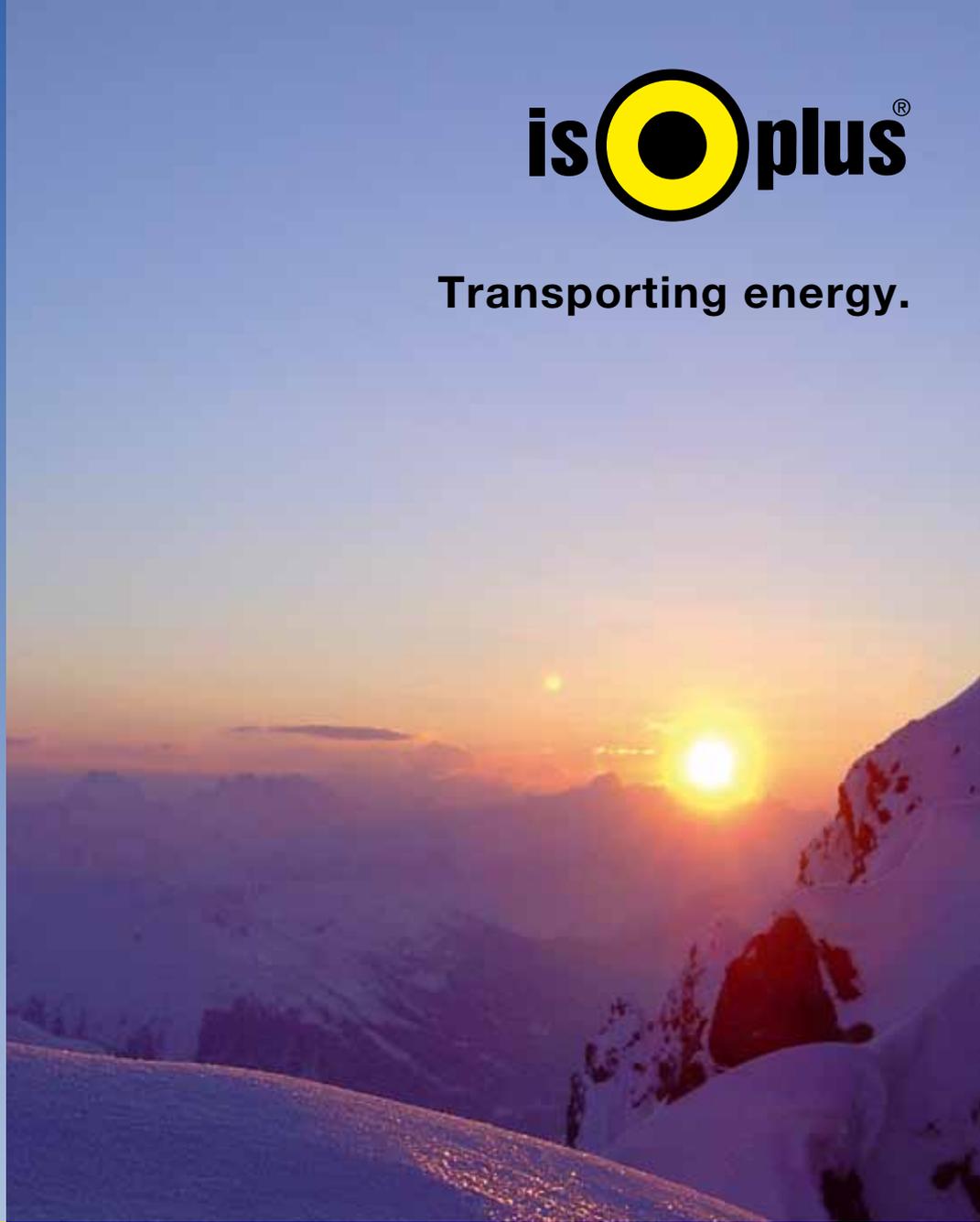




Transporting energy.



ENERGY-PIPE-TECHNOLOGY



www.isoplus.org

System

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 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, **economical** and **ecological** optimized solution for every purpose.

