stones, sand and plastics:

Function:

Removal of contraries for protection of equipment

Status quo:

Frequent plant downtime in Anaerobic Digestion of OFMSW



ANALYSIS OF STATUS QUO

„Problems can never be solved by thinking the same way they were raised.“
- Albert Einstein -

New Demands on Biomass Treatment

Energy Efficiency

- Optimizing of total energy efficiency instead of maximum biogas yield
- Only the wet, particle free, anaerobic digestible fraction to Fermentation
- Dry organic fractions into Waste-to-Energy or Recycling

 **no Incineration of Manure – no Fermentation of Wood**

Waste Management

- Priority of Recycling over energy recovery

 **Biogas production not ultimate goal**

Pollutants are incorporated into organic matter by Biological Treatment, result is low product quality: Compost, Biomass-to-Energy, RDF, Fiber-Recycling, plastics, wood

- Reduction of salt by washing and maximum mechanical dewatering instead of drying

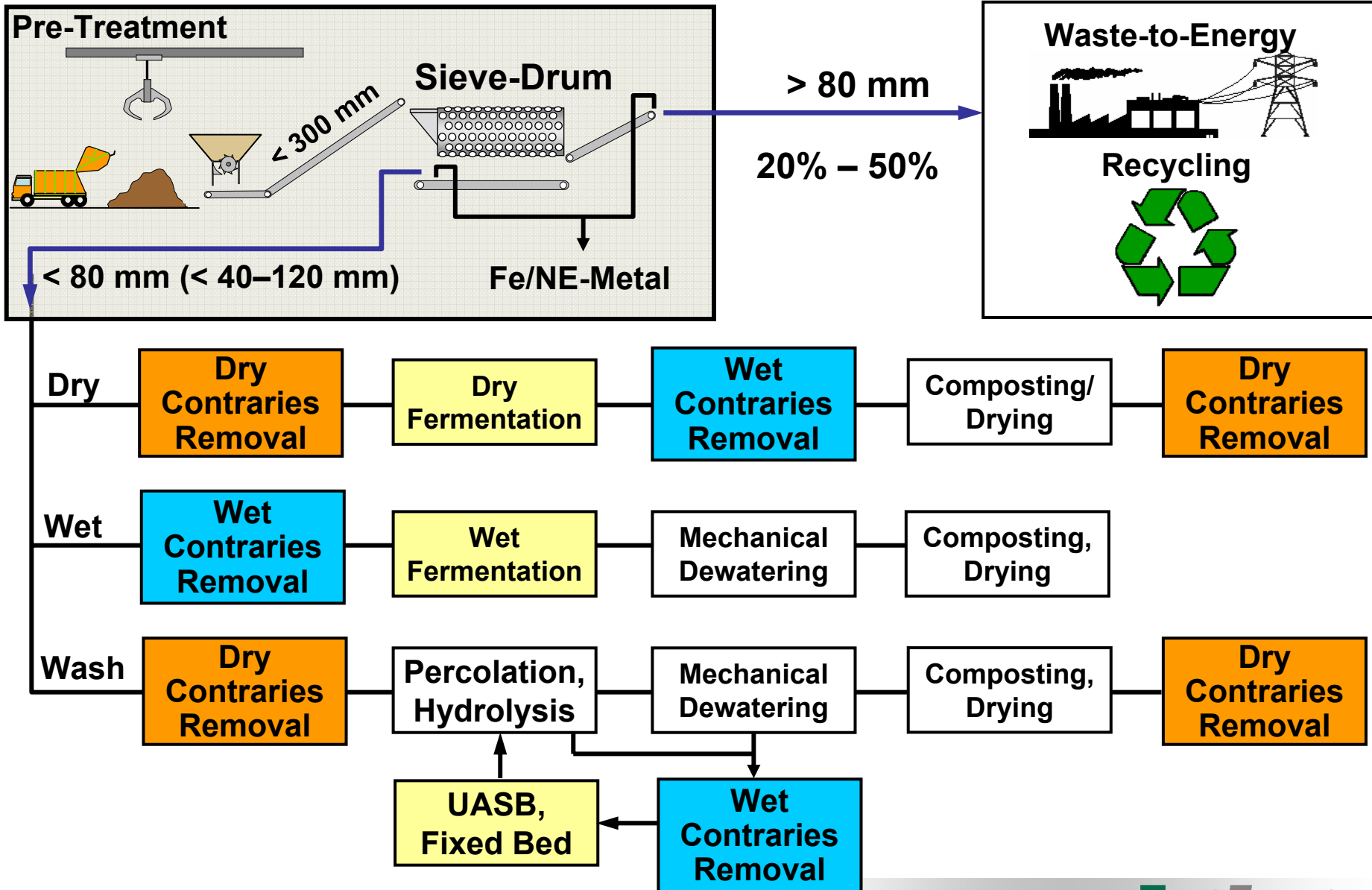
 **no Biological Treatment of utilizable organics**

