Breaking the Limits -

FASTER INSTALLATION OF DISTRICT ENERGY HOT WATER PIPING UNDER DIFFICULT CONDITIONS

HANS-JÖRG FELBICK
BRUGG PIPESYSTEMS

HANS-JOERG.FELBICK@BRUGG.COM

BRUGG PIPESYSTEMS
Flexible solutions

Do You remember?
We have come a long way with district energy

Pipe systems for district energy have been a topic starting in the early 1920's.

From the very beginning district heating networks consisted of rigid steel pipes.

Installation of such systems was extremely challenging and labor-intensive.

Rigid steel pipes are still standard in most situations …

… as main lines in the countryside

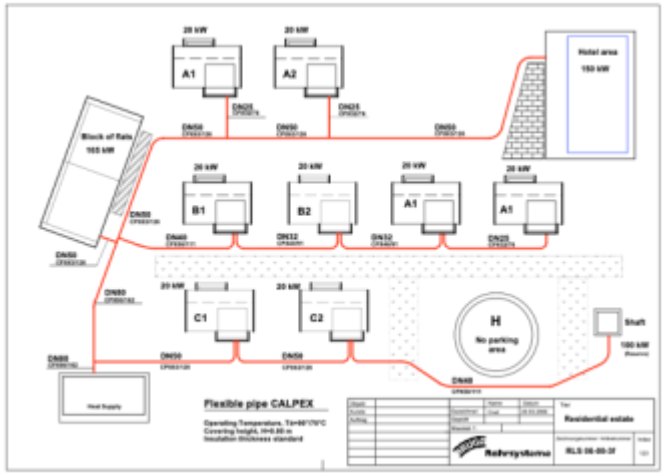
… straight routing as much as possible

… inside cities

BRUGG PIPESYSTEMS
Flexible solutions

… and under most conditions.

