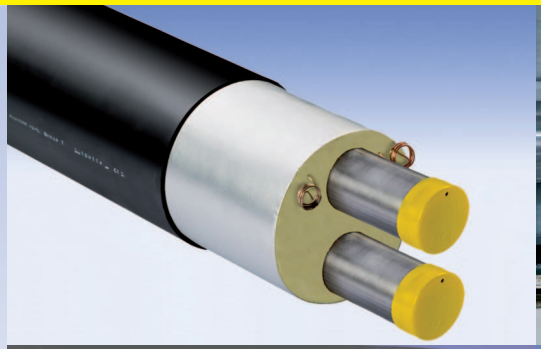
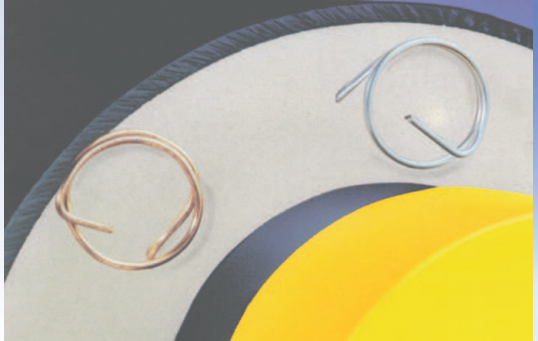
isoplus®

Transporting energy.

CONTI-PIPE-TECHNOLOGY





www.isoplus.org

isoplus

The **isoplus** group of companies with totally nearly 1200 employees is one of the leading manufacturer of preinsulated pipe systems. The main applications are for district and local heating respectively cooling and for various industrial pipe systems. Whenever hot or chilled water, oil or other liquids have to be transported, **isoplus** will offer a technological practicable, **eco**nomical and **eco**logical optimized solution for every purpose.

isoplus as group is producing approximately 3.000 kilometres of pipes and the corresponding accessories per year like i.e. approximately 125.000 fittings and approximately 350.000 couplers (cross-linked and non-cross-linked), in seven manufacturing plants with high technology equipment and in discontinuous and continuous production procedure. The range of dimension reaches from DN 20 to DN 1000.

Within the **isoplus** group a various number of engineers are developing customer and project specific solutions concerning pipeline course, static and assembling. With the **isoplus** philosophy „all from one hand“, that means from project design, material supply, qualified post-insulation by our own post-insulation specialists, approved by AGFW/BFW, up to a competent convincing site-service, we offer our customer a high degree of safety for the project realization. Furthermore **isoplus** disposes a own leak-detection system with digital fault detection.

The well known and appreciated **isoplus** delivery-reliability as well as the competent post-insulation carried out by isoplus assembling specialists, approved by AGFW/BFW have led essentially to the actual strong market position of **isoplus** in many countries.

In the beginning mainly focussed to Europe, the production and sales-activities include meanwhile also Near and Middle East as well as Asia and Africa. Our production plants and all our sales offices own all relevant quality certificates like DIN EN ISO 9001, EHP/001 as well as AGFW FW 603. During the production procedure all product standards like DIN EN 253, 448, 488, 489,13941 and 14419 will be considered. **isoplus** is a member of the Association for District Heating e.V. (AGFW) and also of the Federal Union for District Heating Lines e.V. (BFW).

The isoplus-Group

CERTIFIED IQNet MANAGEMENT SYSTEM

EUROHEAT & POWER
GUIDELINES: EHP/001 • CERIFIED BY: XX/YY

AGFW

BFW

Conti-Pipe

Application range

isoplus Conti-Pipes are guiding concerning their mechanical and thermal properties. The innovative production procedure guarantees a constant foam density and thickness of the PEHD-jacket pipe over the total pipe length.

This will result in optimal opportunities to keep the energy efficiency of a district heating network high, respectively the heat-loss and CO_2 emission low. The positive effects for the environment as well as for the expenses for network losses during the total lifetime are considerable.

isoplus Conti-Pipe is the actual best preinsulated pipe system, with lowest heat losses, due to its special construction, mainly because of an installed aluminum foil. The pipe meets all requirements of EN 253 as well as AGFW –paper FW 401- certified by EuHP. The welding of the service pipe should especially considered during the pipe laying procedure (only approved and experienced welder), because in case of leakages at the welding seams, the hot medium will spread out rapidly. In consequence extensive excavation work will be necessary (depending from time and extension of the damage). Special considered should be also a pressure test according to the standard, tightness of the pipeline, as well as a perfect installation and a rapid put into operation of the monitoring system.

