

BRUGG

Pipes

COOLMANT/COOLFLEX

Energy- and cost-efficient systems for district cooling

A photograph of a construction site in a tropical environment. In the foreground, several large black and red pipes are laid out in a trench. Two workers in blue shirts are standing in the trench, looking towards the background. The background features palm trees, a building, and a clear sky. The text "PIONEERS IN INFRASTRUCTURE" is overlaid in white on the right side of the image.

PIONEERS IN
INFRASTRUCTURE

AN INNOVATIVE APPROACH FOR ENERGY-EFFICIENT DISTRICT COOLING

District cooling has a promising future. Utilizing the waste heat given off from numerous potential sources of energy for cooling is a highly energy-efficient approach that also protects the environment.



How waste heat is used for cooling

District heating – a sustainable concept – is becoming more widespread as time goes on. Utilizing waste heat to supply heating and hot water in buildings saves energy and plays a major part in reducing emissions of harmful substances. Waste heat can also be converted for cooling purposes with the help of absorption machines. This opens up the way to efficient district cooling.

District cooling systems can be supplied with energy from a variety of sources, via insulated pipes that carry cooled water to the consumers.

Increased energy efficiency – reduced environmental impact

District cooling offers many different benefits compared to conventional cooling methods. First and foremost, it is energy-efficient: power consumption is dramatically reduced, which also means that less primary energy is consumed. Potential sources of energy include waste incineration plants, industrial facilities, combined heat and power plants or natural sources such as water in rivers, lakes or the sea. Another option is to make use of cutting-edge technologies in areas such as solar and geothermal energy.

A system that offers excellent insulation performance

Flexible COOLFLEX and rigid COOLMANT composite pipes from BRUGG provide a comprehensive system to implement totally corrosion-free district cooling networks. These future-oriented, high-tech products are the fruit of BRUGG's decades of experience with pre-insulated systems. Their quality is evident from their superb insulation performance: within a small cross section, they achieve excellent insulation values thanks to their minimal thermal conductivity. Low losses significantly reduce energy consumption, so district cooling with COOLFLEX and COOLMANT is an investment with a long-term pay-back.

TRIED AND TESTED SYSTEM TECHNOLOGY IN A FUTURE-ORIENTED APPLICATION

Thanks to the COOLFLEX and COOLMANT district cooling system from BRUGG, the vision of energy-saving, low-emission cooling is now a reality.



Compact and reliable

The "core" of our high-tech COOLFLEX and COOLMANT pipes is an inner pipe made of certified polyethylene (HDPE). Together with the highly effective fine-pore polyurethane foam insulation, this forms a compact composite system with outstanding long-term thermal performance. The outer casing reliably protects the district cooling pipe against mechanical influences. The pipes can also be installed at low temperatures of about 0°C.

Reliable operation - in the long term

The compact COOLFLEX and COOLMANT pipe structure prevents the longitudinal flow of water in the event that the pipe is damaged by external influences. These underground systems are self-compensating: thermally-induced length changes in the system are absorbed within the pipe structure. COOLFLEX and COOLMANT have good resistance to chemicals and are ideal for the use with ethylene glycolene or other additives.

Easy-to-install system concept

COOLFLEX and COOLMANT composite pipes are quick and straightforward to install. Thanks to their small outer diameters and long delivery lengths, the trench dimensions can be reduced – so the construction work progresses more rapidly. The flexible COOLFLEX system, designed for smaller district cooling networks and house connections, is supplied as a continuous product in coils of up to 807m in one length, depending on the dimensions required. The coils are easy to unroll. Since COOLFLEX allows short curve radii, obstacles can be elegantly bypassed without angle joints. With generous delivery lengths it can often be possible to avoid any underground joints in smaller district cooling projects! **Remember:** fewer connections mean less installation outlay and more reliable system operation.

FOR THE SAKE OF OUR ENVIRONMENT - INTELLIGENT COOLING



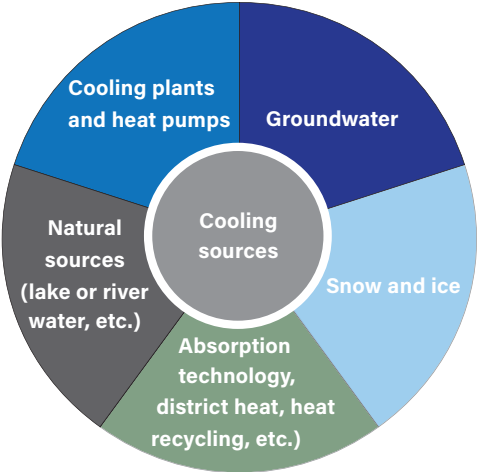
The flexible COOLFLEX system for smaller district cooling networks (house connections, residential estates, hotels and resorts, etc.)



The rigid COOLMANT system for wide-area district cooling networks (urban buildings and office complexes, hospitals, shopping centers, etc.)



