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**European Association for
Ductile Iron Pipe Systems**

Fachgemeinschaft Guss-Rohrsysteme

NEWSLETTER

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Dear Readers,

There are currently 48 drinking fountains in Berlin, from which an average of 350,000 liters of nicely cooled drinking water bubbles up from the city's drinking water system between May and October. The capital wants to instil the drinking of healthy, mineral-rich mains water even more strongly in public spaces, reduce the mountains of rubbish from plastic bottles and offer everyone in the city a refreshment with drinking water as they pass by. That's why another 100 cast-iron drinking fountains – so called Kaiserbrunnen – are being set up for Berlin.



With the popular initiative „2000 Watt for Zug“, the city of Zug in Switzerland is pursuing a different goal. The long-term aim is to establish the values of a 2000-watt society. The heat and cold from the energy of Lake Zug will be used for this purpose. Ductile cast iron pipes are used for the so-called anergy network, which connects a heating centre with the urban quarters.

On the other hand, those who use pipe systems that are open to access should use a robust, non-combustible and diffusion-tight pipe system that is highly resistant to external influences such as fire and mechanical stress; this is the case with various construction measures for water supply and wastewater disposal.

Enjoy and inspire reading

Yours Christoph Bennerscheidt

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The online Newsletter published periodically provides professionals in the field with up-to-date information about interesting European pipeline projects as well as the many and varied activities of EADIPS®/FGR®.

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100 cast iron drinking fountains combat the plastic bottles

In Berlin there are currently 48 **drinking fountains** from which, between May and October in each case an average of 350,000 litres of nicely cooled water bubbles up from the city's drinking water system. In addition there are 62 **drinking water dispensers** available in public administrative buildings. Berlin wants to instil the drinking of healthy, mineral-rich **mains water** even more strongly in public spaces and offer everyone in the city refreshment with drinking water as they pass by – quickly, free of charge and in an uncomplicated and environmentally friendly way. And, not least, to declare war on the waste mountains of plastic bottles!

With the presentation of the **“Blue Community” certificate** on 23 October 2018 Berlin has officially received the “Blue Community” designation. With this certificate, presented to the Berlin Senate, the City subscribes to the principles of a “Blue Community”, thereby committing itself to the following four principles:

- Recognition that water is a human right
- Water services remain under the control of the public authorities
- Drinking mains water instead of bottled water
- Promoting partnerships with international partners

Blue Community Berlin – an exemplary initiative

Blue Communities, Berlin is the third “blue” capital of Europe, encourage the people within them to go back to drinking mains water. Within their own structures and operational processes are striving towards responsible handling of water and – as far as possible – use drinking water from the public water supply. Because: locally sourced mains water provided via the municipal drinking water network protects the environment. Mineral and table water, on the other hand, is filled into bottles and transported onto the street, requiring a thousand times more energy than is used for the supply of mains water from the drinking water network.



With the resolution of the House of Representatives for the **“Blue Community”** for the first time the State of Berlin is making one million euros available for a **drinking water fountain** construction programme over the coming two years. Distributed over the whole of the city, Berliner Wasserbetriebe, the water supply company for the city, will now be setting up a further **100 drinking fountains and water dispensers** in addition to those already in existence.

Manufacture of the drinking fountains are in good hands

The contract for the construction of these lavishly designed **Kaiser drinking fountains** and their delivery went to Ludwig Frischhut GmbH & Co. KG from Pfarrkirchen in Bavaria, a subsidiary of the Talis Group. After taking over, adapting and preparing the existing model for the Kaiser drinking fountain, which has been produced since 1985, the company, working together with Berliner Wasserbetriebe and the enamellers commissioned for the work, succeeded in producing the initial sample and receiving the go-ahead for this. After the challenging production of the individual **cast iron components** and their **enamelling**, finishing, preliminary assembly and final checking were carried out at the Ludwig Frischhut premises. This collaboration between workshops enabled the quality demanded by Berliner Wasserbetriebe to be guaranteed under one roof. Therefore the company is the main supplier for the **“100 drinking water fountains for Berlin”** project being promoted by the Berlin Senate.