Emissions

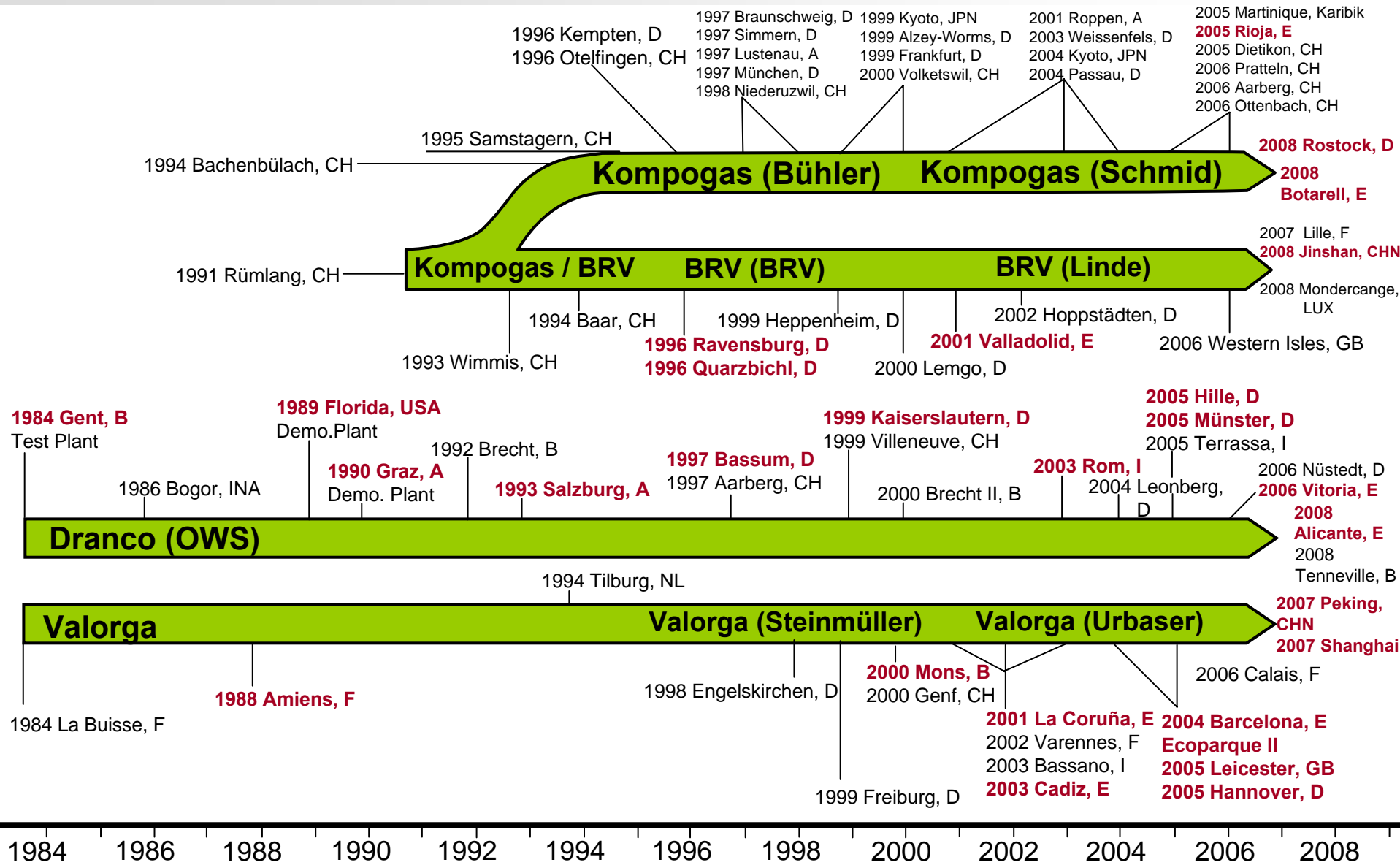
- Minimum odor emissions for public acceptance
- Minimum CO₂-emissions: Minimizing energy consumption and unused energy from composting

