

INTECUS GmbH

Waste Management and Environment-Integrating Management



Dipl.-Ing. Joerg Wagner

Mechanical-biological Treatment of MSW as a Possibility to save Landfill Volume

Ho-Chi-Minh-City, October 29th, 2010

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1. Company

- consulting company for environmental engineering founded in 1991 in Dresden
- Acting partners:



Prof. Dr.-Ing. habil. Dr. h.c. Bernd Bilitewski



Dipl.-Ing. Joerg Wagner

- consulting and planning services for waste management and the optimization of production processes (Cleaner Production)

1. Company

- projects in more than 20 countries, e.g. by order of EU, WorldBank, GTZ
- established business contacts in another 15 countries
- representatives in
Vietnam and Malaysia



1. Company – Service fields

Basic design engineering, support in plant permitting, startup and optimization support for waste management facilities

Tender procedures for waste services

Steering instruments and financing schemes for waste management

Landfill construction, remediation and aftercare planning

Expert opinion and management consultation

Planning and development of renewable energy concepts

Concepts and system solutions for environmentally benign waste management

Waste-to-Energy concepts and services

Waste collection systems and logistics management

Industrial waste management and cleaner production concepts

Deconstruction and site remediation planning

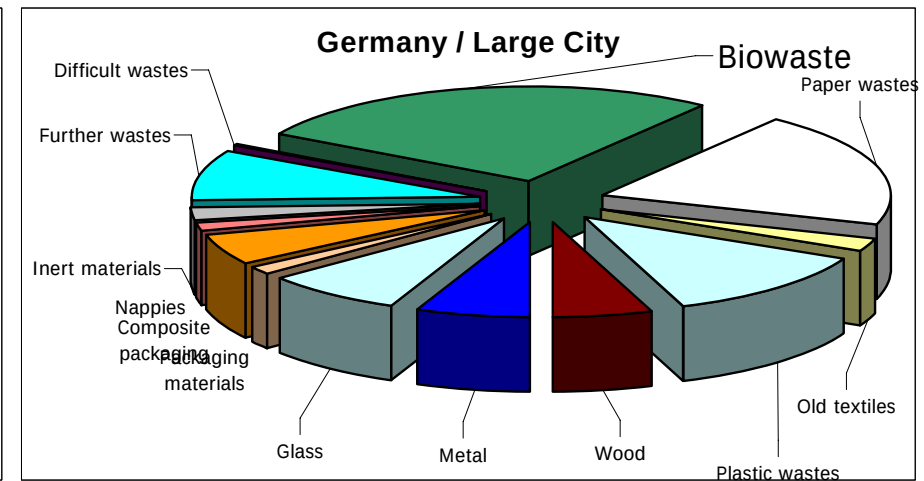
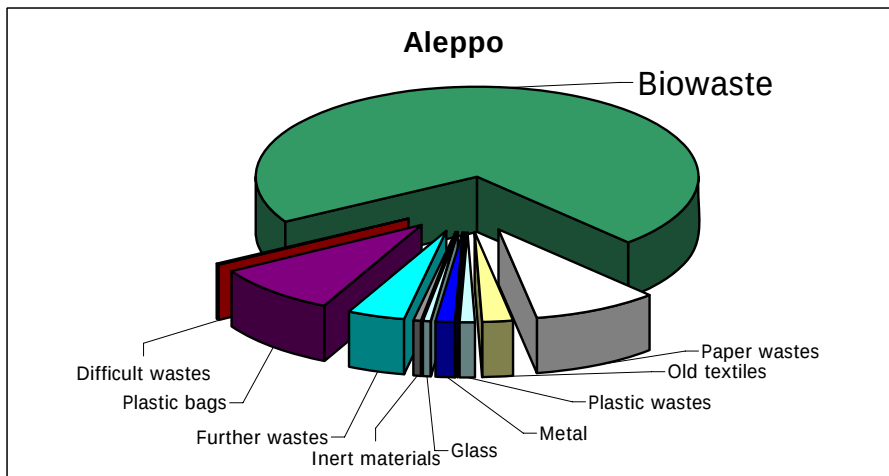
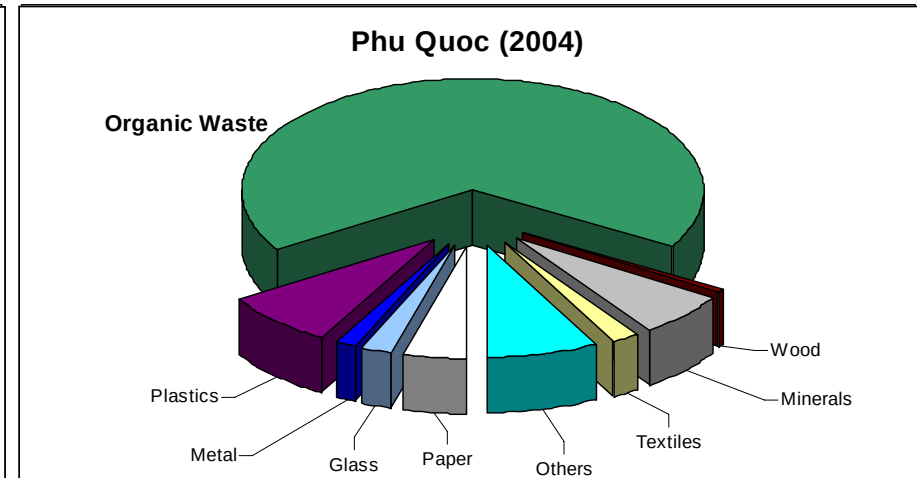
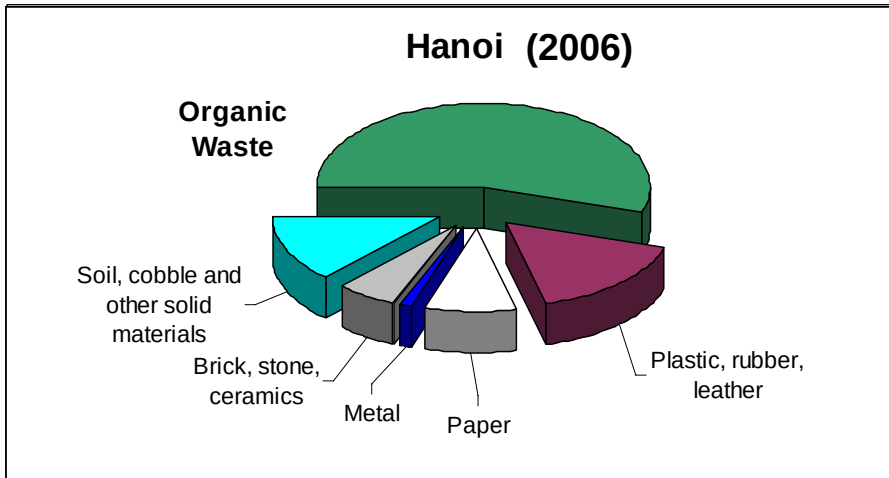
International waste management co-operation and technical assistance

