BRUGG
Pipes

Pipe systems for plant engineering

safe – economic – efficient – flexible

Experience and expertise in plant construction

We are worldwide market leader you should talk to when you need to find efficient solutions for the safe transport of inflammable and environmentally hazardous liquids. Our approved pipe systems convince of short construction time and endless lengths. Even a renovation during the continuous plant is solvable. Since more than 40 years, we are the first address for petroleum companies, engineering and plant manufacturer all over the world..

Every challenge is most welcome

Special applications ask for suitable solutions. Due to this we develop monitorable, double-walled pipe systems for the needs of plant construction and petrol stations, which can be laid without any connection underground. For the needs of a biogas plant we offer a most efficient fermenter heating, which due to the long life time and flexibility a fast and low cost installation without connections and welded joints is.

Whether plant construction, petrol station or biogas plant – we go hand in hand with our customers and develop the best solution for every project.

Advantages

- Flexible or rigid double-walled pipe system
- Leak monitoring; over-pressure, under-pressure, remote diagnosis
- Multifunctional applicable; independent to the application or medium
- Short construction time, fast laying
- Approved, monitorable system
- No welded joints with flexible pipes
- Connecting fittings without welding or brazing with flexible pipes
- Full installation service by BRUGG possible

Pipe systems for plant engineering

Applications

FLEXWELL® Safety Pipe
PN 25
DN 12 – DN 150

Construction: continuous, flexible, double-walled, safety pipe system with leak detection. Medium conducting pipe made of stainless steel.

Applications: transport of environmentally hazardous, inflammable, toxic and dangerous liquids and gases.

BRUGG-STAMANT® Safety Pipe
PN 25
DN 15 – DN 800

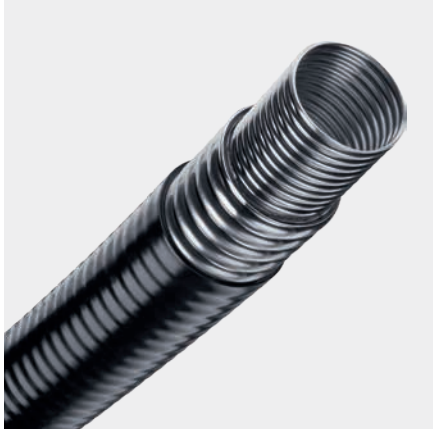
Construction: rigid, double-walled, approved safety pipe with leak detection. Medium conducting pipe made of steel or stainless steel.

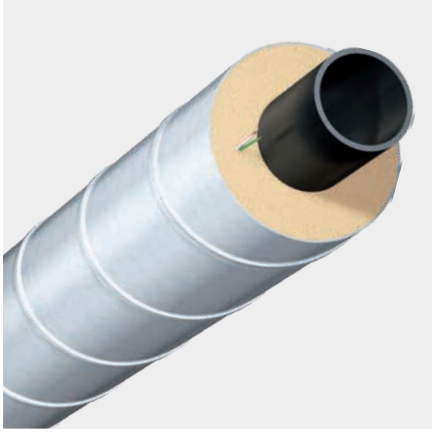
Applications: transport of environmentally hazardous, inflammable, toxic liquids and gases. Supplement to FLEXWELL® Safety Pipe.

SPIRAMANT
max. 160 °C
PN 25
DN 20 – DN 1000

Construction: rigid, heat-insulated pipe system, folded spiral-seam steel casing, not readily flammable. Variable medium conducting pipe with PUR heat insulation.

Applications: heat-insulated liquids transport both outdoors or indoors.





Pipe systems for plant engineering

Applications

PETREX®-CNT
PN 6
DN 25 – DN 80

Construction: continuous, flixible pipe system, single-walled with polyethylene corrosion protection. Medium conducting pipe made of stainless steel.

Applications: fuels, suction line, vent line.

SECON®-X
PN 10
DN 25/40/50/100

Construction: continuous, flexible, pipe system with leak detection. Medium conducting pipe made of stainless steel.

Applications: petrol stations (filling, pressure, suction, gas displacement and gas return pipe).