 **Composting is not technology of choice**

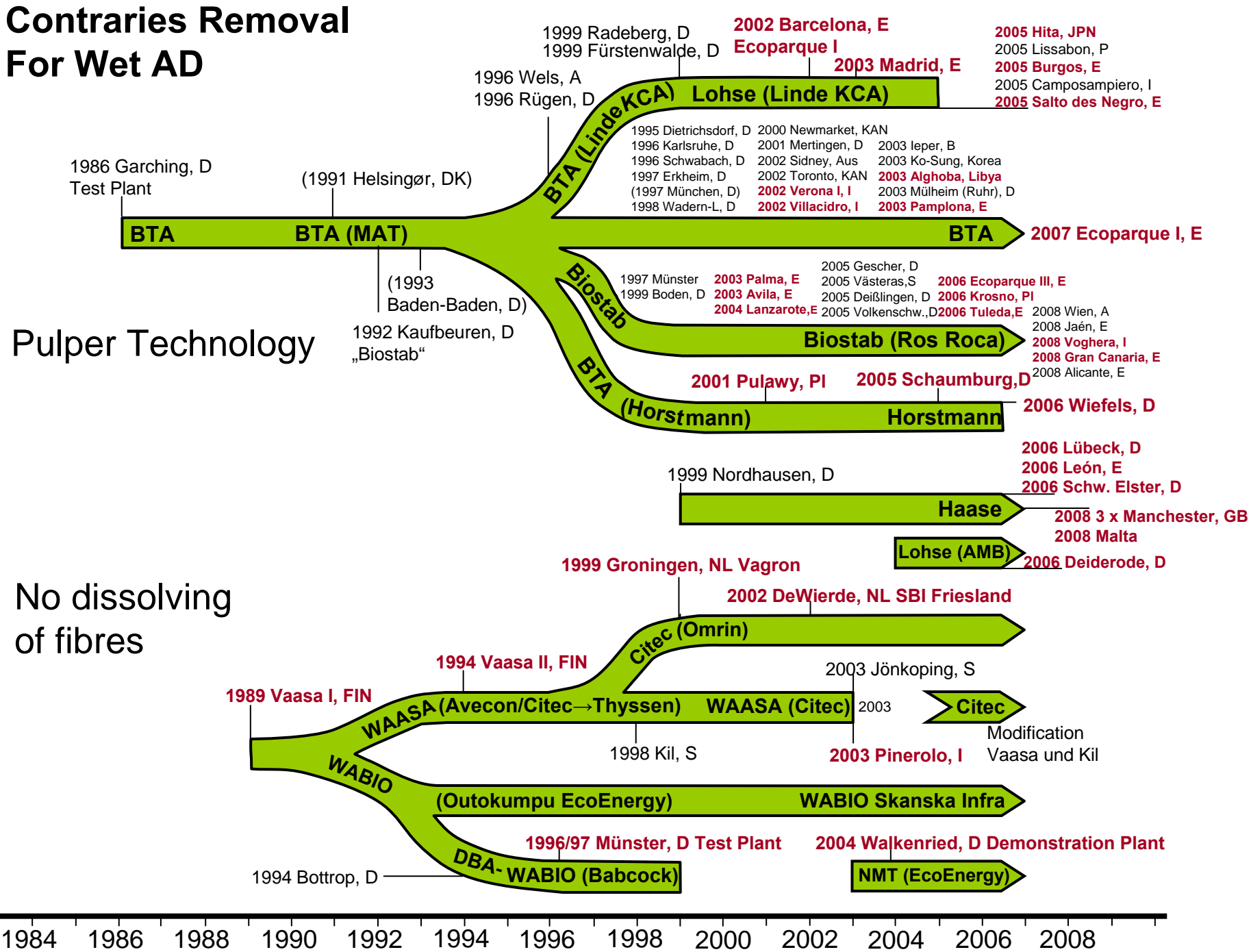
Mechanical Treatment ⇒ AD-Technologys



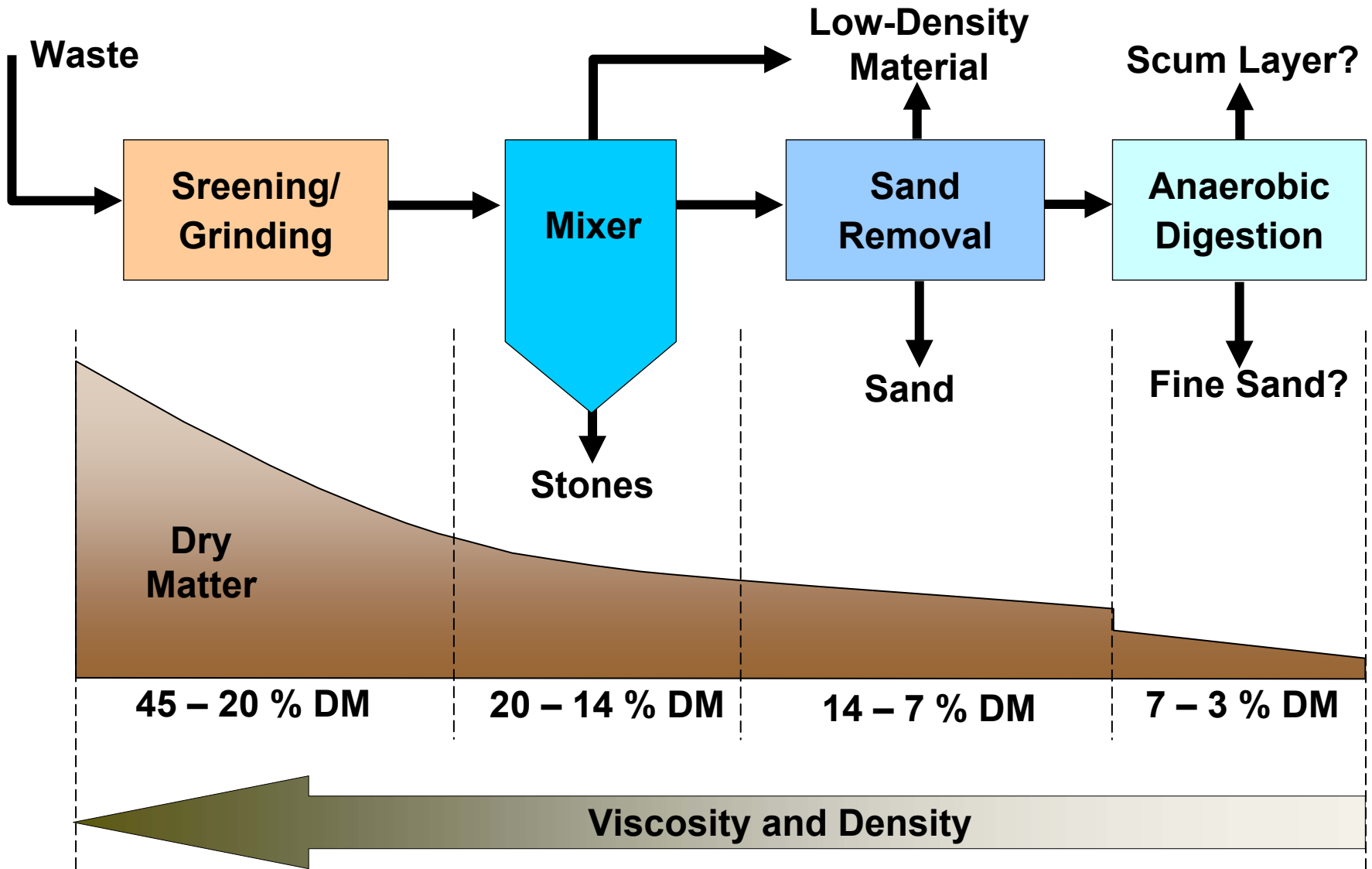
Contraries Removal for Dry Anaerobic Digestion