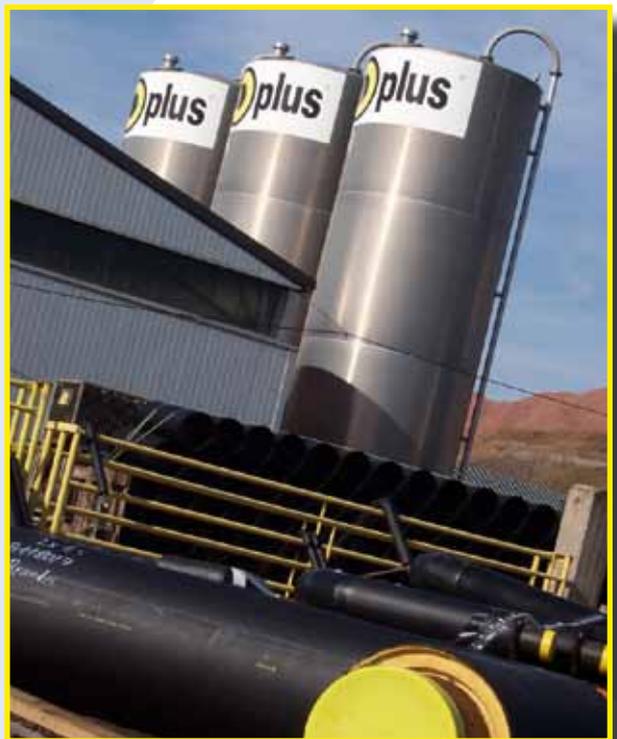


isoplus as group is producing approximately 3.000 kilometres of pipes and the corresponding accessories per year like i.e. approximately 125.000 fittings and approximately 350.000 couplers (cross-linked and non-cross-linked), in seven manufacturing plants with high technology equipment and in discontinuous 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. **isoplus** also has its own leak detection system with digital location.



The well known and appreciated **isoplus** delivery-reliability as well as the competent post-insulation carried out by our 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 and 14001, 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).



EUROHEAT & POWER



Rigid

Single-Pipe

isopipe-single is mainly used as energy pipe for effective lasting transportation of district heating and district cooling. Furthermore it will be used for various applications in the production technology from food stuff industry up to the oil-industry.

The **isopipe**-single is produced in classical and continuous method (with diffusion barrier layer).

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. The outside PEHD-jacket pipe is covering the insulated-system, shock resistant, break-proof and water tight. All factory produced pipes and fittings can be used easily at site as a building brick system.

Data (depending on manufacturing and nominal diameter)

- DN 20 (3/4") up to DN 1000 (40") in classical production
- DN 25 (1") up to DN 200 (8") in continuous production
- Thermal conductivity λ_{50} Disconti = 0,027 W/(m•K)
- Thermal conductivity λ_{50} Conti = 0,024 W/(m•K)
- Standard insulation, 1x or 2x reinforced
- Operating temp. at least acc. to EN 253 and 25 bar pressure
- Up to 85° C static calculation temp. infinite in length is possible
- Carrier pipe P235TR1/TR2/GH acc. to DIN EN 10216/17
- Available as 6, 12 or 16 m pipe bar
- **IPS-Cu, IPS-NiCr** leak detection, others available

Double-Pipe

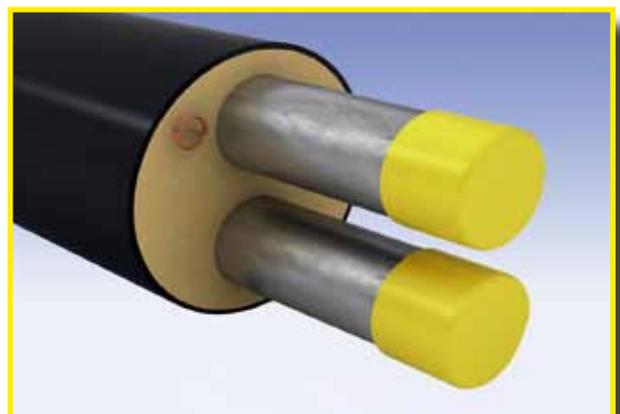
isopipe-double is an effective supplement to the single pipe and a perfect solution for the transportation of district heating and district cooling with optimized **ecological** and **economical** customer efficiency.

The **isopipe**-double is produced in classical and continuous method (with diffusion barrier layer).

With the construction-principle of the double pipe an optimum of insulation will be reached as **one** thermal-block, with the advantage that the double pipe will reach the same insulation as a 1x reinforced single pipe. Space- and cost saving by reduced trenches will additionally lower the construction expenses essentially.