Energy sources for district cooling



Key benefits of district cooling:

- Unlimited cooling comfort for users thanks to demand-led cooling
- More cost-effective cooling thanks to lower capital outlay and reduced operating and maintenance costs
- Less space required for compact transfer stations
- Low-noise or silent operation, compared to conventional air conditioning technology
- CO₂ emissions reduced by highly efficient central district cooling

TRIED-AND-TESTED SYSTEM TECHNOLOGY IN A FUTURE-ORIENTED APPLICATION



Endless flexibility

The excellent flexibility of COOLFLEX and COOLMANT systems allows planners to select the optimum routing and combination of district cooling pipes in response to the requirements imposed by the terrain. The patented corrugated outer casing of COOLFLEX pipes means that they can easily be adapted to virtually all pipe routing conditions. More efficiency thanks to: shorter distances, less trenchwork, less material, lower costs.

Reliable joints that are quick to assemble

An extensive range of 100%-tight fittings is available for safe and reliable joints between COOLFLEX and COOLMANT composite pipes, or between these pipes and the technical installations in the overall system. Our extensive range includes electro-welding joints, pipe couplings and screwed fittings.

Clip-shell technology: reliable and easy to fit

Supplementary insulation for the COOLFLEX pipe system is provided by our patented clip shells, which provide perfect protection for pipe junctions. The shells are all-plastic and can be fitted quickly and reliably without any tools. To restore the insulation, the shells are filled on site with pentane-blown insulating polyurethane foam.

OUR RANGE: A WIDE SELECTION - WITH HIGH AVAILABILITY

The components of our COOLFLEX and COOLMANT system can be supplied ex stock at short notice.

Our wide and varied range of accessories provides the perfect solution for every project. Specially manufactured items are also available with short delivery periods.

The excellent availability of COOLFLEX and COOLMANT products gives you more flexibility with planning and ensures minimum disruption to works on site.

COOLFLEX



COOLFLEX Ø 20-125 mm / SDR 11 (16 bar)

Type	DN	Inches	Minimum Bending radius	Weight	Coil length
		"	m	kg/m	m
25/ 76	20	¾	0.7	0.90	520/807
32/ 76	25	1	0.7	1.00	520/807
40/ 91	32	1¼	0.8	1.39	377/590
50/ 91	40	1½	0.8	1.54	271/429
63/126	50	2	1.0	2.60	192/305
75/126	65	2½	1.0	2.75	143/229
90/162	80	3	1.2	4.56	92/149
110/162	100	4	1.2	5.69	92/149
125/182	125	5	1.4	6.37	52/ 86

COOLMANT



COOLMANT Ø 125-315 mm / SDR 11 (16 bar)

Type	Inches	Inner pipe PE d x s	Outer pipe D x s1	Volume Inner pipe	Weight	Standard length
	"	mm	mm	l/m	kg/m	m
125/225	5	125 x 11.4	225 x 3.5	8.203	7.61	6/12
140/225	-	140 x 12.7	225 x 3.5	10.315	8.38	6/12
160/250	6	160 x 14.6	250 x 3.9	13.437	10.67	6/12
180/280	7	180 x 16.4	280 x 4.4	17.018	13.45	6/12
200/315	8	200 x 18.2	315 x 4.9	21.021	16.77	6/12
225/315	9	225 x 20.5	315 x 4.9	26.590	18.91	6/12
250/355	10	250 x 22.7	355 x 5.6	32.878	23.68	6/12
280/400	11	280 x 25.4	400 x 6.3	41.259	29.85	6/12
315/450	12	315 x 28.6	450 x 7.0	52.198	37.69	6/12

COOLMANT Ø 125-315 mm / SDR 17 (10 bar)

Type	Inches	Inner pipe PE d x s	Outer pipe D x s1	Volume Inner pipe	Weight	Standard length
	"	mm	mm	l/m	kg/m	m
125/225	5	125 x 7.4	225 x 3.5	9.230	6.63	6/12
140/225	-	140 x 8.3	225 x 3.5	11.960	6.82	6/12
160/250	6	160 x 9.5	250 x 3.9	15.610	8.60	6/12
180/280	7	180 x 10.7	280 x 4.4	19.760	10.85	6/12
200/315	8	200 x 11.9	315 x 4.9	24.380	13.58	6/12
225/315	9	225 x 13.4	315 x 4.9	30.850	14.86	6/12
250/355	10	250 x 14.8	355 x 5.6	38.150	18.67	6/12
280/400	11	280 x 16.6	400 x 6.3	47.840	23.60	6/12
315/450	12	315 x 18.7	450 x 7.0	60.520	29.78	6/12

Operating parameters

Operating temperature:

max. - 20°C to + 40°C*

Operating pressure: 16 bar

* Hot water applications with restricted lifetime and operating pressure / as per DIN 8074

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