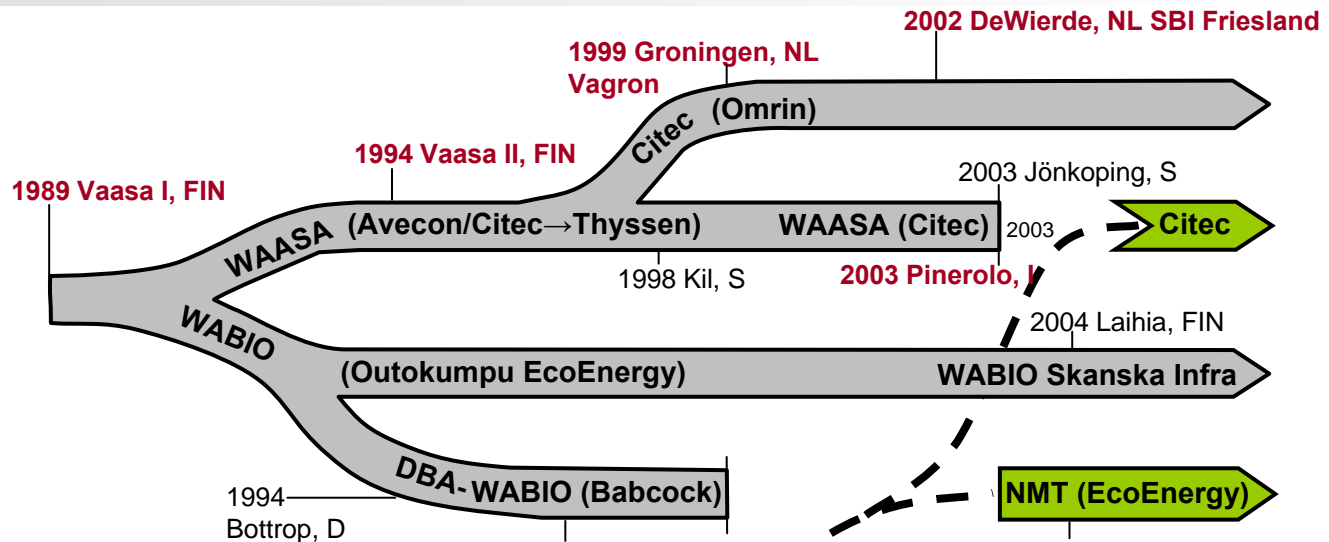
Contraries Removal For Wet AD



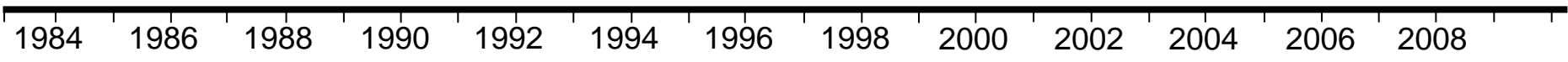
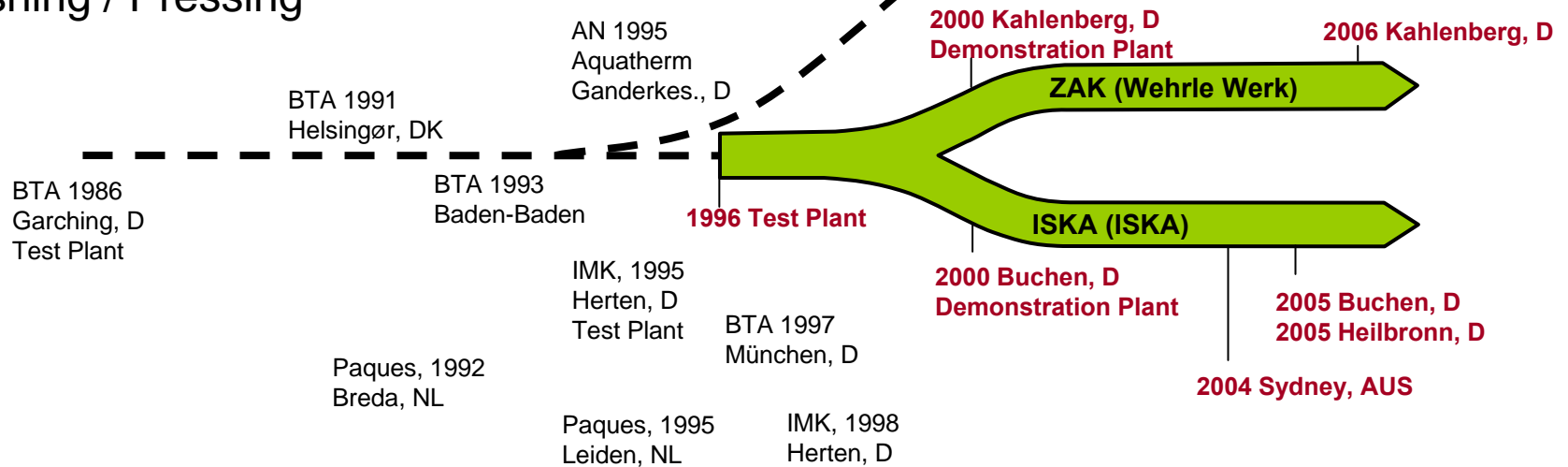
Wet Contraries Removal for Wet-Fermentation