Data (depending on manufacturing and nominal diameter)

- DN 20 (3/4") up to DN 200 (8") in classical production
- DN 25 (1") up to DN 100 (4") in continuous production
- Thermal conductivity λ_{50} Disconti = 0,027 W/(m•K)
- Thermal conductivity λ_{50} Conti = 0,024 W/(m•K)
- Standard insulation or 1x reinforced
- Operating temp. at least acc. to EN 253 and 25 bar pressure
- Up to 90 K spread $[\Delta_T]$ between flow- and return-line
- Up to 70° C static average temp. infinite in length is possible
- Carrier pipe P235TR1/TR2/GH acc. to DIN EN 10217
- Available as 6, 12 or 16 m pipe-bar
- **IPS-Cu** or **IPS-NiCr** as leak detection



System

Flexible **isoplus**-pipe-systems are excellent suitable for house-connections, extension works later on and for bypassing of obstructions like i.e. buildings, trees or other pipeline systems. They can be also used for complete low-temperature systems in lower dimensions.

Because of the continuous production of **isoplus**-flexible pipes a longitudinal water tight compound system will be reached. That means the three basic materials (carrier pipe + insulation + jacket pipe) are connected by axial force with each other. Due to a very small bending radius of flexible pipes, it is possible to choose always the direct way around obstructions respectively to the area of the house connection.

Due to the big delivery lengths the pipe laying works can be carried out in a short time, the operational works can be reduced to a minimum. Also the underground construction works can be reduced essentially because of the extremely narrow trenches. For these reasons the flexible pipe system of isoplus represents a technically fully developed and economically as well as ecologically perfect laying method for district heating systems.



Heat-Insulation

Flexible pipes will be insulated with polyurethane-hard foam (PUR), consisting of component A = Polyol (clear) and component B = Isocyanat (dark), tested acc. to EN 15632-1. During production continuously foamed around the carrier pipe, a high quality heat insulation with an excellent thermal conductivity at low specific weight will be reached, due to an exothermal chemical reaction.

That means the very best heat insulation values will be reached at lowest possible ODP- and GWP-values, ODP (ozone reducing potential) = 0, GWP (green house potential) = <0,001 !

In order to avoid the exchange of PUR-cell gas, in all **isoplus**-flexible pipes a diffusion barrier is included. This barrier-foil will be implemented between PUR-foam and jacket pipe during the production procedure. The used barrier-foils are granting the flexible pipes a constant and durable low energy loss during the duration of operation. For **isoflex**, **isowell** and **isocu** a 100 % diffusion tight aluminium-foil will be used as barrier. In order to keep the compound system, the foil is coated on both sides by corona treated polyethylene. **isopex** and **isoclisma** are containing a coloured and also corona (electrical surface-cross-linked) treated polyethylene foil, as a direct cell gas barrier.

Jacket pipe

The jacket pipe of the flexible pipes consists of proved PE-LLD with even surface. **Polyethylene Linear Low Density** is a seamless, tough elastic thermo-plastic material which will be continuously extruded onto the PUR foam during the production procedure.

isoflex

- DN 15 (1/2") up to DN 25 (1") as single pipe
- Thermal conductivity $\lambda_{50} = 0,0218 \text{ W}/(\text{m}\cdot\text{K})$
- isoflex - 28 in standard or 1x reinforced insulated
- isoflex - 28 also available as double pipe
- Up to 140 °C peak temperature and 25 bar pressure
- Carrier pipe P195GH + N acc. to EN 10220 & DIN EN 10305-3
- Up to 100 m delivery lengths in coils
- Prepared for **IPS-Cu** as leak detection



Flexible

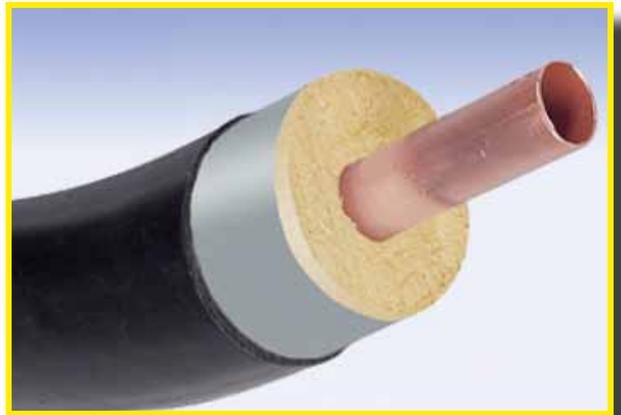
isowell

- DN 25 (1") up to DN 50 (2")
- Available as single pipe
- Thermal conductivity $\lambda_{50} = 0,0218 \text{ W/(m}\cdot\text{K)}$
- Up to 140 °C peak temperature and 25 bar pressure
- Spiral corrugated HYDRA® stainless-steel tube as carrier pipe
- Up to 250 m delivery lengths in coils
- Prepared for **IPS-Cu** and **IPS-NiCr** as leak detection



isocu

- DN 15 (1/2") up to DN 25 (1")
- Available as single pipe and double pipe
- Thermal conductivity $\lambda_{50} = 0,0218 \text{ W/(m}\cdot\text{K)}$
- Up to 120 °C operating temp. and 25 bar pressure - when used in accordance with appropriate compression copper fittings up to max. 140 °C
- Carrier pipe Cu-DHP/R220 acc. to EN 12449 & EN 12735-2
- Up to 360 m delivery length, depending from dimension
- Generally **without leak detection**



