



UTILIZATION OF HEAT FROM COMMERCIAL WASTEWATER

Using the example of the
Central Laundry at the Hospital
Graz

Fernett Energy Solutions

Dust Separator - Exhaust Air - Wastewater - Energy

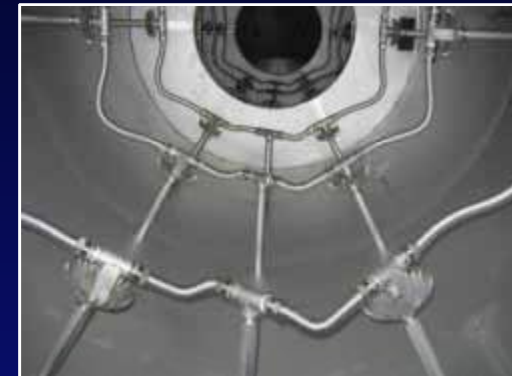
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What does FERNETT do ?

- Heat recovery systems for wastewater and exhaust air in all scales
- Wastewater heat exchanger
- Exhaust air heat exchanger
- Dust separation systems
- Thermal solar collectors
- System planning for heat recovery installations
- Energy efficiency studies





Principal of the Fernett Wastewater Heat Exchanger

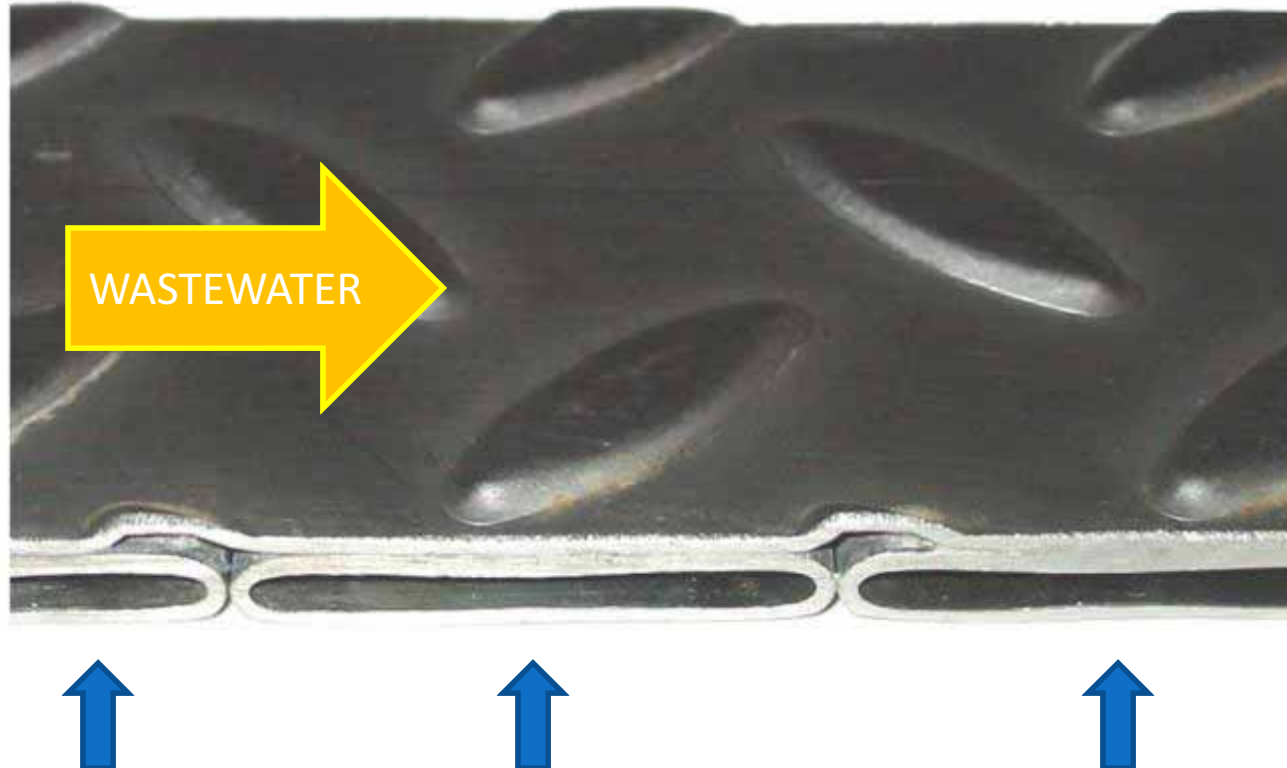


Film stream principle

- In the shortest time the wastewater is distributed over the entire absorber plate and flows off as a **thin turbulent film stream**
- This **maximizes the heat transfer** (compare to: spilled coffee)
- **Self-cleaning:** Due to the turbulent open film stream the wastewater heat exchanger cleans itself and **cannot "grow over"**



Principal – Technical implementation FERNETT



Sectional view of a Fernet Absorber Type FB-1

- The wastewater flows on the surface on the checker plate
- The freshwater flows in flat pipes in a right angle to the wastewater flow (cross counter stream)
- The metal transfers the heat from hot wastewater to the cold freshwater



Fernett Absorber plate in a sewage treatment plant, e.g. with heat pump





Fernet Wastewater Heat Exchanger Type FB-12/WS

- The modular construction of our heat exchanger ensures an appropriate scaling of the necessary heat transfer output for each business
- Advantages of the open system: Inspection of the heat exchanger is possible at all times and without interruption of the operations