Conti-Pipe - Single

isoplus-single pipes are mainly used as energy pipe for effective lasting transportation of district heating and district cooling. Furthermore it will be used for various industrial applications. High quality PUR-hard foam insulation - 100% free of freon, with Cyclopentan as foaming agent, processed on modern machinery equipment - guarantees a permanent excellent insulation characteristic during the duration of application.

- DN 25 (1“) up to DN 200 (8“)
- Thermal conductivity λ_{50} = **0,0240 W**/(m•K) at a density of 60 kg/m3
- Thermal conductivity λ_{50} = **0,0225 W**/(m•K) at a density of 48 kg/m3
- **Diffusion barrier layer**
- Standard insulation, 1 x or 2 x reinforced
- Operating temperature at least according to EN 253 and 25 bar pressure
- Service pipe up to DN 80 P235TR1/TR2/GH, from DN 100 P235GH acc. to EN 253, EN 10217-1 / -2
- Depending from dimension as 12 m or 16 m pipe-bar
- **IPS-Cu**® as leak detecting

Conti-Pipe - Double

isoplus-double pipe is an effective supplement to the single pipe and a perfect solution for the transportation of district heating and district cooling with optimized **eco**logical and **eco**nomical customer efficiency.

- DN 25 (1“) up to DN 100 (4“)
- Thermal conductivity λ_{50} = **0,0240 W**/(m•K) at a density of 60 kg/m3
- Thermal conductivity λ_{50} = **0,0225 W**/(m•K) at a density of 48 kg/m3
- **Diffusion barrier layer**
- Standard insulation or 1 x reinforced
- Operating temperature at least according to EN 253 and 25 bar pressure
- Up to 90 K spread between flow- and return-line
- Service pipe up to DN 80 P235TR1/TR2/GH, from DN 100 P235GH acc. to EN 253, EN 10217-1 / -2
- Available as 12 m pipe-bar
- **IPS-Cu**® as leak detecting

Advantages of Continuous-Pipe-Technology

isoplus Conti-Pipe with diffusion barrier layer

The optimal quality of the PUR-foam will result in the best possible heat insulation of non-aged pipes. The part of cellular gases at λ-total value is approx. 60% and is therefore the determinant factor. A partial exchange of cellular gases by air will occur during the operation of traditional produced preinsulated pipes, especially at permanent operating temperatures of ≥130°C. Cyclopentan will mainly remain in the foam cells, due to it´s molecular structure. However the λ-value will get more worse because of the exchange of the CO_2. The so called aging procedure. In order to avoid this, a diffusion barrier-foil will be installed between PUR-foam and PEHD jacket pipe. Because of this the favorable insulation properties of the pipes will remain nearly constant during the total lifetime.
This is very important in order to keep the energy efficiency of a pipe network on the highest possible level, especially in case of smaller and medium pipe dimensions.

PUR-foam density

After request by the Scandinavian countries, the EN 253 standard has been modified concerning the foam-density of preinsulated pipes. Now the density of 60 kg/m³ is no longer strictly required. The **isoplus** Conti-Pipe-Technology offers the possibility to adjust the foam density exact and constant over the total pipe length. By reducing the foam density below 60 kg/m³ the lambda-value (λ) can be improved. However it has to be exactly considered, that the required shearing and pressure resistance values, as well as the expected lifetime will be kept, in case of preinsulated pipes with a PUR-foam density below 60 kg/m³.

