



HOUSE OF **IN**NOVATION



Aqua**plus**

Aqua**plus**  
Prins

Aqua**plus**  
PP-RCT

Aqua**plus**  
AL

Aqua**plus**  
GF

Aqua**plus**  
OT

Aqua**plus**  
UV

Aqua**plus**  
Clima

**FIREFIGHTER**  
PLUS

**ComoPex**

**ComoPex**  
AL<sub>pex</sub>

**ATIERS**  
PLUS

**ecoFloor**  
PLUS

**Classic**  
FLOOR

**Echosilent**

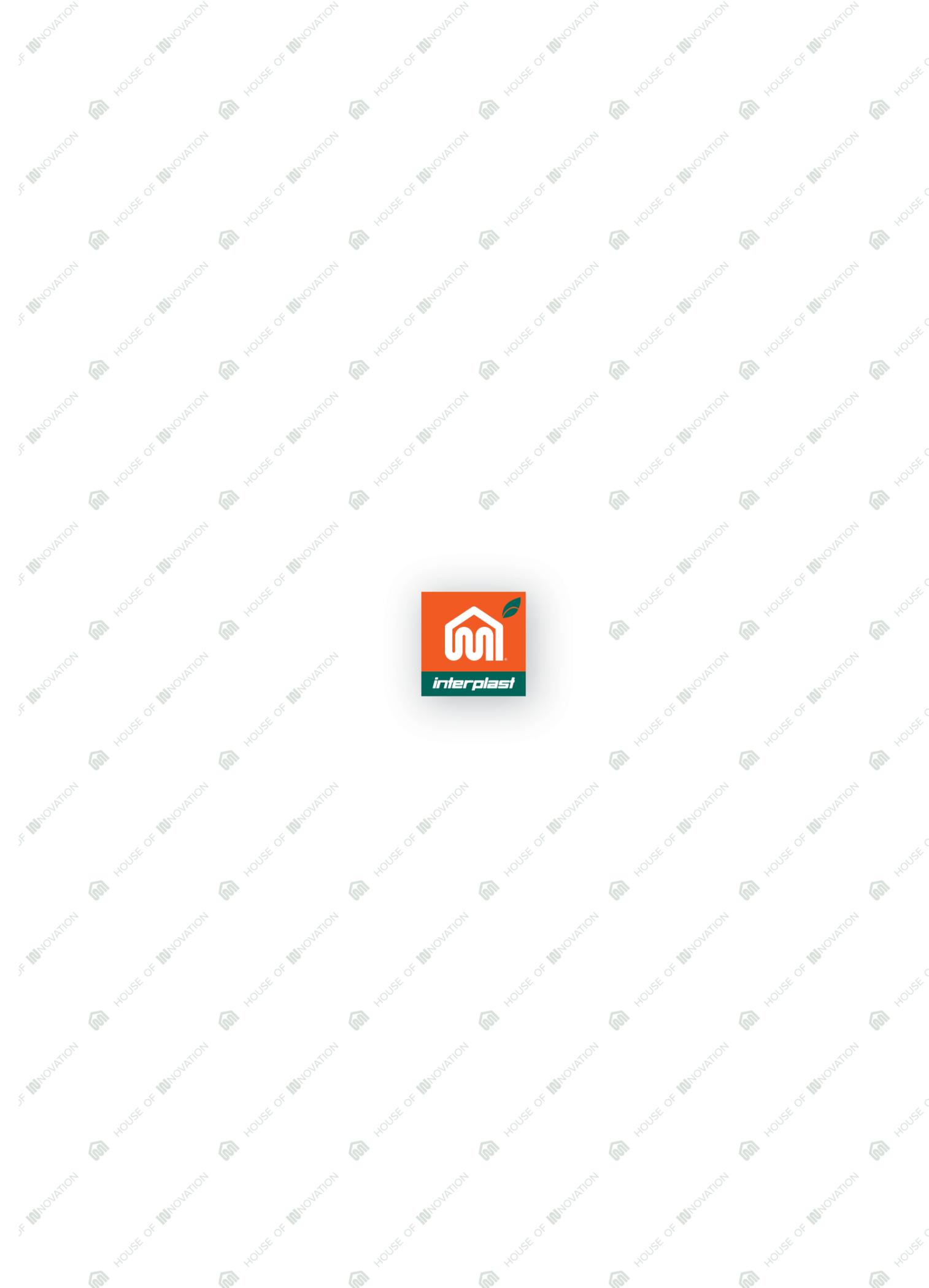
**ecoTop**

**ComoPert**

**UNISOL**

**ComoFlex**

**ELVIOM**  
BRASS FITTINGS





## OUR COMPANY

**Interplast** produces high quality plastic piping systems that find application in water supply, heating, drainage, cooling and district heating facilities, covering a wide range in the fields of construction, technical projects and industrial facilities. The company's goal is to design, develop and market products and integrated solutions that meet the needs of modern manufacturing and improve the quality of life by creating a relationship based on trust with the technical world and the consumer.

The central administration of the group is based in **Industrial Zone of Komotini**, where all the production activities of the industrial plants are coordinated daily.

The production of plastic pipes (PP-R, Preinsulated systems, PEX, PB, PP, PERT, PVC) and fittings takes place in **Komotini**, in an area of 40,000m<sup>2</sup>. In **Menidi, Attica**, in an area of 6,000m<sup>2</sup>, are housed the directorate of Southern Greece of Interplast and its subsidiary's, **ELVIOM**, brass fittings factory.

**Thermi Thessaloniki** houses a product exhibition as well as the Northern Greece Sales department, the Export department, the Energy Applications department and part of the Company's Administration.

**For the first time in the company's history an office is operating abroad.** The sales engineers based in Cairo, Egypt, are responsible for exports from Greece to the Middle East and Africa as well as technical support for these areas.

Exports to **70** over countries and **5** continents



## CERTIFICATES



The company's pipes and fittings exceed the requirements set by the European EN ISO Standards, the globally accepted German DIN EN ISO standards, the Spanish UNE, the British Standards, as well as the American / Canadian ASTM / CSA / NSF. This results in Interplast products not showing a single failure in the regular six-monthly checks carried out by official institutes and involving random samples from production and from storage.

The culmination of the above is that the company's products are certified as final products by the following organizations.



TUV-EN ISO 9001:2015

ISO 14001:2015

ISO 50001:2015

EPD (Sweden)

MIRTEC-EBETAM (Greece)

Lloyd's (UK)

WRAS/NSF (UK)

IAPMO R&T (USA)

RIGHT TESTING LAB (USA)

ICC/ANSI (USA)

CSA (Canada)

SKZ (Germany)

HYG (Germany)

FFI (Germany)

Fraunhofer (Germany)

AENOR (Spain)

KIWA (Netherlands)

EMI (Hungary)

NNK (Hungary)

OKF (Hungary)

MA 39 Stadt Wien (Austria)

CSTB (France)

National Research Center (Egypt)

Housing & Building National Research Center (Egypt)



According to the Official Gazette 3346/2012 & 4278/2019, plastic pipes and accessories intended for Heating - Water Supply - Sewerage are required to have EBETAM certification.

Interplast has obtained EBETAM certification for Como-Pex, ComoPexALPex, Como-Pert, Aqua-Plus (PPR & PPRCT), Atlas Plus (PPH), Atlas Plus Echo Silent (PP-MD), CretaPB and Unisol PVC.



## ENVIRONMENT



# interplast

### ECOLOGICAL SYSTEMS, FRIENDLY TO THE ENVIRONMENT AND THE PEOPLE

- The plastics used by the company are non-toxic, dioxin-free and cover modern requirements at all levels. Moreover:
- Pipes and fittings are recyclable
- Their long life span ensures many years of operation
- They do not produce free heavy metal products
- They are chemically inert
- They do not emit pollutants or gases that are harmful to the environment

Interplast has successfully implemented a **triple certification** that focuses exclusively on environmental protection, proving the company's sensitivity and sense of responsibility. It is well known that the planet is facing an unprecedented increase of the population, which is expected to reach 11.2 billion by the year 2100. Overpopulation and the excessive waste of natural resources at a global scale constitute a dramatic problem. **The solution is to transition from a linear to a circular economy, where products live longer and are recycled at the end of their life.**

Specifically, Interplast has implemented the following:

- 1) It has completed the certification process by preparing an integrated Environmental Management System according to **ELOT EN ISO 14001:2015**.
- 2) It has completed the certification process by installing all prescribed energy saving "tools" according to **ELOT EN ISO 50001:2018**.
- 3) It has completed the preparation of the necessary **LCA** that leads to the drafting of the required **EPD (Environmental Product Declaration)** for a series of its products, which were registered on its electronic platform as prescribed in the **ISO 14025** and **EN 15804** standards.

The Environmental Product Declaration or EPD is an **eco-labelling system** used in the international markets, especially Europe and the USA, as an **"International gold standard"** that depicts and communicates a product's environmental performance during its lifetime.

## ENVIRONMENT



ENVIRONMENTAL PRODUCT DECLARATION DETAILS	
<b>Programme information</b>	
Programme Operator:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environmental.org
E-mail:	info@environmental.org
<b>PCR Information</b>	
CEN standard EN 15804-A1:2013 serves as the Core Product Category Rules (PCR)	
Product category rules (PCR):	PCR 2012:01, Version 2.32 "Construction Products and Construction Services" UN CPC code 3032 "Tubes, pipes and hoses, and fittings thereof, of plastics"
PCR review was conducted by:	IVL Swedish Environmental Research Institute, Secretariat of the International EPD System Appointed PCR Moderator Martin Ericsson IVL Swedish Environmental Research Institute (email: martin.ericsson@ivl.se)
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	
<input type="checkbox"/> EPD process certification	<input checked="" type="checkbox"/> EPD verification
Third party verifier:	greeneco Dr. Nikolay Minkov greeneco.me GmbH (https://www.greeneco.me) Contact: nikolay.minkov@greeneco.me
Approved by:	The International EPD® System
<b>LCA information</b>	
Background LCA Report prepared by:	LyCIS/HMCS Group Dr. Giannopoulos Dimitrios Dr. Stamatiadou Marianna Dr. Bonou Alexandra
	LyCIS/HMCS is a research group of the Lab of Heterogeneous Mixtures & Combustion Systems, School of Mechanical Engineering, National Technical University of Athens (Greece)
Address:	Zografou Campus 9, Iroon Polytechniou str, 15701 Zografou Greece
Contact:	+30 210 772 1238
Website:	www.ntua.gr/hmcs
E-mail:	stalam@central.ntua.gr

The above prove in the most emphatic way Interplast's vision and commitment to its goal of being a model production company, environmentally conscious, offering products that constitute ideal choices for **buildings that follow the principles of bioclimatic design.**

Such moves help designers, constructors – buyers and users of buildings to assess and, if desired, classify their buildings as "green buildings" with low or zero emissions, according to the **LEED V4, BREEAM, and DGNB** protocols which constitute the basis of assessment for the requirements of **EN 15978–Sustainability of Construction works.**

The plastics used by the company can be recycled and reused as specified in European and International standards for a variety of constructions.

The products produced by Interplast are designed for a lifetime of up to 100 years, therefore ensuring zero maintenance or replacement costs.

**Particularly the innovative, pre-insulated Aqua-Plus Prins system offers a long life also in terms of insulation. This is why it is included in the very few products of integrated certified systems (pipes, fittings and insulation) worldwide with zero maintenance requirements and a long life not only of the pipe itself, but also of its thermal insulation properties.**



## QUALITY ASSURANCE IN PRODUCTION

Interplast's primary concern and key commitment is to ensure the highest quality of its products.

The mechanical equipment used to produce Interplast pipes and fittings ensures precisely this quality to the highest degree.

In addition to the usual mechanical equipment required for pipe production, Interplast production lines also include the following equipment, so that consumers can rest assured that they will enjoy flawless, top-quality products.

### Raw materials dehumidifier

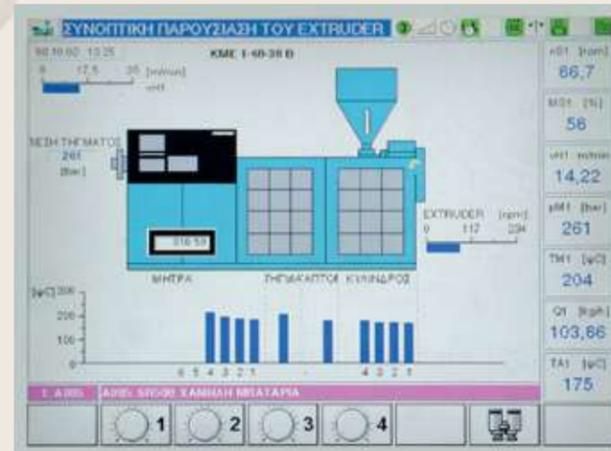
This ensures the stabilisation of the Extruder parameters in case of raw materials that absorb moisture easily, thus preventing the dimension changes observed in many pipes.

### Automatic correction of pipe wall thickness

This is a system for defining the desired wall thickness limits, which are automatically adjusted through the production line puller. It is the second part of the pipe's dimensional stability.

### Automatic correction of screw rotations

This helps achieve a constant weight per meter for the produced pipe and, therefore, consistent dimensions. It is the first part of the pipe's dimensional stability.



## QUALITY ASSURANCE IN PRODUCTION



### Laser control of the external diameter

This is the third and final part of the electronic checks. The precise values of the LASER SCANNER ensure the correct fit of the pipe to the fitting during heat welding or connection with metal or other components.

### Inspection of pipe dimensions by the line operator

The external diameter is checked with a circumference tape, while the wall thickness and the ovality of the pipe are checked with an electronic thickness gauge. The measured specimens are kept for final inspection by the production manager and the technical manager who, after the end of the laboratory testing, approve the products' suitability for the market. All measurement data are recorded in the ISO system, which is updated on a daily basis.



### Dimensional control

Checking the fit between the pipe and the fitting using a thermal self-adhesion device for PPR pipes and fittings. Checking the fit of the brass connector at the end of the production of each coil, for PEX, PB, PERT & PE pipes. Checking the fit of the pipe with the corresponding fitting for all household drainage categories.



2.09  
1=OFF, 2=SUPL, 3  
ΤΙΜΗ 0.31 mm  
Προγραμτ 0.33 mm



## LABORATORY TESTING

The strict specifications followed by Interplast in the production of its pipes and fittings are certified in its privately owned, state-of-the-art laboratories, using tests defined by European standards EN ISO 15874-1/2/3 and German standards DIN 8077, 8078 and 16962. The factory markets pipes and fittings that have undergone quality tests in accordance with the following procedures:



### Flow index testing of raw materials and finished products

This is a standard test conducted each time raw materials are received and a product is produced. The raw materials flow index is very important in defining the EXTRUDER temperature profile and, therefore, the homogenization of the material. A low deviation from the flow index of the respective product proves that the material has been processed correctly.



### Visual inspection of the surface of the pipes, measurement of the external diameter and measurement of the wall thickness using calibrated instruments

These tests certify that continuous measurements are carried out during production.