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Distribution of the wastewater on the absorber plates

- The wastewater is always led through large profiles pipes onto the absorber plates and distributed, therefore the heat exchanger can also be operated with strongly contaminated wastewater
- Impurities and particles or foreign bodies in the wastewater are not a problem for the heat exchanger



Advantages of the FERNETT Technology

Disadvantages of other wastewater heat exchangers

- Closed on the side of the wastewater, therefore danger of clogging and gradual “growing over” of the free profile inside the heat exchanger
- Dirty wastewater cannot be used or has to be filtered beforehand.
- No film stream possible, since canals that are too small would “grow over” too quickly.

Advantages of the FERNETT wastewater heat exchangers

- Pressure-free on the side of the wastewater, therefore no danger of clogging, heat exchanger cannot “grow over”
- High degree of heat transfer from the wastewater into the freshwater due to the film stream principle
- High degree of efficiency and self-cleaning effect due to the turbulence of the wastewater film on the surface of the FERNETT Absorber



**Frequent problems with clogging by dirt
Wastewater heat exchangers that are customary in
the trade after use in a commercial laundry
Typical damages**





FERNETT Wastewater Heat Exchanger after use in a commercial laundry for several years





Wastewater Heat Recovery System FERNETT – Example of a laundry

System:

- Collection of the entire warm process wastewater (automated washing system/washing machines)
- Recovery of the wastewater heat with the virtually maintenance-free FERNETT Wastewater Heat Exchanger
- Preheating of the soft water of the buffer tank before the automated washing system/washing machines