Dimensions respectively Types

Conti-Pipe - Single

Dimensions Steel Pipe P235TR1 / TR2 / GH					Delivery length L in mm	Jacket-Pipe Outisde-Ø D_a in mm			Weight without water G in kg/m		
Type	Nominal Diameter / Dimension in		Outside-Ø d_a in mm	Wall-thickness s in mm		Insulation Class			Insulation Class		
	DN	Zoll				Standard	1x reinforced	2x reinforced	Standard	1x reinforced	2x reinforced
KRE - 25	25	1“	33,7	3,2	12	-	110	125	-	3,98	4,32
KRE - 32	32	11/4“	42,4	3,2	12	110	125	140	4,62	4,97	5,34
KRE - 40	40	11/2“	48,3	3,2	12	110	125	140	5,06	5,40	5,78
KRE - 50	50	2“	60,3	3,2	12	125	140	160	6,27	6,64	7,18
KRE - 65	65	21/2“	76,1	3,2	12	140	160	180	7,76	8,30	8,89
KRE - 80	80	3“	88,9	3,2	12	160	180	200	9,18	9,77	10,94
KRE - 100	100	4“	114,3	3,6	12/16	200	225	250	13,69	14,63	15,78
KRE - 125	125	5“	139,7	3,6	12/16	225	250	280	16,48	17,64	19,13
KRE - 150	150	6“	168,3	4,0	12/16	250	280	315	21,22	22,71	24,86
KRE - 200	200	8“	219,1	4,5	12/16	315	355	-	31,25	34,13	-

Conti-Pipe - Double

Dimensions Steel Pipe P235TR1 / TR2 / GH					Delivery length L in mm	Jacket-Pipe Outside-Ø D_a in mm		Ridge height (Pipe Clearance) h_S in mm	Weight without water G in kg/m	
Type	Norminal Diemeter / Dimension in		Outside-Ø d_a in mm	Wall-thickness s in mm		Insulation Class			Insulation Class	
	DN	Zoll				Standard	1x reinforced		Standard	1x reinforced
KRD - 25	2 • 25	1“	33,7	3,2	12	140	160	19	7,04	7,58
KRD - 32	2 • 32	11/4“	42,4	3,2	12	160	180	19	8,87	9,46
KRD - 40	2 • 40	11/2“	48,3	3,2	12	160	180	19	9,74	10,33
KRD - 50	2 • 50	2“	60,3	3,2	12	200	225	20	13,23	14,18
KRD - 65	2 • 65	21/2“	76,1	3,2	12	225	250	20	16,40	17,56
KRD - 80	2 • 80	3“	88,9	3,2	12	250	280	25	19,32	20,81
KRD - 100	2 • 100	4“	114,3	3,6	12	315	355	25	28,45	31,33

Transmittable Capacity [P]

	Type	Volume Flow V´ in m³/h		Flow Speed w in m/s		Transmittable Capacity P in kW at spread					
						20 K		30 K		40 K	
		from	to	from	to	from	to	from	to	from	to
Conti-Pipe - Single	KRE - 25	1,148	2,526	0,50	1,10	27	59	40	88	53	118
	KRE - 32	2,348	4,695	0,60	1,20	55	109	82	164	109	218
	KRE - 40	3,151	6,303	0,60	1,20	73	147	110	220	147	293
	KRE - 50	5,879	11,757	0,70	1,40	137	273	205	410	273	547
	KRE - 65	9,781	19,563	0,70	1,40	228	455	341	683	455	910
	KRE - 80	15,395	30,791	0,80	1,60	358	716	537	1.074	716	1.432
	KRE - 100	25,945	51,891	0,80	1,60	604	1.207	905	1.811	1.207	2.414
	KRE - 125	49,639	89,350	1,00	1,80	1.155	2.078	1.732	3.118	2.309	4.157
	KRE - 150	87,185	152,573	1,20	2,10	2.028	3.549	3.042	5.324	4.056	7.098
	KRE - 200	174,732	299,541	1,40	2,40	4.064	6.968	6.097	10.451	8.129	13.935
Conti-Pipe - Double	KRD - 25	1,148	2,526	0,50	1,10	27	59	40	88	53	118
	KRD - 32	2,348	4,695	0,60	1,20	55	109	82	164	109	218
	KRD - 40	3,151	6,303	0,60	1,20	73	147	110	220	147	293
	KRD - 50	5,879	11,757	0,70	1,40	137	273	205	410	273	547
	KRD - 65	9,781	19,563	0,70	1,40	228	455	341	683	455	910
	KRD - 80	15,395	30,791	0,80	1,60	358	716	537	1.074	716	1.432
	KRD - 100	25,945	51,891	0,80	1,60	604	1.207	905	1.811	1.207	2.414

All data are based on an average specific thermal capacity [c_m] of the water of 4.187 J/(kg•K). The flow speed [w] has generally to be determined on dependence of application.

