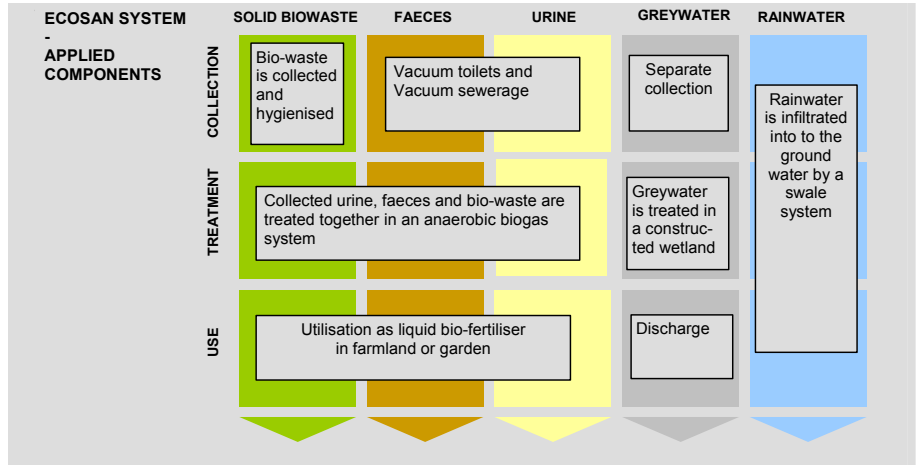




004

**Ecological housing estate
Lübeck Flintenbreite**

Lübeck, Germany



1 General Data

Type of Project:

Urban upgrading of an ecological settlement project

Project Period:

Start of planning: 1995
Start of construction: 1999

Project Scale:

- 117 apartments in twin houses, terraced houses and blocks of flats
- appr. 350 - 380 inhabitants

Address:

Flintenbreite 4
23554 Lübeck

Planning Institution:

Otterwasser GmbH
Engelsgrube 81
23552 Lübeck

Executing Institution:

infranova GmbH & Co KG
Flintenbreite 4
23554 Lübeck

3 Location and general conditions



Figure 1: Twin houses in Flintenbreite (source: GTZ)

The settlement served as a global project of the EXPO 2000 Hanover and has attracted many visitors.

The ecological settlement is situated to the West of Lübeck and covers an area of 5,6 ha, of which 2,1 ha are left as natural green space.

It consists of 117 accommodation units in twin and terraced houses and blocks of flats with different sizes for up to 380 inhabitants.

It is planned as a nearly car-free settlement with a central parking area.

The special character of the settlement is based on a holistic ecological concept, which includes architecture, landscape planning, social cooperation, energy and sanitation.

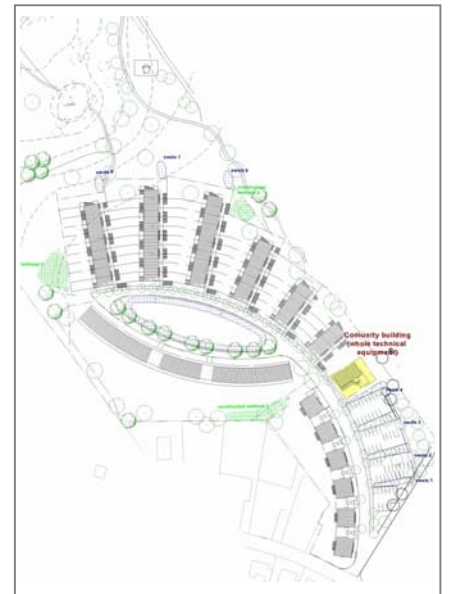


Figure 2: Location plan (source: Otterwasser)

2 Objectives of the project

To serve as a demonstration project for the German Federal Ministry of the Environment and as a pilot project for the Hansestadt Lübeck for ecological, social and economical sustainable urban development.

To ensure the consequent utilisation of ecological building materials, the use of self-sustaining, integrated energy and wastewater concepts, and the implementation of innovative energy saving technologies, with a minimisation of interference in nature, and a responsible, integrative and active cohabitation of the inhabitants.

4 Technologies applied

The settlement is not connected to the public wastewater system. The wastewater is collected and treated in an internal cycle.

The rainwater of roofs and sealed areas is collected in small gutters and infiltrated to the groundwater in decentralised swales.

**data sheets for ecosan projects
ecosan sector project**

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

P.O. Box 5180
65726 Eschborn, Germany
fon: +49 6196 794220
fax: +49 6196 797458
e-mail: ecosan@gtz.de
internet: http://www.gtz.de/ecosan



Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

commissioned by:



Federal Ministry for Economic Cooperation and Development

In the households vacuum toilets with a very low water consumption (0.7 – 1.2 l per flush) are installed.



Figure 3: Vacuum toilet (source: Otterwasser)

The blackwater (faeces and urine) is transported via a vacuum sewerage system to a central anaerobic digester.

The organic waste from the kitchens is collected separately and is mixed and treated together with the blackwater, initially by thermic hygienisation.

This is followed by anaerobic digestion. The liquid residue is stored for a further stabilisation to produce an organic fertiliser. The treatment plant is still in its start up phase, as the settlement is not yet fully inhabited due to various reasons related to the real estate market.

The greywater (wastewater from the

wetlands. After a preliminary sedimentation the greywater is fed in intervals to the wetlands, constructed as vertical flow filters.



Figure 4: Constructed wetland (source: Otterwasser)

5 Type of reuse

The liquid substrate of the anaerobic digestion of blackwater and biowaste will be collected by a farming cooperative and used as an organic fertilizer.

The biogas can be used for power and heat generation for the households in a combined heat and power unit.

The treated greywater flows toward a nearby receiving water, with a portion infiltrating into the ground en route.

The stormwater is led back to the natural cycle by infiltration.



Figure 5: Gutter and swale system for stormwater (source: Otterwasser)

6 Further project components

- Houses exceed the low energy consumption- standard of the Federal State of Schleswig-Holstein.
- Adapted ventilation systems in the houses.
- Solar panels for water heating.
- Combined heat and power unit and gas fired condensing boilers cover a high rate of self-production of heat and electricity.
- Central electronic account system for energy (electricity and heat) and water consumption.
- Large central community building for all technical systems with rooms for public use and four apartments.
- Scientific supervision of the project by the Technical University Hamburg-Harburg.

7 Project history

Construction began in 1999 after the city of Lübeck approved a development plan for an ecological settlement. Unfortunately the investors for the buildings changed during the construction phase, causing delays and image problems followed by marketing difficulties. The settlement is therefore still not completely finished and the infrastructure system is not yet running at full capacity. Construction on the missing units will restart during 2005.

8 Costs

The investment costs of the complete ecological housing settlement project in Lübeck Flintenbreite are approx. € 20 Mio.

The investment for the integrated sanitation system are approx. € 600.000

Investment costs for the sanitation system are approx. 40% higher than for the common wastewater system, while operation costs are estimated to be 25% less than in conventional settle-



Figure 6: Mixing and hygienisation unit (source: Otterwasser)
kitchen and bathroom) is transported by gravity pipes to several constructed