1. Company - Interesting Service Fields for the Vietnamese Waste Management

- Planning of Waste Collection (technique, organization)
- Planning of MSW-Treatment (biological, mechanical-biological, thermal treatment, landfilling, recycling schemes)
- Consulting in Waste-to-Energy-Systems (thermal utilization, generation of biogas)
- Waste Avoidance, Utilization and Disposal Concepts for Hazardous and Non-hazardous Industrial Waste
- Financing and Fee-Calculation for Waste Management Systems
- Know-How- and Technology-Transfer-Services
- Education and Training Support

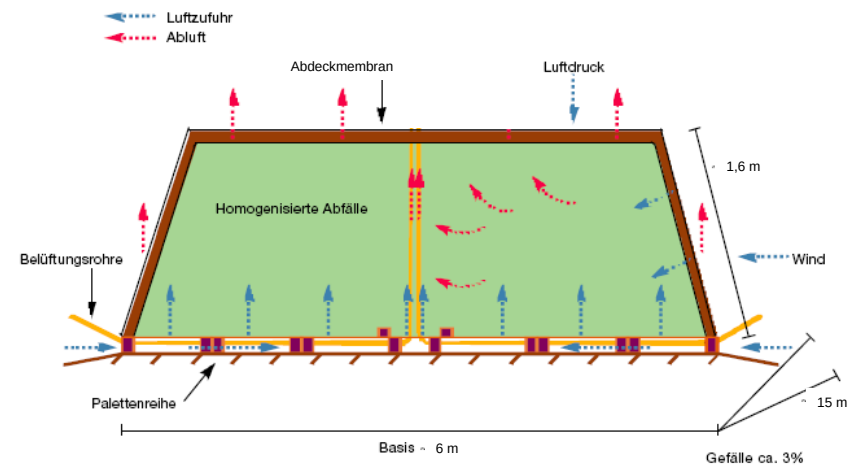
2. Pilot Project „Mechanical-biological Treatment“ in Syria