### Strength and durability testing of pipes and fittings using the thermal cycling method

The products are tested as a system under extreme operating conditions for a period of 5,000 hours. The water temperature changes every 15 minutes between 20°C and 95°C, while the hydraulic pressure is constant at 6 bar, according to ISO 19893 and EN 12295. This is actually the most comprehensive test since, with the help of successive thermal shocks, it can simulate within one day the pipe's resistance in one year. This is a key "tool" for all new products of the company, as pipes and their corresponding fittings remain in the Thermal Cycling Tester for 100 days, so that the durability of the entire system can be verified for 100 years. There are very few companies around the world which possess such equipment.



### Checking the percentage of linear return after pipe heating

Production specimens are kept in a laboratory oven at a temperature of 135°C for 2 hours. The measurement results should not exceed 2%, according to DIN and EN ISO specifications. The pipes produced by the company boast extremely low thermal linear expansion coefficients when operating in heating installations, even lower than those defined by the Standards.



### Microscopic testing of material homogenization

This proves that the raw material has been processed correctly and is, therefore, one of the most important tests. It ensures the best possible homogenization of all pipes and fittings and, consequently, their very long service life.

### Impact test

The test is conducted in accordance with the requirements of the EN ISO 9854-1/2, DIN 53453, and DIN 8078 standards and the corresponding regulations of the Institutes-Accredited Certification Bodies, which describe the test method in their procedures and rules. More specifically, PPR and PPRCT pipes must withstand impacts with an energy value of 15J without breaking at a temperature of 0°C. The high quality of Interplast pipes enables them to withstand temperatures in the order of -7°C for impacts with an energy value of 25J, which exceeds the requirement of the standards by 75%.



### Environmental Stress Crack Resistance (ESCR) testing

Pipe specimens are scratched internally to a depth of 10% of the wall thickness and their interior is filled with a special chemical for elimination of the surface tension. They are then pressed at 95°C for 1000 hours. In the specific test, the pipes produced by the company prove their reliability even in cases of incorrect handling during transport or installation (light tearing, scraping etc.).

### Measuring the degree of cross-linking on a daily basis

This applies to PEX pipes only. The degree of cross-linking of packaged pipes is at least 65%.



### Checking the mechanical strength of pipes and fittings in a tensile tester

Tensile strength tests, as well as tests to determine the modulus of elasticity and elongation of the material, are conducted on specimens of pipes and fittings that have been properly prepared by a special device. All results are recorded on a computer and measurements are subsequently analyzed using special diagrams.



### Checking the mechanical strength of pipes and fittings

The test is conducted at the internal hydrostatic pressure, during a testing period of 1 hour at 20°C and 95°C; 22, 165 & 1,000 hours at 95°C; and 8,760 hours at 110°C, as specified by European norms and US and German standards. The 1-hour tests are conducted for each batch of finished product, while the 22-hour and 165-hour tests are conducted once a year for each pipe type and cross-section.

### Checking the density of raw materials

and the material of pipes and fittings using a special densimeter.





MAJOR PROJECTS TRUST  
**interplast**



**interplast**

Large scale and modern projects trusted Interplast's products for their facilities in plumbing, heating, cooling and sewage systems. They trusted the market leader in Greece of plastic pipes for building premises. The steady growth of Interplast both in Greece and abroad, is a result of multiannual human experience that combines technology, high quality and innovation, managed to set Interplast among the largest European plastic pipe manufacturing companies.



**Hotels**

- Four Seasons Hotel 5\*, Amaala, Saudi Arabia
- St. Regis Hotel 5\*, Bahrein
- Sheraton Cairo Hotel & Casino 5\*, Egypt
- Double Tree Hotel by Hilton 5\*, Amman, Jordan
- Laqlouq Hotel 5\*, Laqlouq, Lebanon
- Le Grey Hotel 5\*, Beirut, Lebanon
- Murex Hotel 5\*, Lebanon



- Vocco Hotel 4\*, Beirut, Lebanon
- Kuda Villingili Resort 5\*, Maldives
- Jericho Resort Village 4\*, Palestine
- St. Elias Hotel 5\*, Bethlehem, Palestine
- Al Aar Hotel 5\*, Qatar
- Al Asmakh Tower, Qatar
- Souq Waqif Boutique Hotel 5\*, Qatar
- Al Brook Tower 5\*, Qatar
- Holiday Inn Hotel 4\*, Qatar
- Mozoon Tower 5\*, Doha, Qatar
- Rotana Arwa Tower, Qatar
- Seef Lusail Towers 5\*, Qatar
- St. Regis Hotel & Residential Towers Luxury Hotels, Doha, Qatar
- Sheraton Hotel 5\*, Qatar
- Traders Hotel 5\*, Doha, Qatar
- Viva Bahriya Towers in Pearl, Qatar
- Waldorf Astoria Hotel 5\*, Doha, Qatar
- Secrets Baby Beach Hotel 5\*, Aruba, Caribbean Sea
- Laikipia 5\*, Kenya
- Lengishu House, Luxury Safari Longe 5\*, Laikipia, Kenya
- Tribe Hotel 5\*, Kenya
- Riverview Hotel 3\*, Kenya
- Hotel Butrinti 5\*, Sarande, Albania
- Folie Marine Hotel & Beach Club 4\*, Jale Beach, Himarë, Albania
- Hyatt Regency Sofia 5\*, Bulgaria
- Hyatt Regency Pravets Resort 4\*, Bulgaria
- Complex Soney SKS Spa Hotel 3\*, Momin Prohod, Bulgaria
- Anna Hotel 4\*, District VIII, Budapest, Hungary
- Balaport Hotel 5\*, Balatonfured, Hungary
- Eger Hungest Hotel 4\*, Eger, Hungary
- Lifestyle Hotel Matra 4\*, Gyöngyös, Hungary
- OVB, Worker's Hostel, Debrecen, Hungary
- Silvanus Hotel 4\*, Visegrád, Hungary
- Iveagh Gardens Hotel 4\*, Dublin, Ireland
- Belgrade Waterfront 5\*, Belgrade, Serbia
- Skyline Towers, Belgrade, Serbia
- Ayia Napa Marina, Ayia Napa, Cyprus
- Adams Beach 5\*, Ayia Napa, Cyprus
- Aliathon Hotel 5\*, Pafos, Cyprus
- Aphrodite Intercontinental 5\*, Cyprus
- Atlantica Mare Village Ayia Napa 5\*, Ayia Napa, Cyprus
- Atlantica Mare Village Pafos 5\*, Paphos, Cyprus

- Athina Hotel 4\*, Paphos, Cyprus
- Avanti Hotel 4\*, Paphos, Cyprus
- Atlantica Bay Hotel 4\*, Limassol, Cyprus
- Cap St. George Hotel 5\*, Paphos, Cyprus
- City of Dreams Mediterranean Hotel & Casino 5\*, Limassol, Cyprus
- Chrysomare Beach Hotel 5\*, Ayia Napa, Cyprus
- Cypria Maris Beach Hotel 4\*, Paphos, Cyprus
- Del Mar 5\*, Nicosia, Cyprus
- Eva Lena Hotel 4\* Protaras, Cyprus
- Grecian Park Hotel 5\*, Ayia Napa, Cyprus
- Kefalos Damon Hotel 3\*, Paphos, Cyprus
- Landmark Hotel 5\*, Nicosia, Cyprus
- Ledra Hotel 4\*, Paphos, Cyprus
- Le Meridien 5\*, Limassol, Cyprus
- Lydra Marriott 5\* (Thalassotherapy sector), Nicosia, Cyprus



- Margantina Hotel 4\*, Ayia Napa, Cyprus
- Melpo Antia Hotel 4\*, Ayia Napa, Cyprus
- Nissi Blue Hotel 5\*, Ayia Napa, Cyprus
- Olympic Lagoon Hotel Resorts 5\*, Ayia Napa, Cyprus
- Phaethon Hotel 4\*, Paphos, Cyprus
- Palm Beach Resort 5\*, Larnaca, Cyprus
- Radisson Blu 5\*, Larnaca, Cyprus
- Radisson Larnaca Beach Hotel 5\*, Larnaca, Cyprus
- Saminara Hotel 4\*, Larnaca, Cyprus
- Stamatia Hotel 3\*, Ayia Napa, Cyprus
- Trilogy Tower 5\*, Limassol, Cyprus
- Academias Autograph Collection 5\*, Athens
- Amalia Athens Hotel 4\*, Athens
- Arethusa Boutique Hotel 4\*, Athens
- Athens Choice 2\*, Athens
- Athens Coast Hotel 4\*, Glyfada, Athens
- Athens Platinum Rooms and Suites 4\*, Athens
- Blend Hotel 4\*, Athens
- Boss Boutique Athens 5\*, Athens
- Capri Hotel 2\*, Athens
- Dave Red Athens 4\*, Athens
- Ever Eden Beach Resort 4\*, \*, Anavissos, Athens
- Electra Metropolis 5\*, Athens
- Fenix Hotel 4\*, Glyfada, Athens
- Four Seasons Astir Palace 5\*, Vouliagmeni, Athens
- Grand Hyatt 5\*, Syggrou Ave., Athens
- Grecotel Imperial 5\*, Karaiskaki sq., Athens
- Holiday Inn 5\*, Attika Ave., Athens
- Hotel Coco-mat BC 5\*, Athens
- Ibis Styles Athens Routes 4\*, Athens
- King's Palace 5\*, Syntagma, Athens

- King George Hotel 5\*, Athens
- Mati Hotel 4\*, Nea Makri, Athens
- MGallery Collection - Athens Capital Hotel 5\*, Athens
- Moxy Athens City 4\*, Athens
- NLH Athens, Neighborhood Lifestyle Hotel, Athens
- NYX Esperia Palace 5\*, Athens
- One & Only Aesthesis, Luxury Resort 5\*, Athens
- President Hotel 5\*, Athens
- Piraeus City Hotel 2\*, Piraeus
- Selina Athens 3\*, Theatrou sq., Athens
- Sofitel Athens Airport 5\*, Spata, Athens
- The Ilysian (fmr. Hilton) 5\*, Athens
- The Stanley 4\*, Karaiskaki Sq., Athens
- Asteras Vouliagmenis Hotel 5\*, Athens
- Asteras Glyfadas, Athens
- Grand Bretagne 5\*, Luxury Hotels, Athens



- Amanzoe Resort, Kranidi, Argolida
- Paradise Lost Hotel-Apartments 3\*, Tolo, Argolida
- Thraki Palace 5\*, Alexandroupoli
- Amalia Hotel 3\*, Kourouta, Amaliada
- Palirroia 5\*, Chalkida
- Antigoni Beach Resort 4\*, Ormos Panagias, Chalkidiki
- Anthemus Sea Beach 5\*, Elia, Chalkidiki
- Blue Lagoon Princess Hotel 5\*, Chalkidiki
- Eagles Palace 5\*, Ouranoupoli, Chalkidiki
- Ekies All Senses Resort 4\*, Vourvourou, Chalkidiki
- Eurotel Queen Hotel 5\*, Chalkidiki
- Greek Pride Seafront Hotel 4\*, Chalkidiki
- Ikos Oceania Resorts 5\*, N. Moudania, Chalkidiki
- Ikos Olivia Hotel 5\*, Gerakini, Chalkidiki
- Lagomandra Beach Hotel 4\*, Nikiti, Chalkidiki
- Meliton - Porto Karras 5\*, Chalkidiki
- Porto Carras Resort 5\*, Porto Karras, Chalkidiki
- Sani Beach Hotel 5\*, Chalkidiki
- Sani Club 5\*, Chalkidiki
- Sani Dunes 5\*, Chalkidiki
- Acharavi Beach Hotel 4\*, Corfu
- Aeolos Beach Resort 4\*, Corfu
- Almyros Hotel 5\*, Corfu
- Atlantica Grand Mediterraneo Resort 5\*, Ermones, Corfu
- Ekati Mare Boutique Resort 4\*, Corfu
- Grecotel Daphnila Bay 4\* Dasia, Corfu
- Ikos Dassia 5\*, Dasia, Corfu
- Ikos Odisia 5\*, Corfu
- LTI Louis Grand Hotel 4\*, Corfu
- MarBella Corfu 5\*, Agios Ioannis Peristeron, Corfu
- The Olivar Suites 5\*, Messonghi, Corfu

- Isla Brown Corinthia Resort & Spa, Collection by Hilton 5\*, Corinth
- Abaton Island Resort & Spa 5\*, Hersonissos, Crete
- Agapi Beach Resort Hotel 4\*, Ammoudara Gaziou, Crete
- Aldemar Knossos Royal 5\*, Crete
- Aldemar Royal Mare 5\*, Crete
- Aldiana Club Kreta 5\*, Crete
- Apollonia 5\*, Heraklion, Crete
- Arina Beach Hotel 4\*, Heraklion, Crete
- Atermono Boutique Resort 5\*, Rethymno, Crete
- Bella Beach Hotel 5\*, Anissaras, Crete
- Bella Mare 3\*, Rethymno, Crete
- Bueno Hotel 3\*, Rethymno, Crete
- Cactus Beach 5\*, Stalida, Crete
- Cactus Village Hotel & Bungalows 4\*, Stalida, Crete
- Chersonissos Belvedere Hotel 4\*, Heraklion, Crete
- Coral Hotel 3\*, Agios Nikolaos, Crete
- Corissia Bay, Chania, Crete
- Domes of Elounda, Luxury Hotel 5\*, Elounta, Crete
- Elios Hill Hotel 4\*, Hersonissos, Crete
- Elounda Breeze Hotel 4\*, Crete
- Esperides Resort 5\*, Hersonissos, Crete
- Euphoria Beach Resort 5\*, Chania, Crete
- Gouves Water Park Holiday Resort 5\*, Heraklion, Crete
- Grand Hotel Holiday Resort 4\*, Hersonissos, Crete
- Ibis Style Herakleion Central 4\*, Crete
- Ikos Kisamos 5\*, Kisamos, Chania, Crete
- JW Marriott Crete Resort & Spa, 5\*, Marathi, Crete
- Lyttos Beach 4\*, Hersonissos, Crete
- Menia Hotel, Chania, Crete
- Minos Mare Royal 5\*, Rethymno, Crete
- Nana Imperial Hotel 5\*, Hersonissos, Crete
- Princess Anex Hotel, 2\*, Malia, Crete
- Rethymno Palace 5\*, Rethymno, Crete
- Robinson Club 5\*, Ierapetra, Crete
- Silva Beach 4\*, Pallini, Crete



- St. Nicolas Bay Resort Hotel 5\*, Agios Nikolaos, Crete
- Star Beach Village & Water Park 4\*, Hersonissos, Crete
- Stella Palace Resort 5\*, Hersonissos, Crete
- The Artemis Hotel 4\*, Rethymno, Crete
- The Royal Blue Resort 5\*, Rethymno, Crete
- The Royal Senses Resort & Spa 5\*, Rethymno, Crete
- The Syntopia of Orion Hotel 4\*, Adelianos Kampos, Crete
- Eretria Hotel & Spa Resort 4\*, Euboea (Evia)
- Aldemar Royal Olympian 5\*, Pyrgos, Ilia
- Grand Elis Hotel 5\*, Savalia, Ilia
- Grecotel Olympia Riviera 5\*, Killini, Ilia
- Olympian Village 5\*, Ilia
- Epirus Palace Hotel Congress & Spa 5\*, Ioannina
- Grand Serrai 5\*, Ioannina
- Grand Hotel Kalamata 5\*, Kalamata
- Kolokotronis Hotel & Spa, Kalamata
- Afoti Beach Hotel, 2\*, Karpathos



