SUPPLY

Sustainable neighbourhood planning

With cold district heating and PKS-THERMPIPE®

FRANK

Cold district heating networks

Utilizing free energy locally together

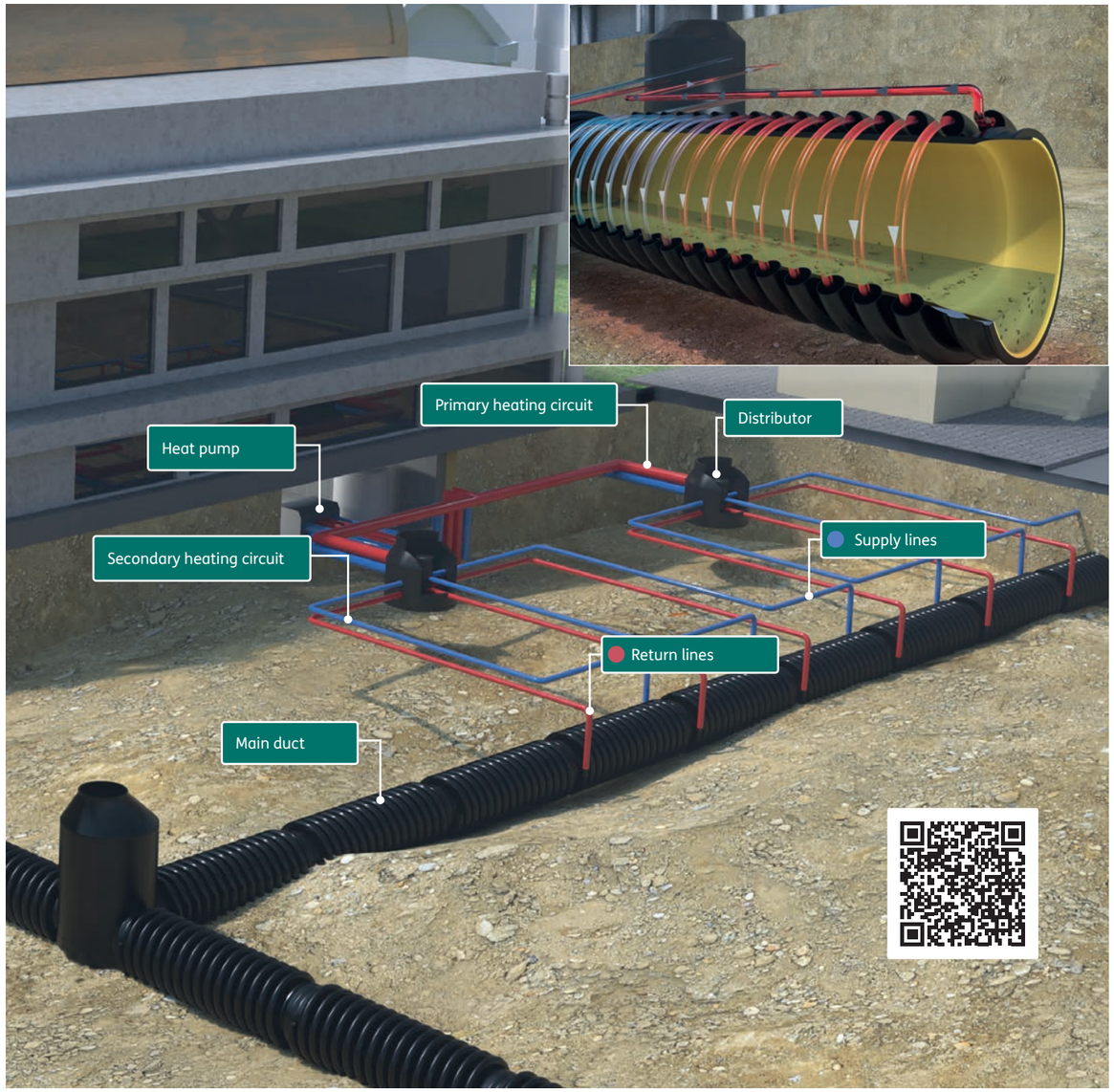
In a residential area with a cold district heating network, thermal energy is harvested in close proximity, at central points, and then distributed to households in the adjacent settlement via a pipeline system. The short distances to consumers increase efficiency; the pipes can be operated at lower temperatures and do not require any additional insulation. Renewable energy sources such as geothermal probes, surface collectors or PKS-THERMPIPE® can be used and combined as desired. The house connection is made via supply and return lines in which a heat transfer medium circulates at temperatures of -5 to +25 °C. In order to utilize the thermal energy for heating and cooling, heat pumps raise the temperature level in homes. If the electricity required for this is covered by green electricity, the system is even carbon-neutral.