- Waste composition – Comparison to Vietnam



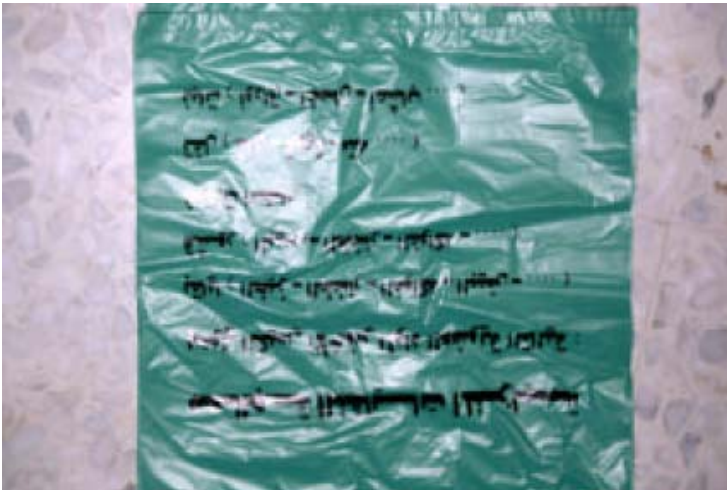
2. Pilot Project „Mechanical-biological Treatment“ in Syria

- Test set-up in Al-Salamieh (Syria)



2. Pilot Project „Mechanical-biological Treatment“ in Syria

- Accompanying investigation of separate bio-waste collection and compost production



2. Pilot Project „Mechanical-biological Treatment“ in Syria

- Mass reduction by biological treatment of 45-75 %
- loss on ignition: reduction of 20 – 30 %
- loads of heavy metals require a special approach for compost production