Percolation – Washing / Pressing

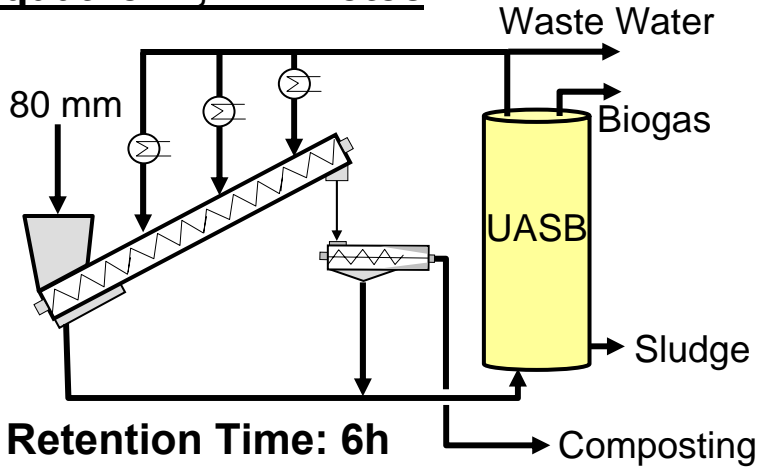


Percolation / Hydrolysis Washing / Pressing

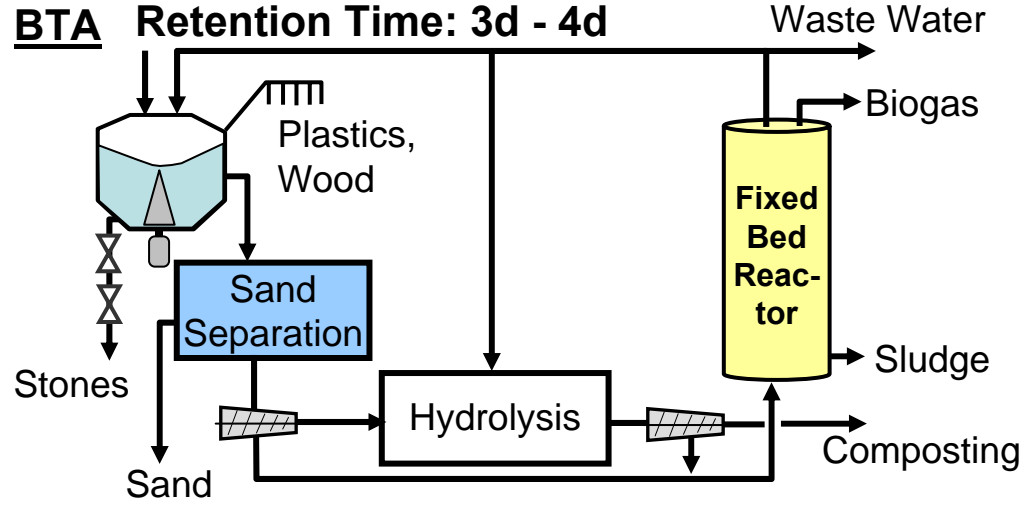


Washing Processes - Examples

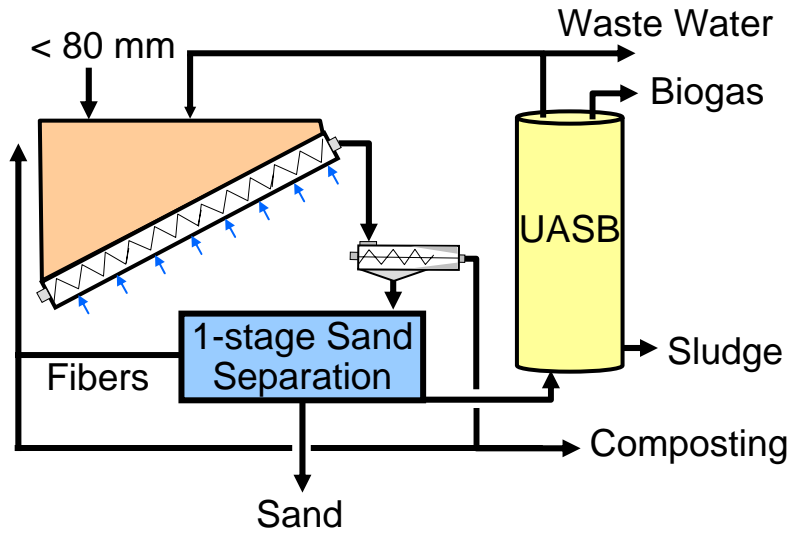