Author: Jörg Meier, Ludwig Frischhut GmbH & Co. KG

The article was slightly shortened by the editors. You can find the complete article with various illustrations as a PDF in the download area under [Downloads Annual Issues EADIPS FGR](#).

Circulago – Heating and cooling from the waters of Lake Zug

Circulago is a future-oriented project to supply the town of Zug and the southern part of Baar with environment-friendly **heating and cooling** energy derived from the water of Lake Zug. With the so-called people's initiative "2000 Watts for Zug" with the aim of developing the values of a 2000 Watt society in their town over the long term. Until the year 2050 the CO₂ emissions should be reduced to 2 tonnes per person per year and the primary energy consumption to 3,500 W. In order to achieve these aims there are various renewal measures and improvements to and within buildings on the agenda of the town and its citizens. **Circulago** is being planned, implemented and operated by Zuger utility company WWZ AG. The first buildings will be able to be connected up as early as the second half of 2019 and supplied with heating and cooling.



Pulling-in of two cast iron pipes simultaneously using specially developed mobile double pipe clamps.

Ductile iron pipes for the Anergy network

For the heating and cooling supply from Lake Zug the water will be collected from the depths of the lake and routed to the lake water power station. The energy of the lake water will be taken via a heat exchanger into a second independent circuit – the so-called **Anergy network** – which then connects with the urban districts.

TMH Hagenbucher AG was awarded the contract for this **Anergy network** to supply, in the first stage, around twice 1,000 m (flow and return) of DN 600 ductile iron pipes with cement mortar coating and approx. twice 860 m DN 400 ductile iron pipes with protective epoxy finishing layer. The DN 600 ductile iron pipes were pulled into the microtunnel with an internal diameter of 1.6 m by TPS Trenchless Piping Systems AG, which also belongs to the Hagenbucher Group, using mobile double pipe clamps specially developed for this application. This microtunnel has a number of horizontal and vertical changes of direction. The restrained BLS® push-in joint of the pipes, with a diameter of DN 600, allows an angular deflection of up to 2 degrees.

Only in this way was it possible to draw the entire pipe string into the tunnel with such care and precision that, pulled through curves and dips for over 500 m, it only appeared with a deviation of 10 mm from the theoretically calculated position at the end of the tunnel.



Arrival at the target shaft. The extremely tight space conditions in the microtunnel are clear to see.

All requirements met

The client set high demands for the corrosion protection of the pipes. Therefore the **cast iron sewer pipe** with fibre-reinforced **cement mortar coating** from Duktus (Wetzlar) GmbH & Co. KG was used. It guarantees not only perfect corrosion protection but it can also absorb condensation water without any problem.

The DN 400 pipes were installed with the help of pre-assembled pipe clamps in a **microtunnel** with an internal diameter of 1.6 m from the town of Zug, which mainly serves as a **rainwater channel**. This is blocked in places so that a few **cast iron pipes** lie completely in rainwater. In the Anergy network the medium is mixed with a 7 % ethanol blend, an antifreeze agent. The internal coating of the DN 600 **ductile iron pipes** consisting of high-alumina cement mortar and this ethanol mix are absolutely compatible. With the absorption and release of energy, temperature fluctuations can occur in the medium with differences of up to 20 Kelvin, that has effects on the linear expansion of the pipes.

Cast iron pipes have a comparatively low expansion coefficient; also the BLS® push-in joint, with its play of around 4 mm in the longitudinal direction (without effect on the sealing action and thrust resistance), can also act as a compensator.

Everything done right

The **Circulago** project proves that 6 m long **ductile iron pipes** from Duktus/Hagenbucher are also extremely suitable for applications such as those required for the construction of Anergy networks.