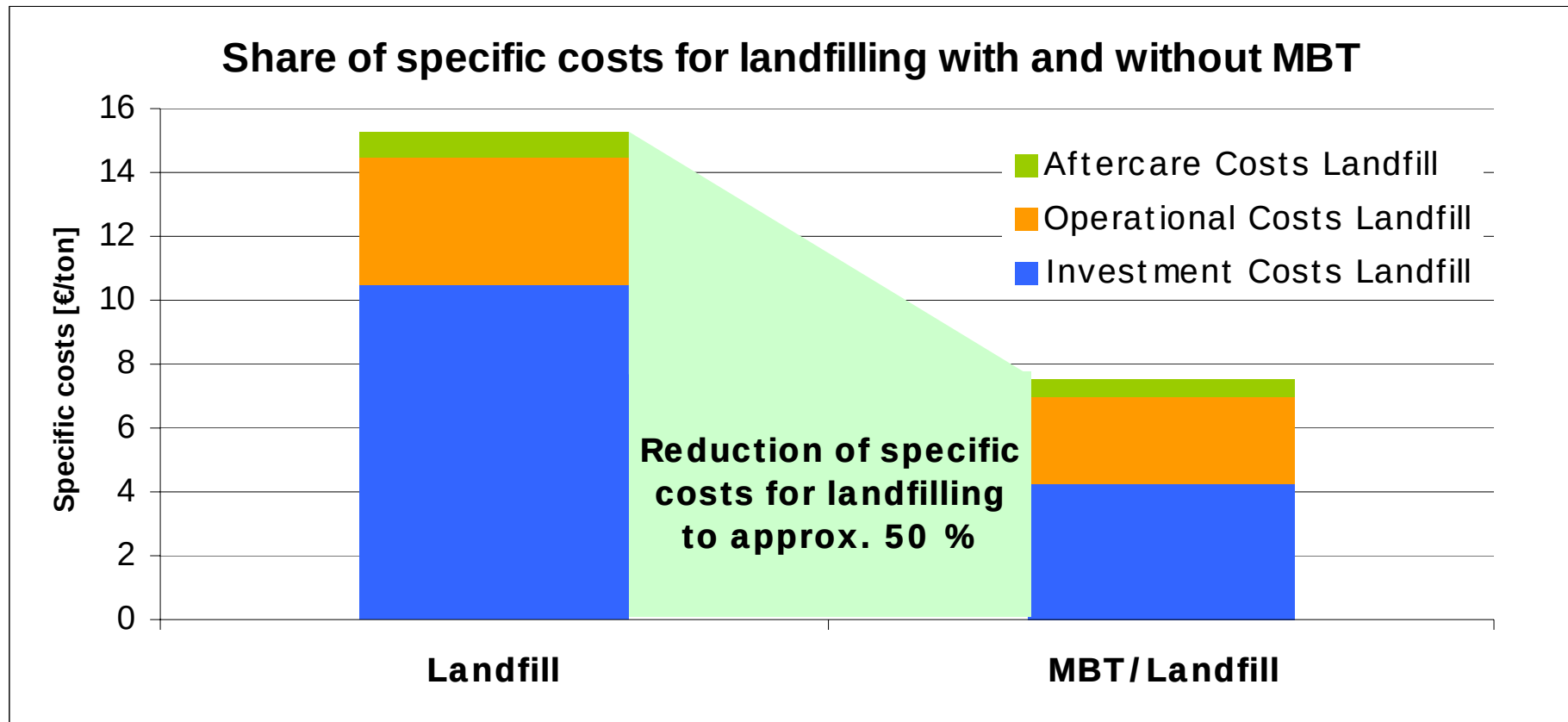
MBT-plant Aleppo

	Compost samples						German Federal Compost Association	Syrian Regulation	
	non-shredded MSW		bio-waste sorted out of mixed MSW		shredded MSW	source separated bio-waste		Quality 1	Quality 2
Lead	117	105	114	122	118	117	150	120	150
Cadmium	0.1	0.1	0.1	0.2	0.1	0.1	1.5	3	5
Chromium	-	-	-	-	-	-	100	100	150
Copper	96	82	90	87	72	65	100	150	250
Nickel	56	53	32	34	49	26	50	50	70
Mercury	2.3	2.1	1.9	1.9	2.1	0.89	1.0	1.5	3.0
Zinc	456	446	201	214	324	159	400	350	500

Conclusion: Treatment goals are easily to achieve, BUT:
Production of environmentally safe compost of best
quality needs separate collected bio-waste as raw
material!

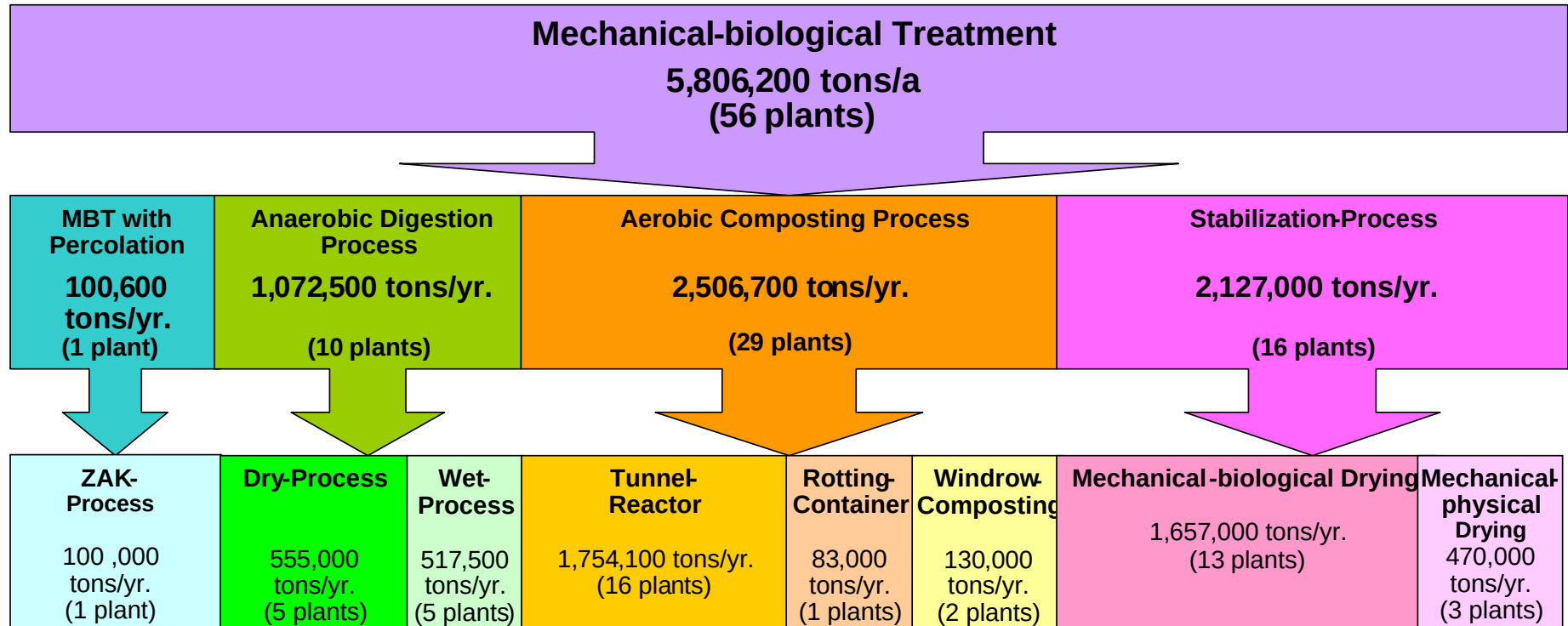
2. Pilot Project „Mechanical-biological Treatment“ in Syria