NIROFLEX®
PN 10 – PN 16
DN 10 – DN 150

Construction: ffexible, single-wall, spiral-corrugated pipe system available with or without polyethylene corrosion protection. Medium conducting pipe made of stainless steel.

Applications: heat exchanger, transport of gases, water, chemicals or as protective piping.

Pipe systems for plant engineering

Applications

FLEXWELL®-LPG
up to –50 °C
PN 25
DN 20 – DN 50

Construction: continuous, flexible, single-walled pipe system with reinforcing bands equipped with foil and a polyethylene casing for external corrosion protection.

Applications: gases, pressurized water line, fuels, etc.

FLEXWELL® CRYO PIPE
–200 °C up to +50 °C
PN 25
DN 15 – DN 32

Construction: flexible, double-walled, vacuum insulated pipe system for the transport of all cryogenic liquefied gases.

Applications: Transport of all cryogenic liquefied gases.

FLEXWELL® LNG All-in-One
–200 °C up to +50 °C
PN 30
DN 32/32 – DN 40/50

Construction: flexible, multi-layer, vacuum insulated pipe system for the transport of cryogenic liquefied gases.

Applications: Transport liquefied natural gas at LNG fuelling stations. Circulation- and BOG-line.

One flew over the Augsburg clinic

Fuel pipe for refueling the Christoph 40 rescue helicopter

Germany's highest air rescue base located on a building has been constructed 58 meters above the ground on the top of the Augsburg Clinic building. A helicopter landing pad has been built on top of the fourteenth floor of the hospital for ADAC's (Allgemeiner Deutscher Automobil Club, the German equivalent of AAA) Christoph 40 rescue helicopter. The landing pad towers an additional three stories above the building and has room for another helicopter.

In order to guarantee an unrestricted supply of fuel to the helicopter, various fire protection and environmental protection requirements had to be complied. FLEXWELL® Safety Pipe (FSR) complies these requirements and offers further an continuous leak monitoring.

For the transport of Jet A-1 had been 245 m of FSR 39/60 (DN 32) laid in three phases of construction. In the first phase of construction, 100 m FSR will be laid from the underground fuel tank adjacent to the building into the basement level of a 50-meter-tall supply shaft in the Clinic. The second phase of construction will see an additional 50 meters of safety pipe laid vertically from the basement level of the supply shaft into the fourteenth story – up to 250 meters would be possible with no problems.

The termination of this section of pipe on the fourteenth floor is located under the fueling system on the seventeenth floor. From there, the pipe will rise another approximately 12 meters into the tanking cabinet.

New fire for the Ritz-Carlton, Wolfsburg

Supply line for the propane fireplaces at the Ritz-Carlton, Wolfsburg

The first European hotel of the Ritz-Carlton chain was opened at the end of the 1990s in Wolfsburg. Extensive renovation was carried out in 2013 which included the complete reconstruction of the originally wood-burning fireplaces. Each fireplace was to be in future fuelled by a continuous, but individually adjustable, flow of liquefied gas (propane).

In order to fulfil the demands of this ambitious retrofitting programme while complying with all the legal requirements and environmental aspects, it was planned to use the existing piping system, which was designed with the intended extension in mind.

Nothing was to disturb the smooth continued functioning of the hotel at any time of the day or night. Low corridors, pits and several wall openings meant that a high degree of project management skill and discipline from everyone involved were of the essence. FLEXWELL® Safety Piping passed the test of all the demands made on it with flying colours – whether tight turns in various directions in the routing or extremely limited freedom of movement in installing the system, not to mention temperatures of up to 50 °C. And the installation crew was no less flexible on the job than the FSR 30/48 itself.

In the basement area, the double-walled pipes had to be laid through utility rooms, corridors and sanitary facilities; and this always meant running them directly beneath the ceiling, mostly suspended ceilings which did not permit a clear view of what was happening. Waste water pipes, cable ducts and girders also got in the way of the originally planned routing.

