Waste to Energy opportunities

Via BIOGAS

Proposal for setting up

a plant of 500 TPD for processing Organics & Food waste from MSW

through
DRY Fermentation
Technology

AAT Abwasser- und Abfalltechnik GmbH

- Founded 1993
- Experience with biogas plants since 1981

- Dedicated and experienced staff (up to 20 years)

- Since 2009 part of IMA-Schelling Group
  (corporate group with 1.300 employees and 230 Mio. EUR/a)
- Certificate ISO EN 9001, ISO EN 14001, ISO 45001

The unique selling proposition (USP)

Reliable Solutions for Commercial Success!

- More than 150 substrates in use
- Successfully on the market since 1993
- More than 1000 satisfied and well-known customers worldwide
- Development, engineering, production, assembly, commissioning, after-sale-service – all from one source
- Unbeatable 8,600 full load hour – this is over 98%
- Forward-looking engineering (upgradeable, flexibility on substrates, increased efficiency)
- Unique digester technology, patented processes
- International research network with universities and laboratories
- International environmental awards

- **Low maintenance**

Dry fermentation has few moving parts, low wear and tear, and doesn't require agitators, pumps, or feeding pipes. It eliminate the need for pre-treatment or sorting of inputs.

- **Low energy consumption**

Dry fermentation processes consume less energy than wet anaerobic digestion.

- **High gas yields**

Dry fermentation can produce high gas yields with superior gas quality.

- **Waste volume reduction**

Dry fermentation can reduce waste volume by up to 60% at a lower cost than wet processing.

- **Substrate tolerance**

Dry fermentation systems can tolerate substrates with a high content of crop residues, household waste, and livestock manure. They can also handle dry, stackable biomass with a high percentage of solids (20-55% DM – dry matter).

- **Contaminant tolerance**

Dry fermentation systems are very tolerant of contaminants such as sand, fibers, glass, plastics, and large particles.

- **Cost advantages**

Dry fermentation can have additional cost advantages if water there are shortages.

Feedstock

- Organic Fractions from Municipal Solid Waste
- Manure or animal slurry
- Food wastes from domestic, commercial and industrial sources
- Green waste from parks and gardens
- Sewage sludge
- Energy crops (e.g., grass silage, whole crop wheat, and whole grain maize)

Example:

Primary Segregation

800-1000
Wet Waste

Secondary Segregation

500 TPD
Pure organic fractions

Waste to Energy plant

BIOGAS – 3,000 m p3r hour `65 MT of gas

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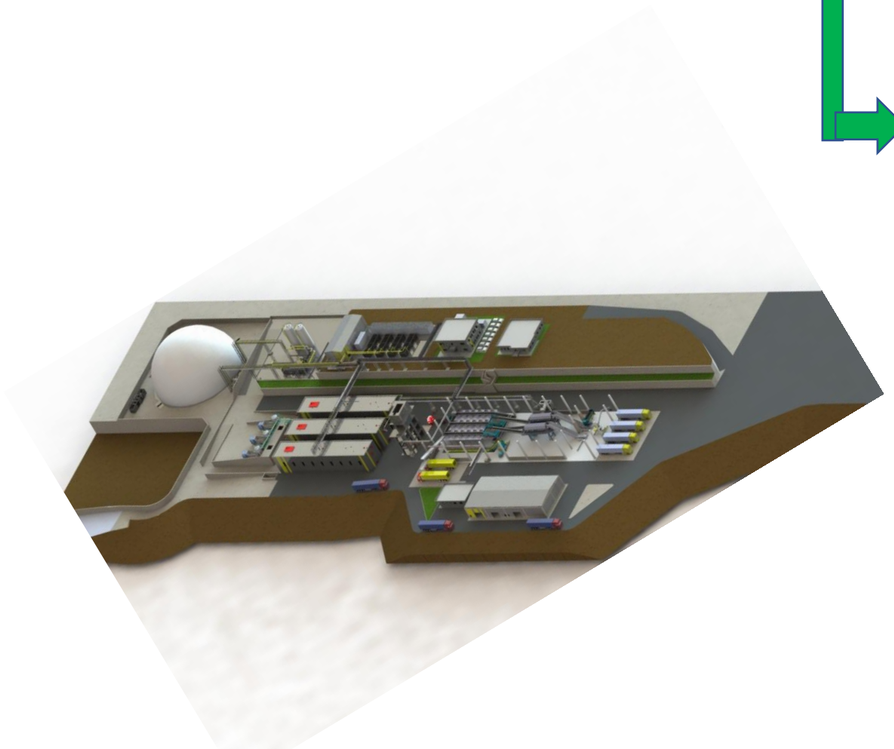
SCHEME FOR PROCESSING OF Organic& food waste from MSW