- Results of investigating the application of MBT-technology in developing countries (GTZ)



Source: GTZ

3. Situation on MBT in Germany



Goals: reduction of waste volume, enhancement of waste utilization as well as low-emission landfiling

= > MBT is an interesting approach for countries standing on the beginning of a regulated waste management

4. Approaches of MBT for Vietnam

- Simple concept: Open MBT on a landfill
(first tests in Germany in the early 80ies)



- Preliminary homogenizing of residual waste at the landfill
Costs in Germany: 25-30 EURO per ton



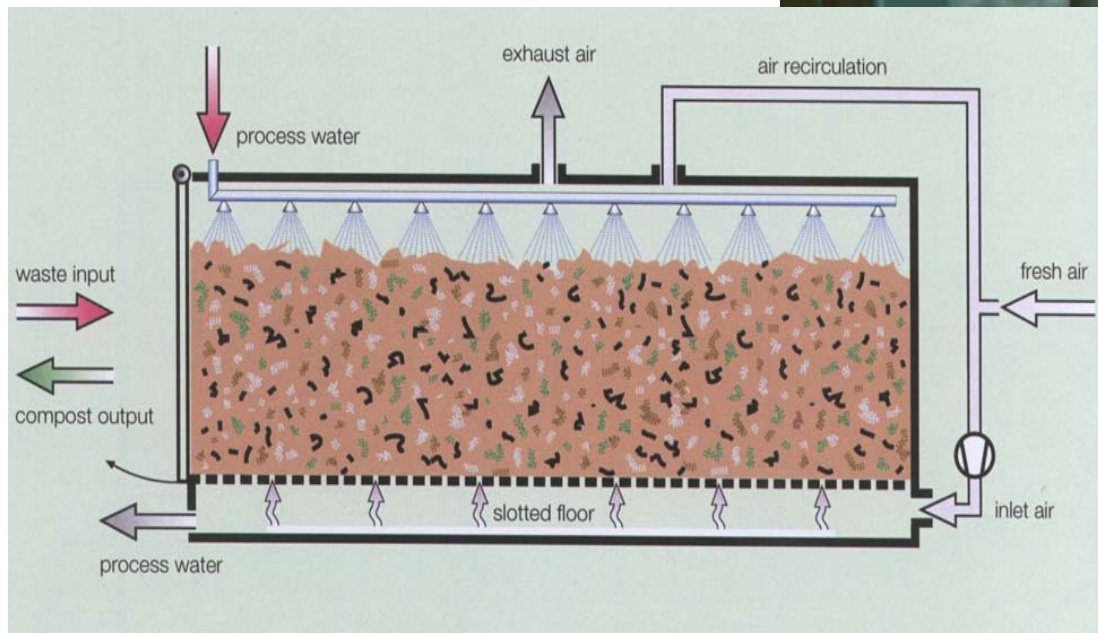
- Biological treatment of residual waste in simple heaps at the landfill