So that a big city has an uninterrupted power supply

Oil supply line for the new auxiliary steam generator plant in a large power station

The medium (heating oil EL) and the legal requirements were only some of the criteria to consider in looking for the right type of piping for this project. The routing runs above ground alongside buildings, across pipe bridges and along the coal store. On top of this, various differences in height need to be negotiated and a riser line run for 25 m up the outside wall of the flue gas scrubbing plant. All in all, the entire route covers some 750 m.

In addition, the heating oil pipe specification called for a double-walled and monitorable line for safety reasons: it's hard to imagine a better fit for these demands than FLEXWELL® Safety Pipe.

Using a lifting platform, the engineers were hoisted up to a height of 4 m to adjust the remote-controlled laying process with traction ropes. It was important here not to obstruct the internal rail traffic, which continued without interruption. Right at the outset of 2 x 540 m it was necessary to negotiate a structural projection on the building as well as overcome a height difference of +1.50 m. Although the preparatory work by the other trades took longer than planned, reducing our time frame, the overall construction schedule was met.

In order to reach the overall length of 1,420 m (feed and return flow), it was only necessary to fit one single connection. This meant that the required monitorability of the line was maintained along its whole length.

Ensured power supply in case of necessary

Filling pipe for the power supply at the Robert Koch Institut in Berlin

The Robert Koch Institut is a federal institute working under the aegis of the Federal Ministry of Health. Its core remit is the detection, prevention and control of diseases such as e.g. new strains of flu, HIV, multi-resistant pathogens, EHEC etc. In the event of an epidemic or a power outage, the Robert Koch Institut has to be self-sufficient in power supply even if the emergency lasts for a long time, since this is precisely when its services are most needed.

Due to the particular location of the feeder hopper outside the institute complex, it was necessary to lay four separate fill lines from the feeder hopper to the tanks in the inner courtyard, with a length of 80 m for each feedline.

FLEXWELL® Safety Pipe was laid in one piece for each line directly off the drum into the trench, which was routed through the basement all the way to the tanks. Here we can see once again why FLEXWELL® Safety Pipe has been up to demanding requirements like these for more than 40 years. Frequent changes of direction were no problem for the installation crew.

It was only necessary to excavate a shallow trench of adequate width to lay the pipe directly, which not only meant time savings, but also helped to protect the trees which stand there. Only one day was needed for the pipelaying work, without any interruption of operations.

Guaranteed safety – even after a twister

Supply line for fuelling yachts

Marinas (yacht fuelling plants) directly on the sea pose special challenges for fuelling supply lines. Up to now flexible tubing was mostly used to compensate the movements caused by tidal differences and the consequent changes in length of the pipes running via the gangway. That means that connectors which can lead to leaks are fitted above the water. BRUGG developed a system in which the flexibility of the FLEXWELL-HL safety piping takes over the function of compensating such elongation. No connectors over the water are needed here, and in most cases an uninterrupted line can be installed from the storage tank to the fuel dispenser. This not only saves installation time, but connectors, sumps and other fittings are not needed.

The owners of the Wyncote Yacht Club in Huntington (Long Island, New York, USA) were ordered by the authorities to renew their fuelling station. In this plant there are two nominal bore DN 50 lines, one for gasoline and one for diesel fuel, which run for about 150 m from a sump on land via the gangway to the floating dock and to the fuel dispensers. The tidal fluctuation in this case is about 3.5 m, but this can be more due to storm surge. The difference in length which results from this, and has to be compensated by the piping, is c. 50 to 60 cm.

They not only checked the type approvals of the FLEXWELL-HL safety piping, but also subjected it to an intensive internal appraisal process by their own engineers. FLEXWELL-HL safety piping is today the only fuel piping for marinas approved for use on Long Island.

Difficult stretches – easy solutions

Emergency power generators of the Federal Press Office Berlin

The "emergency power incident" means the maintenance of a conti-nuous electrical power supply by means of emergency generators when a power blackout occurs. Emergency generators can be deployed everywhere where the loss of mains power can have grave consequences – such as in hospitals, chemical plants, server rooms and last but not least in public administration premises at all levels.