The construction time for this major project in Zug was extremely tight; it was therefore important that good progress was made with the assembly of the pipes. Here again, the installation-friendly, pressure-resistant and, where necessary, easy to dismantle BLS® push-in joint proved its excellent suitability. The Hagenbucher company is proud of the fact that it was commissioned by WWZ AG with the supply and installation of the **ductile iron pipes** for this project, which so far is unique in Europe.

Material used build in from Hagenbucher:

Pipe pulling-in, lake water power station– Aabach – Gubelstraße:

Total approx. 1,900 m pipes:

- 318 x 6 m DN 600 ductile iron pipes with cement mortar coating from Hagenbucher/Duktus
- 163 double pipe clamps
- 670 special bolts for the rails

Pipe assembly, Industriestraße:

Total approx. 1,800 m pipes:

- 300 x 6 m DN 400 ductile iron pipes with protective epoxy finishing layer from Hagenbucher/Duktus

Author: Marco Nussbaumer, TMH Hagenbucher AG

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Interim pipelines in ductile cast iron are the best

When **supply pipelines** or **sewage systems** still in operation need to be replaced, renovated or even repaired, the engineering involved for ensuring a **secure supply** or **disposal service** in the meantime is not to be underestimated. In branched local networks **supplying drinking water**, the section concerned can usually be closed off and the water diverted away from the area affected by a bypass. But shutting down and diverting is often not possible, and pipelines laid below ground (e.g. in gravity sewers) or above ground, referred to as “flying” or **interim pipelines** need to be constructed so as to be able to continue transporting the media in question while the work is being carried out.



The route of the DN 800 interim pipeline over the dike between the pipe bridge over the River Mulde and the Canitz waterworks

Rules and practical examples for interim pipelines

To date there are no generally applicable requirements for the planning, construction, operation and deconstruction of **interim pipelines**, meaning that as a rule technical solutions have been worked out as each individual case arises. Information on the construction of pipelines above ground and on special requirements for piping systems constructed above ground can be found in DVGW W 400-2, chapter 15.2, EN 805, chapter 5.4 (protection of systems) and in the draft of prEN 598. Basically, the requirements described there are to be observed when planning **interim pipelines**.

But also, different network operators have many years of experience in the use of **ductile iron pipe systems** as **interim pipelines** which can be drawn on in order to formulate requirements for interim pipelines.

- The setting up of an emergency supply at Maifeld during the conversion of the Olympic stadium in Berlin using DN 250 ductile iron pipes and BLS® restrained push-in joints. Because angular deflections of 3.5° are possible with the BLS® joint, it was possible to install the interim pipeline along the curve of the stadium wall
- The use of a 2,000 m long DN 600 interim pipeline for the South Saxony water supply association. The ductile iron pipe sand fittings were used a total of three times in order to allow the renovation of a 6,000 m long section of pipeline

- The installation and reuse of a DN 150 interim pipeline with BLS® restrained push-in joints to maintain the supply of water to the districts of Eimelrod and Hemminghausen in Willingen/Upland by the Upland water supply association

Interim pipeline between the Canitz waterwork and a pipe bridge

The communal waterworks of Leipzig renovated two DN 1000 grey cast iron water transport pipelines running in parallel which supply the city of Leipzig with fresh water from the waterworks at Canitz and Thallwitz, by pulling in DN 800 **ductile iron pipes** with **BLS® restrained push-in joints**. The two waterworks at Canitz and Thallwitz feed their water into the two strings of the 23 km double transport pipeline in the direction of Leipzig.

The section of the double transport pipeline to be renovated is located between the pipeline junction at Thallwitz/Canitz in the immediate vicinity of the Canitz waterworks and a pipe bridge over the River Mulde. At this point the pipelines run underneath the flood prevention dike. The first step was to construct a DN 800 **interim pipeline** with BLS® push-in joints between the Thallwitz/Canitz junctions and the pipe bridge and put it into operation. Then this new pipeline was put into operation and the interim pipeline was decommissioned. The pipes and fittings of the interim pipeline were then used again so that the second DN 1000 could be renovated.