4. Approaches of MBT for Vietnam

- Simple concept: Variants of open MBT on a landfill
- Outdoor, passively aerated heap rotting
 - low-cost process
 - simple technical efforts, but needs lot of space
 - high emission of odor and also of climate-damaging gases due to anaerobic zones inside the heaps
 - low process performance
- Outdoor rotting with mobile turning equipment
 - needs more technical efforts
 - better process performance
 - lower emissions of odor and also climate-damaging gases
- Modular-extensible heap rotting with Gore-Tex cover
 - low-cost alternative of intensive rotting
 - reduction of odor emissions
 - good process performance

4. Approaches of MBT for Vietnam

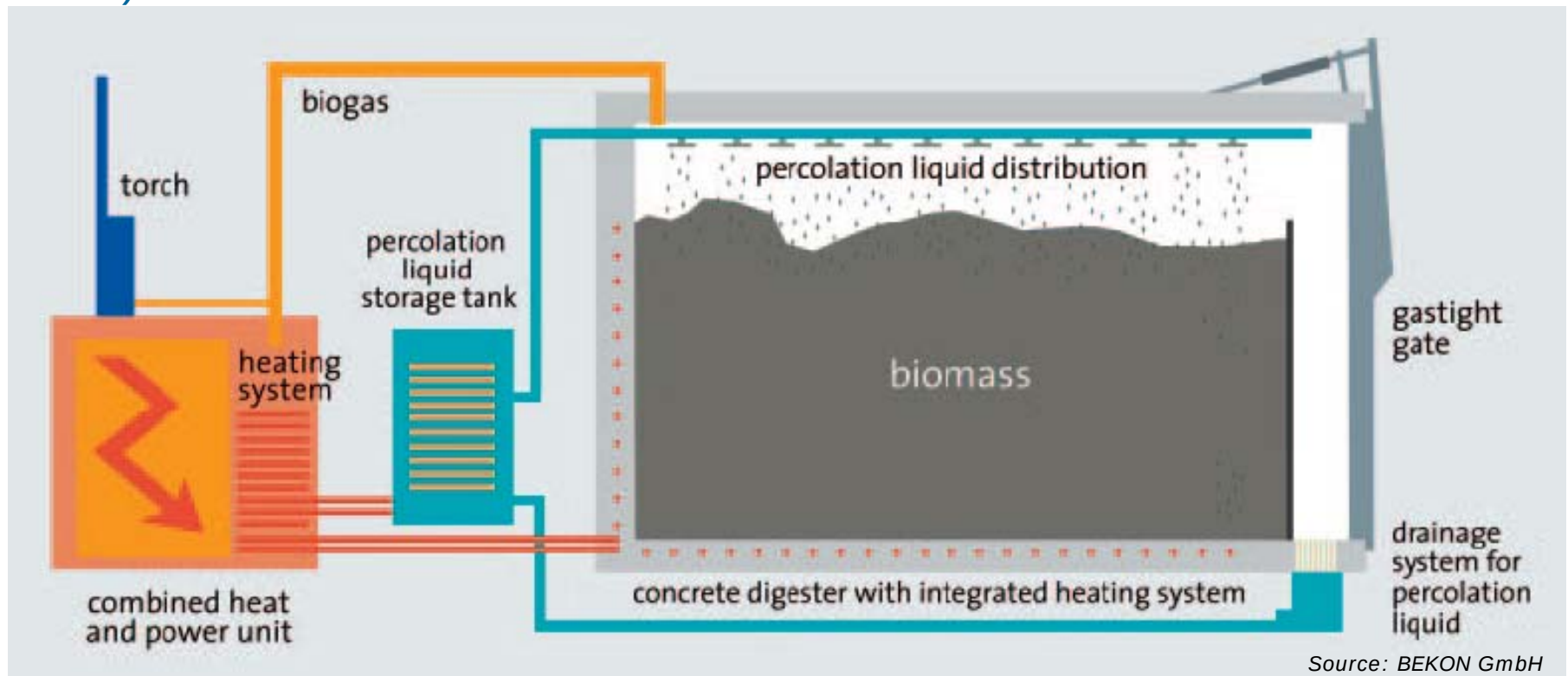
- Advanced concept: Rotting boxes (Intensive rotting stage)
- low-emission
- more intensive rotting
- controllable
- independent of weather conditions



