



NAWARO[®]
BioEnergie AG

NAWARO[®] BioEnergie AG: a short introduction into our business for BiG>East: Biogas for Eastern Europe



Nawaro's business model fits the situation in CEE

Initial situation in many CEE countries

1 Biogas is a great technology

2 We have a lot of available land

3 We have a favorable climate for energy crops and agricultural know-how

4 We have big farms

BUT:

- Biogas is still relatively new
- Local funding is difficult
- Farmers do not want to take the risk



Nawaro brings

- Extensive own operations know-how
- Proven technology from reliable partners
- Funding/partial funding
- Fixed prices for farmers
→ reduced risks



NAWARO® BioEnergie AG overview

- Founded February 2005 in Leipzig, Germany by experienced business people
- Business model: Building and operating biomass power plants and fertilizer factories on an industrial scale
- Closed cycle => residues are recycled to organic fertilizer
- 1. NAWARO® Park in Penkun, Germany is completed and running up to it's full capacity => proof of feasibility
- Next park in Guestrow, Germany is under construction, 3rd park in Jocksdorf is in the planning phase



Advantages of the NAWARO® process: sustainable energy production on an industrial scale

- **Environmentally friendly due to CO₂ neutral process:** Combustion of biogas / bio methane emits only as much CO₂ as has been consumed by the energy crops during the growth process
- **Efficient use of scarce arable land:** Biogas is the most space-efficient bioenergy: about three times more energy per hectare than biodiesel or bioethanol
- **Closed-cycle:** Fermentation residues are processed in the NAWARO® process into valuable bio fertilizer (solid and liquid) or solid fuel and liquid biofertilizer
- **Flexible in terms of input substrates:** Energy crops or bio waste
- **Industrial scale:** Big size of NAWARO® BioEnergy Parks (20 MW electrical energy) ensures a very efficient and safe operation of the plant
- **Good citizen:** Sophisticated technology to avoid smells and other emissions; creation of jobs in rural areas



NAWARO® know-how: covering the crucial elements

Supply and logistics

- Selection of highly efficient energy crops
- Consulting to and partnering with farmers
- Building up and maintaining a reliable logistics system

Plant design and erection

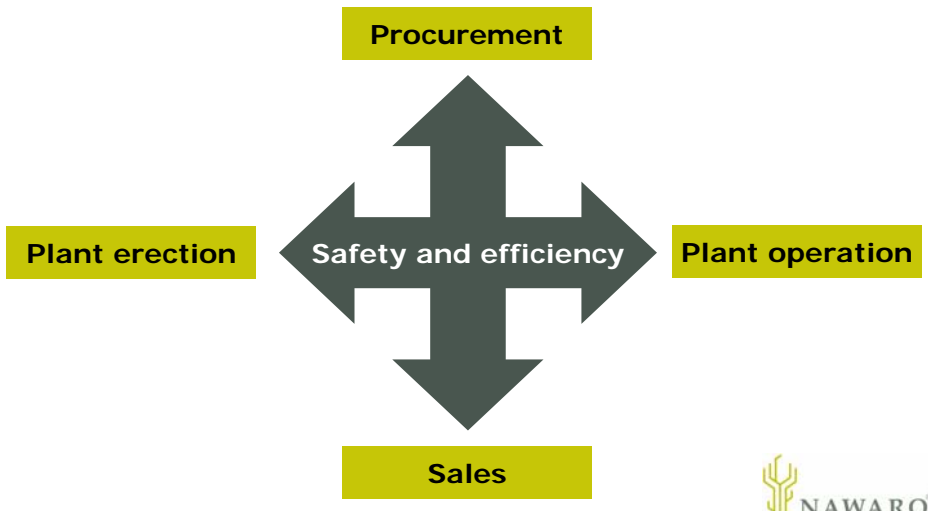
- Design of plant layout and selection of sub-contractors
- Management of the plant erection process
- Proprietary technology in processing of fermentation residues

Operation

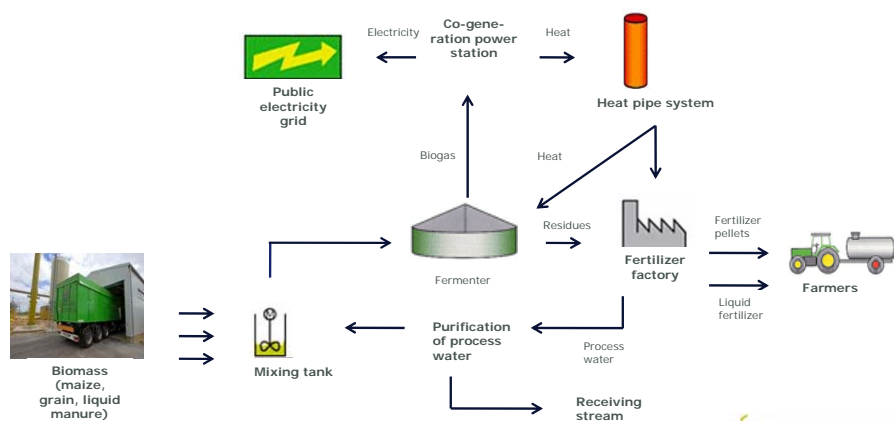
- Quality management system for fermentation substrates
- Operation of fermentors (biological balance and efficiency)
- Maintenance and maximization of uptime



Our industrial concept



The NAWARO® process: version 1: electricity feed-in version



We realize two versions of the NAWARO® process: electricity generation and bio methane generation

Commonalities of the two versions

- Energy production through fermentation (anaerobic digestion) of energy crops
- Industrial scale, high efficiency
- Closed cycle: processing of fermentation residues

Version 1: Electricity generation (plant in Penkun)

- Combustion of biogas from fermentation in cogeneration units and production of electricity which is fed into the public grid
- Utilization of the waste heat of cogeneration units for processing the fermentation residues into bio fertilizer

Version 2: Bio methane generation (plant Guestrow)

- Purification of biogas from fermentation to bio methane and feeding it into the public gas grid
- Processing the fermentation residues to solid fuel and liquid fertilizer
- Combustion of solid fuel to supply heat to the residue processing plant

Location map



A potential for partnerships with positive effects for rural regions

HAVES OF MANY REGIONS IN CEE

Lot of available land

Favorable climate for energy crops

Agricultural know-how

Big farms

PARTNERSHIP
BETWEEN
REGIONS IN CEE
AND NAWARO

NAWARO'S HAVES

- Extensive own operations know-how
- Proven technology from reliable partners
- Funding/partial funding
- Fixed prices for farmers
→ reduced risks

- Creation of about 40 jobs per BioEnergy Park plus numerous jobs in logistics
- Environmentally friendly energy for the region
- Nucleus for high-tech know-how in rural areas



NAWARO BioEnergie Park „Klarsee“: it works!



We are looking forward to working with you!