Thermal Transmission Coefficient [k_{DR}] and Heat Loss [q]

	Type	Jacket-Pipe Outside-Ø D_a in mm			Coefficient k_{DR} in W/(m•K)			q at Average Temperature T_M = 100 K in W/m			q at Average Temperature T_M = 70 K in W/m			q at Average Temperature T_M = 50 K in W/m		
		Insulation Class			Insulation Class			Insulation Class			Insulation Class			Insulation Class		
		Standard	1 x reinf.	2 x reinf.	Standard	1 x reinf.	2 x reinf..	Standard	1 x reinf.	2 x verst.	Standard	1 x reinf.	2 x reinf.	Standard	1 x reinf.	2x reinf.
Conti-Pipe - Single	KRE - 25	-	110	125	-	0,1198	0,1086	-	11,984	10,859	-	8,389	7,601	-	5,992	5,430
	KRE - 32	110	125	140	0,1466	0,1301	0,1184	14,660	13,011	11,838	10,262	9,108	8,287	7,330	6,505	5,919
	KRE - 40	110	125	140	0,1679	0,1466	0,1319	16,786	14,659	13,187	11,750	10,261	9,231	8,393	7,329	6,593
	KRE - 50	125	140	160	0,1869	0,1636	0,1428	18,691	16,362	14,277	13,084	11,453	9,994	9,345	8,181	7,139
	KRE - 65	140	160	180	0,2189	0,1831	0,1602	21,889	18,312	16,016	15,322	12,819	11,211	10,945	9,156	8,008
	KRE - 80	160	180	200	0,2257	0,1918	0,1696	22,574	19,183	16,955	15,802	13,428	11,869	11,287	9,592	8,478
	KRE - 100	200	225	250	0,2329	0,1976	0,1741	23,287	19,760	17,405	16,301	13,832	12,184	11,644	9,880	8,703
	KRE - 125	225	250	280	0,2681	0,2265	0,1943	26,809	22,652	19,428	18,766	15,856	13,600	13,405	11,326	9,714
	KRE - 150	250	280	315	0,3145	0,2556	0,2137	31,451	25,562	21,373	22,016	17,893	14,961	15,726	12,781	10,686
	KRE - 200	315	355	-	0,3413	0,2702	-	34,134	27,024	-	23,894	18,917	-	17,067	13,512	-
Conti-Pipe - Double	KRD - 25	140	160	-	0,2004	0,1760	-	20,040	17,600	-	14,028	12,320	-	10,020	8,800	-
	KRD - 32	160	180	-	0,2176	0,1919	-	21,760	19,190	-	15,232	13,433	-	10,880	9,595	-
	KRD - 40	160	180	-	0,2563	0,2180	-	25,630	21,800	-	17,941	15,260	-	12,815	10,900	-
	KRD - 50	200	225	-	0,2483	0,2148	-	24,830	21,480	-	17,381	15,036	-	12,415	10,740	-
	KRD - 65	225	250	-	0,2920	0,2476	-	29,200	24,760	-	20,440	17,332	-	14,600	12,380	-
	KRD - 80	250	280	-	0,3279	0,2651	-	32,790	26,510	-	22,953	18,557	-	16,395	13,255	-
	KRD - 100	315	355	-	0,3307	0,2663	-	33,070	26,630	-	23,149	18,641	-	16,535	13,315	-

The mentioned data are based on a covering heigth [$Ü_H$] of 0,80 m (at KRE-100, 125, 150, 200 of 1,00 m), a thermal conductivity of soil [λ_E] of 1,0 W/(m•K), a soil temperature [T_E] of 10 °C as well as a pipe distance of 150 mm at single pipe; $T_M = (T_{VL} + T_{RL}) : 2 - T_E$ => Example: (100° + 60°) : 2 -10° = 70 K. All data are based on a thermal conductivity of PUR-Foam λ_{50} = 0,0240 W/(m•K).