In all cases, drinking water pressure pipes with restrained BLS® push-in joints, DN 800, wall thickness class K 9, with **cement mortar lining** and a 400 g/m² zinc/aluminium coating plus a blue epoxy finishing layer were used. In addition, various **fittings in ductile cast iron**, nominal size DN 800, were installed.

Renovation of a wastewater pressure pipeline in Berlin Tegel Forest

An old DN 1000 **wastewater pressure pipeline** in asbestos cement along the external West and North fence of Berlin Tegel Airport was to be replaced by DN 800 **ductile iron pipes** with BLS® restrained push-in joints. The new pipeline was to be installed along the same route. This meant that wastewater from the old pressure pipeline had to be routed parallel to it through an **interim pipeline** constructed above ground. The removal and relaying of the **waste-water pressure pipeline** was done head on in a number of installation stages.



An uprooted oak tree which fell onto the interim pipeline did not result in any operational disruptions

In the first stage of the work, an approx. 870 m long section of the **interim pipeline** was constructed along a forest road. In the 2nd stage of the project, the interim pipeline above ground was first of all dismantled and assembled again in the same way at the new section of pipeline. Because of the tight space conditions in this section of the were, constructing the interim pipeline parallel to the route of the **wastewater pressure pipeline** was not possible and so the pipeline was laid along an existing forest road. Once complete, the interim pipeline was 1,300 m long.

No disruptions in operation occurred throughout the entire construction phase. Also the construction and dismantling of the pipelines was, as usual, uncomplicated, however, in 2017 the Berlin city area experienced the effects of local bad weather events on many occasions. Heavy rain resulted in flooding and squalls took away roofs and uprooted trees and dozens of trees were uprooted in Jungfernheide Forest and a decades-old oak fell onto the **interim pipeline**. Once the oak had been removed from the pipe-line then, as expected, it was seen that the pipeline in robust **ductile cast iron** had withstood the powerful impact of the tree without damage. There were not even any detectable alterations to the surface of the pipe.

Requirements for interim pipelines

- the choice of a piping system consisting of pipes, fittings and valves
- a robust, non-flammable, impermeable piping system with a high level of resistance to external influences (e.g. fire and mechanical stresses)
- able to be supplied in a wide range of nominal sizes
- suitable for delivery even under restricted site conditions
- thrust-resistant joints connecting all pipeline elements parts
- the possibility of flexible routing of the pipeline which can be adapted to e.g. structural and/or topographical conditions
- fast, easy and secure assembly, as well as dismantling, even under the worst weather conditions (temperatures in the minus range) without additional expense
- the possibility of using system components again once dismantled without any particular preparation work
- efficiency and environmental compatibility

Authors: Uwe Hoffmann and Lutz Rau

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EADIPS members at TAUSENDWASSER 2019 – Success makes you want more



A new spirit of optimism, innovative strength and great future potential – **TAUSENDWASSER**, the new trade fair and congress format for the water industry, celebrated a successful opening. This is the summary on the homepage of the TAUSENDWASSER trade fair. On two varied days in the Potsdamer film park Babelsberg stood also the **EADIPS members**

- Düker GmbH
- Duktus (Wetzlar) GmbH & Co. LIMITED PARTNERSHIP
- Erhard GmbH & Co. LIMITED PARTNERSHIP
- Keulahütte Ltd.
- vonRoll hydro (germany) gmbh

for discussions with the specialist public. Around 1,200 experts from the water industry visited the trade fair. Both regional and national trade visitors used the two days of the fair to find out about their products and services and to make and maintain contacts.

After a convincing start in Potsdam, **TAUSENDWASSER** will move to Station-Berlin in March 2021 with the next edition, in order to be able to offer more supporting programmes there. TAUSENDWASSER wants to plan a rotational change between Berlin and Brandenburg in order to represent the water management metropolitan region Berlin-Brandenburg permanently.

Look forward to the next issue of **TAUSENDWASSER 2021!**