They are used around the world in small and large DHC networks,



or large infrastructure projects

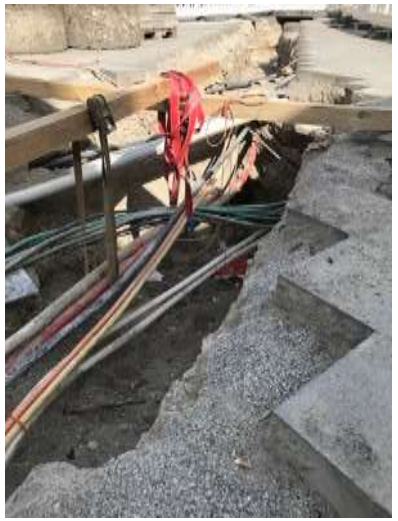
BRUGG PIPESYSTEMS
Flexible solutions

But what about the new situations, …

… in a challenging natural environment,

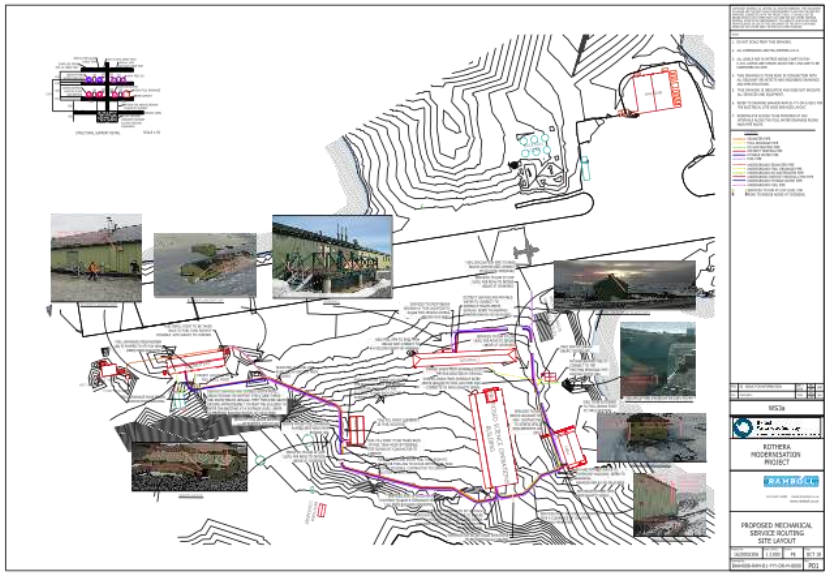
… around tight curves + obstacles,

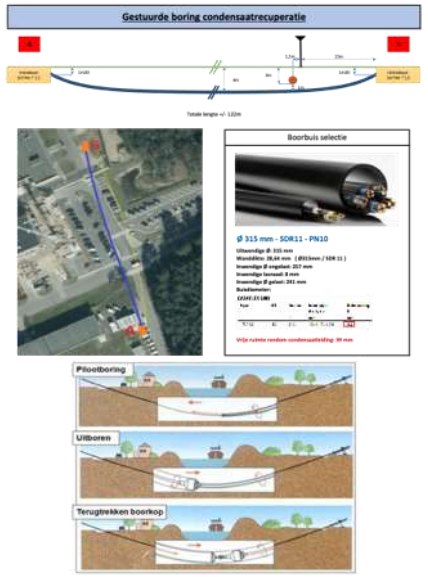
... in urban areas + utilities in the way



BRUGG PIPESYSTEMS
Flexible solutions

… and today’s demanding applications?





BRUGG PIPESYSTEMS
Flexible solutions

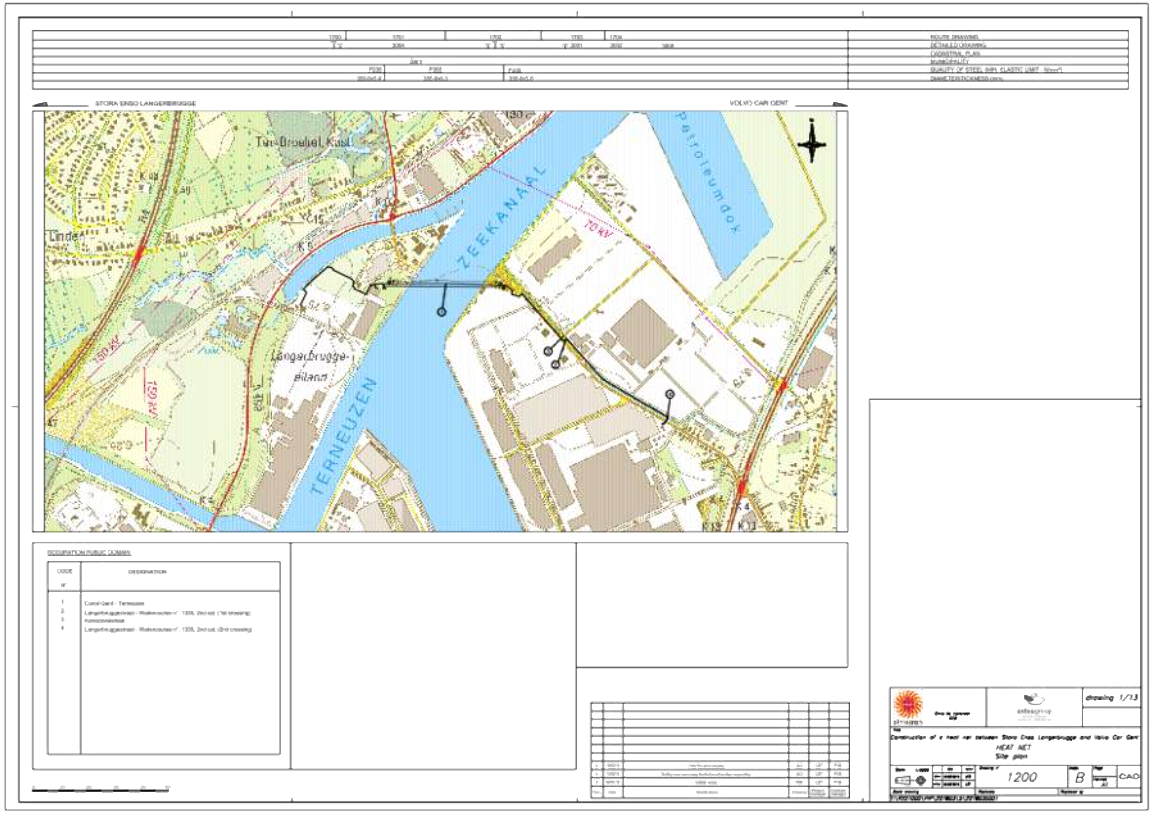
An example:
Heat from Stora papermill to Volvo car plant in Belgium

rigid steel pipe (2000 ft), induction welded joints

+

“steel in steel” pipe (1500 ft)

underneath a waterway



BRUGG PIPESYSTEMS
Flexible solutions

How do we “break the limits”?

We use “flexible” pipes (stainless steel and plastic)

- for small and medium local and district heating or cooling networks,
- when we encounter special, difficult and challenging conditions, or
- for projects using a “mix” of rigid + flexible pipes.