- Apolis Beachscape Hotel 4\*, Karpathos
- Limneon Resort & Spa 5\*, Kastoria
- One and Only Kea Island 5\*, Kea
- Argostoli Marina Suites 3\*, Kefalonia
- Electra Kefalonia Hotel & Spa 5\*, Kefalonia
- Ionian Plaza 4\*, Kefalonia
- RSR Eagle Resort 5, Platanistos, Karistos
- Kimolian Sea 5\*, Kimolos
- Achilleas Beach Hotel 4\*, Mastichari, Kos
- Atlantica Beach Resort Kos 5\*, Kos
- Atlantica Porto Bello Beach 4\*, Kardamaina, Kos
- Atlantis Hotel 4\*, Kos
- Blue Lagoon City Hotel 5\*, Kos
- Blue Lagoon Ocean 4\*, Kos
- Blue Oceanic 4\*, Kos
- Caravia Beach Hotel 4\*, Marmari, Kos
- Eurovillage Achilleas Hotel 4\*, Mastichari, Kos
- Gaia Palace 5\*, Mastichari, Kos
- Gaia Royal Hotel 4\*, Mastichari, Kos
- Gaia Village Hotel 3\*, Tigaki, Kos
- Grand Blue Beach Hotel 5\*, Kardamaina, Kos
- Horizon Beach Resort 4\*, Mastichari, Kos
- Iberostar Astir Odysseus 5\*, Tigaki, Kos
- Ikos Aria 5\*, Kefalos, Kos
- KOIA All-Suite Wellbeing Resort 5\*, Kos
- Kosta Palace City Hotel 4\*, Kos
- Kouros Palace 5\*, Kardamaina, Kos
- Kyma Rooms & Suites 5\*, Kos
- Lakithira Resort & Village 5\*, Kardamaina, Kos
- Mitsis Blue Domes Resort & Spa 5\*, Kardamaina, Kos
- Mitsis Family Village Beach Hotel 5\*, Kardamaina, Kos
- Mitsis Norida Beach Hotel 5\*, Kardamaina, Kos
- Mitsis Ramina Beach Hotel 5\*, Kos
- Mitsis Summer Palace Beach Hotel 5\*, Kardamaina, Kos
- Nefeli Hotel, 4\*, Kos
- Neptune Luxury Resort, 5\*, Μαστιχάρι, Kos
- Kyma Mare 5\*, Kos
- Kyma Rooms & Suites 5\*, Kos
- Robinson Club Daidalos 4\*, Fortress of Antimachia, Kos
- Smy Princess of Kos 4\*, Mastichari, Kos
- Summer Palace 5\*, Kos
- Zorbas Beach Hotel 5\*, Tigaki, Kos
- Kythnos Bay Hotel, 2\*, Kythnos
- Radisson Blu Resort 5\*, Gytheio, Lakonis
- Euphoria Retreat Hotel 5\*, Mystras, Lakonis
- Porto Galini Seaside Resort & SPA 4\*, Nikiana, Lefkada
- Captain Stavros Hotel 4\*, Nidri, Lefkada
- Zaira Hotel 4\*, Skala Loutron, Lesvos
- Porto Plomari Hotel 5\*, Plomari, Lesvos
- Theofilos Paradise Boutique Hotel 4\*, Mytilene, Lesvos

- Camvillia Resort 5\*, Koroni, Messinia
- Costa Navarino, Messinia
- Grand Hotel Kalamata 5\*, Kalamata, Messinia
- Kolokotronis Hotel & Spa 4\*, Stoupa, Messinia
- Mandarin Oriental Costa Navarino 5\*, Gialova, Messinia
- Navarino Bay 5\*, Messinia
- W Costa Navarino 5\*, Gialova, Messinia
- White Coast Hotel 5\*, Milos
- Aleomandra, Luxury Villa, Ornos, Mykonos
- Ambassador Hotel 5\*, Platis Gialos, Mykonos
- Apollonia Hotel and Resort 5\*, Mykonos
- Blue Hotel 5\*, Mykonos
- Casa Cook Mykonos (Velos Tourism SA) 4\*, Mykonos
- Elia Mykonos Resort 5\*, Mykonos
- Grecotel Mykonos Blu 5\*, Mykonos
- Myconian Crown Suites 4\*, Mykonos
- Petinaros Hotel 2\*, Mykonos
- Rochari Hotel 4\*, Mykonos
- Silver Sands Hotel 5\*, Mykonos
- Sunset Hotel 5\*, Mykonos
- Tagoo Hotel 5\*, Mykonos
- Yi Hotel, Luxury Boutique Hotel 4\*, Mykonos
- Savvidis K. S.A. Hotel, Rocari Chora Mykonos, Mykonos
- Porto Plomari Hotel 5\*, Mytilene
- Andronis Minois Hotel 5\*, Paros
- Punda Beach Resort 5\*, Pounta, Paros



- Paros Rocks Luxury Hotel & Spa 5\*, Ampelas, Paros
- Galaxy City Center Hotel 3\*, Patra
- Manthos Mountain Resort & Spa 3\*, Pilio
- Amanzoe Luxury Hotel & Resort 5\*, Porto Cheli
- HapiMag Resort 4\*, Porto Cheli
- Nikki Beach Resort and Spa 5\*, Porto Cheli
- Acantia Hotel 5\*, Rhodes
- Adriana Princess Hotel 5\*, Rhodes
- Aethrion Villas & Suites, Rhodes
- Amada Colossos Hotel 4\*, Rhodes
- Amathus Beach 5\*, Ixia, Rhodes
- Amilia Mare Rhodes 5\*, Rhodes
- Atlantica Aegean Blue Resort 5\*, Kolymbia, Rhodes
- Atlantica Hotel 5\*, Rhodes
- Atlantica Imperial Resort 5\*, Kolymbia, Rhodes
- Atlantica Princess Hotel 4\*, Ixia, Rhodes
- Atlantica Sensatori Resort 5\*, Gennadi, Rhodes
- Atlantis Boutique City Hotel & Spa, 4\*, Rhodes
- Belair Beach Hotel 4\*, Rhodes
- Blue Sea Beach Resort 4\*, Faliraki, Rhodes
- Calypso Beach 4\*, Faliraki, Rhodes
- Capsis Rhodes Hotel 5\*, Rhodes
- Clever Hotel 3\*, Rhodes

- Electra Palace Rhodes 5\*, Rhodes
- Forum Beach Lalyssos 3\*, Ialysos, Rhodes
- Golden Odyssey Hotel 4\*, Rhodes
- Ixian Grand 5\*, Ialysos, Rhodes
- Kalithea Mare Palace 4\*, Rhodes
- La Marquise Luxury Resort Complex 5\*, Rhodes
- Lindian Village 5\*, Lardos, Rhodes
- Lindos Bay 5\*, Lindos, Rhodes
- Lindos Mare Sea Side Hotel 5\*, Lindos, Rhodes
- Lindos Princess Beach Hotel 4\*, Lardos, Rhodes
- Mayia Exclusive Resort & Spa 5\*, Kiotari, Rhodes
- Mitsis Alila Resort & Spa 5\*, Rhodes
- Mitsis Rodos Village Beach Hotel 5\*, Rhodes
- Olympic Palace Hotel 5\*, Ixia, Rhodes
- Orion Hotel 3\*, Faliraki, Rhodes
- Paradise 5\*, Kallithea, Rhodes
- Princess Andriana Hotel & Spa 5\*, Rhodes
- Rodos Princess Beach Hotel 5\*, Rhodes



- Rodos Palace 5\*, Ixia, Rhodes
- Rodos Palladium Leisure & Wellness 5\*, Faliraki, Rhodes
- Sun Beach Resort 4\*, Ialysos, Rhodes
- Sunshine Rhodes 4\*, Rhodes
- Sunwing Kallithea Beach 4\*, Kallithea, Rhodes
- The Ixia Grand Hotel 5\*, Ixia, Rhodes
- Virginia Family Resort 3\*, Kallithea, Rhodes
- Casa Cook Samos (Velos Tourism SA) 5\*, Samos
- Doryssa Seaside Resort 5\*, Samos
- Andronis Luxury Suites 5\*, Santorini
- Oia Santo Maris 5\*, Santorini
- Rasisson Blu Zaffron Resort 4\*, Kamari, Santorini
- Skyfall Luxury Suites 5\*, Santorini
- Acropolis Hotel 4\*, Serres
- Kassadra Bay Resort 5\*, Vasiliak, Skiathos
- Xenia Hotel 5\*, Koukounaries, Skiathos



- Skiathos Princess Hotel 5\*, Skiathos
- Pedi Beach Hotel 4\*, Symi
- Alexandra Beach Spa Resort 4\*, Thassos
- Ilion Mare 5\*, Thassos
- Linden Apartments, Potos, Thassos
- Makryammos Bungalows 4\*, Thassos
- Thasos Grand Resort 5\*, Thassos
- Vathi Cove Luxury Resort & Spa 5\*, Vathi, Thassos
- MarBella Elix 5\*, Perdika, Thesprotia
- Regina Mare Hotel Club 5\*, Perdika, Thesprotia
- Anatolia Hotel 4\*, Thessaloniki
- Electra Palace, 5\*, Thessaloniki
- Hyatt Regency Thessaloniki 5\*, Thessaloniki
- Makedonia Palace 5\*, Thessaloniki
- Onoma Hotel 5\*, Thessaloniki
- Domes Aulus Hotel, Autograph Collection 5\*, Zante
- King Jason Zante 5\*, Zante
- President Hotel 3\*, Zante
- Tsamis Zante Suites 5\*, Tragaki, Zante
- White Olive Elite Laganas, Laganas, Zante
- Zante Park Resort & Spa 5\*, Zante
- Zante Sun Resort & Spa 5\*, Zante

**Residences**

- German Sports Tower, Dubai Sports City, United Arab Emirates
- AG Villa – Dubai, United Arab Emirates
- 505 Villas – Uptown, Emirates City, United Arab Emirates
- 14 Villas (Westar Prop), Jumeirah Village, Dubai, United Arab Emirates
- Villa Rashidiya, Dubai, United Arab Emirates
- Villa Ras Al Khor, Dubai, United Arab Emirates
- Alawi Villa, Bahrein
- Jawad & Jaffer Villa, Bahrein
- Riyadh Villa, Bahrein
- Amchit Bay Villas Resorts, Lebanon
- Amiouni Villa, Baabat, Lebanon
- B Chez Moon Residences, Lebanon
- Chalet Ziad Mohsen Dalloul - Faqra, Lebanon
- Chalet Chalhoub, Faqra, Lebanon
- Fadi Mahmoud Duplex, Lebanon
- Garden View, Sin El Fil, Lebanon
- Nevis and Nevei Faqra Luxury Villa, Faqra, Lebanon
- Nova Building, Naccache, Lebanon
- Njeim Villa, Aayoun El Siman, Lebanon
- PCD Villa, Faqra, Lebanon
- Raoucheh residence, Verdun, Lebanon
- Retro 67 Residences, Lebanon
- Riva Building, Mtayleb, Lebanon



- Villa Karageuzian - Faqra, Lebanon
- Villa Badro - Faqra, Lebanon
- Ziad Khalil Apartment, Lebanon
- Green Hills, Building Complex, Kenya
- Montave, Building Complex, Kenya
- Palm Valley, Building Complex, Kenya
- 5\* Paradise, Building Complex, Kenya
- Building Complex, Mauritius
- Cityscape Shariff Plaza, Abuja, Nigeria
- Commercial District, Abuja, Nigeria
- Lake Green Field, Abuja, Nigeria
- Matiana Mall, Abuja, Nigeria
- Mixed Development, Nigeria
- Bab Al Rayyan 400 - Village Villas, Doha, Qatar
- Barwa Passivhaus Villa, Qatar
- Viva Bahriya Towers in Pearl, Qatar
- Luxurious Villa, Philadelphia, United States of America
- Apartment building, Lezhe, Albania
- 4 Residential complex (booked by Foreign Embassy), Tirana, Albania
- City Pearl, Destrict IX, Budapest, Hungary
- Silverbay, Siofok, Budapest, Hungary
- Szemesbay Resort, Balatonszemes, Hungary
- ZVK, Office and residential building, Destrict XIV, Hungary



- Residential complex, Ireland
- Luxurious Villa, Amsterdam, Netherlands
- Alia Apartments, Budapest, Romania
- Green Lake Residences, Bucharest, Romania
- Monaco Towers, Bucharest, Romania
- Vile Curtea Domneasca, Bucharest, Romania
- West Park, Bucharest, Romania
- Skyline Towers, Belgrade, Serbia
- Houses, Housing Complex, Uppsala, Sweden
- Alidona, Residential Complex, Cyprus
- ASHES A&B, Cyprus
- Ayia Napa Marina, Cyprus
- Blue Rif Apartment building, Limassol, Cyprus
- Carisa Alcyone, Five Storey Apartment Building, Cyprus

- Carisa Zenovia, Cyprus
- Emerald Elite Luxury Home, Agia Napa, Cyprus
- Neapolis Effeto, Residential Complex, Cyprus
- Pearl of Mackenzie, Building Complex, Cyprus
- Vasilis & Ismini, Luxury Villas, Larnaca, Cyprus
- Goulandris Villa, Porto Heli, Athens
- Social Housing, Tavros, Athens
- Social Housing, Agios Ioannis Renti, Athens
- Housing of earthquake victims Ano Liosia, Athens
- Luxury Villas at Pentelis 8, Ekali, Attica
- ELPEN Multi-Use Facility, Pikermi, Attica
- Student Accomodations, Zografou, Athens
- Luxury Villas 650 m2, Antiparos
- Esperides Villa, Residence complex, Koutouloufari, Heraklion, Iliia
- Luxury Villas, Kalamata
- Social Housing, Komotini
- Luxurious Villa of 2.500m<sup>2</sup>, Lefkada
- Destrict ΙΔ Costa Navarino, Messinia
- Destrict ΙΖΤ Costa Navarino, Messinia
- Luxurious residence 2.000m<sup>2</sup>, Mykonos
- Luxurious residence, Agios Ioannis Diakoftis, Mykonos
- Luxurious residence, Mykonos
- Residential Complex, Chinitza, Porto Cheli
- Residential complex, Samos
- Social Housing, Thessaloniki
- Housing Unit, Ministry for the Environment and Public Works, Thessaloniki
- Residential Complex, Thermi, Thessaloniki


