

# FLEXWELL FHK

Flexible district heating pipe



# FLEXWELL FHK

The intelligent alternative:  
safe and economical through simplified planning and minimal civil construction costs



## Safety furnished by the corrugated steel casing pipe

The convoluted steel casing pipe can absorb high soil and traffic loads. Armour plating of the FLEXWELL FHK construction.

## Connection to other piping systems

FLEXWELL FHK can be connected without difficulty to other mains systems, e.g. plastic-jacketed pipes and concrete trench systems.

## House connections with the loop-in method

Since FLEXWELL FHK is bendable and "endlessly" long it can be looped from one point to another. That way there are no buried branch connections. This method is conventionally used with buried electric cables.

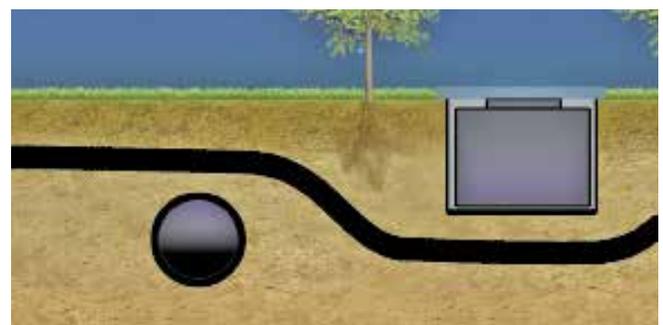
Using FLEXWELL FHK both flow and return are laid using the shortest route from building to building. Inside the building, e.g. in the basement, branch connections are installed both to the house system and the supply mains to the next building. FLEXWELL FHK is looped in the same way to additional houses or heating system users down the line.

## The results:

- no buried connections, no break in the original corrosion proofing
- shortest possible pipe route
- easy access to every cable connection
- no welding and leak tests required along the pipe route
- no need for T-pieces, expansion elbows, compensators and anchors
- small trench dimensions



Trenchless installation



Working around underground obstacles with FLEXWELL FHK.

# FLEXWELL FHK

The problem solver:  
the heating cable which can be used in about any underground condition



## Safety when using the horizontal directional drilling method

Where it is not possible to lay pipes directly in open cut trenches, e.g. when a traffic thoroughway has to be crossed and cannot be closed down or for environmental reasons, the specific properties of FLEXWELL FHK allow it to be installed underground using this method which does not impair the surface.

To do this, a drill string which can be steered in all three dimensions, consisting of bendable sections of steel tubing is positioned in a starting trench. It is operated by injection and flushing an environmentally neutral drilling fluid which transports the fine-grained portion of the material to the starting or target trench. The drill string is guided into the target trench with high accuracy. The required size of jet reamer is then mounted on the drilling rig together with the FLEXWELL FHK to be pulled through. In reverse gear and adding Bentonite drilling fluid the drill hole is enlarged, while the FLEXWELL FHK is pulled through simultaneously.

## Minimal cover required

The external steel casing of FLEXWELL FHK has a high degree of rigidity due to its corrugated construction and is thus able to take up high live and dead loads.

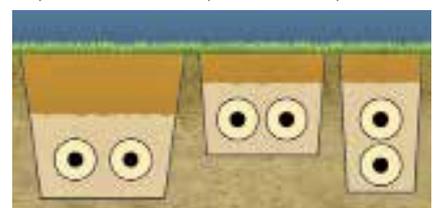
A test report from Dr. Ing. Veenker, officially approved expert, indicates: "The thickness of cover required for FLEXWELL FHK of the series 22/55 to 200/310 (primary pipe diameter/casing pipe diameter) is determined by assuming traffic loads in accordance with SLW 60. An effective cover of 0.20 m is sufficient for all cable sizes."

This minimal cover requirement is a great advantage when installing new pipes on top of existing concrete trenches (retro-fitting).



Laying the FLEXWELL FHK by using the horizontal directional drilling method.

SPIP* Excavation quantities 100 %	FLEXWELL Excavation quantities 60 %	FLEXWELL Excavation quantities 35 %
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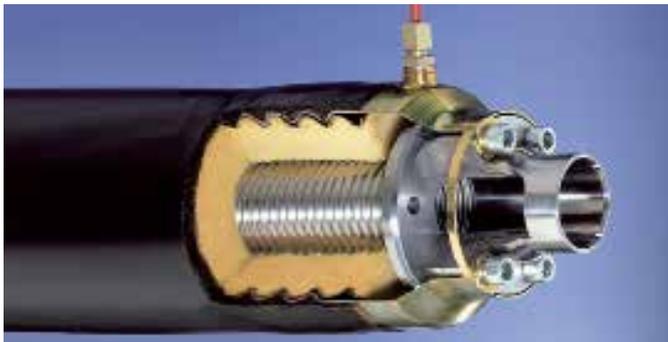


Trenching

\*) Standard pre-insulated pipe

# FLEXWELL FHK

Quality and performance at its best



## Safety provided by multi-layer corrosion proofing

The external corrosion proofing has three layers. It provides protection against aggressive soils, water and stray currents. The same corrosion proofing has proven its worth in many decades of service on buried high-frequency and telephone cables.

