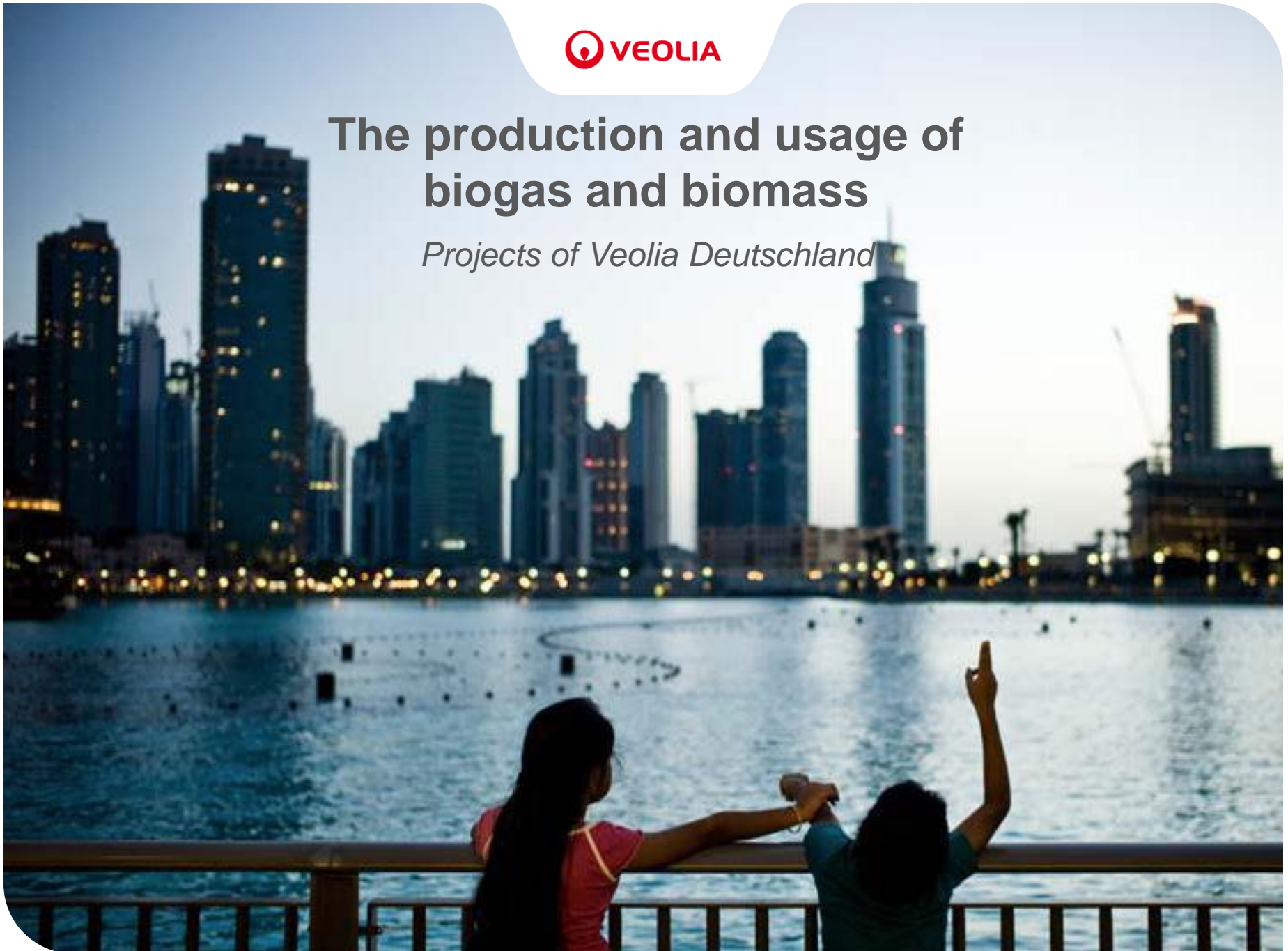




The production and usage of biogas and biomass

Projects of Veolia Deutschland



OUR ACTIVITIES IN GERMANY



WATER

Our tasks include the management of the water cycle,

from the drinking water supply and waste water disposal to the maintenance of canal networks and the energy generation from waste water.