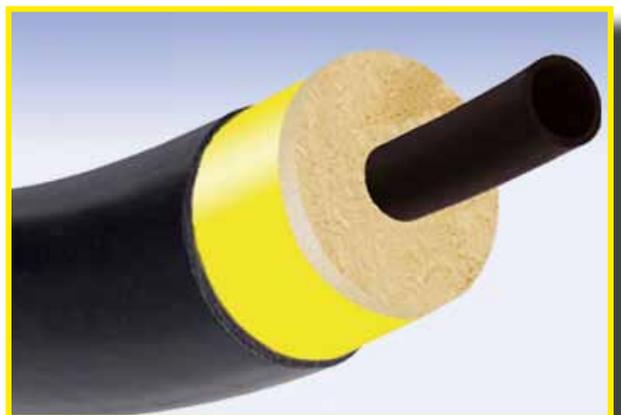
isopex

- DN 15 (1/2") up to DN 150 (6")
- Available as single pipe and double pipe
- Thermal conductivity $\lambda_{50} = 0,0218 \text{ W/(m}\cdot\text{K)}$
- Single pipe up to DN 80 also 1x reinforced insulated available
- Double pipe up to DN 50 also 1x reinforced insulated available
- Up to 95 °C peak temperature and 6/10 bar pressure
- Carrier pipe cross linked PE-Xa acc. to EN ISO 15875-1
- Up to 360 m delivery length, depending from dimension
- Generally **without leak detection**



isoclima

- DN 20 (1/2") up to DN 110 (6")
- Available as single pipe
- Thermal conductivity $\lambda_{50} = 0,0218 \text{ W/(m}\cdot\text{K)}$
- Operating temp. -20 °C to +30 °C and 16 bar pressure
- Carrier pipe PE 100 acc. to DIN 8074/8075/DIN EN 12201-2
- Up to 150 m delivery length, depending from dimension
- Generally **without leak detection**



Jacket Pipe

Connection Coupler

There are several coupler constructions available for the different technical requirements. All PEHD-connection couplers are used in order to reach a non-positive safety, gas- and watertight jacket-pipe connection. It will be generally possible to deliver all couplers in special length, i. e. for post-insulation of the welding seams of an uninsulated one-time-ball-valve, an one-time-compensator or a fitting piece. Insulation and sealing of all kind of couplers, except of **isocompact**, will be carried out generally by **isoplus**-works-educated assembling specialists, tested by AGFW- and BFW.

Sleeves

The manual usable shrink-sleeves consist of a heat shrinkable, molecular cross-linked and modified polyolefin with a sealing adhesive system consisting of an elastic-viscous sealing area. This kind of sleeve is resistant against thermal ageing, weather conditions and chemical influence as well as UV-rays and alkaline-earth.

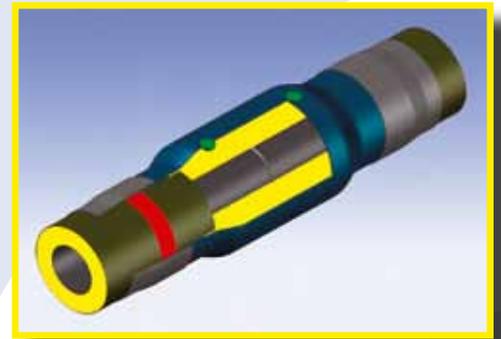
Coupler Test Procedure

In cooperation with accepted test institutes, like i. e. **FFI** in Hanover (District Heating Research Institute e.V.) **isoplus** offers extensive analysis of PUR-local foam and sleeves respectively of complete couplers. The test procedures include all quality guidelines of EN 253 and EN 489 standard.

All taken samples will be recorded with the relevant parameters like date, time project and -section, constructing company and installer, weather conditions, temperature, dimension, kind of coupler and -number, local foam (mechanical or manual) and trench conditions, and transferred to the corresponding test institute. After writing of the certificate it will be given to the buyer for documentation.