Capacity 800 tons per day throughput

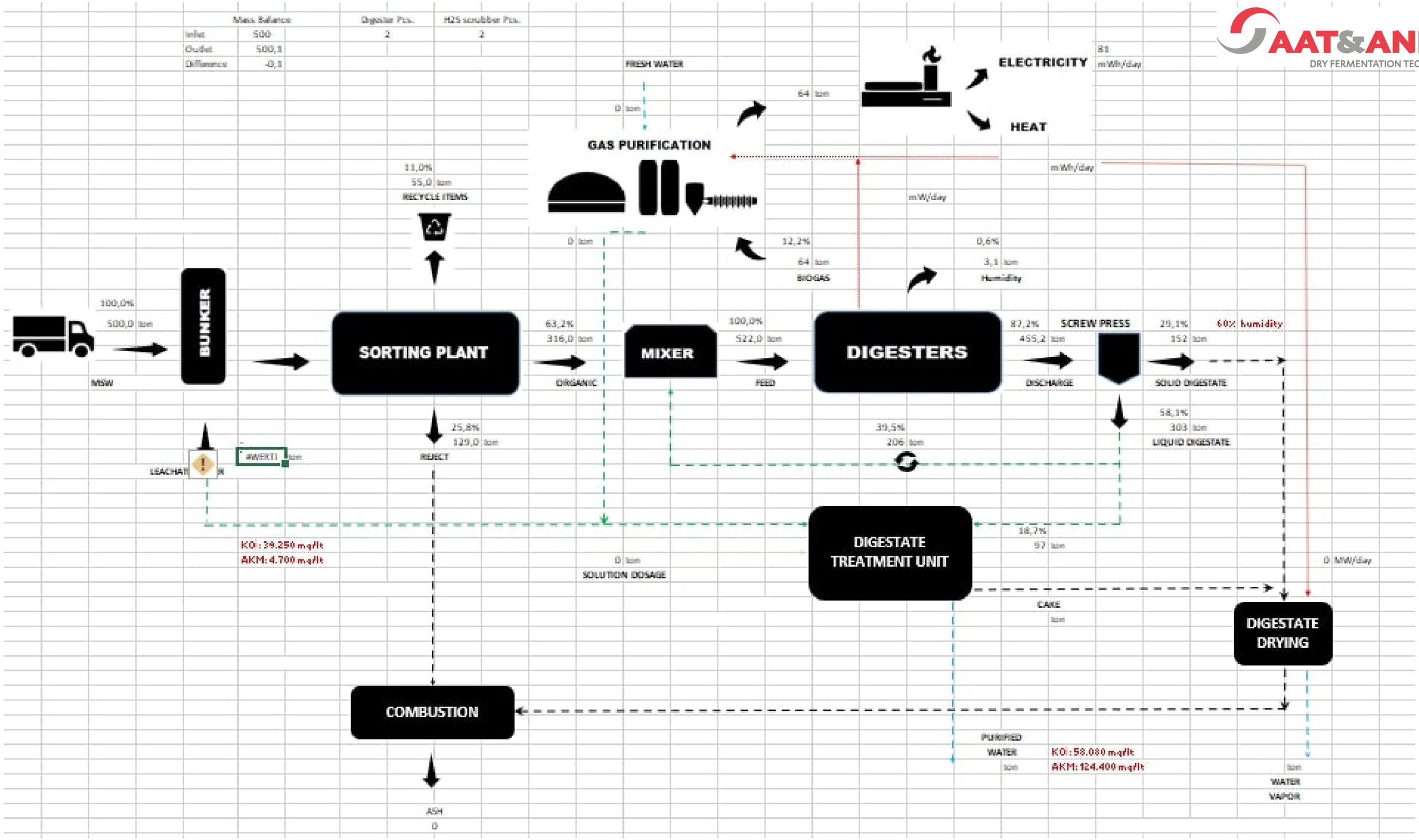
400TPD
TROMMEL-1
90 mm
300 TPD
Organic Separation
250TPD
400TPD
TROMMEL-2
90 mm
300 TPD
Organic Separation
250 TPD
RDF plant
500 TPD ORGANIC FRACTIONS
BIO-METHANATION
Scrubbing



Estimated Yield:

Raw Gas : 12-15%

Compost : 50%



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3 Digestors at Eskisehir plant

Green Incentives

- **20000 MT of fossil Fuel replacement**
- **40000 MT Co2 emission saving**
- **42000 Carbon Credits**
- **Employment generation**