## Safety through permanent surveillance

FLEXWELL FHK enable continuous and unbroken surveillance using the WIREM (resistance reference measurement) alarm system. This gives immediate warning of any ingress of moisture into the insulation layer, i.e. leaks in the primary or casing pipe as well as faults in the surveillance system itself, such as discontinuity of circuit.

The fault can be pinpointed with an accuracy of more than 0.2 % of the cable length under surveillance. Warning is given of leaks at an early stage, so that expensive water and heat losses can be avoided. The expenditure of time and money when digging up great lengths of pipe to locate the fault becomes unnecessary.

## Universal connections

The mechanical, no-weld connections with a graphite packing can be installed in just a few minutes without the need for special tools, thus enabling FLEXWELL FHK to be connected to conventional piping systems.

## Operating range for FLEXWELL FHK

Operating temperature  $-170$  up to  $+150$  °C

Operating pressure PN 16 and PN 25

## Uses

- heating water
- domestic hot water
- potable water
- condensate

Watertight wall glands for entry of FLEXWELL FHK into buildings and manholes are available to suit.



## Construction of FLEXWELL FHK

- 1 Convoluted stainless steel primary pipe
- 2 Alarm wires
- 3 Flexible solidified Polyurethane foam
- 4 Convoluted steel casing pipe
- 5 Polymer (bituminous mastic) layer
- 6 Polyethylene protective jacket

# FLEXWELL FHK

## Technical data

Twelve good reasons why you should choose FLEXWELL FHK



Type designation	Nominal core	External diameter	Weight	Min. bending radius	Max. supply lengths
		mm	kg/m	m	m
30/ 91	DN 25	94	3.9	1.0	1000
39/116	DN 32	121	5.7	1.2	640
60/148	DN 50	156	9.1	1.5	590
75/171	DN 65	178	12.2	2.0	480
98/171	DN 80	178	12.8	2.0	480
98/220	DN 80	233	19.3	4.0	270
127/220	DN 100	233	19.8	4.0	270
147/220	DN 125	233	20.3	4.0	250
200/310	DN 150	313	33.2	6.0	230

### Installation in endless lengths without field joints

- Time savings due to shorter installation times
- No welding or insulation of field joints in the trench

### Trenchless installation

- Pipe can be put directly into the ground without a ditch by using a plough
- FLEXWELL FHK can be combined with other cables in a single step – reducing costs

### Renovation of old or damaged systems

- FLEXWELL FHK pipe can directly replace existing district heating or other existing pipes which are damaged or not in use anymore
- Existing PE tubes can be used to enter new flexible pipes without additional construction work

### Flexible

- No prefabricated elbow fittings necessary
- Uninterrupted factory corrosion proofing jacket
- No particular precautions needed in areas prone to subsidence and on slopes

### Self-ventilating

- The helically convoluted pipe is self-ventilating
- There is virtually no need for vents along the route

### Lower costs as there is no need to keep trenches free of water

- Ease and safety of pipe laying even in wet soil conditions and where the water table is high
- Plus when crossing waterways

### Self-compensating

- No U-bends, compensators, expansion elbows or anchors needed in the ground
- Low planning and construction supervision costs

### Minimal excavation costs

- Narrow trench widths and shorter routes
- Less excavation quantities
- Cost savings when restoring the surface
- Minimal laying depth
- Lower costs for securing the site and for road and pedestrian bridges

### Loop-in method instead of T-branches

- Less risks and improved longevity
- No interruption in the corrosion proofing jacket
- Fast and economical installation

### Underground installation

- Horizontal directional drilling method
- in ducts and protective pipes

### Circumnavigating obstacles

- Obstacles can be passed above or below at no extra cost
- Extra work for relocation of other underground lines not necessary

### Environmentally friendly installation

- The pipe route can simply be tailored to suit local conditions
- Trees and shrubs can be skirted at a suitable distance
- No lowering of the water table necessary
- Routing can be chosen to fit the local topography

# Pipe systems for the future

Heating systems – Industry – Petrol stations – System packages



## Your partner for pipe systems

We are the people you should talk to when you need to find efficient solutions for transporting liquids. With our project engineers, development department, in-house production unit and our professional team of fitters, we have the know-how and the resources to look after your projects competently and reliably. For all types of heating systems, petrol station construction, industrial plant construction and system packages.

## Customer-specific solutions

Brugg is the full service provider in the field of single-wall, double-wall and insulated pipe systems. This know-how allows us to manufacture project-specific customised items.

## Give us a call!

Our engineers would be pleased to advise you and find a made-to-measure solution.

## International network

Our global partnership network can be reached on site at any time. More than 34 partners in 20 different countries will look after you wherever you are.

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