BRUGG PIPESYSTEMS
Flexible solutions

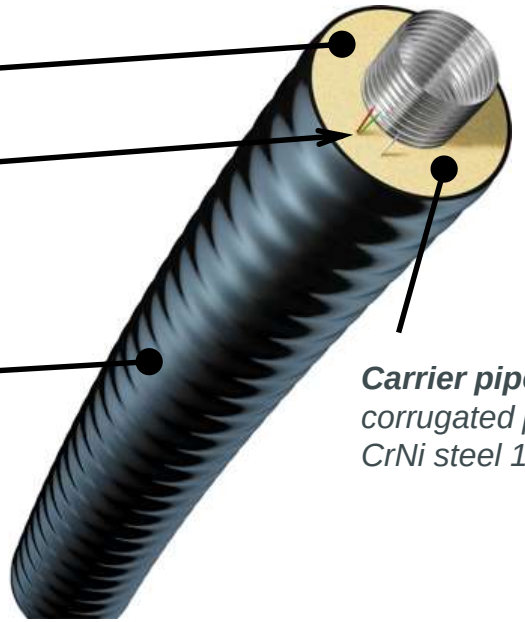
We “break the limits” using single wall flexible stainless steel pipes!

CASAFLEX ®

Insulation:
Polyisocyanurate (PIR)

Monitoring wires:
combination green + white = Nordic system

PE protective coating:
seamlessly extruded including multiple-layer diffusion barrier and metal reinforcement

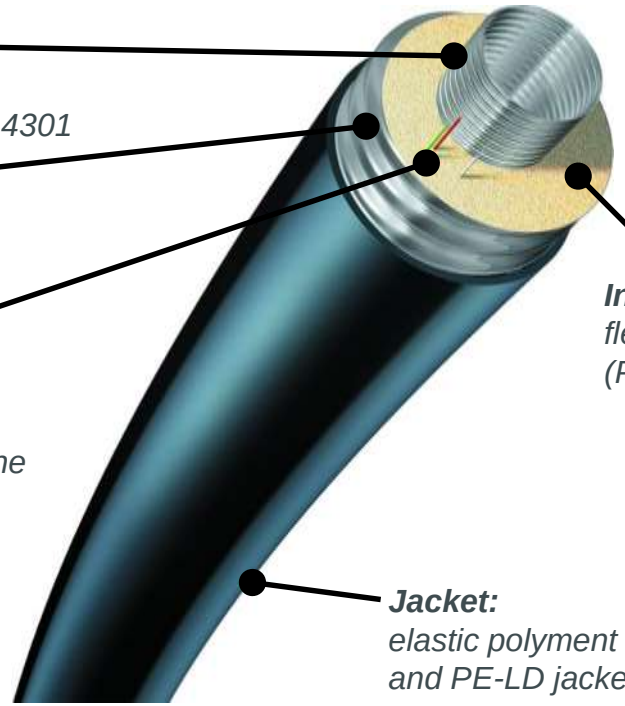


Carrier pipe:
corrugated pipe
CrNi steel 1.4404, 1.4301

BRUGG PIPESYSTEMS
Flexible solutions

We “break the limits” using double wall flexible stainless steel pipes!

FLEXWELL ®



Carrier pipe
corrugated pipe
CrNi – steel 1.4404, 1.4301

Steel protection pipe
Cr – steel 1.4512

Leak detection:
Nordic System
green + white wires
spirally wrapped around the carrier pipe

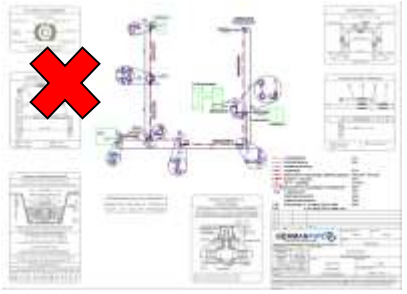
Insulation:
flexible polyurethane foam (PUR)

Jacket:
elastic polyment coating and PE-LD jacket

BRUGG PIPESYSTEMS
Flexible solutions

Why do we use flexible stainless steel pipes?

- ***No U- or Z-designs required***
- ***No expansion pads needed***
- ***One single pipe for a long distance – no joints***
- ***No vents: corrugated pipe is self-ventilating and –cleaning***
- ***Minimum no. of components needed***
- ***Directional changes around obstacles***
- ***No additional HDPE pipe needed in HDD applications (FLEXWELL)***
- ***Fittings available from rigid steel pipe program***
- ***Narrow and flat trenches possible***
- ***No structural analyses / static calculations***



Result:
Cost and Risk Savings!