Aquatherm, AN Biotec



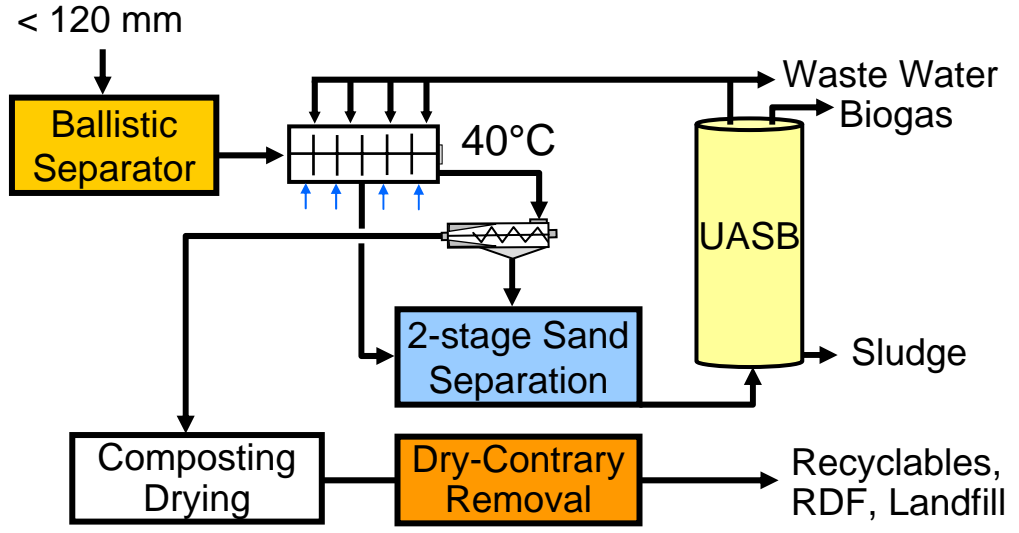
BTA Retention Time: 3d - 4d



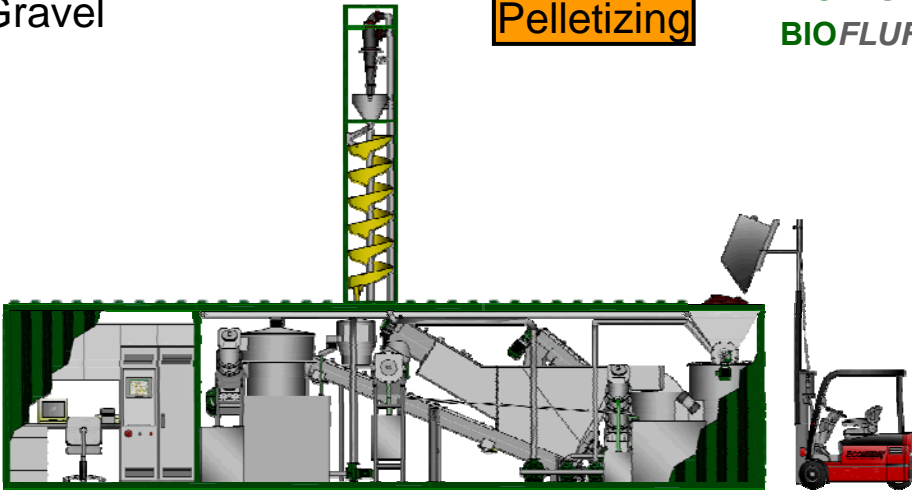
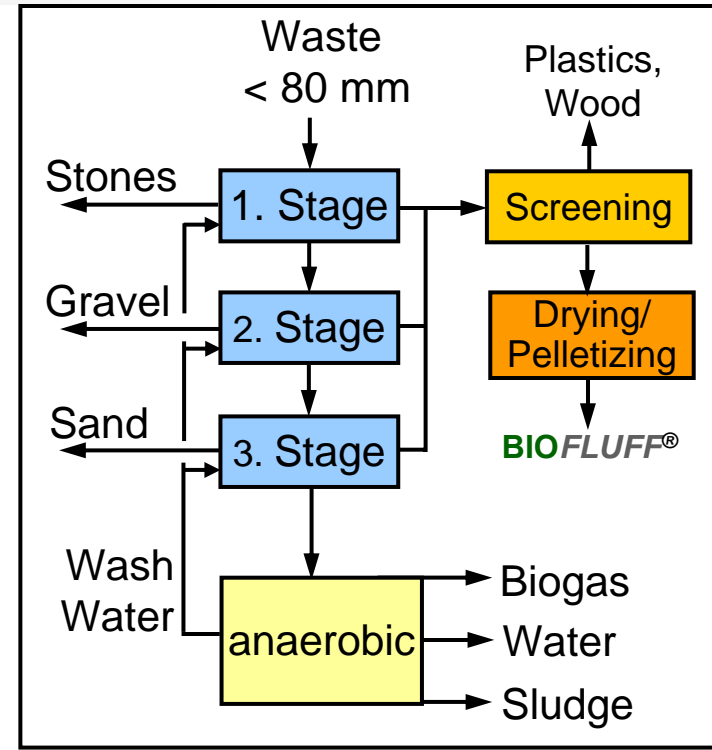