WASTE

Services throughout Germany offers Veolia from the disposal logistics, the recycling of materials to the merchandising of secondary resources. Services like the biological waste management complement the range of services.



ENERGY

High efficiency supply of power, gas and district heating

Being partner of municipalities, industrial and commercial customers Veolia is active in many projects in the field of energy efficiency services in Germany.

INDUSTRIAL SERVICES

Technical FM, industrial cleaning and logistics or waste management

- prestigious industrial and commercial customers from throughout Germany have been relying on our expertise for many years.



OUR MISSION: Resourcing the world

DEVELOPING ACCESS TO RESOURCES

Veolia offers operational solutions that consume fewer environmental resources and are more economically efficient.



PRESERVING RESOURCES

Veolia develops solutions to conserve resources and optimize their use.

REPLENISHING RESOURCES

Veolia provides solutions for creating new “secondary” resources.

OUR ENGAGEMENT

- The **development of solutions for urgent environmental issues** like resource scarcity and highly toxic forms of environmental pollutions
- **Contribution to sustainable growth of industrial companies**, especially through an optimized resource management and the reduction of CO₂-emissions
- **Support of fast growing regions in the world** with ecologically efficient solutions and complex urban utility services

Biogas in Germany- municipal influence and co-operation

- Mostly, biogas plants are built and operated by private investors
- Municipalities can influence the project via the approval procedure for the building permits
- Several biogas projects have been developed in co-operation between municipality and a local public services co-operation
- In such co-operations municipalities profit from heat production for residential or municipal buildings
- Several municipalities have established « energy villages », e.g. the municipality of Juehnde