BRUGG PIPESYSTEMS
Flexible solutions

2 examples from the Netherlands:

Installation of FLEXWELL

in the center of Rotterdam

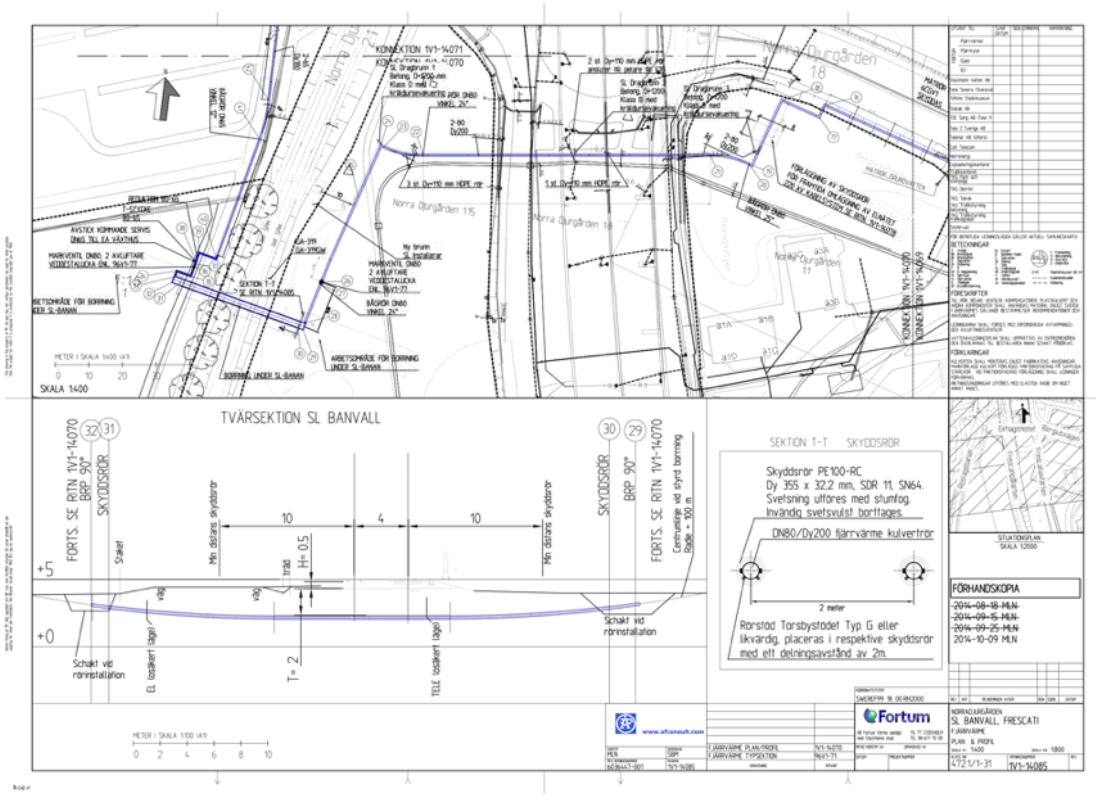
in the center of Amsterdam

BRUGG PIPESYSTEMS
Flexible solutions

And:
Pipe installation under a railway track in Stockholm with ongoing traffic

FLEXWELL as a shortcut to connect rigid steel pipes on both sides of the railway track

Installation in 1 day only!