**Hospitals**

- Magdi Yacoub, Global Heart Foundation, Cairo, Egypt
- Al Salam Hospital, Tripoli, Lebanon
- Al Arcoub Hospital, Tyre, Lebanon
- Medrar Medical Center, Lebanon
- Saint John Hospital, Jounieh, Lebanon
- HDF Hospital, Beirut, Lebanon
- Saint Charles Hospital, Beirut, Lebanon
- An - Najah National University Hospital, Ramallah, Palestine
- St. John Eye Hospital, Nablus, Palestine
- Dialysis Center, Doha, Qatar
- General Hospital, Trebinje, Bosnia
- ÉKC Hospital, Destrict XII, Budapest, Hungary
- General Hospital, Bitola, North Macedonia
- Zywiec Hospital, Privet Clinic, Poland
- General Hospital, Żywiec, Poland
- Health Center, Κέντρο Υγείας, Preševo, Serbia

- CCRI – Cyprus Cancer Research Institute, University Campus, Cyprus
- Mediterranean Hospital of Cyprus, Limassol, Cyprus
- Attica, Rehabilitation Centre, Magoula, Attica
- Mediterraneo Hospital, Glyfada, Athens
- 251 Air Force General Hospital, Athens
- NIMTS Medical Institution Military Shareholder Fund Hospital, Athens
- General Hospital of Athens “G. Gennimatas”, Athens
- General Hospital Asklepieio Voulas, Voula, Attica
- Evangelismos Athens General Hospital, Athens
- Penteli Children’s Hospital, Penteli, Attica
- Children’s Hospital “P. & A. Kyriakou”, Athens
- Konstantopoulou General Hospital, Nea Ionia, Athens
- KAT Attica General Hospital, Athens
- Sotiria Thoracic Diseases Hospital of Athens, Athens
- Thriasio General Hospital of Elefsina, Attica
- Aimodiagnosi MED, Diagnostic Center, N.Kifisia, Attica
- Euroclinic of Athens, Ampelokipoi, Athens
- IASO ICU for Adults, Marousi, Athens
- IATRIKO OF ATHENS - PSICHICO, Psychico, Athens
- IATROPOLIS Diagnostic Center, Halandri, Athens



- IATROPOLIS Diagnostic Center, Patisia, Athens
- IATROPOLIS Diagnostic Center Tatoi and Anagenniseos, Metamorfofi, Athens
- Marousi Medical Center, Marousi, Athens
- Peristeri Medical Center, Peristeri, Athens
- Metropolitan General Private Clinic, Piraeus, Athens
- Central Clinic of Athens, Athens
- «Hara», Center for People with Special Needs, Pallini, Athens
- IASO Maternity - Gynecology Hospital, Marousi, Athens
- MITERA, General, Maternity, Gynecological and Children’s Hospital, Marousi, Athens
- Athens Naval Hospital, Athens
- General Hospital of Chios
- Mental Health Center – General Hospital, Chania, Crete
- Venizelio Hospital, Heraklion, Crete
- General Hospital, Ierapetra, Crete
- Creta Inter Clinic, Private Clinic, Heraklion, Crete
- General Hospital of Igoumenitsa, Igoumenitsa
- General Hospital of Kavala, Kavala
- Hospital of Karpathos, Karpathos
- General Hospital, Lamia
- NIMTS Medical Institution Military Shareholder Fund Hospital, Lamia
- Vostanio General Hospital, Mytilene, Lesbos
- Medical Sea, Private Clinic, Ornos, Mykonos
- Olympion Private General Clinic, Patra
- General University Hospital of Patras, Patra



- General Hospital, Rhodes
- Elderly Care Center of Terpni Serres, Serres
- 424 Military Hospital, Thessaloniki
- Papanikolaou General Hospital, Thessaloniki
- European Interbalkan Medical Center, Thessaloniki
- Galinos, Private Clinic, Thessaloniki
- ARMONIA Recovery & Rehabilitation Center, Thessaloniki
- Genesis, Obstetric Clinic, Thessaloniki
- AHEPA University General Hospital, Thessaloniki
- Thessaloniki Psychiatric Hospital, Office building, Stavroupoli, Thessaloniki
- Panarkadiko General Hospital, Tripoli
- Elderly Care Center of Zante, Zante

**Educational Institutions**

- University of Galway, Ireland
- Aley Technical School, Lebanon
- Children Village, Tripoli, Lebanon
- School Al Salam Akkar / Akroum, Tripoli, Lebanon
- Palestine Ahlyi University, Bethlehem, Palestine
- An-Najah National University, College of Dentistry Clinics, Nablus, Palestine
- University of Malta, Msida, Malta
- Simplex, Data Center, Limassol, Cyprus
- University Facilities (Laboratories), Nicosia, Cyprus
- Arsakeia - Tositseia Schools, Ekali, Attica
- Deree College, Agia Paraskevi, Athens
- St’ Catherine’s British School College, Kifisia, Athens
- Saint Paul Delasalle School, Alimos, Athens
- Athens College, Psychico, Attica
- Nursery and Kindergarten School, Glyfada, Attica
- Nursery and Kindergarten School “Zouzounakia”, Crete
- Theodoropoulou Private School, Korakies Chanion, Crete
- University of Western Macedonia (UoWM), Grevena
- Public Primary School, Lechena, Ilias
- 1st Public Primary School Palama, Karditsa



- 3rd Public Primary School Palama, Karditsa
- Public School Tsanakleios, Komotini
- Technical High School (EPAL), Komotini
- Nursery and Kindergarten School, Kos
- Public Primary School, Milos
- Nursery and Kindergarten School, Nafplion
- Public Primary School, Kastanies, Orestiada
- Public Primary School, Thourio, Orestiada
- Hellenic Open University of Patra, Patra
- University of Patras, Patra
- School complex and Library, Domokos, Phthiotis
- High School building, Neo Monastiri, Domokos, Phthiotis
- Bioclimatic School Buildings of Ialysos, Afandou and Kremastis of Rhodes, Rhodes
- Public Primary School, Tycherio, Soufli
- American Farm School, Thessaloniki
- Faculty of Philosophy - AUTH, Thessaloniki
- Nursery and Kindergarten School, Lachana Str., Thessaloniki
- School complex, Kleanthous str., Thessaloniki
- Technical High School (EPAL), Volos
- Democritus University of Thrace (DUTH), Xanthi


**Airports**

- Shannon Airport, Galway & Limerick, Ireland
- Tenerife South–Reina Sofia Airport, Tenerife, Spain’s Canary Islands
- Aegean Simulator, El. Venizelos Airport, Athens
- Athens International Airport “El. Venizelos” (ATH), Athens
- MRO Station, B56 Building, (ATH) Athens International Airport
- Elefsina Military Airport, Athens
- Aktion International Airport (PVK), Aktion
- Chania International Airport “Ioannis Daskalogiannis” (CHQ), Crete

- New International Airport, Kasteli, Heraklion, Crete
- Chios National Airport “Omiros”, Chios
- Alexandria Heliport, Imathia
- Kavala Airport “Alexander the Great” (KVA), Kavala
- Kefalonia International Airport “Anna Pollatou” (EFL), Kefalonia
- Kos Island International Airport “Hippokrates” (KGS), Kos
- Airport of Mykonos (JMK), Mykonos
- Paros Airport (PAS), Paros
- Rhodes International Airport “Diagoras” (RHO), Rhodes
- Samos International Airport “Aristarchos o Samios” (SMI), Samos
- Skiathos International Airport “Alexandros Papadiamantis” (JSI), Skiathos
- Thessaloniki Airport Makedonia (SKG), Thessaloniki


**Industries**

- Esti Foods, Food Industry, New Jersey, USA
- HB Fuller - Adhesives, Sealants and Chemical products Industry, Giza, Egypt
- PepsiCo October Hub, Giza, Egypt
- Sumitomo, Electric Wiring Systems Industry, Ramadan Cairo, Egypt
- Nova Pharma, Pharmaceutical Industry, Sadat industrial City, Egypt
- Al Rabies, Feeds and Grains Food Industry, Hebron, Palestine
- Seniors, Food Industry, Jerusalem, Palestine
- Al Wafa, Plastic Industry, Hebron, Palestine
- Al-Mahareeq Investment Company, Hebron, Palestine
- Coficab, Cable Industry, Tunisia
- Coca Cola, Zagreb, Croatia
- AIRBUS Helicopter, Machinery parts manufacturer, Gyula, Hungary
- Cooper Vision, Contact lenses manufacturer, Gyál, Hungary
- Hell Factory, Energy Drinks, Szikso, Hungary
- LEGO Manufacturing, Nyíregyháza, Hungary
- Nestle, Food Industry, Bük, Hungary
- Rheinmetal, Automotive and arms manufacturer, Zalaegerszeg, Hungary
- Valeo, Electronic Systems Industry, Veszprém, Hungary
- Zollner Elektronik, Electronic Systems Industry, Vác, Hungary
- Allergan Pharmaceuticals, Pharmaceutical Industry, Dublin, Ireland
- Purely Plant, Pharmaceutical Industry of medical cannabis, North Macedonia
- Jaka Ohris, Pharmaceutical Industry of medical cannabis, North Macedonia
- Zito Luks (Elbisco Group), North Macedonia
- Lactalis MK, Milk and Dairy industry, Bitola, North Macedonia

- Nestle, Food Industry, Budapest, Poland
- RPK BIO Pharma, Pharmaceutical Industry, Portugal
- Vitalic, Pharmaceutical Industry, Portugal
- Coca Cola, Cyprus
- Frou - Frou, Biscuit Industry, Nicosia, Cyprus
- Apivita, Bioclimatic building, Markopoulos, Attica
- Adelco S.A., Pharmaceutical Company, Moschato, Athens
- BCF Plastic, Acharne, Attica
- ELPEN, Pharmaceutical Company, Spata, Attica
- Demo, Pharmaceutical Company, Agios Stefanos, Attica
- IASIS, Pharmaceutical Company, Koropi, Athens
- Uni-Pharma, Pharmaceutical Company, Athens
- Pharmazac, Pharmaceutical Company, Keratea, Athens
- Roche Hellas A.E., Pharmaceutical Company, Marousi, Athens



- Genepharm, Pharmaceutical Industry, Pallini, Athens
- Mandrekas Dairy S.A., Attica
- Nafpliotis Glass, Glazing Industry, Moschato, Attica
- NOVO Norbix, Pharmaceutical Company, Agia Paraskevi, Athens
- Philip Morris - Papastratos, Tobacco Industry, Aspropyrgos, Athens
- SYMETAL Aluminium Foil Factory, Mandra, Athens
- ION, Chocolate Factory, Koropi, Athens
- Dragées Hatziyiannakis factory, Piraeus, Attica
- Integrated Waste Management Units (IWMUs), Tripoli, Arcadia
- Mandrekas S.A., Milk and Dairy industry, Corinth
- Pelopack S.A., Packing Machinery & Materials, Glyfada, Corinth
- FULGOR - VIOHALCO, Electric cable manufacturer, Corinth
- Refrigeration and storage chambers, Corfu
- Public Power Plant - P.P.C. (D.E.I.), Heraklion, Crete
- Kremel S.A., Food Industry, Heraklion, Crete
- ELBISCO S.A., Food Industry, Chalkida, Euboea
- DAVOUTIS - MAVRIDOPOULOS SA., Fresh Meat maintenance, Ioannina
- Household Waste Treatment Unit of the Region of Epirus, Ioannina
- ZAGORI, Natural Mineral Water Bottling Company, Ioannina
- Ileiaki Elaourgia, Olive oil company, Epitalio, Ilea
- Hellenic Fertilizers and Chemicals Elfe S.A, Kavala
- 3P, Food Industry, Karditsa
- Thalassios Kosmos, Fish and SeaFood Refrigeration, Karditsa
- Tomas, Animal Food Production Industry, Karitsa, Katerini
- KOLIOS S.A., Milk Industry, Kilkis
- TORRE COOPERLAT, Ice Cream Industry, Kilkis
- ZINCOMETAL, General Steel Structures, Polikastro, Kilkis
- ELVIAL, Aluminium Manufacturer, Kilkis
- Ellassona Farm, Meat processing and packaging, Larissa

- Intercomm Foods S.A., Cannery Factory, Larissa
- Industrial and Entrepreneurial Area of Keratea, VIO.PA, Lavrio
- Lesvos Dairy, Lesvos
- Intermediate Waste Management Unit, Kallirroio, Messinia
- KPI KPI S.A., Dairy industry, Serres
- Gatidis Fresh S.A., Bakery and Patisserie Industry, Serres
- Biodiesel Production Plant, Nigrita, Serres



- ELECTROVAM S.A., Powder coating Service, Sindos, Thessaloniki
- Multy Foam S.A., Foam rubber producer, Themi, Thessaloniki
- Style Glass, Glass Industry, Industrial Area of Thessaloniki, Thessaloniki
- Tsakiris Family S.A., Food Industry, Neochorouda, Thessaloniki
- Biological wastewater treatment, Thessaloniki
- Goody's, Food industry, Sindos, Thessaloniki
- Titan Cement Co. S.A., Thessaloniki
- HERON I, Power Plant, Thiva
- HERON II VIOTIAS S.A., Power Plant, Thiva
- Mechanical and Biological Treatment plant (MBT), Thiva
- Demo, Pharmaceutical Company, Tripoli
- Stamos S.A., Unit of food, Volos
- SEKAP S.A., Tobacco Industry, Xanthi
- Thrace Greenhouses, Xanthi
- Thrace Plastic Pack SA, Plastic packaging industry, Xanthi

#### Packaging – Dry Aging

- Argo Merchants, Packaging plant and Preservation chambers, Dublin, Ireland
- Biokarpos S.A., Packaging plant, Argos
- PAPANAKIS, Cooling chambers of Dry Aging of Bananas, Crete
- Wonderplant, Tomato Hydroponics Greenhouse, Petrousa, Drama
- ANATOLI, Fruit packaging plant, Imathia
- ALKYON, Fruit packaging plants, Industrial Area of Kavala
- PYRGETOS S.A., Kiwi Maintenance and Packaging, Larissa
- Tsilili Distillery, Damasi, Larissa
- Escarcom, Processing of Frozen Fruits and Vegetables, Skydra, Pella
- PROTOFANOUSIS A.E., Fruit Preservation, Nea Efesos, Pieria
- Tokas Olymp Fruits, Packaging plant and Refrigeration Storage, Karitsa Pierias
- Aqua Trade, Fish and SeaFood Refrigeration, N. Michaniona, Thessaloniki
- BOURAKIS, Preservation chambers, Anchialos, Thessaloniki
- TSAKIRIS FAMILY S.A., Food Industry, Neochorouda, Thessaloniki
- Greenhouse, Lakia, Thessaloniki

#### Wineries & Breweries

- Analiontas Domain, Nicosia, Cyprus
- Vasileiadis Domain, Omodos, Cyprus
- Konstantinopoulos Winery (AMPELAKI), Marathia, Amaliada
- Kanakaris Winery, Aigio, Achaia
- Kintonis Winery, Aigio, Achaia
- Oinoforos Winery, Aigio, Achaia
- Beer Microbrewery, Chios
- Chios Distillery, Chios
- Papargyriou Estate, Kiato, Corinthia
- Charalampaki Estate, Heraklion, Crete
- Kostas Lazaridis Estate, Adriani, Drama
- Macedonian Brewery, Drama