Cost/benefit comparison

One-time cost

- Wastewater heat exchanger
- Pipe conducts
- Pumps
- Assembly and installation

Long-term benefit

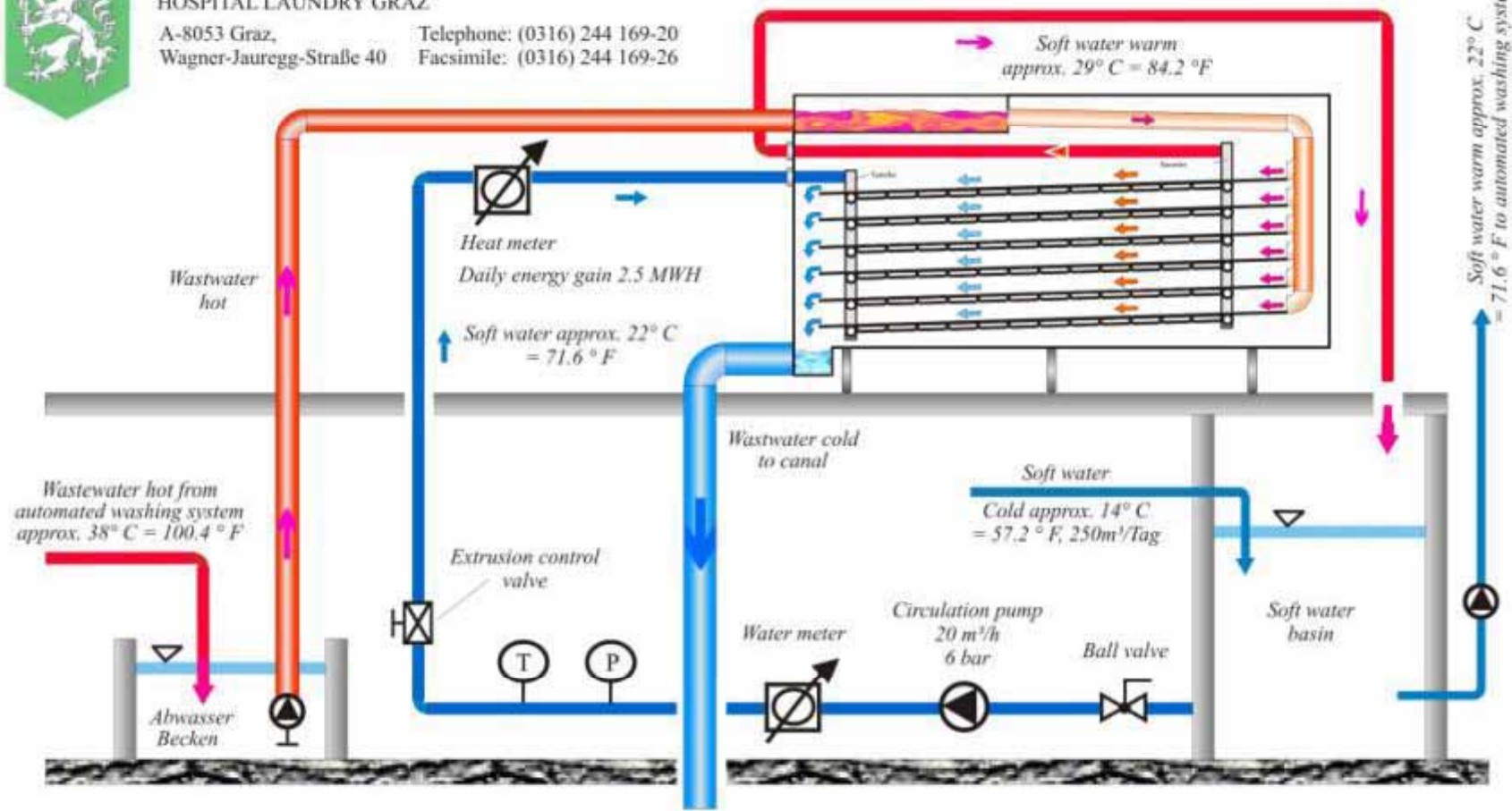
- Reduced wastewater temperature, therefore compliance with the statutory requirements
- Increased soft water temperature
- Reduced heat-up times
- Reduced energy costs
- Lower emissions