Conti-Pipe

isoplus Fernwärmetechnik
Vertriebsgesellschaft mbH
Aisinger Straße 12
83026 Rosenheim
GERMANY
Tel.: +49 80 31 / 6 50 - 0
Fax: +49 80 31 / 6 50 - 110
e-mail: info@isoplus.de

isoplus Fernwärmetechnik
Vertriebsgesellschaft mbH
Beilsteiner Straße 118
12681 Berlin
GERMANY
Tel.: +49 30 / 54 98 83 - 0
Fax: +49 30 / 54 98 83 - 33
e-mail: berlin@isoplus.de

isoplus Fernwärmetechnik
GmbH
Schachtstraße 28
99706 Sondershausen
GERMANY
Tel.: +49 36 32 / 65 16 - 0
Fax: +49 36 32 / 65 16 - 99
e-mail: sondershausen@isoplus.de

isoplus Fernwärmetechnik
Ges. m. b. H.
Furthoferstraße 1a
3192 Hohenberg
AUSTRIA
Tel.: +43 27 67 / 80 02 - 0
Fax: +43 27 67 / 80 02 - 80
e-mail: office@isoplus.at

isoplus Távhővezetékgyártó Kft.

Kunigunda utca 45
1037 Budapest III.
HUNGARY
Tel.: +36 1-250 / 44 40
Fax: +36 1-250 / 27 31
e-mail: isoplus@isoplus.hu

isoplus eop s.r.o.
Areál elektrárny
Opatovice nad Labem
532 13 Pardubice 2
CZECH REBUPLIC
Tel.: +420 466 / 53 60 21
Fax: +420 466 / 84 36 19
e-mail: isoplus@isoplus-eop.cz

isoplus Fjernvarmeteknik A/S

Korsholm Alle 20
5500 Middelfart
DENMARK
Tel.: +45 64 41 61 09
Fax: +45 64 41 61 59
e-mail: iso@isoplus.dk

isoplus (Schweiz) AG

Alte Landstraße 39
8546 Islikon
SWITZERLAND
Tel.: +41 52 369 08 08
Fax: +41 52 369 08 09
e-mail: info@isoplus.ch

isoplus Romania S.R.L.
Conducte preizolate
Strada Uzinelor Nr. 3/H - 3/G
410605 Oradea - Judetul Bihor
ROMANIA
Tel.: +40 259 / 47 98 08
Fax: +40 259 / 44 65 88
e-mail: office@isoplus.ro

isoplus Mediterranean s.r.l.

Via Dell`Artigianato, 347
45030 Villamarzana (RO)
ITALY
Tel.: +39 0425 17 18 000
Fax: +39 0425 17 18 001
e-mail: info@isoplus.it

isoplus Zagreb d.o.o.
Predizolirane Cijevi
Vrlička 12
10000 Zagreb
CROATIA
Tel.: +385 1 30 11 - 634
Fax: +385 1 30 11 - 630
e-mail: isoplus-zagreb@zg.t-com.hr

isoplus polska Sp. z o.o.

ul. Zeliwna 43
40-559 Katowice
POLAND
Tel.: +48 32 / 2 59 04 10
Fax: +48 32 / 2 59 04 11
e-mail: biuro@isoplus.pl

isoplus slovakia spol. s.r.o.

Kračanská 40
92901 Dunajská Streda
SLOVAKIA
Tel.: +421 3 15 51 - 61 72
Fax: +421 3 15 51 - 61 72
e-mail: isoplus.slovakia@stonline.sk

isoplus d.o.o.
Prodaja
Aleksandra Stamboliskog 3/b
11000 Beograd
SERBIA
Tel.: +381 11 2 66 13 24
Fax: +381 11 2 66 41 23
e-mail: isoplus@isoplus.co.rs

isoplus d.o.o.
Proizvodnja
Aleksinački rudnici bb.
18220 Aleksinac
SERBIA
Tel.: +381 18 88 20 00
Fax: +381 18 88 20 01
e-mail: isoplus@isoplus.co.rs

isoplus Middle East
Located at Kuwait Pipe Industries and
Oil Services Company (KPIOS), Sulaibiya
Safat - 13035
KUWAIT
Tel.: +965 66 54 08 64
e-mail: anton.tiefenthaler@isoplus.at
e-mail: office@isoplus.at

isoplus France SAS

19 Av de Chantelot
69520 Grigny
FRANCE
Tel.: +33 4 37 60 09 93
Fax: +33 4 72 89 51 85
e-mail: contact@isoplus-france.com

isoplus Benelux B.V.

Van de Rejtstraat 3
4814 Breda
NETHERLANDS
Tel.: +31 76 5 23 19 60
Fax: +31 76 5 23 19 69
e-mail: info@isoplus.nl

www.isoplus.org