Source: STRABAG Umwelthanlagen GmbH

4. Approaches of MBT for Vietnam

- Sophisticated concept: Dry fermentation process with downstream rotting stage
- add-on effect: generation of biogas (production of electrical power and heat)



Source: BEKON GmbH

4. Approaches of MBT for Vietnam

- Sophisticated concept: Dry fermentation process with downstream rotting stage



Source: BEKON GmbH

5. Examples for Implementation of MBT in Germany

- Mechanical stage of the MBT-plant Cröbern
(System provider: Linde-KCA GmbH Dresden/HOCHTIEF Construction AG)
Capacity: 300,000 tons per year



Source: STRABAG Umwelthanlagen GmbH

5. Examples for Implementation of MBT in Germany

- Rotting hall for biological residual waste treatment. Biomechanical waste treatment plant, Salzburg: aerated heaps, started operation in 1987. (System provider: Linde KCA Dresden)
Capacity:
140,000 tons
per year



Source: STRABAG Umweltanlagen GmbH

5. Examples for Implementation of MBT in Germany

- Overview about the anaerobic digestion plant in Freienhufen
(System providers: KompTech/HAASE)
Capacity:
50,000 tons per year



5. Examples for Implementation of MBT in Germany

- Modular, and thus expandable, system of containers for the biological treatment of waste
(Stralsund/Ruegen)
(System provider: Nehlsen AG, Bremen)
Capacity:
70,000 tons per year



5. Examples for Implementation of MBT in Germany

- Drying drum of the
MPS Berlin-Pankow
Capacity:
160,000 tons per
year



6. Know-How-Transfer

- Information tool “Best Practice Municipal Waste Management”
http://www.umweltbundesamt.de/best-practice-mwm/html/index_en.html



Bewährte Verfahren zur kommunalen
Abfallbewirtschaftung

**Best Practice Municipal Waste
Management**

Meilleures pratiques en maîtrise des déchets des
communes

Испытанные методы муниципального
менеджмента отходов

Gefördert durch  **Umwelt
Bundes
Amt**
Für Mensch und Umwelt

Funded by

Erstellt durch  **intecus**
Abfallwirtschaft und
umweltintegratives Management

Produced by



 Informationssammlung über Ansätze zur nachhaltigen Gestaltung der kommunalen Abfallbewirtschaftung und dafür geeignete deutsche Technologien und Ausrüstungen

 Information pool on approaches towards a sustainable design of municipal waste management and supporting German technologies and equipment

 Observatoire des solutions durables pour la maîtrise des déchets des communes, des technologies et des équipements allemands

 Информационный сборник по подходам к устойчивой организации муниципального менеджмента отходов и подходящим немецким технологиям и оборудованию



7. International References of INTECUS

- Consulting to improve the environmental protection and waste minimization of the foundry sector (**Russia**) and of the food industry (**Mexico**)
- Planning of waste separation and sorting facilities in **Romania** and **Vietnam**
- Technical support to optimize and revise of MBT-plants in **Greece**, **Portugal**, **Spain** und **France**
- Landfill sanitation in **India**, **Portugal**, **Iran**, **West Bank**, **Montenegro** and **Belarus**
- Conceptual planning and technical support for the implementation of waste management concepts in the **Republic of the Congo**, **Syria** and **Botswana**
- Institutional advanced education in developing waste management concepts in **Vietnam**, **Malaysia** und **Bulgaria** and Trainings on planning, contract management and financing of waste management services in **Romania** und **Bashkiria (Russia)**
- Cooperation on a study project to establish sustainable, environmentally-friendly water resources and waste management systems for industrial parks in **Vietnam**

Thank you for your attention!



Dipl.-Ing. Joerg Wagner
INTECUS GmbH
Waste Management and Environment-Integrating Management
Pohlandstr. 17
D-01309 Dresden
Germany
fon: +49 (351) 3182314
fax: +49 (351) 3182333
email: joerg.wagner@intecus.de
internet: www.intecus.de