- Techni Oinou (Wine Art) Estate, Drama
- Amyntaio Agricultural Cooperative Winery, Amyntaio, Florina
- Giannis Boutaris Winery, Amyntaio, Florina
- Ktima Alpha – Alpha Estate, Amyntaio, Florina
- Tsantiris Winery, Ano Proespera, Ilkaria
- Giannis Mpoutaris Winery, Naoussa Imathias
- Ampeloes Winery, Nea Peramos, Kavala
- Vivlia Chora Estate, Kokkinoxori, Kavala
- Dio Filoi Estate, Siatista, Kozani
- Zafeiraki Estate, Tyrnavos, Larissa
- Plomari ouzo, Distillery, Tirnavos, Larissa
- D. Migas Estate, Tyrnavos, Larissa
- Tsilili Distillery, Damasi, Larissa



- MELMAR Winery, Samothrace
- Santo Wines, Pyrgos, Santorini
- Vassaltis Winery, Vourvoulos, Santorini
- Boutaris Winery, Santorini
- Aslanis Estate, Nea Mixaniona, Thessaloniki
- Gerovassiliou Estate, Epanomi, Thessaloniki
- Kaveiros Winery, Thiva
- Vourvoukelis Estate, Avdira, Xanthi

#### Olympic Projects

- Athens Airport “El. Venizelos”, Spata, Attica
- Athens Metro, Athens
- Basketball & Fencing stadium facilities, Elliniko, Attica
- Baseball, Softball & Hokey Stadium Facilities, Elliniko, Attica
- Building facilities of the start of the Marathon road, Marathonas, Attica
- Indoor Gym of Gymnastics and Table Tennis, Galatsi, Attica
- Journalist's Village of the Municipality of Pallini, Athens
- Journalist's Village of the Municipality of Zografou, Athens
- Journalist's Village of the Municipality of Marousi, Athens
- Olympic village, Athens
- Olympic Rowing Center, Sxinias, Attica
- Olympian Press Center, Marousi, Attica
- Olympian Beach Volley Stadium, S.E.F., N. Faliro, Attica
- Peace and Friendship Stadium, N. Faliro, Attica
- Weightlifting Center, Nikaia, Attica



#### Building Facilities

- Al Wathba Stable Compound, Abu Dhabi, United Arab Emirates
- Camel Quarantine farm, Abu Dhabi
- Tent Majlis, Camel Farm, Abu Dhabi, United Arab Emirates
- Ministry of Housing, Bahrein
- Areeba, Office Building, Beirut, Lebanon
- DAMAC Tower by Versace, Lebanon
- Riva Building, Beirut, Lebanon
- Saida Mall, Sidon, Lebanon
- Nablus Town Hall, Nablus, Palestine
- Arwa Tower, Doha, Qatar
- Butj Al Mana Tower, Qatar
- Erkyah Mall Doha, Qatar
- Imam Abdul Wahhab Mosque, Qatar
- Kahramaa - Qatar General Electricity & Water Corporation (KM1) - Doha, Qatar
- Lexus showroom and Offices, Qatar
- Naval Base, Qatar
- Palace and Majlis, Palace, Qatar
- Qatar Main Electricity Building, Qatar
- Hellenic Embassy, Austria
- Rex Bank, Vienna, Austria
- Explosive materials warehouse, Korçë, Albania
- Mosque, Gjirokaster, Albania
- Intersport Store, Plovdiv, Bulgaria
- CTP Park, Industrial warehouses and logistics park, Szigetszentmiklós, Hungary



- Ministry of National Economy and Finance, Destrict I, Budapest, Hungary
- NAV Nyomozó Központ, Government Building, Destrict III, Budapest, Hungary
- National Athletics Centre, Budapest, Hungary
- Nemzeti Filmintézet, Arts organization, Fót, Hungary
- Park 22, Industrial warehouses and logistics park, Destrict XXII, Budapest, Hungary
- Tudósok Háza, House of Scientists, Destrict V, Hungary
- Prishtina Mall, Pristina, Kosovo
- Malta Currency Museum, Malta
- RPK Bio Pharma, Pharmaceutical Company, Portugal
- District heating, Brasov, Romania
- Airport City Belgrade, Office Complex, Belgrade, Serbia
- Army Base, Kiev, Ukraine
- District heating, Sofia, Bulgaria



- District heating, Manitoba, Canada
- District heating, Budapest, Hungary
- District heating, Futó Utca, Miskolc, Hungary
- District heating, Mór, Hungary
- District heating, MTK, Destrict XIV, Hungary
- District heating, Kiev, Ukraine
- Ayia Napa Marina, Cyprus
- Larnaca District Court, Larnaca, Cyprus
- Metropolis Mall, Larnaca, Cyprus
- Paphos District Court, Paphos, Cyprus
- Paralimni Marina, Paralimni, Cyprus
- Simplex, Data Center, Cyprus
- Summer orthodox camp, Cyprus
- Water Line Pegia, Paphos, Cyprus
- Konaki Mount Athos, Romanian skete of Great Lavra, Mount Athos
- Pantokratoros Monastery, Mount Athos
- Xenophontos Monastery, Mount Athos
- IPTO-ADMIE, Independent Power Transmission Operator, Kryoneri, Attica
- Royal Palace of Tatoi, Attica
- Hellenic Army Academy Evelpidon, Varis-Koropiou, Attica

- Disabled Care Center, Elliniko, Athens
- TEMES Group, Office Building, Athens
- Athens Heart, Shopping Mall, Athens
- Noval Property, Real Estate Investment Company, Marousi, Athens
- “City Plaza”, Mall, Glyfada, Athens
- Golden Union, Office Building, Athens
- Leroy Merlin Kifisou Ave., Athens
- Leroy Merlin Ampelokipoi, Athens
- Logistics Village, Elefsina, Athens
- Medi Jeunesse, Beauty Salon and Weightloss center, Marousi, Athens
- Metro Cash & Carry, Super Market, Agios Ioannis Renti, Athens
- M-MARITIME, Shipping Company Offices, Athens
- STANDALONE Restaurant, Asteras Vouliagmeni, Athens
- “The Mall”, Entertainment – Shopping Center of Marousi, Nerantziotissa, Athens
- Athens Conservatoire (Odeion Athinon), Attica
- Police Station, Paleo Faliro, Attica
- Ilioupolis Town Hall, Ilioupolis, Attica
- Chalandri Town Hall, Chalandri, Attica
- Athens Court, Athens
- Public Indoor Sports Hall, Moschato, Attica
- Municipal Swimming Pool, Koridallou, Attica
- Bioiatriki Stores, Athens
- Artillery Training Center, Avlona, Attica
- Hellenic Air Force Academy, Icarus Cadets, Tatoi, Athens
- Head Office of the Agricultural Bank of Greece, Syggrou Ave., Athens
- Penteliko Estate – Erithreas and Tatoi, Varimpompi, Athens
- Vailer Building – Administration Building of the Acropolis Museum, Athens
- Vass. Sofia 112 Building, Athens
- AUBERGE Office Building, Tatoi, Athens
- Eurobank Office Building, Neos Kosmos, Athens
- Ionian Chemicals S.A., Office building, Chalandri, Athens
- POLYECO S.A., Office Building, Piraeus, Attica



- PWC Office Building, Chalandri, Attica
- Terra Nord Office Building, Kifisia, Athens
- Wave – Prodea Office Building, Syggrou Ave., Athens
- Ethniki Asfalistikí Office Building, Syggrou Ave., Athens
- VIOPOL Factory Office Building, Schimatari, Athens
- Ethniki PANGAIA Office Building, Chrisospiliotissis, Athens
- Papastratos Office Building 1, Piraeus, Athens
- Papastratos Office Building 2, Piraeus, Athens
- Papastratos Office Building 3, Piraeus, Athens

- Lada 3, (DOL, Lambrakis Press Group), Athens
- EOF Building (National Organization for Medicines), Holargos, Athens
- OTE Estate Building, Marousi, Athens
- OTE TV Building, Kifisia, Athens
- OTE Headquarters, Telecommunications service provider, Marousi, Athens
- COSMOTE Center, N.Kifisia, Athens
- John S. Latsis Public Benefit Foundation, Pallas Athena Building, Kifisia, Athens
- Museum of Modern Art, Athens
- Goulandris Museum of Contemporary Art, Pangrati, Athens
- Goulandris Natural History Museum, Kifissia, Athens
- Piraeus Port Authority S.A., Attica
- Piraeus Tower, Piraeus, Attica
- Office Complex Nerantziotissa 115, Marousi, Athens
- Bank of Greece, Athens
- Ministry of Interior, Athens
- Tax offices, D.O.Y., Alexandroupolis



- Geothermal District Heating, Aristino, Alexandroupolis
- National Bank of Greece, Argos
- Happy Days Summer camp, Metamorfoosi, Chalkidiki
- Military Camp, Chios
- Motor Oil Site, Agioi Theodoroi, Corinth
- Golf Course Crete, Heraklion, Crete
- Aquarium “Thalassokosmos”, Heraklion, Crete
- Heraklion Cultural Center, Heraklion, Crete
- F.H.L. I. KIRIAKIDIS Marbles - Granites S.A., Office Building, Drama
- Elderly Care Unit, Chrisantheio, Petrousa, Drama
- Municipal Swimming Pool, Drama
- Central District Heating, Grevena
- International Olympic Academy Building, Ancient Olympia, Iliia
- Barbouni Restaurant, Costa Navarino, Kalamata
- Selecta Hellas, Floriculture Unit, Kavala
- Municipal Swimming Pool, Kavala
- Court House of Pieria, Katerini
- Ethniki Trapeza (National Bank), Komotini
- Indoor Sports Hall, Komotini
- Private District Heating Network, Kozani
- Kosmokinisi Live, Events Venue, Kozani
- Terranova, Clothing Store, Kozani
- District Courthouse, Larissa
- Elderly Care Unit, Plomari, Lesvos
- Navarino Bay, Construction Site, Pylos, Messenia



- Retirement Home, Missolonghi
- Agia Sofia Church, Mykonos
- “Nikolaos Samaras” Indoor Sports Hall, Orestiada
- AB Vassilopoulos Super Market Store, Patra
- Retail Park, Shopping Mall, Patra
- Paxi Port Authority, Paxi
- Alkmini, Elderly Care Unit, Terpni, Serres
- Indoor Gymnasium Pethelinos, Serres
- District Heating, T.E.I. Central Macedonia, Serres
- Attica Bank, Thessaloniki
- A K.T.E.O., Vehicle Inspection Centre, Thessaloniki
- “Mediterranean Cosmos”, Entertainment – Shopping Center, Thessaloniki
- Orfeas Sourotis, Sport facilities, Souroti, Thessaloniki
- Saint Lukas Orthodox Church, Souroti, Thessaloniki
- Saint George Orthodox Church, Melissochori, Thessaloniki
- Hondos Center Store, Thessaloniki
- Lancome, Office Building, Thessaloniki
- Mylos club, Thessaloniki
- Federation of Industries of Greece, Thessaloniki
- Permanent Non-Commissioned Army Officers School, Trikala
- Municipal Theater «Vangelis Papathanassiou», Volos

### Prefabricated Buildings

- Electricity interconnection terminal points of Attica – Crete
- DESFA S.A. Central region operation and maintenance station, Ampelia Farsalon, Larisa
- Refugee Hot Spot, Kos
- Refugee Hot Spot, Larissa
- Refugee Hot Spot, Thiva



# futureproof



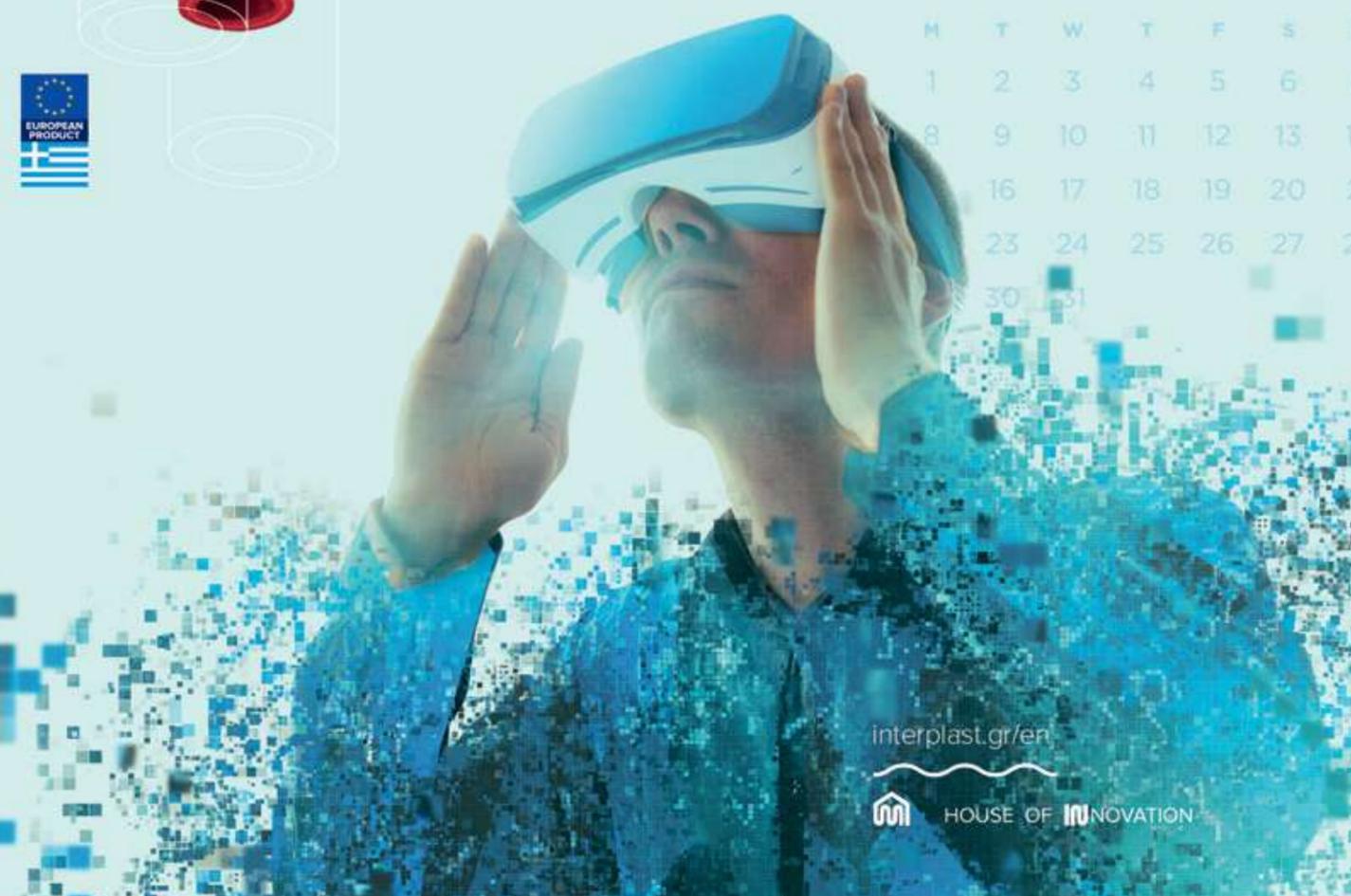
**Aquaplus**

PPR  
Pipes and fittings—  
Random



OCTOBER 2078

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
16	17	18	19	20	21	
23	24	25	26	27	28	
30	31					