BRUGG PIPESYSTEMS
Flexible solutions

Heat supply to an automotive plant in Southern Germany

Installation of a FLEXWELL pipe,

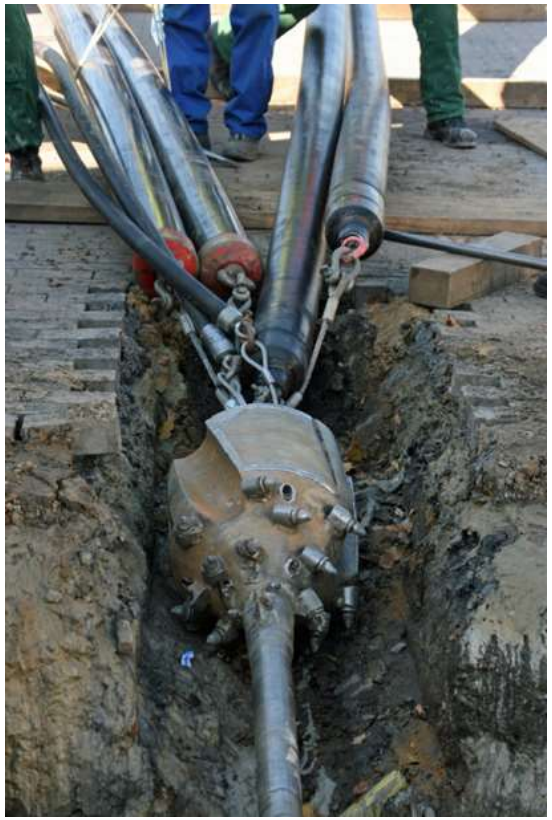
700ft. long,

using HDD

no extra HDPE pipe needed to house the flexible pipe!

BRUGG PIPESYSTEMS
Flexible solutions

Mastering tight working conditions in the City of Münster, Germany



A bundle of pipes was installed in one go:

2x FLEXWELL, 230ft each

2x HDPE protection pipe

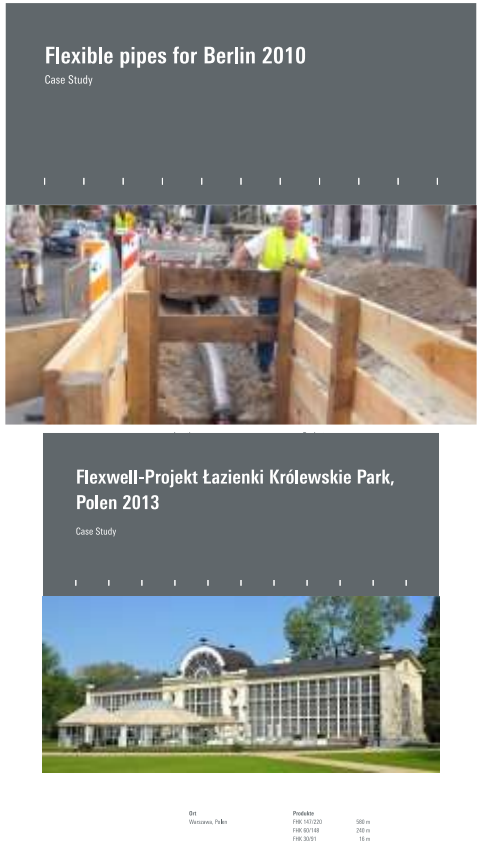
1x water pipe

2x power lines (electric + telephone)

1x bentonite pipe

BRUGG PIPESYSTEMS
Flexible solutions

Case studies show how we break the limits using flexible steel pipes



FLEXWELL project recently realized in the City of Hamilton, Canada

This FLEXWELL pipe was successfully installed in early 2018

Initial assessment and feasibility study showed the advantage of a single flexible pipe using HDD:

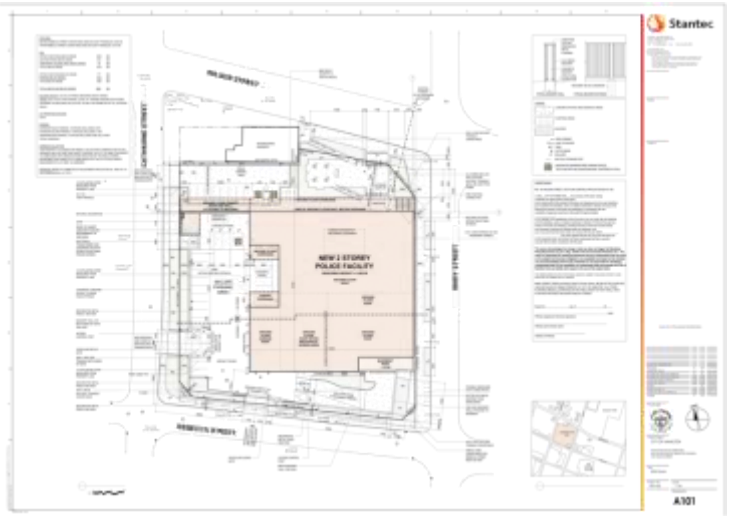
- ***770ft. long in one piece***
- ***no joints – welds only at pipe ends***
- ***no additional HDPE pipe needed***
- ***installation with a bundle of additional pipes in one go***
- ***no road closures needed in the city center***

Despite initially higher material / pipe costs total project costs were similar to rigid steel pipes due to