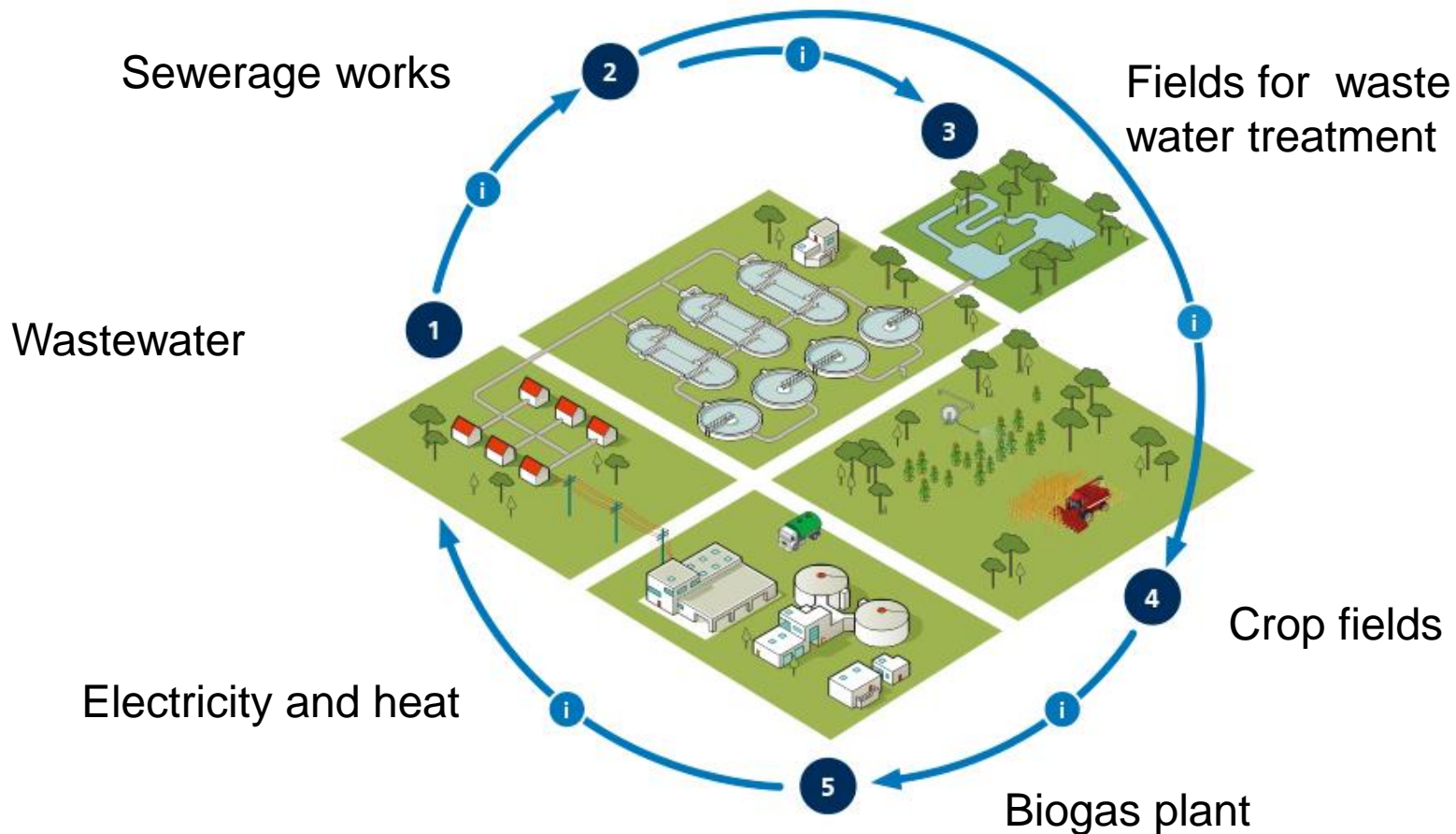


Veolia Biogas and Biomass Projects

Co-operation with municipalities and own projects

Projekt Oelper: Brunswick model

Co-operation between BS|ENERGY, Association for Sewerage Treatment Brunswick (municipal partner) and SE|BS (affiliate of BS|ENERGY)