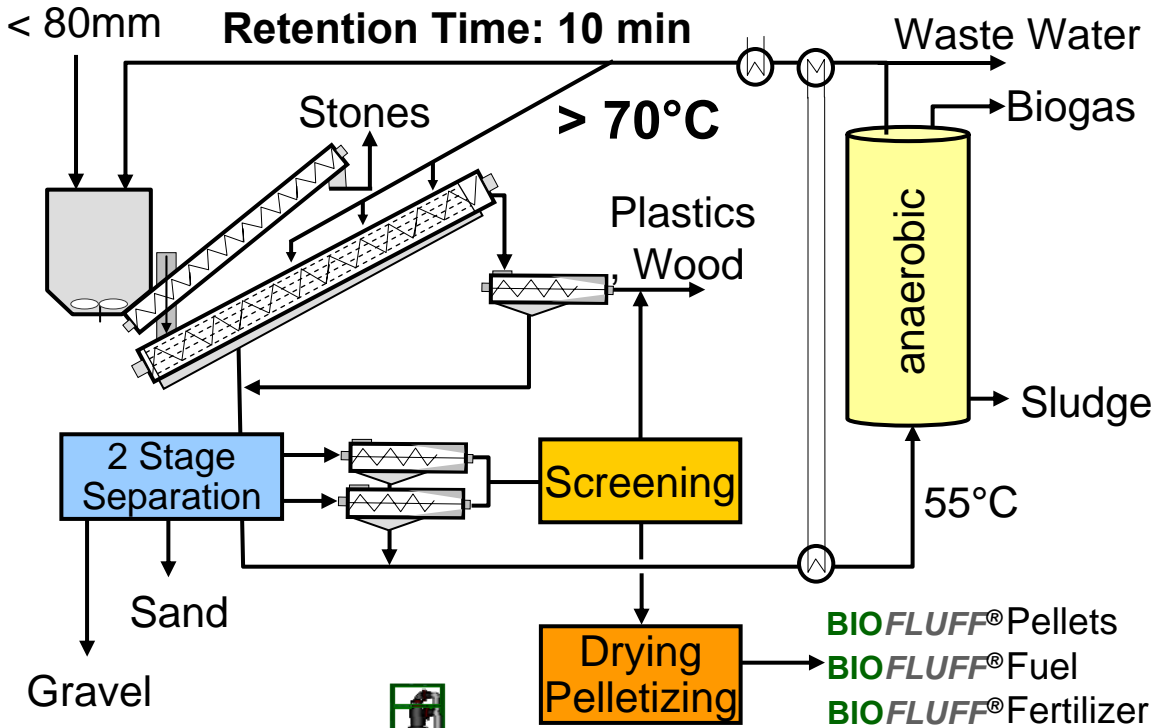
IMK Retention Time: 3d



Percolation Retention Time: 2d - 3d



NMT Process - EcoEnergy





Thank you for your attention!

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www.EcoEnergy.de