interplast.gr/en

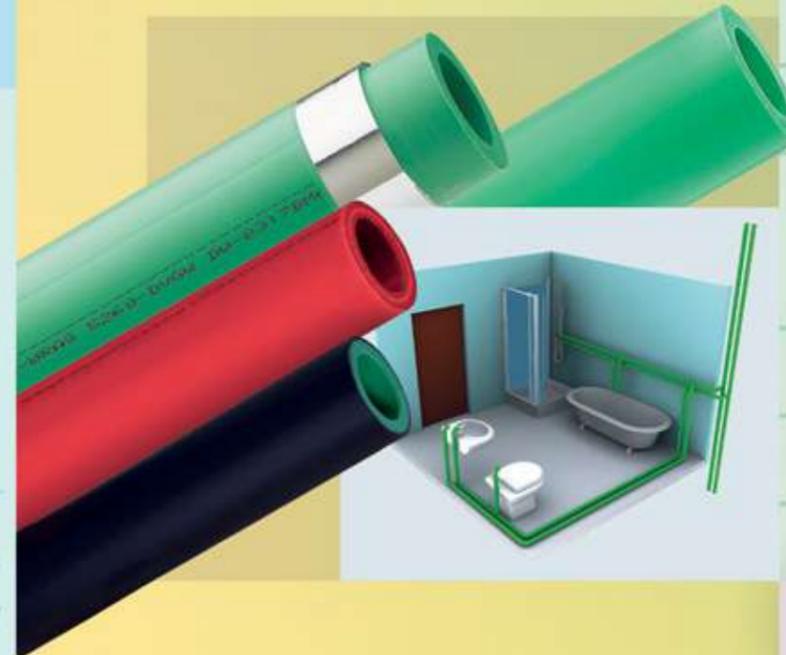


## Aquaplus PIPES & FITTINGS

The structure of the material and the smooth texture of the surface ensure low friction losses resulting in low resistance and low pressure drop in the piping. Furthermore, the material used presents a greatly reduced noise factor and restricted transmission of noise through the pipes.

Thus, plastic pipes of smaller cross-section can be used for the same quantity of water.

Aqua-Plus pipes are manufactured in diameters ranging from 20mm up to 125mm, in 4-meter straight lengths, and from 160mm up to 450mm in 5,8-meter straight lengths. There is also production capability 11.6-meter straight lengths.



## ADVANTAGES

- Pipes and fittings display high resistance to hydraulic shock (at pressures greater than 130 bar at ambient temperature).
- The lifespan of more than 50 years for temperatures of 20°C to 90°C and operating pressure of 6-26 bar, depending on the type of the material and the SDR of the pipes. Peak temperatures of 110°C at 4 bar operating pressure do not affect the Aqua-Plus system.
- Exceptional resistance to corrosion. Very good performance even in areas with very hard water.
- Low thermal conductivity makes it possible to reduce heat loss in the hot water networks.
- Reduction of thermal linear expansion in three-layer pipes that include aluminum or fiberglass.

## PP-R & PP-RCT PIPES

Interplast produces the below types of pipes which are responding to plumbing, heating, cooling for cold water up to -15°C and District heating up to +100°C.

- Aqua-Plus SDR 6 (PN 20) single layer pipes, PP-R 100.
- Aqua-Plus UV SDR 7,4 (PN 20) pipes, two layers, PP-R 125 with a special black covering for higher UV protection. \*Upon request with glass fiber.
- Aqua-Plus multilayer pipes with aluminum, SDR 7,4 (PN 20), PP-R 125. This type of pipe performs lower or equal linear expansions of 0,025mm/m/°C.
- Aqua-Plus multilayer pipes with glass fiber, SDR 7,4 (PN 20), PP-R 125.
- Aqua-Plus Clima multilayer pipes with glass fiber, SDR 11 (PN 16), PP-R 125.
- Aqua-Plus PP-RCT multilayer pipes with glass fiber, SDR 9 (PN 20). It is recommended for networks with very high water temperatures. Also PP-RCT offers high resistance to chlorinated water. Pipes are certified according to ASTM F2389 and NSF.
- Aqua-Plus PP-RCT multilayer pipes with glass fiber, SDR 17 (PN 12,5).
- Aqua-Plus Firefighter multilayer pipes with glass fiber, SDR 7,4 multilayer PP-R 125 for firefighting networks.
- Aqua-Plus OT five layer pipes with glass fiber, SDR 7,4 & 11 PP-R 125 with oxygen barrier layer.

Multilayer pipes with glass fiber perform lower or equal linear expansions of 0,030mm/m/°C.

For the above pipes raw material with special additives are used, giving worth to the whole system like UV Protection, Metal Deactivator etc.

The reduction of the pipe's wall thickness (SDR) must be followed by different raw material (PP-R or PP-RCT) or from different MRS (e.g  $\sigma = 8\text{Mpa}$  or  $\sigma = 12,5\text{Mpa}$ ).

Interplast has obtained certifications for every type of pipe as required by the European and American Regulations.

PP-R pipes are recommended as the first choice for their drinking water suitability by Greenpeace Organization.

## Lifespan Table

Temperature (°C)	Lifespan (years)	PP-R 100-SDR 6	PP-R 125-SDR 7,4	PP-RCT SDR 9	PP-R 125-SDR 11	PP-RCT SDR 17
		Operating pressure (bar)				
20	50	25,9	29,2	29	20,4	14,6
40	50	18,4	21,5	21,6	14,6	10,7
60	50	12,9	15,4	16,1	10,3	7,8
70	50	8,5	12,9	14	6,8	-
80	25	6,4	10,9	12,4	5,2	-

AquaplusPrins AquaplusClima  
 AquaplusAL AquaplusPP-RCT  
 FIREFIGHTER  
 AQUA PLUS  
 AquaplusOT AquaplusUV

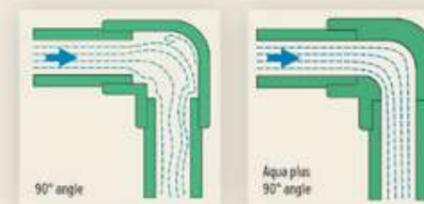


## TOTAL FLOW INDEX CERTIFIED FITTINGS Aqua-Plus PN 30

The Aqua-Plus fittings are amongst the few in the world that have ICC, MIRTEC and WRAS Certifications.



The fittings are manufactured in accordance with DIN 16962 from Polypropylene Random (Type 3) and available in diameters from 20mm up to 450 mm. For the production of the fittings the company uses raw material with a low melt flow index, identical to that of its pipes, so that the mechanical strength of the pipe does not differ from that of the fittings. They are produced with a wall thickness equivalent to 30 bars.



The considerable thickness of the walls of the PN 30 fittings allows us to design a better internal geometry of the fittings so as to considerably reduce the value of hydraulic losses and to improve the flow through the system.

For example, the local resistance coefficient ( $\zeta$ ) of the 90° elbow for the usual PN 20 fittings is 1.2 whereas for the PN 30 fittings is 0.9, i.e. 25% less. The fittings with high wall thickness are characterised as total flow while the fittings with small wall thickness as partial flow.



The brass parts (metal inserts) are reinforced, heavy-duty type and of low hardness (105 Brinell) thus eliminating the possibility of cracking, which is particularly common in fittings with female threading. They have cross-shaped grooves at the base of the brass insert so as to prevent torsion and consequent detachment of the metal from the plastic part.



Perimetric fitting retaining grooves, in which one side of the groove has negative declination, from the outside in, so as to retain the PP-R material and prevent detachment of the metal part from the plastic part in the presence of tensile forces.



The PP-R overlaps the male brass inserts on the inside. In this way the metal parts are isolated from the installation, and solid deposits and consequently reduced flow are prevented. Moreover, the system is protected against electrochemical corrosion.



For the heating-plumbing technician's convenience Interplast produces an intake with predefined connection distances for the bath battery allowing connection of the hot or cold water lines either from the floor or from the wall.

### Aqua-Plus Prins PRE-INSULATED SYSTEM

- ▶ The Aqua-Plus Prins system is insulated externally with uniform insulation of closed cell polyurethane.
- ▶ The foam of Polyurethane is fulfilled and actually over-exceeds the characteristics which are defined by the standards of EN 253.
- ▶ Casing pipe is made of ecological PVC which has better insulation properties and lower thermal expansions than PE.
- ▶ The system (ecological PVC, Polyurethane and PPR) is classified as B,s2,d0 according to EN 13501 (SBI) concerning the reaction on fire.

There is also production capability with HDPE case in 4m, 5,8m and 11,6 straight length.

The advantages of Aqua-Plus Prins compared to conventional insulation systems are:

- Reducing energy consumption up to 70%
- Zero maintenance for 50 years
- Lower thermal linear expansion than cooper
- UV protection
- Sparse and simple types of supports due to minimum thermal expansions and the minimum bend arrow of Pre-Insulated pipes
- Perfect system for underground and visible networks of hot and cold water
- Higher mechanical strengths
- Zero condensation

**Aquaplus  
 Prins**



## PROJECTS

Our steady growth puts Interplast in the first place in sales of plastic pipes for plumbing and heating for building establishments in the Greek market. At the same time, Interplast exports to more than 60 countries and our products have been installed in many highlighted projects throughout Europe, the Middle East, Africa and America. For us, our lead is shown by our participation in numerous constructions of hotels, hospitals, industrial applications, commercial shops and residential units.



Kuda Villingii Resort, Maldives



Skyline Tower, Beograd



The St. Regis Doha, Qatar



Grande Bretagne, Athens



Domains Biblia Chora, Kavala



Mayia Exclusive Resort & Spa, Rhodes



Sani Dunes, Chalkidiki



Atlantica Dreams Resort & Spa, Rhodes



Domes of Elounda, Crete



Radisson Blu Hotel, Larnaca, Cyprus



Installed Manifold, Aqua-Plus Prins in 5\* Hotel



Pre-Insulated Manifolds and Pipes, Aqua-Plus Prins in 5\* Hotel compound



Aqua-Plus Pipes & Aqua-Plus Prins in 5\* Hotel compound



## CERTIFICATIONS

Aqua-Plus pipes and fittings meet and exceed the specifications set by European & US Standards, the internationally accepted German DIN and the British BS standards. As a result Aqua-Plus does not present so much as a single failure in the regular biannual tests carried out by official institutes on random samples from production and the warehouse. The outcome of all the above is that Aqua-Plus has been certified as a final product by the following organizations:

TUV-EN ISO 9001:2015, ISO 14001:2015, ISO 50001:2015, EPD Sweden, MIRTEC Greece, WRAS/NSF Great Britain, ICC/ASTM USA, ICC/NSF USA, ICC/ANSI USA, NSF 372, SKZ Germany, FFI Germany, AENOR Spain, KIWA Netherlands, EMI Hungary, NNK Hungary, OKF Hungary, National research center Egypt, Housing & building national research center of Egypt and HZJZ Croatia,

### Fittings Certifications PN30:

ICC USA, NSF 372, MIRTEC Greece, WRAS Great Britain and HZJZ Croatia.



**Warranty: 10 years warranty with insurance covered by Generali, for an amount up to €5.000.000.**

**Triple Certification for the Environment and Energy Saving: EN ISO 14001: 2015, EN ISO 50001: 2018, EPD (Environmental Product Declaration)**



REDUCTION OF ENERGY LOSS  
UP TO **-70%**



**Aquaplus Prins**

PP-R 125 and PP-RCT  
Preinsulated system



# Upgrade the constructions

[interplast.gr/en](http://interplast.gr/en)

 HOUSE OF INNOVATION



Atlantica Aegean Blue 5\*, Rhodes



 HOUSE OF INNOVATION

Interplast with a passion for innovation, produces a complete and certified system of pre-insulated polypropylene pipes and fittings. Aqua-Plus Prins system constitutes a high-end technology insulation for industrial hydraulic applications. Aqua-Plus Prins ensures a certified and uninterrupted energy savings, elimination of linear expansions marking the beginning of the end to costly insulation maintenance and energy-intensive network operations, while the system resists on extreme weather conditions, corrosive chemicals, oxidation and fire.

#### PRODUCT DESCRIPTION

The system consists of a service pipe which is produced from polypropylene, PP-R 125 or PP-RCT. This is followed by a uniform layer of closed cell polyurethane insulation. The polyurethane foam exceeds the quality characteristics defined by the standard EN 253. Finally follows the outer casing (pipe) of modified polyvinyl chloride (M-PVC) or high density polyethylene (HDPE).

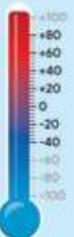
The casing M-PVC pipe meets the quality characteristics of EN 1329 with additional UV protection from sunlight.

#### PRODUCTION AND DELIVERY INFORMATION

The length of the pre-insulated pipes is 4m, available in diameters from Ø20mm to Ø125mm and in 5.8m, with range from Ø160mm to Ø450mm. It is possible to be produced in SDR 7,4 - 9 - 11 and 17, with or without fiberglass. Upon request, our company has the ability to produce pipes and fittings with casing pipe made by polyethylene HDPE in straight lengths of 4m, 5.8m and 11.6m.

#### SYSTEM OPERATION LIMITS

- Ambient temperature: -40°C to +80°C
- Inner fluid temperature for PP-R or PP-RCT pipes: -10°C to +100°C
- Thermal linear expansion coefficient for the PPR / PUR / M-PVC system: 0.016mm/mK



The system has been awarded with the Gold Medal of Innovation and the Silver Medal of Industrial Excellence by the Hellenic Academy of Marketing.

These distinctions are a justification of our company's efforts, which, since its establishment, constantly invests in scientists and state-of-the-art equipment which leads to innovation. This award does not belong only to us. It also belongs to all those who choose our products and support the efforts of our company throughout its years of operation, giving us the stigma of innovation and high quality products with respect for the people and the environment.