Biogas Project Oelper

Technical Data

Biogas Plant

- 38.000 t/a corn
- 9.000 t/a barley silage
- 9,7 Mio. Nm³/a biogas

CHP

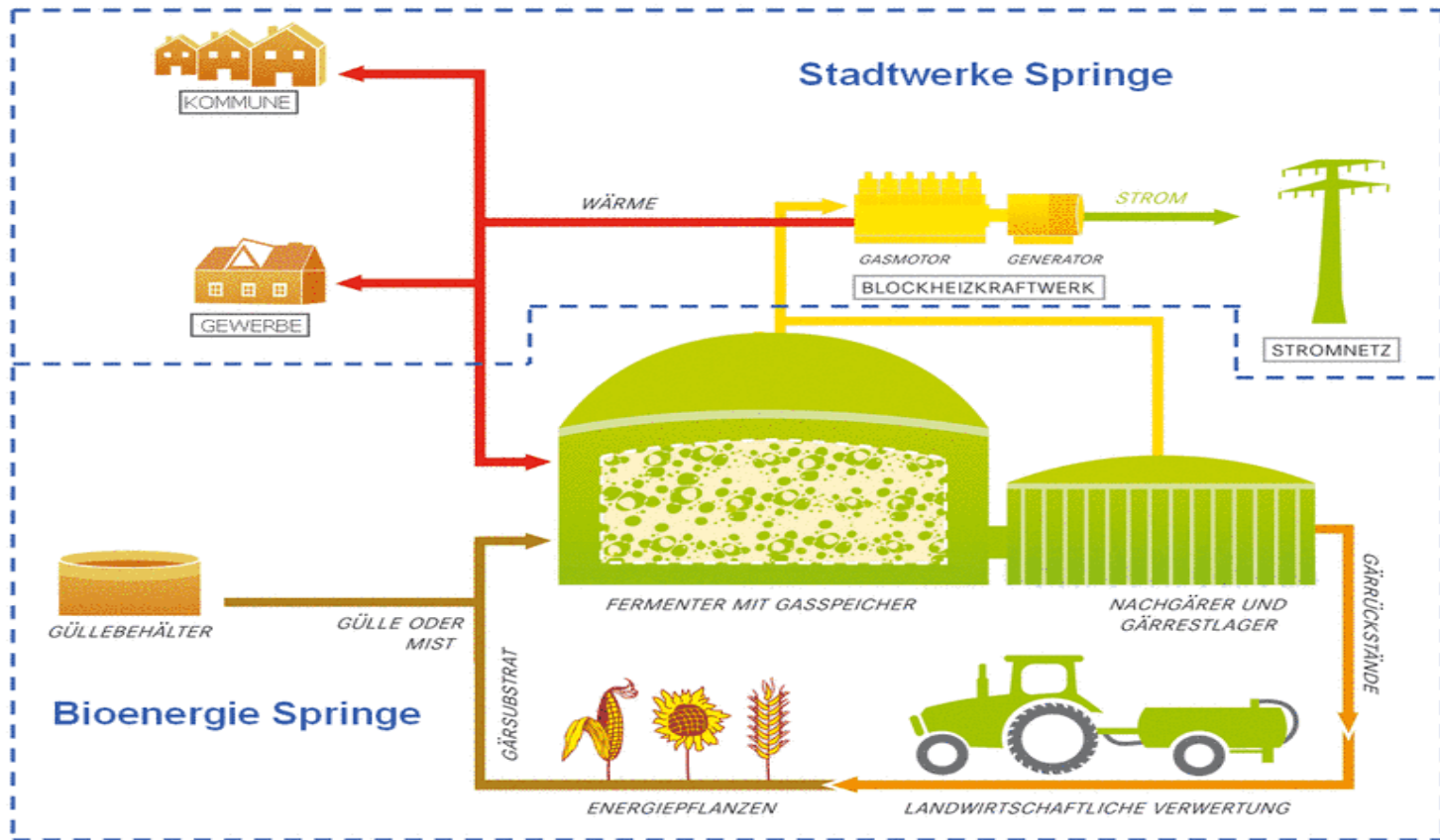
- 1,89 MW el (4000 households)
- 600 kW el for own use in biogas plant
- 2,14 MW therm (1000 households)

CO² savings: 12.000 t/a



Biogas Project Springe (1)

Co-operation of the Stadtwerke Springe (50,1% City of Springe, 49,9 % BS|ENERGY and Veolia) and local farmers



Source: Stadtwerke Springe

Biogas Project Springe (2)

Technical Data

Partner: Stadtwerke Springe GmbH and Bioenergie Springe GmbH (operator)

Biogas Plant:

- Crops from local farmers
- Biogas: 3,9 Mio nm³/a

CHP:

- two 527 kW el (3000 households)
- two 558 kW therm (500 households)
- Savings in CO² emissions: 6000 t/a