As a rule these emergency generators are installed on the roofs of buildings and need a day tank, which is located close to the emergency generator and must be kept constantly topped up. The day tank is supplied by a storage tank usually installed in the basement or underground. The connection between storage tank and day tank is often made using FLEXWELL® Safety Pipe, which has proven itself over decades of service in this application. Thanks to the double-walled construction of the safety piping all legal requirements and fire protection standards are fulfilled.

In the Federal Press Office in Berlin, 80 m of FLEXWELL® Safety Pipe FSR-M 16/30 were laid. This formed the connection between the day tank on the roof and the storage tank in the basement. Laying took only a very short time – the complete piping was installed in less than one day and put into operation within hours.

Underground oil and heat piping completely refitted in the shortest time imaginable

Safety piping and heating lines for a power generation plant

The intermediate and peak power generation plant of the Mark-E Aktiengesellschaft has been founded in 1912. The feed-stock fuels for the various boiler plants are very diverse. To initiate firing and to maintain it, however, fuel oil is permanently needed. This fuel oil is stored in flat-bottom tanks above ground and flows to the power generating plants through underground pipes. The passage of time has taken its toll here, of course, and a complete overhaul of all the underground oil and heating pipes became a matter of urgency. A host of changes since 1912 have made the power station into an intricate complex of buildings, so that the primary task was first of all to draw up an orderly plan for the refurbishing of the equipment.

Our many years of expertise and the very good results we can point to in the projects we have completed to date convinced the power station operator to decide for us, and we were awarded the contract for planning the refurbishing of the entire pipework complex. After the completion of the planning phase we were also employed as general contractor to carry out the refurbishing of the plant. The time-frame was very tight, since the power plant would have to be taken out of the energy grid for some parts of the refurbishing work. The installation schedule therefore left no room for delays of any kind. Working on Saturdays and Sundays was an indispensable necessity to be finished on time. In the four-day final spurt the refurbished piping network was connected up to the existing systems. Our client was highly satisfied with our total package from one supplier.

40 years of know-how

BRUGG-STAMANT® safety for the SLOVNAFT refinery in Slovakia

The rebuilding of the Horny Hricov Terminal has been under discussion since 1997, when the first studies on re-routing the piping from the upper to the lower plant of SLOVNAFT were carried out. The lower SLOVNAFT plant in the Horny Hricov Terminal served as a distribution centre for petrol stations in Central and Eastern Slovakia, while the upper plant was used as the state material reserve. Following a number of changes in the SLOVNAFT refinery, the Horny Hricov Terminal was re-evaluated as the storage facility of the state material reserves of the Slovak Republic. The necessity to re-route the piping between the two plants resulted from the extension of the motorway from Bratislava in the West to Kosice in the East. This motorway ran over the piping connecting the two plants. In order not to hinder operations it was necessary to re-route the piping so that the motorway routing would not have to be taken into consideration in the event of reconstruction work being needed.

The project consists of 13 lines of BRUGG-STAMANT® double-walled safety piping laid below the surface. From Germany BRUGG supplied 4,446 m of double-walled piping and 1,611 m of single-walled piping with dimensions ranging from DN 80 to DN 300. Transport media are petrol, crude oil and gas. DLR-G 8 S positive pressure leak detectors are used.

Presently the piping has been in service for over eight years.

Cool times for hot wheels ...

Project Audi Neckarsulm: Cooling stretch in building A17

A cooling stretch in an automotive paint shop detracts the waste heat from the dehydration process and keeps the process temperature steady. This is necessary to guarantee a perfectly paintwork of the cars.

The automotive industry demands a high deal of material and manufacture. The pipes must be free of silicone backlogs and have to be protected with an anticorrosive painting. The outer jacket of the pipe is made of a wrapped-fold pipe with an inlaying sealing tape free of silicone. Temperature sensors and monitoring loops are also included to guarantee a permanent monitoring of the pipeline.

In sum 1100 meters of SPIRAMANT in the dimension range of DN 300 up to DN 600 in P235 TR1 with APZ were ordered and build in for this job.