## ADVANTAGES

- Reduction of energy loss up to 70% compared to classic types of pipe insulation
- Zero maintenance
- Long service life
- Constant thermal resistance of the insulation over the years
- Guaranteed insulation quality
- Full coverage of the inner surfaces so that no gaps are left, condensation and air entrapment phenomena are avoided
- Resistance to extreme weather conditions (rain, snow, frost, etc.)
- Sparse and simple support due to the minimal expansion and the small bending of the insulated pipes
- Thermal linear expansion smaller than copper
- Increased mechanical strength
- Zero condensation
- Quick installation compared to conventional insulation application
- High resistance to external stress
- Waterproof material
- UV protection
- Fire resistance (B-s2, d0)
- Oxygen tight
- Insulation wall thickness compliant with ASHRAE standards
- Extremely fast payback of the investment
- Low weight
- High resistance to corrosion



## APPLICATION AREA

The Aqua-Plus Prins insulated system is suitable for:

- Underground networks
- Outdoor networks
- Indoor networks
- New constructions
- Reconstructions



Below, some of the system applications:

- Air conditioning networks and cooling towers
- Heating networks
- Transport of hot water & drinking water installations
- District heating and cooling
- Underground hot and cold water networks
- Industrial refrigeration networks
- Networks in food industries etc.
- Networks in the shipbuilding industry
- Geothermal systems
- Chemical liquid networks
- Spas and swimming pools

## ANTI-FROST PROTECTION SYSTEM

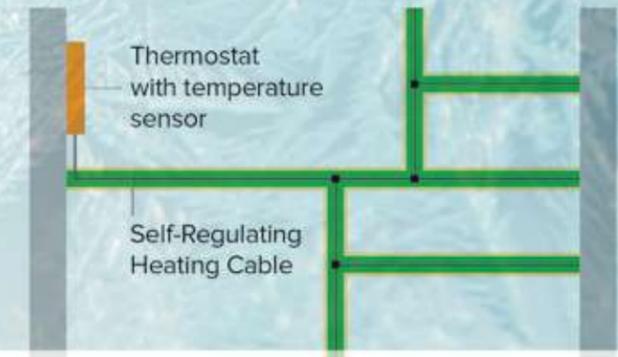
During the winter, extreme weather conditions may cause ice formation, even on pre-insulated pipes. Ice formation will result in the blockage of the pipe and in the worst scenario its failure, with the appearance of a leak. Repairing requires time and cost for the installer. The antifreeze protection system is an affordable and reliable solution which ensures both the integrity of the insulated pipes from low temperatures and the uninterrupted operation of the network of pipes and fittings for many years.

Antifreeze protection system offers:

- Elimination of the ice formation phenomenon
- Avoidance of Unpredictable repair costs
- Ensurement of continuous network flow even in extreme weather conditions



## ANTI-FROST PROTECTION SYSTEM



## LEAK DETECTION SYSTEM

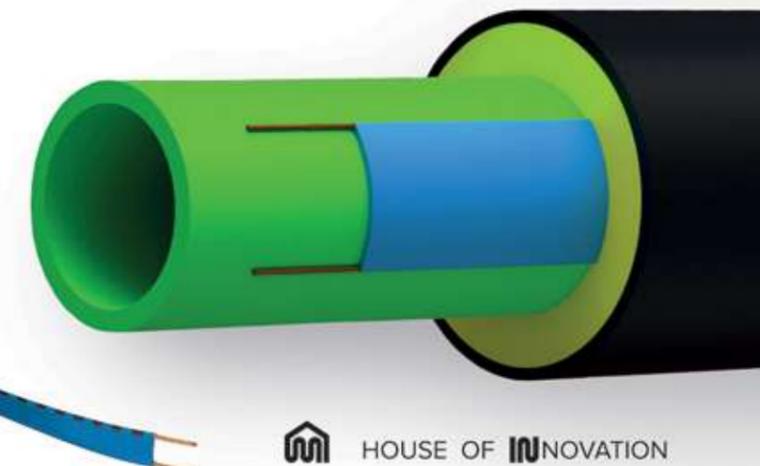
The pre-fabricated insulation of pipes offers multiple benefits to the hot and cold medium transportation networks. However, in insulated pipes, the occurrence of leakage in the main pipe is difficult to detect with emphasis on invisible underground networks. Even a small leak will cause deterioration of the insulating properties, high energy cost, damage and oxidation.

The solution to this problem is the installation of a leak detection system to pipe network. The leak detection system is a complete and reliable system for monitoring and control of piping networks, which finds its optimal application in insulated pipes where there is no direct visual contact with the main pipe. This system detects the presence of a leak and its exact location, with high accuracy.



The leak detection system achieves:

- Safe and smooth operation of the network
- Leakage detection and determination of its extent
- Detection of the location of the leakage
- Monitoring and control of the network, at any time, for the whole year
- Reduction of repair costs
- Remote access with a simple internet connection
- Remote control of the detection system
- Creation of data history
- Creating reports and analyzing results



## REFERENCE PROJECTS

The continuous improvement, innovation and high quality of Interplast products have ranked it in first place in Greece in terms of plastic piping networks in plumbing, heating and air conditioning.

At the same time, extroversion and export activity in 60 countries have resulted in the placement of the company's products at very important projects in Europe, America, Africa and the Middle East. A summary of some of the most important projects, in which the system of insulated pipes and fittings Aqua-Plus Prins of Interplast has been installed, is briefly presented.



Mayia Exclusive Resort & Spa 5\*, Rhodes



Hyatt Regency 5\*, Thessaloniki



Agia Napa Marina, Cyprus



Kuda Villingili Resort 5\*, Maldives



Pristina Mall, Pristina



European Interbalkan Medical Center, Thessaloniki



Cyprus Cancer Research Institute



Hell Energy Drinks Industry, Hungary



Mykonos Airport (JMK), Greece



Deree College, Agia Paraskevi, Athens



Ktima Alpha, Amyntaio



MarBella Elix 5\*, Karavostasi, Greece



## CERTIFICATIONS

Interplast, established the strictest production control processes, in order to fulfill the new requirements concerning the wider upgrade of the buildings, energy saving and environmental protection. The company is certified according to the standards ISO 9001, ISO 14001, ISO 50001 and holds the crucially important Environmental Product Declaration (EPD) for the energy footprint of the Aqua-Plus system.

Aqua-Plus Prins pipes and fittings meet the standards set by international (ISO), European (EN), German (DIN), British (BS) and American (US). Interplast products are subject to periodic inspections by internationally certified institutes without the slightest production failure having been noted (or recorded).

The pre-insulated system Aqua-Plus Prins, along with service pipe certifications, has the following additional certifications and laboratory test reports:

- Hydraulic test at -10°C
- Thermal conductivity & energy losses
- Quality of polyurethane
- Linear expansion calculation
- Fire resistance
- Waterproofing of the joints process (jackets)
- Oxygen permeability

The wall thickness and insulation properties of the polyurethane meet the requirements of the American (ASHRAE), European (EN) and Greek (EERB) standards and regulations.

TUV-EN ISO 9001:2015, ISO 14001:2015,  
ISO 50001:2015, EPD Sweden



### Test / Certification Bodies - Audits:

EBETAM-MIRTEC Greece, ICC America, SKZ Germany, WRAS Great Britain, EMI Hungary, ISS Serbia, Aristotle University of Thessaloniki, National Technical University of Athens, KIWA Netherlands, FFI Germany.

### Certifications of Parts PN 30:

ICC America, SKZ Germany, EBETAM-MIRTEC Greece, WRAS Great Britain, EMI Hungary.

**Warranty:** 10-year warranty with insurance covered by Generali, for an amount up to €5.000.000.



**fireproof**

Fire Resistant Pipes and Fittings

# FIREFIGHTER PLUS



System approved by the Greek Fire Service

# FIREFIGHTER PLUS

**PLASTIC PIPES (GF) AND FITTINGS SYSTEM MADE OF HIGHLY FIRE-RESISTANT PP-R 125**

Interplast is offering a complete range of polypropylene pipes and fittings for firefighting systems, under the brand FireFighter Plus.

The pipe consists of three layers, where the intermediate layer is made of a special synthetic glassy material of high mechanical strength and superior fire resistance.

The system complies with the following standards: EN ISO 13501, EN ISO 12845, EN ISO 13823, EN ISO 11925, EN ISO 15874, EN 21003, NFPA 13, UL 1821, DVS 2207.

# fireproof

[interplast.gr/en](http://interplast.gr/en)

 HOUSE OF INNOVATION



- APPLICATIONS in
- Hotels
  - Shopping Malls
  - Residences
  - Car parks
  - Warehouses
  - Ships
  - Industry (as specified in the relevant EN standard)



Interplast uses state-of-the-art materials to offer a system that is difficult to ignite. During a fire, the FireFighter Plus system does not produce flammable particles, smoke or droplets that are harmful to the human body.

The system is classified as B - s1 - d0 according to EN 13501, achieving a great result for a polymer in conditions of fire.

“Designed for continuous operation of at least 50 years”

FIRE RESISTANCE CLASSIFICATION OF MATERIALS ACCORDING TO EN 13501 AND MAPPING TO DIN 4102

Instruction Sheet “Fire prevention – European classification of building products” 2017

European classification of building products

Building authority designation	DIN 4102	DIN EN 13501	Additional requirements		Building authority designation	DIN 4102	DIN EN 13501	Additional requirements	
			Smoke production	Flaming particles/droplets				Smoke production	Flaming particles/droplets
Non-combustible	A1	A1	no smoke	no drips/droplets	Difficult to ignite	B1	C - s1, d1	no smoke	limited drips/droplets
Non-combustible	A2	A2 - s1, d0	no smoke	no drips/droplets	Difficult to ignite	B1	C - s1, d2	no smoke	many drips/droplets
Difficult to ignite	B1	A2 - s1, d1	no smoke	limited drips/droplets	Difficult to ignite	B1	C - s2, d0	limited	no drips/droplets
Difficult to ignite	B1	A2 - s1, d2	no smoke	many drips/droplets	Difficult to ignite	B1	C - s2, d1	limited	limited drips/droplets
Difficult to ignite	B1	A2 - s2, d0	limited	no drips/droplets	Difficult to ignite	B1	C - s2, d2	limited	many drips/droplets
Difficult to ignite	B1	A2 - s2, d1	limited	limited drips/droplets	Difficult to ignite	B1	C - s3, d0	unlimited	no drips/droplets
Difficult to ignite	B1	A2 - s2, d2	limited	many drips/droplets	Difficult to ignite	B1	C - s3, d1	unlimited	limited drips/droplets
Difficult to ignite	B1	A2 - s3, d0	unlimited	no drips/droplets	Difficult to ignite	B1	C - s3, d2	unlimited	many drips/droplets
Difficult to ignite	B1	A2 - s3, d1	unlimited	limited drips/droplets	Normal combustibility	B2	D - s1, d0	no smoke	no drips/droplets
Difficult to ignite	B1	A2 - s3, d2	unlimited	many drips/droplets	Normal combustibility	B2	D - s1, d1	no smoke	limited drips/droplets
Difficult to ignite	B1	B - s1, d0	no smoke	no drips/droplets	Normal combustibility	B2	D - s1, d2	no smoke	many drips/droplets
Difficult to ignite	B1	B - s1, d1	no smoke	limited drips/droplets	Normal combustibility	B2	D - s2, d0	limited	no drips/droplets
Difficult to ignite	B1	B - s1, d2	no smoke	many drips/droplets	Normal combustibility	B2	D - s2, d1	limited	limited drips/droplets
Difficult to ignite	B1	B - s2, d0	limited	no drips/droplets	Normal combustibility	B2	D - s2, d2	limited	many drips/droplets
Difficult to ignite	B1	B - s2, d1	limited	limited drips/droplets	Normal combustibility	B2	D - s3, d0	unlimited	no drips/droplets
Difficult to ignite	B1	B - s2, d2	limited	many drips/droplets	Normal combustibility	B2	D - s3, d1	unlimited	limited drips/droplets
Difficult to ignite	B1	B - s3, d0	unlimited	no drips/droplets	Normal combustibility	B2	D - s3, d2	unlimited	many drips/droplets
Difficult to ignite	B1	B - s3, d1	unlimited	limited drips/droplets	Normal combustibility	B2	E	no smoke	no drips/droplets
Difficult to ignite	B1	B - s3, d2	unlimited	many drips/droplets	Normal combustibility	B2	F - d2	no smoke	many drips/droplets
Difficult to ignite	B1	C - s1, d0	no smoke	no drips/droplets	Easily ignited	B3	F	no smoke	many drips/droplets

The following conditions apply at the NürnbergMesse site (acc. to DIN EN 13501):

- unrestricted approval
- approved up to 2.50 m wall construction/not approved over people (d1)
- not approved (D, E, F, s3 or d2)

Key to building product classes: to DIN 4102

A1 = non-combustible (without combustible components)  
A2 = non-combustible (with combustible components to a minor extent)

B1 = difficult to ignite  
B2 = normal combustibility  
B3 = easily ignited

Key to building product classes: to DIN EN 13501

A1 = non-combustible (without combustible components)  
A2 = non-combustible (with combustible components to a minor extent)

B,C = difficult to ignite  
D,E = normal combustibility  
F = easily ignited

s1 = no/very little smoke production  
s2 = limited smoke production  
s3 = unlimited smoke production  
d0 = no drips/droplets  
d1 = limited drips/droplets  
d2 = many drips/droplets

ADVANTAGES

- System certified system by AENOR according to EN 13501
- Quick and easy installation
- There is no accumulation of residues due to corrosion, thus ensuring the trouble-free operation of the sprinklers
- Low weight
- Easy transport
- Reduced labour costs
- The piping does not have to be painted, unlike the corresponding metal pipes
- There is no corrosion
- Pipes and fittings are connected in the same way as the corresponding PP-R items. The welding equipment remains the same.
- Ideal for use in underground networks, even in shallow trenches

IMPORTANT NOTE

The only European product classification standard related to fire is EN 13501 (in accordance with the Greek fire protection - Presidential Decree 41/2018) which refers to flame propagation, emission of fumes and release of droplets. DIN 4102 or any other national standard of another country is not an acceptable standard for Greece and its classification is entirely different from the corresponding European standard.



FireFighter Plus has received an award by the Greek Marketing Academy for the period 2020-2021 as the most innovative product made in Greece. FireFighter Plus is a complete system for Low & Ordinary Hazard installations which ensures the smooth operation of fire extinguishing networks.