Available Types

- ⇒ **PEHD-Shrinkable Coupler** (uncross-linked), additional available as Reduction-Shrinkable Coupler, Double-Reduction-Shrinkable Coupler and Shrinkable End Coupler
- ⇒ **isojoint X - Shrinkable Coupler** (cross-linked)
- ⇒ **isojoint III - Shrinkable Coupler** (cross-linked)
- ⇒ **Electro - Welding Coupler** (uncross-linked), **without** axial-welding seam
- ⇒ **isocompact - Coupler** (cross-linked, two-parted PUR-insulation-shell)
- ⇒ **Spiro - Coupler** (sheet metal sleeve, suitable for all open line or pipe-networks outside or inside of buildings)

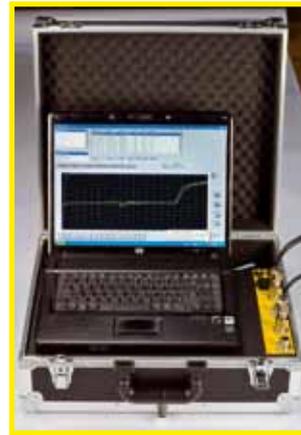


Service

Leak-Detection IPS-Cu and IPS-NiCr

isoplus leak detection systems **IPS-Cu** and **IPS-NiCr** are highly effective, completely automated monitoring and detecting systems with long term detecting. Specially developed for chilled water and hot water systems up to 320 km copper-wires or 153 km NiCr-wires this will be the ideal solution. Also in case of different wire systems the total net will be detected and automatically located by one processing unit. State-of-the-art digitalization technology guarantees highest accuracy.

Different variations to the corresponding project will be simply and cost-effective possible, due to a wide range of accessories. The special control software **IPS-Digital-SSW**, which controls the complete network will record all measured data automatically. Faults will be read automatically and located exactly. All single units from series **IPS-Digital** are using the same software. Therefore the periods for introduction will be minimal. Furthermore with the extended software **IPS-Digital-VISUAL** the localization can be indicated directly in a pipeline design. That means a maximum of automatization and exactness of pipe-leak-detection and an optimal economic efficiency will be reached.



IPS-Digital

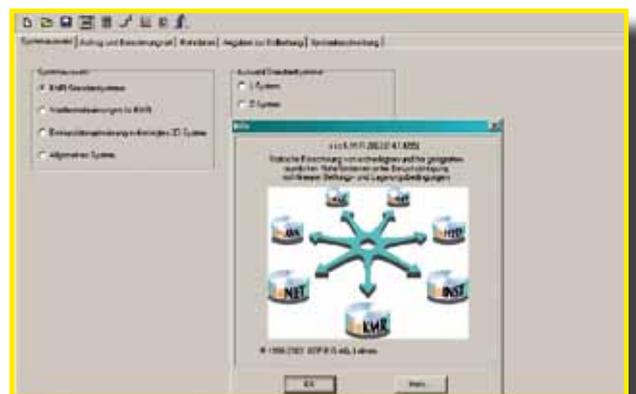
The **IPS-Digital** - system is the optimal complete solution for a fully automatic monitoring and parallel permanent detection. **IPS-Digital** will be suitable for copper wire- and resistance wire systems **IPS-Cu** and **IPS-NiCr** as well as for technical comparable systems. **IPS-Digital** offers a central leak detecting management for medium- up to big respectively branched pipeline networks.

Due to the software based control and evaluation of the complete system, a simple up-date and configuration to the project-typical factors will be possible. The automatic recognition of the kind of measuring unit, i. e. **IPS-Cu** or **IPS-NiCr**, the friendly operation as well as an optimum of safety in monitoring and detecting, are additional essential advantages of **IPS-Digital**.

Service

The permanent quality assurance, from reception of goods up to delivery and also for post insulation will be guaranteed completely and convincingly by **isoplus**-service. Design engineers will prepare the project technically and economically.

It is very important to reach a complete correspondence between the established site-estimation and the final requirements of the project owner respectively user. Therefore **isoplus** offers extensive and complete service applications concerning execution, assembling and acceptance.



Design and Project Work

Design and project work of preinsulated pipelines for direct buried pipe lines or for aerial lines requires a high level of special knowledge. The designing **isoplus** engineer will execute this for you directly and competently. Bill of material, detail solutions, tender specification, route inspection, -design, -calculation and -drawing, all will be executed quickly, exactly and according to the offer. Of course in consultation and with assistance of modern computer technology.

Energy Pipe



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