Using synergies

Cold district heating + PKS-THERMPIPE®

Sewage pipe system with heat exchanger function

PKS-THERMPIPE® is the ecological and economical solution for residential areas with a cold district heating network. Because the system combines two functions: On the one hand, it is a durable, permanently welded sewage pipe system made of PE 100, and on the other hand, it is a heat exchanger that provides additional free energy. For this purpose, the support hose embedded in the outer pipe profile, which spirals around the pipe, is used as a secondary heating circuit for a heat transfer medium. The heat thus extracted is then fed into the cold district heating network via welded PE pipes.
PKS- THERMPIPE ® utilizes the heat of the surrounding soil as primary energy. Wastewater provides additional heat. If the heat energy obtained in this way exceeds the current demand, it is released to the ground and stored there - similar to a battery. This makes the system independent of daily fluctuations or irregular wastewater discharges. Constant energy supply is ensured.



Cold district heating 2.0

For this exemplary neighbourhood planning with a cold district heating network, a heat requirement of approx. 690 kW has been determined. For this purpose, an extraction capacity of 520 kW (COP 4.5) is to be provided either exclusively via geothermal probes or in combination with PKS-THERMPIPE®. The costs of the two options are compared below.

DN	Duct length [m]
200	876
300	348
400	198
500	96
In total	**1518**

Advantages of PKS-THERMPIPE®

- Sewage pipe and heat exchanger in one
- Modular design
- Made of corrosion-resistant PE
- Tight welded connections
- No root ingrowth
- Break-proof
- Low maintenance costs
- Service life >100 years
- Lower CO_2 footprint than concrete
- Easy recycling after dismantling

Save with PKS-THERMPIPE®

Option 1

Geothermal probes + concrete duct

The required extraction power of 520 kW is covered exclusively by geothermal probes (EWS). Wastewater disposal takes place using concrete pipes.

	Cost	Power [kW]
144 geothermal probe systems (Total length 12,960 m)	€ 1,008,000.00	520
Duct	€ 75,000.00	-
Shafts, accessories	€ 340,000.00	-
	€1,423,000.00	**520**

VS

Option 2

Geothermal probes + PKS-THERMPIPE®

Welded PKS-THERMPIPE ® sewage pipes in combination with geothermal probes are used as an energy source.(The concrete channel is not required.)

	Cost	Power [kW]
62 geothermal probe systems (Total length 5,580 m)	€ 434,000.00	230
PKS THERMPIPE	€ 200,000.00	290
Shafts, accessories	€ 340,000.00	-
	€974,000.00	**520**

∑ €574,000.00

∑ € 125,000.00

∑ € 449,000.00

Saving: € 449,000.00

By using PKS-THERMPIPE® (Option 2), the total costs of the construction project are reduced by €449,000.00. The heat exchanger function of the sewage pipe system provides the heating network with such a high extraction capacity (290 kW) that 82 geothermal probe systems can be saved. At the same time, the neighbourhood receives a modern, welded sewage pipe system that can be operated with low maintenance costs for over 100 years and can be easily recycled thereafter. This saves additional costs in the long term and protects the environment.

From A to Z

FRANK complete system for sustainable neighbourhood planning

Probes | Collectors | Shafts | Pressure pipes | Moulded parts | Fittings

FRANK. Plastic in good hands.

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