



TEAMS WORK.

**CONCEPT FINDING
AD - PROJECTS FOR BIO WASTE**

**10TH ANNIVERSARY
FINNISH ASSOCIATION FOR BIOLOGICAL
TREATMENT
HELSINKI 21. & 22.10.2015**



STRABAG
TEAMS WORK.



1 **FUNDAMENTAL
QUESTIONS**



2 **DATA ACQUISITION,
ANALYSIS**



3 **TENDERING DECISIONS**



4 **EVALUATION CRITERIA**



5 **SHALL REQUIREMENTS**



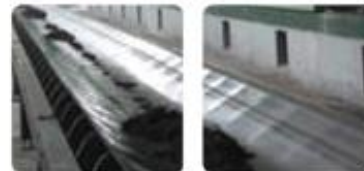
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FUNDAMENTAL QUESTIONS:

Decisions to optimize an anaerobic digestion plant

Questions

- Feedstock preparation
- Biogas amount
- Quality compost
- Liquid Fertilizer
- Hygienisation
- Continuous biogas production
- Utilisation of biogas (CHP or upgrading)
- Implementation of existing infrastructure



Instruments

- Available feedstock
- Buffer system
- Costs and market for compost
- Acceptance and costs for use of liquid fertilizer
- Fertilizer storage capacity
- Revenue for biogas/electricity/heat
- Public subsidy system for AD plants

DATA AQUISION AND ANALYSIS

Intended feedstock

- Biowaste
- Green waste
- Food waste
- Grease sludge
- Expired packed food



Data Aquisition

- Collection and tipping system
- Analysis of physical properties considering annual variations and peaks
 - Grains size distribution
 - Composition of fractions
 - Dry matter
 - Degradable organic fraction
- Analysis of chemical properties
- Biogas prognosis

Reproducible analysis acc. appoved standards and sufficient for digestion.

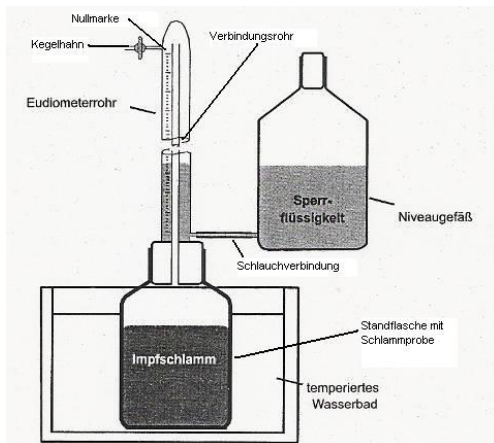
DATA AQUISION AND ANALYSIS

Biogas Estimation



- Various tests on the market, each dedicated to an individual purpose:

Test:	Most suitable for substrate:
DIN EN ISO 11734	Soluable substances, liquids (1-3g DM/l)
DIN 38414 S8	sludge, wastewater with high org. load
VDI 4630	Fresh organic waste (high org. matter)



- Biogas prognosis for:
 - Feasibility of plant
 - Decision for feedstock
 - Design size of fermenter
 - Equal data available for each candidate
 - Proof of contract parameters

TENDERING PROCEDURE

1. **External engineer vs. tender prepared by own experts**

2. **Prequalification procedure**
 - + Elimination of start ups with high process risk for client
 - + Only reputed candidates with similar experience
 - Time consuming

3. **Concept open tender (e.g. competitive dialogue, negotiation procedure)**
 - + Chance of best technical solution
 - Time consuming
 - Complicated procedure to treat candidates equal

4. **Tender with fixed technology and specification**
 - + Most common procedure
 - + Time and cost efficient for client and candidate
 - Requested technology does not fit each candidate equal

EVALUATION CRITERIA

Selection of the most advantageous offer

- Investment price
- Operational costs
 - Energy & heat consumption
 - Wear parts
 - Rejects, wastewater etc.
- Revenues
 - Biogas
 - Heat
 - Electricity
 - Compost & liquid fertilizer etc.
- Soft criteria
 - References (plants and CV)
 - Financial strength of candidate
 - Technology
 - Concept of plant

objective



subjective

Evaluation formulas providing score points to the above criteria.

SHALL REQUIREMENTS

Minimum Demands and Presettings

Typical technical presettings

- Net fermenter volume and number of ferments
- Min. net buffer size
- Biogas generation of each substrate
- Proof of biogas generation by reputed method (VDI 4630)
- Digester filling and emptying regime
- Hygienisation proof
- Dewatering concept/direct composting
- Detailed specification of final products (compost, fertilizer)



THANK YOU FOR YOUR ATTENTION

**AXEL HUBER
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