Project
BV Loosdrecht, NL
FRANK-Water Heat Exchanger System

FRANK

System description

Project Loosdrecht, NL

Project data:

- Living space: 150 m²
- Heating pump: ~ 9kW
  - Manufacturer alpha innotec, type alterra WZSV-serie 92K3M
- Projectperiod: 06. - 10.2022
- Installationperiod: 19. - 21.10.2022
- Commissioning: 21.10.2022

The building project is located directly on the Loosdrecht lake district, which is connected via the river Vecht with the Markermeer and thereby with Amsterdam, the Ijsselmeer and the North Sea. Originally the area was a marshland used for peat extraction until it was turned into a recreational area in the 20th century.
The challenge of the project was to make the thermal energy stored in the water available for heating and cooling a detached house with direct access to the lake. The building from 2010 has very good insulation values, has triple-glazed windows glazed windows, underfloor heating and low-temperature fan radiators. In the course of this project a heat pump was was retrofitted.

For the efficient operation of the heating system the heat pump requires an environmental extraction capacity of approx. 7 kW at a volume flow of 2000 l/h. Due to the minimum temperature of the Loosdrecht Lake of approx. 4° C and the on-site operations, two FRANK WET water heat exchangers type 1 are used here. Each of them has a capacity of approx.
4 KW at a volume flow of 1000 l/h.

The installation of the heat pump and the heat exchangers was done in two steps:

Step 1
The installation of the heat pump in the garage integrated in the residential building was carried out by the building owner. The existing piping of the old gas heating system could be used for the most part.

Step 2
The FRANK water heat exchangers were fixed in the lake at a depth of approx. 2m using buoyancy protection devices.
In addition, the complete piping with the manifold and collector as well as the heat pump in the garage.

Further details
The supply and return pipes (d 40 SDR 11 PE 100-RC) of the two FRANK water heat exchangers are each approx. 50 m long and were connected to a plastic brine manifold type 3060 in the garage with a materially bonded. The resistant PE 100-RC pipes could be laid with little effort in trenches approx. 0.5 m deep and led into the building by means of core drillings. In later operation circulates in the Pipe system between the heat exchangers and the water heat pump a carrier medium (25% ethylene glycol water mixture).

All connections of the system, starting with the heat exchangers up to the heat pump, were realized with permanently tight heating coil welds. FRANK Ring-Gap-Seal were used for the subsequent sealing of the pipe penetration through the masonry.

Delivery program FRANK:

- 2 pcs. FRANK WET type 1
- modular brine manifold typ 3060
- 2 circuits incl. isulation shells
- 200 m connection d40 mm
- 4 impact-press seal d40/90
- div. welding fittings d40

Product information

FRANK WET / Water Heat Exchanger

Description:
The FRANK water heat exchanger has been designed specifically for generating heat from lakes, rivers or the sea.
The compact, high-efficiency heat exchanger draws the heat energy from the water and provides it to a heat pump. The FRANK water heat exchanger can just as easily be used for cooling purposes.
The FRANK heat exchanger and the protective casing are made of environmentally-friendly,high-grade polyethylene.

Details:
- Large heat exchanger surface
- Modular design with 3 module sizes
- All pipe connections are welded
- Robust protective casing
- Secure connection with electro fusion-fittings

Installation:
The FRANK heat exchanger can be installed using anchor ballasts on the bed of the lake/river or by attaching it to jetties or quay walls.
See Fig. 1+2.

Mode of operation:
The heat exchanger is operated in conjunction with heat pumps.
A water/ethylene glycol mixture containing up to 35% glycol is generally used as the heat transfer medium.

Heat extraction rate:
Thanks to the modular design, it can be adapted easily to the performance requirements.

The heat extraction rate is dependent on the module size (1-3 modules), the surrounding water temperature and the operating conditions. For larger performance requirements, several units can be connected to one manifold in parallel.

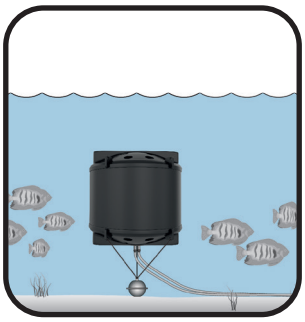


Fig. 1: Attachement with anchoring weight

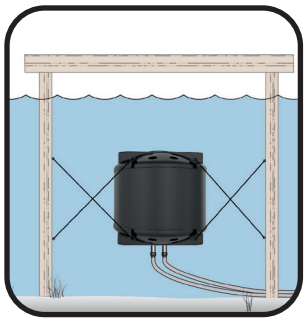
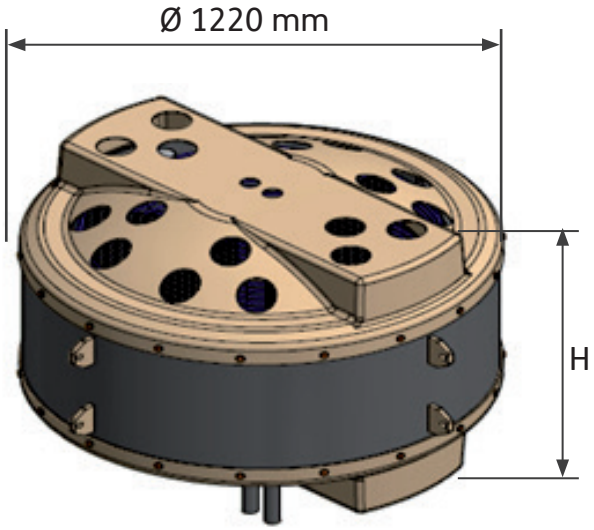


Fig. 2: Bracing under landing stage

Technical data	
Max. operating pressure 3,0 bar	3,0 bar
Max. test pressure 4,5 bar (20°C)	4,5 bar (20°C)
Perm. ambient termpera-ture -10 °C bis +40 °C	-10 °C bis +40 °C
Supply/return pipe connec-tion d40 mm, SDR 11	d40 mm, SDR 11

Module type:	Height H
WET 1	600 mm
WET 2	900 mm
WET 3	1200 mm



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NATHAN
driven by knowledge

FRANK GmbH
Starkenburgstraße 1
64546 Mörfelden-Walldorf
T +49 6105 4085 - 0
F +49 6105 4085 - 249
info@frank-gmbh.de
www.frank-gmbh.de

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