Due to the good engineering planning in the beginning and the perfect collaboration of the companies during this project make in sum, that the overall construction schedule was met although the installation crew was faced to troubles and time lags in cause of winter weather and winter temperatures.

Using SPIRAMANT made it happen, that the laying could be done smoothly and effective, so that the end of the project was reached in time. Conclusion of the investor is, that this investment raised the flow rate multiple.

Petrol station with built-in top-level environmental protection

New station built at the motorway A 20 in north-eastern Germany

A stretch of 240 km on the A 20, AKA the "Baltic Autobahn", was opened for traffic in December 2009. A few questions also remained open, too, however: Where can I get petrol? The best place for all these things is the beautiful countryside of the Schönberger Land between Lübeck and Rostock.

And of course, choosing such an idyllic location has its price. Anyone who wants to build one or two petrol stations here is faced with the most stringent environmental protection requirements anywhere. In the knowledge that all these environmental requirements must be complied with and planned in with state-of-the-art technology, one of the major petrol companies won the contract for equipping the two modern motorway petrol stations at Schönberger Land.

BRUGG played a supporting role in drawing up the piping plan. The planned piping for all fuel products was to be double-walled SECON®-X. The installation of the piping for its mirror-image twin on the south side, here also SECON®-X, was staggered with a time lag.

BRUGG was always there on site during installation work to provide comprehensive and intensive support and was able to assure themselves that well-trained operatives are the precondition for high-quality pipe laying and installation.

High end environment protection

Double-walled pipe system for the reconstruction of a motorway service station

Following the decision of the investor, work began on erecting a new motorway service station next to the Autobahn A 27 at the exit Bremerhaven-Wulsdorf. The planning for this project was done in close cooperation with Shell Deutschland Oil GmbH. They set the quality standards for the realization of the plant.

The new-build is in a designated water protection area, so that it was compulsory to use double-walled and leak-monitored piping for carrying the fuel. The Office of Environmental Protection in the port of Bremerhaven was particularly concerned that double-walled petrol station piping should be used on the premises of the service area. BRUGG cooperated with the professional planners and the architects' office to create a project design for a double-walled piping network. All the requirements according to water Law and Environmental Protection Law needed to be followed.

Thanks to SECON®-X's "General technical approval", all legal requirements for underground piping for the transport of environmentally hazardous substances were complied with one hundred percent. The system is double-walled and can be permanently monitored. Double-walled safety piping is compulsory not only for automotive fuels such as diesel and high-octane petrol, but also for the underground transport of AdBlue. Modern fuels such as E10 or biodiesel can be optimally transported in the chemically resistant stainless steel inner pipe too.

Efficient fermenter heating

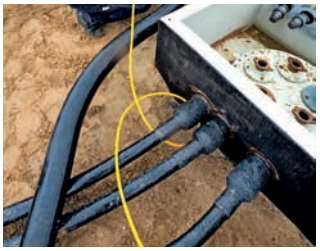
BIOFLEX in a Spanish biogas plant

In the Spanish province of Teruel in Aragon Region (in the Iberian mountain range between Valencia and Barcelona), there are several large pig farms. The occuring liquid pig manure is applied to the fields as fertilizer and ends up in the ground water. Since in the summer the region depends on groundwater, it ie now being tried by so-called manure processing plants (biogas plants) to convent the slurry in several steps to harmless fertilizer.

During the conversion process of swine manure into a fertilizer biogas is produced inside of the digesters, which is then converted into electricity and heat in a combined heat and power unit. The heat is used to generate a consistently high temperature inside of the digesters, while the electricity is fed into the Spanish power grid.

The demand for an efficient heating system, which also ensure a more reliable operation and a quick and easy installation, the responsible project managers found their way quickly to BRUGG pipe systems. Because by means of BRUGG's BIOFLEX fermenter heater, it is possible to gain all of the required attributes.

The most important part of the fermenter heater is a stainless steel corrugated pipe, which can be installed in one continuous piece (because of tis continuous production) and which is also very flexible and thus can be installed in a time and cost-saving way.



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