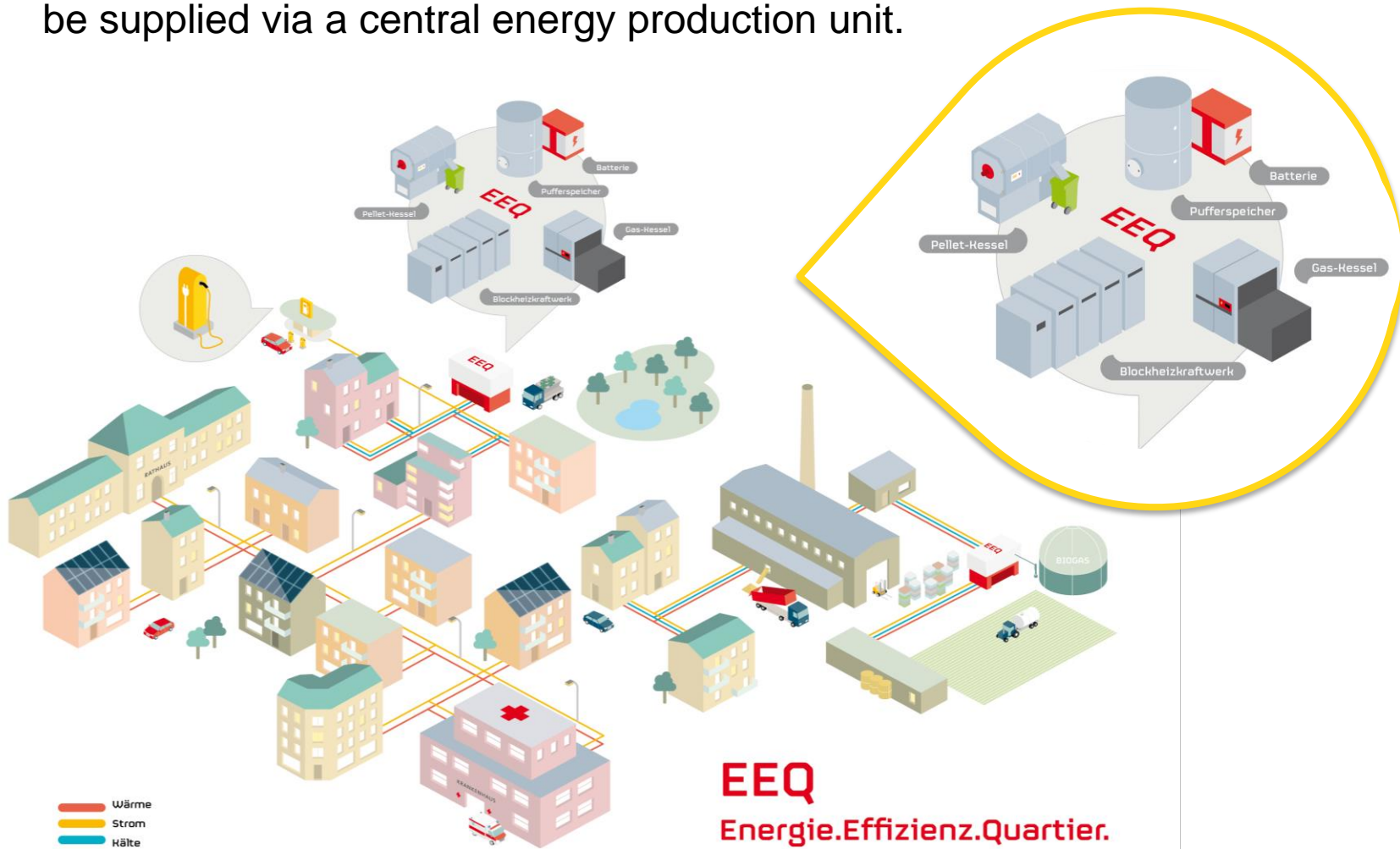
Heat supply:

- Distric heating grid
- The blood donor service of the German Red Cross is supplied covering 90% of the heating demand



Energy Efficiency Quarters (EEQ) in Brunswick: Hungerkamp

In the area of Hungerkamp where many buildings are closely situated these can be supplied via a central energy production unit.



EEQ Hungerkamp

Technical Data

CHP:

- 2 wood pellet heating boilers, 2 heat storage tanks, 1 gas fired spare boiler

Heat production:

- 15,600 MWh (1.000 households)

Electricity production:

- 9,200 MWh (2.300 households)
- 100% green electricity and 98% of green heat
- Savings in CO²: 7,800 t/year
- Award: „Global District Energy Climate Award“ in 2015



Sewerage gas projects- Schoenebeck

A co-operation between the City of Schoenebeck and Veolia Wasser Deutschland GmbH. The sewerage works are operated by Veolia

- The sludge is used for sewerage gas production in combination with ferments from food production
- The sewerage gas is used in a CHP: 240 kWel, 333 kWtherm
- By the electricity produced the demand of the sewerage works is met by 98%. The surplus electricity is fed into the public grid.
- The heat is used for the digestion tower and other heating.



Further biogas projects

- Biogas plants for food remnants: e.g. Bardowick



- Biogas plant for the biological part of household refuse in Rostock



Thank you for your attention!

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