References

14 plants are in operation since 2009

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ENERJİ ÜRETİM KAPASİTESİ/ENERGY PRODUCTİON CAPACİTY

TESİS (FACILITY)	KAPASİTE (CAPACITY) (MW)	LİSANS KAPASİTESİ (LICENCED CAPACITY) (MW)
ANKARA-MAMAK	16,956	16,956
ANKARA-SİNCAN	28,32	28,32
ANKARA - GAZLAŞTIRMA	10,85	10,85
ADANA	15,565	15,565
KONYA	4,245	4,245
BURSA	9,8	9,8
ANTALYA-KIZILLI	25,47	28,3
ALANYA - YUMRU	2,83	2,83
AKSARAY	1,415	1,415
ELAZIĞ	2,208	2,208
SAMSUN-ÇARŞAMBA	1,415	1,415
ESKİŞEHİR	11,32	
YOZGAT	1,415	1,415
BİNGÖL	1,415	1,415
TOPLAM KAPASİTE/ (TOTAL CAPACİTY)	**133,224**	**124,734**

- Düzenli Depolama (Landfill)
- Mekanik Ayırma (Sorting Plants)
- Biyometanizasyon (Biomethanization)
- Elektrik Enerjisi (Energy Production)

2009/2	2010/1	2011/1	2013/2	2014/1	2017/4	Güncel
4,2 MW	5,6 MW	11,2 MW	22,6 MW	25,4 MW	28,3 MW	28,3 MW

MAMAK-ANKARA

- Düzenli Depolama (Landfill)
- Mekanik Ayırma (Sorting Plants)
- Biyometanizasyon (Biomethanization)
- Elektrik Enerjisi (Energy Production)
- Kompost (Compost)
- ATY (RDF)
- Ambalaj Atıkları (Packaging Waste)

2006	2007	2008/1	2008/2	2011/2	Güncel
4,2 MW	5,6 MW	11,2 MW	22,6 MW	25,4 MW	16,9 MW

- Düzenli Depolama (Landfill)
- Mekanik Ayırma (Sorting Plants)
- Biyometanizasyon (Biomethanization)
- Elektrik Enerjisi (Energy Production)
- Tıbbi Atık Sterilizasyon (Sterilization of Medical Wasts)
- Kompost (Compost)

2017/2	Güncel
22,4 MW	25,4 MW

- Düzenli Depolama (Landfill)
- Mekanik Ayırma (Sorting Plants)
- Biyometanizasyon (Biomethanization)

- Elektrik Enerjisi (Energy Production)
- Tıbbi Atık Sterilizasyon (Sterilization of Medical Wasts)
- Ambalaj Atıkları (Packaging Waste)

2010/2	2011/2	2012/2	2012/2	2019/1
9,8 MW	11,2 MW	14,1 MW	15,6 MW	15,5 MW

ESKİŞEHİR

- Düzenli Depolama (Landfill)
- Mekanik Ayırma (Sorting Plants)
- Biyometanizasyon (Biomethanization)
- Elektrik Enerjisi (Energy Production)

2018/2

11,3 MW

YOZGAT

- Düzenli Depolama (Landfill)
- Mekanik Ayırma (Sorting Plants)
- Biyometanizasyon (Biomethanization)
- Elektrik Enerjisi (Energy Production)

Güncel
1,42 MW

ALANYA-TÜRKLER

- Düzenli Depolama (Landfill)
- Mekanik Ayırma (Sorting Plants)
- Biyometanizasyon (Biomethanization)
- Elektrik Enerjisi (Energy Production)
- Tıbbi Atık Sterilizasyon (Sterilization of Medical Wasts)

BURSA

2012/1	Güncel
5,6 MW	9,8 MW

KONYA

2011/2	2011/2	Güncel
4,2 MW	5,6 MW	4,25 MW

Güncel

2, 21 MW

ÇARŞAMBA

Güncel

1,42 MW

AAT&ANKA
DRY FERMENTATION TECHNOLOGY

AKSARAY

Güncel
1,42 MW

ENDÜSTRİYEL ATIKLARIN BERTARAFI

INDUSTRIAL WASTE TREATMENT

- ARA DEPOLAMA –TEMPORARY STORAGE
- DÜZENLİ DEPOLAMA – LANDFILL
- GAZLAŞTIRMA/YAKMA – GASIFICATION/INCINERATION

SAMKITEC
Green Technologies

ADDRESS

- 101, Plot No 12-2-709/c/207
- Padmanabha Nagar, Mehdipatnam,
- Hyderabad- 500 028 India

TELE CONTACT

- Phone : +91 40 23515967
- Mobile : +91 9848045967

WEB CONTACT

- samki@samkigroup.in
- anything@samkigroup.in
- www.samkigroup.in