- ***time savings – preparation and installation***
- ***reduced civil work – almost no excavation***
- ***labor savings***

Enduser's additional benefits:

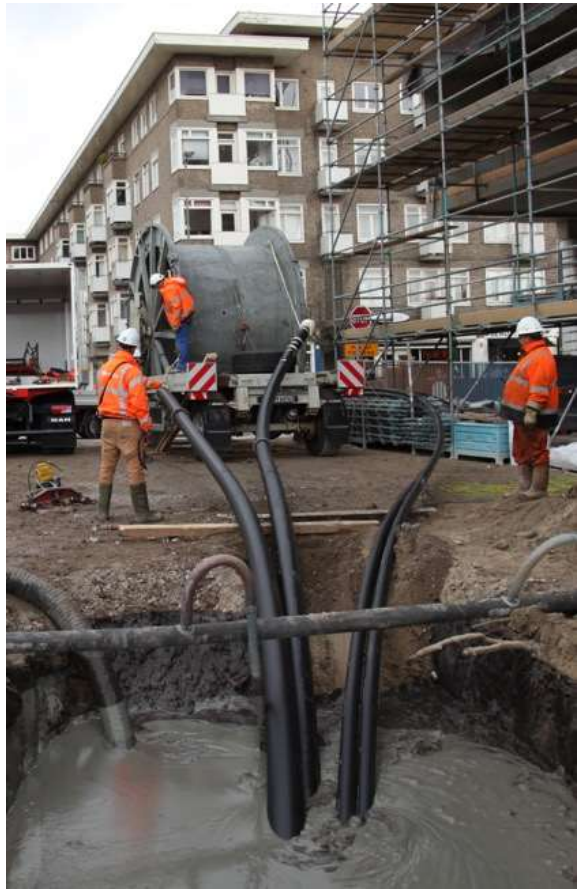
- ***engineering support during design stage, project preparation and realization***
- ***Training and supervision before + during installation***

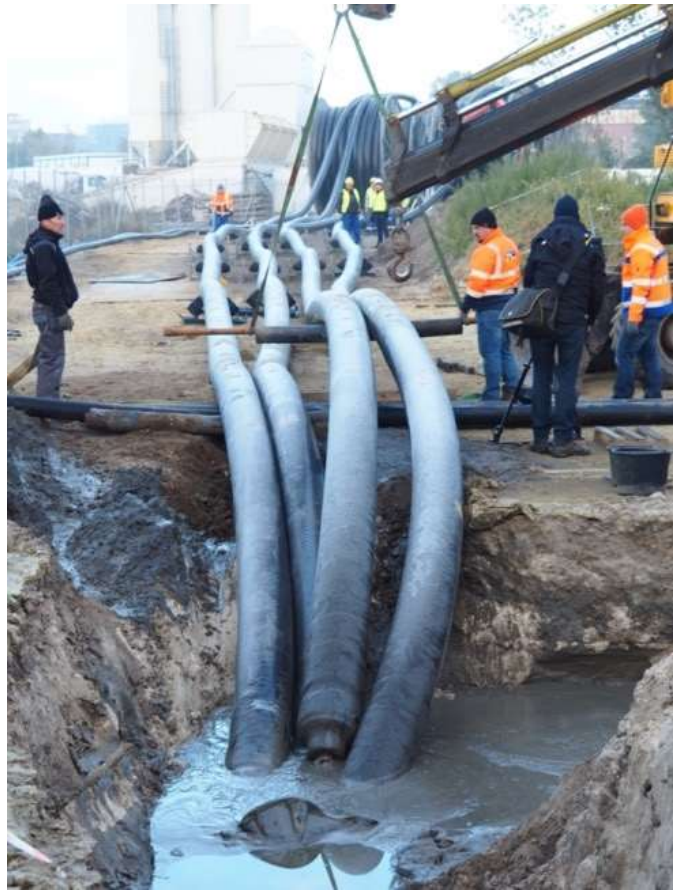


BRUGG PIPESYSTEMS
Flexible solutions

Installation of FLEXWELL pipes in the city of Hamilton

This hopefully provides some new ideas about how you can “break the limits”!





BRUGG PIPESYSTEMS
Flexible solutions

Breaking the Limits -

FASTER INSTALLATION OF DISTRICT ENERGY HOT WATER PIPING UNDER DIFFICULT CONDITIONS

HANS-JÖRG FELBICK
BRUGG PIPESYSTEMS

HANS-JOERG.FELBICK@BRUGG.COM

BRUGG PIPESYSTEMS
Flexible solutions