Fernett FB-12/W in a commercial laundry

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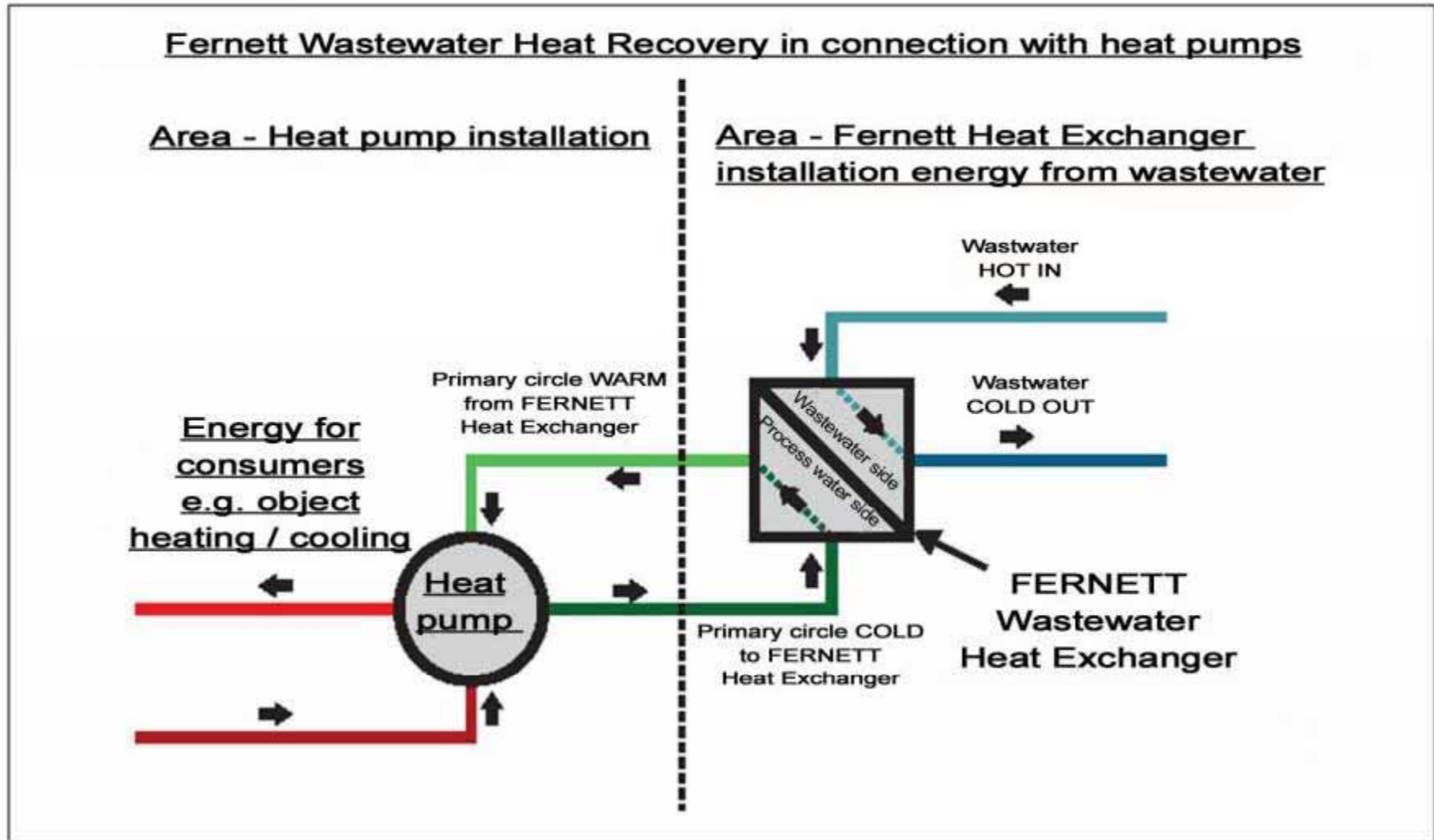
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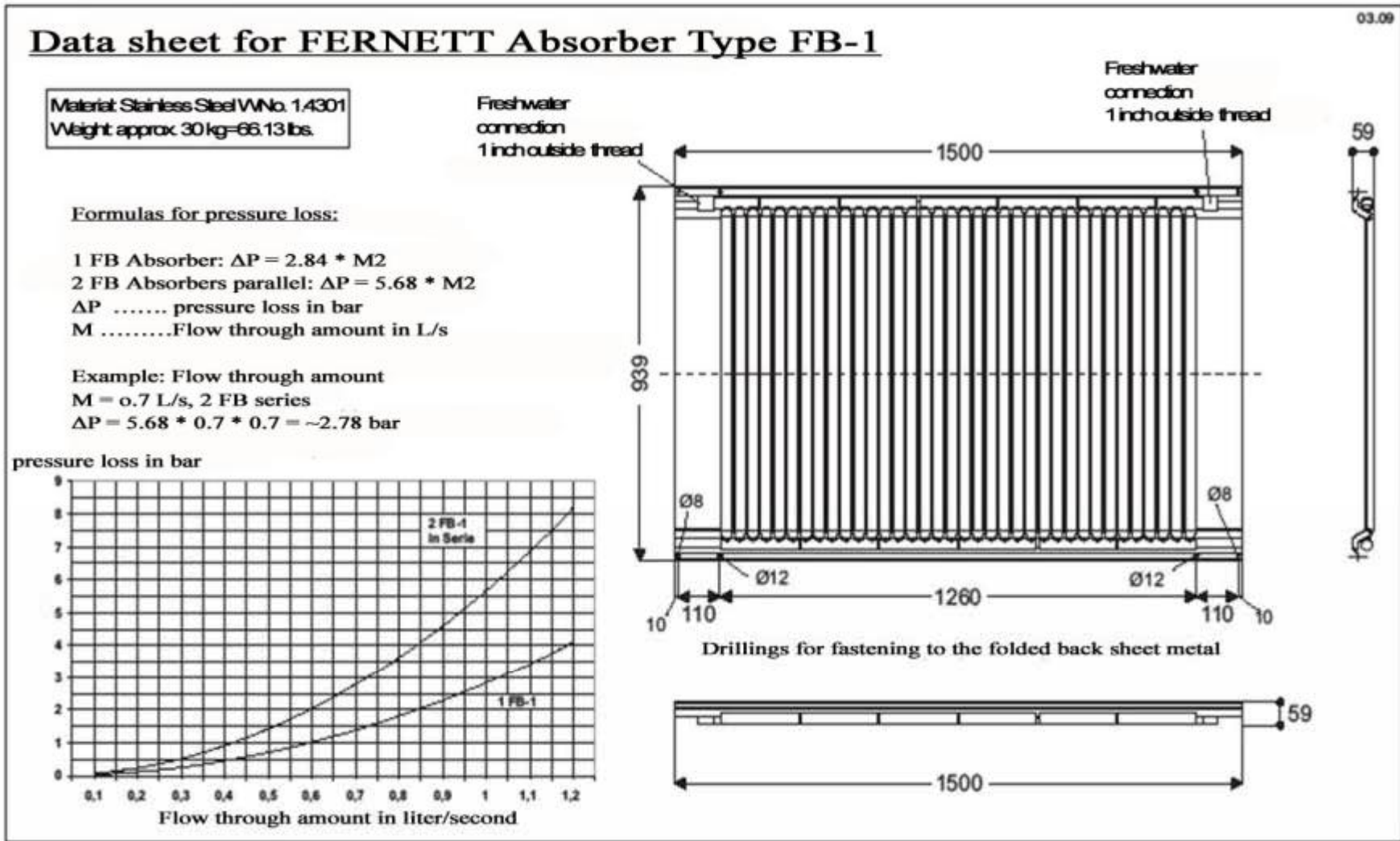
FERNETT
Dust separator - Exhaust Air - Wastewater - Energy



Installation example - Heat pump



Installations Project planning





Application areas for Fernet Wastewater Heat Exchanger

- Wastewater heat recovery
- Exhaust air heat recovery (in connection with Fernet Spray Tunnel Type EST)
- In connection with heat pumps for the recovery of heat from a heat source with low temperature level (e.g. canal wastewater)

Sectors/Industry:

- Food processing industry
- Commercial laundries / dying factories
- Distilleries
- Sport centers, swimming pools
- Hotels
- Private applications
- and many more



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Thank you for your time!

Please visit us online:

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Fernett Energy Solutions

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