

Brandenburger^{Heatliner®} Future energy sewage

Durable sewer rehabilitation and heat recovery from sewage

"Sewage contains a large quantity of thermal energy that can be used to heat buildings using modern heat-pump technology. The potential of this renewable energy source is quite high. With sewage heat, on the supply side, we could heat 10 % of all buildings in Germany." (Source: Advisory Leaflet DWA M 114)

Brandenburger has developed a process in which the conditions are established for the waste heat recovery from sewage in combination with a sewer rehabilitation with pipe liners.

Composition of the Heatliner®:

1. **Outer liner:** Brandenburger liner for rehabilitation of the sewer
2. **Heat exchanger mat:** in the sewer base as absorber for heat recovery
3. **Inner liner:** Brandenburger liner for fixation and protection of the heat exchanger mat

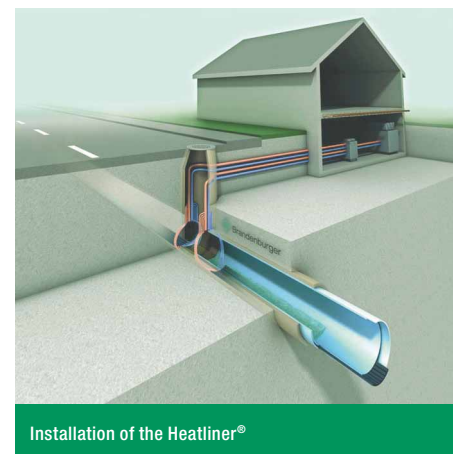
The installation of the Heatliner®:

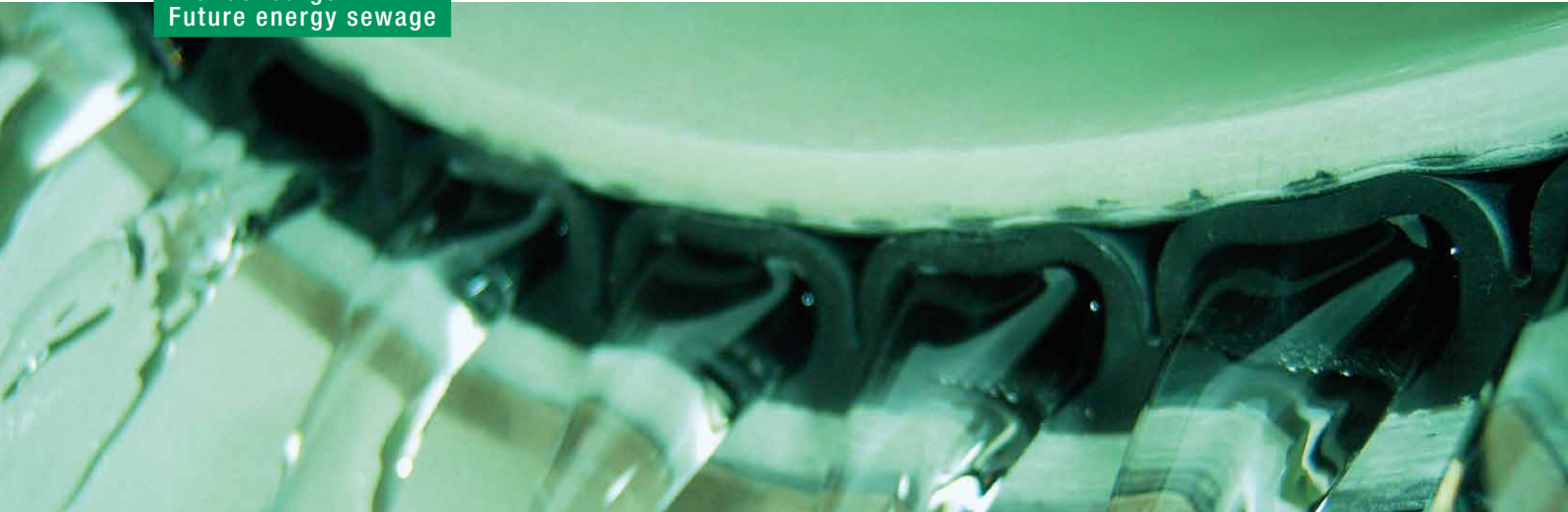
After all necessary preparatory work for the pipeliner rehabilitation, **the outer liner** is pulled into the sewer using a cable winch, expanded with pressurised air and cured using UV light. The outer liner takes on the task of rehabilitation of the defective sewer and must be dimensioned so that it can fulfil the stress requirements.

In the second step, the **heat exchanger mat** is pulled into the pipe base.

The **inner liner** is then installed. The inner liner can be thin-walled, as it does not perform a structural function. As the outer liner it is pulled into the sewer using a cable winch, expanded with pressurised air and cured, using UV light.

If sewer rehabilitation is not necessary, but you wish to recover heat from sewage anyway, it is of course possible to install the system without an outer liner.





Areas of use for the Heatliner®:

Sewage or mixed-water sewers, process or cooling water channels

Dimensions: DN 300 - DN 1600 Profiles: Circular, oval or special profiles

An important requirement for effective heat recovery is the fill level in the sewer for dry weather flow of about 20 %.

In addition, the consumer of the heat should be close to the system to avoid heat loss.

In the municipal sector, the use of sewage or mixed-water sewers is possible. In industrial sectors, it is possible to use process or cooling water channels.

Consumers of the heat include:

- Residential buildings
- Industrial buildings
- Hospitals
- Hotels
- Schools
- Swimming pools

Advantages of the Heatliner®:

- For heating and cooling
- Use in non-walkable dimensions (> DN 300)
- No operational impairment due to an absolutely smooth surface
- Minor cross-section diminution
- No extra cleaning works
- High-pressure flush capable
- Low-cost procedure
- Low maintenance costs

Performance of the Heatliner®:

The heat output of the Heatliner® depends on the

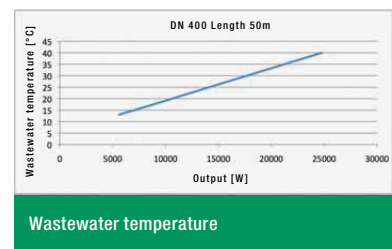
- Temperature of the wastewater
- Fill level of the sewer
- Length of the heat exchanger which depends on the length of the sewer

With this heat output, the following example objects can be supplied:

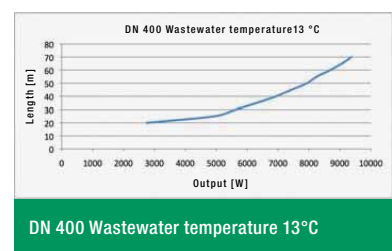
- Complete supply of a one-family house with 140 m² floor area over the entire year (even for temperatures below zero)
- Baseload capacity for 4 one-family houses with 420 m² floor area
- Baseload capacity for multiple-unit family house (6 units each with 70 m²)

(These numbers can vary depending on the year of construction and insulation standard of the building.)

It is possible to connect multiple Heatliners to form a system.



Wastewater temperature



DN 400 Wastewater temperature 13 °C