PROBLEMS RELATED TO METAL PIPING IN FIRE EXTINGUISHING INSTALLATIONS

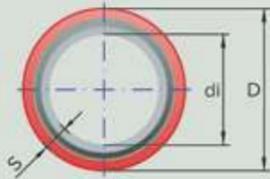


COMPARISON OF SYSTEMS INSTALLATION TIME

	Metal	Plastic
Connection method	Mechanical tightening	Autogenous welding
Required staff	At least 2 persons	1 person
Average installation time for 1 connection	10-20min	30s-2min



**AQUA-PLUS FIREFIGHTER PLUS (GF)  
PP-R 125 / SDR 7,4**



Pipe structure	Three-layered, with glass fiber (GF), highly fire-resistant
Pipe type	SDR 7,4 / S 3.2
Material	PP-R 125
Standards	EN ISO 15874 - EN ISO 21003 - EN 13501
Colour	Red
Length	Ø20-125 in straight sections of 4m & Ø160-200 in straight sections of 5.8m



External diameter D (mm)	Wall thickness S (mm)	Internal diameter Di (mm)	Water content (l/m)	Pipe weight (kg/m)	Packaging (m)
<b>SOCKET WELDING</b>					
20	2,8	14,4	0,163	0,173	100
25	3,5	18,0	0,254	0,27	80
32	4,4	23,2	0,423	0,433	60
40	5,5	29,0	0,660	0,674	40
50	6,9	36,2	1,029	1,050	16
63	8,6	45,8	1,647	1,650	12
75	10,3	54,4	2,323	2,348	8
90	12,3	65,4	3,358	3,363	4
110	15,1	79,8	4,999	5,023	4
125	17,1	90,8	6,472	6,479	4
160	21,9	116,2	10,605	16,465	5,8
200	27,4	145,2	16,559	25,599	5,8

**AENOR**  
Certificate of conformity  
Plastics

**AENOR**  
Certificate of conformity  
Plastics

**AENOR**  
Certificate of conformity  
Plastics

**Applus<sup>®</sup> laboratories**  
SIMPLIFIED TESTS REPORT

**System approved by the Greek Fire Service**

**CERTIFICATIONS**

FireFighter Plus pipes and fittings meet and even exceed the requirements set by European Norms. As a result, FireFighter plus has not presented a single failure in the regular six-monthly checks conducted by official Institutes and involving random specimens from the production area and the warehouse. Consequently, FireFighter Plus is certified or tested as a finished product by the following organisations:

ISO 9001:2015 by TÜV Germany,  
ISO 14001:2015, ISO 50001:2015

**Certifications - Tests:**  
AENOR, Afiti, Applus Spain, National Technical University of Athens.



**Warranty:**  
10-year warranty with insurance coverage by Generali for an amount of up to €5,000,000.





## Strength and durability



**ComoPex**

Pipes and Fittings  
for Plumbing – Heating



interplast.gr/en  
HOUSE OF INNOVATION

## CHARACTERISTICS

Pex pipes have been used safely and reliably for over 50 years worldwide. They are designed for a life span of more than 50 years, temperatures up to 95°C and operating pressures of 6 to 10 bar. Temperature peaks of 110°C at an operating pressure of 4 bar do not affect the pipes Como-Pex.

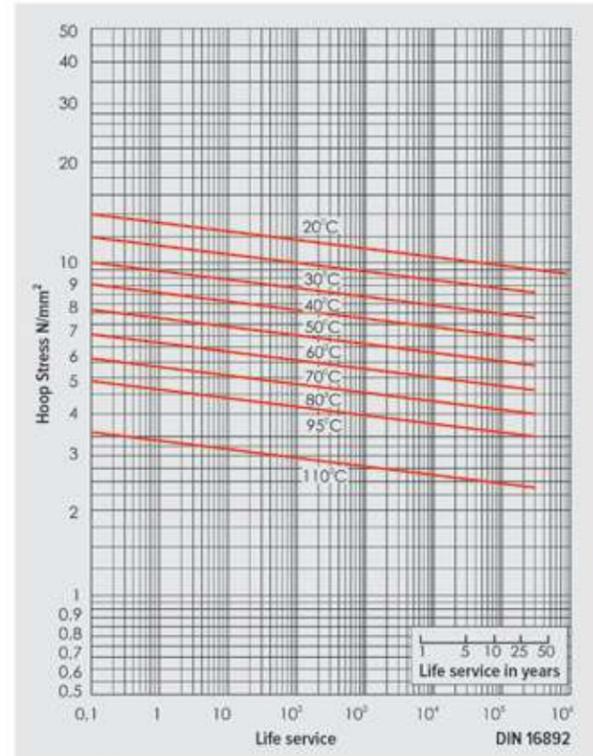
- ▶ Due to their cross-linking structure, the pipes have a **thermal memory** that allows them to return to their original form after thermal stress. Essentially, the internal structure of the material is affected by the form given during production.
- ▶ Como-Pex pipes exhibit excellent aging resistance combined with high pressure and temperature conditions. The service life diagram confirms the excellent performance when used in accordance with the manufacturer's specifications and instructions.

- ▶ Como-Pex pipes are durable, flexible and completely reliable for plumbing and heating applications.
- ▶ Como-Pex pipes produced with or without oxygen barrier meet and exceed European norm EN ISO 15875, the US standards ASTM F876, NSF 14/61 and German DIN 16892/16893.
- ▶ Pipes with oxygen barrier layer meet the requirements of DIN 4726. The EVOH outer layer does not allow oxygen to enter the pipe and corrode the metal parts of the system.

They are well designed for applications in heating, especially underfloor heating installations, where the length of the circuits of the pipes requires their use. In case the pipe does not have oxygen barrier, the heat exchanger is required in order to avoid oxygen corrosion.

Shelf life of tube by a factor of 1.5

Temperature (°C)	Life span (years)	Pressure (bar)	Safety factor
20	50	19,5	1,5
60	50	13	1,5
90	50	9,6	1,5
95	50	8,2	1,5



## TOP EUROPEAN QUALITY

Research is a sector which Interplast company invests. An important part of this is the **Thermal Cycling Tester** apparatus, which confirms the high quality of our products.

Where all systems are certified in the most demanding conditions. In the thermal cycling tester apparatus, pipes and fittings stress at constant pressure 6 bar, at temperatures of 20°C & 95°C, which change every 15 minutes.

This is repeated 5.000 times in a 15 minute duration, which means 52 days.

There is no equivalent equipment in any other company in the Balkans.

Due to modern laboratory equipment and research and development, Interplast uses special additives that give significant properties to Como-Pex pipes as shown in the table below.

Dimensions	Temperature (°C)	Test duration (h)	Test pressure according to regulations (bar)	Test pressure Como-Pex (bar)
16"2,0	20	1	34,29	60
	95	1000	12,57	15,71
18"2,5	20	1	38,71	67,74
	95	1000	14,19	17,74

## CROSS-LINKING METHODS – ADVANTAGES OF PEX-B PIPES

The most common cross-linking methods used in industrial production are **Pex-a** method (peroxides), **Pex-b** (silanes) and **Pex-c** (radiation).

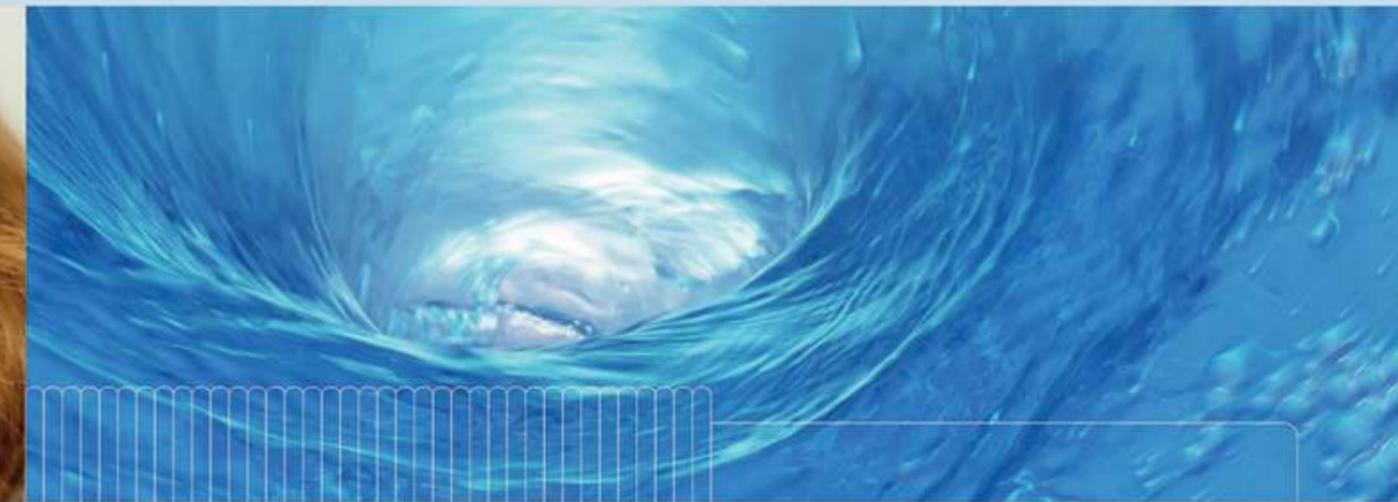
All the aforementioned methods achieve the same results in PE-X pipes and meet the **DIN 16892/16893** and the recent European **EN ISO 15875-1/2** standards.

The **Como-Pex** pipes of Interplast are produced using the **-b** method. It is a method that has managed to improve the characteristics of Pex pipes. The production method of Pex-b pipes was discovered in the laboratories of Sioplast in 1970. It had an

initial cross-linking degree of 65%, which increased over time and reached about 80%, in contrast to the degrees of the other two methods (Pex-c & Pex-a) that stop at 60% and 70% respectively.

It is considered to be the **best cross-linking method** for many reasons, but mainly due to its fully three-dimensional dense networking structure and its high chemical resistance to chlorinated water because of its sufficient amounts of antioxidant additives in its material.

For these reasons, it is used by most manufacturers of PEX pipes worldwide.



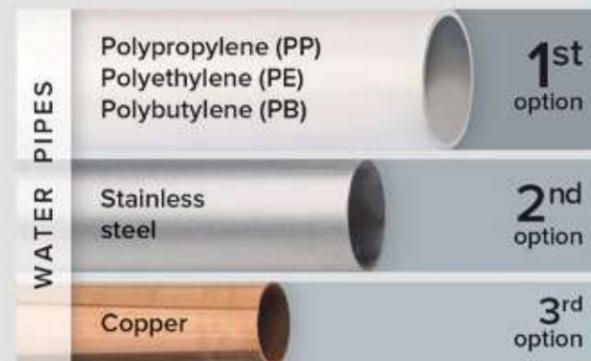
## PERFORMANCE OF POLYTHELYNE MATERIAL IN DRINKING WATER

PE is a material that **does not react with water or its components** (completely inert), does not extract any chemical that can harm the quality of the water, does not develop on its surface any microbiological or bacterial substances, **does not corrode from any chemical agents, cement, lime or acid waters** and has very low roughness (mean surface anomalies in mm), resulting in that the pipes and fittings are protected against damages caused by the friction of water with the inner walls of the pipes, while the pressure drop coefficients remain very low.

For all the aforementioned reasons, Greenpeace, as shown in the following table, and other relevant environmental non-governmental organizations, propose specific types of plastic pipe for water systems in buildings because they have low energy charges, provide clean drinking water without harmful substances, while not having the problems of

metal corrosion. They ideally propose as the first alternatives for plumbing, the use of plastic polypropylene pipes (PP), polyethylene pipes (PE) and polybutylene pipes (PB).

Indicative examples of choices in building products.



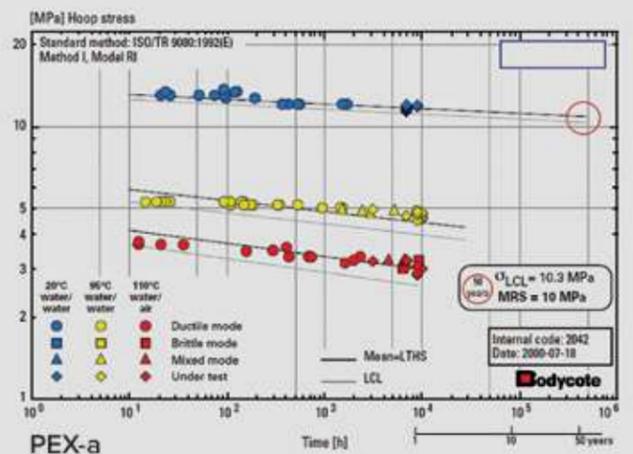
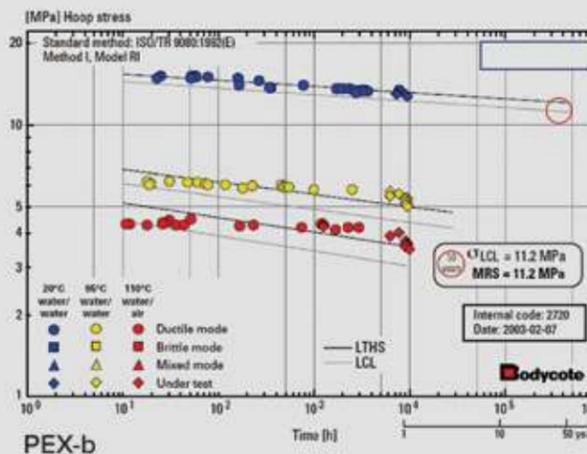
Source: Greenpeace, [www.greenpeace.org/greece/el](http://www.greenpeace.org/greece/el)

## PEX TUBES RESISTANCE

The following charts show the resistance to pressure of a **PEX-b** pipe and a **PEX-a** pipe in long term hydrostatic pressure tests conducted at the renowned Swedish Institute Bodycote Polymer. The prediction for the strength of the PEX-b pipe at 20°C for 50 years is 11.20MPa, while for the PEX-a pipe is 10.30 MPa.

At 95°C, the strengths are 4.20 MPa and 3.81 MPa respectively, whereas at 110°C 3.06 MPa and 2.60 MPa respectively.

The results show the clear superiority of the **Pex-b** pipe in pressure strength by 9% at 20°C, by 10.3% at 95°C and by 17.7% at 110°C compared to PEX-a pipe.



Source: Bodycote Polymers, [www.bodycote.com](http://www.bodycote.com)

## CONNECTION FITTINGS

Interplast is one of the few companies in Europe with vertically integrated productions and the sole company in Greece that manufactures all the components of the system while offering a guarantee on the entire heating-plumbing installation. The company's subsidiary ELVIOM S.A. manufactures brass fittings for the Como-Pex system.

### Regulating bar manifolds (with PTFE sealing)

The manifolds are manufactured of brass bars compliant with the European norm EN 12167 and DIN 50930/6, which refer to the suitability of brass fittings for drinking water installations.

The mechanisms in the manifold are vertically placed therefore increasing the circuits and improving the flows.

Manifolds have a bar type mechanism. As the wheel turns only the valve moves, without the axis moving up and down and at the same time salt build-up is prevented. This prevents wear and tear of the O-ring of the axis.

The flow tests and the drawings of the pressure drop diagrams in the manifolds and the valves have been approved by the German Institute BAUMER.



### 105° Wall plate elbow

The 105° wall plate elbow facilitates the intervention by the installer in the event of replacement of the brass part or the entire pipe line.

By using the reducing sleeve in the lower part of the wall plate elbow, we prevent any "water dripping out" from the corrugated pipe in case of leakage.



### Brass bar manifold

The manifolds are manufactured of CW614N alloy copper profiles compliant with European standard EN 12167 and DIN 50930/6. They are manufactured in 3/4", 1" and 1 1/4" dimensions, from 2 to 12, 1/2" outlets.

The manifold's threading is constructed according to EN ISO 228. The product has low hardness so that it may be more resilient to mechanical stresses and stands out for its extra thick walls.



### Brass fittings

They are produced by high quality brass alloy and exceed German standards. Especially for fittings the final product is subject now for a second time to thermal processing, eliminating the stresses that have been developed during processing, thus nullifying the possibilities of season cracking and restoring the desirable hardness.



## CERTIFICATIONS

The Como-Pex pipes and fittings exceed the requirements come by European norms, worldwide accepted US ASTM, German standards DIN, Spanish UNE and British BS. As a result, the pipes do not fail to meet the regular half-yearly audits carried out by official institutes that deal with random samples of production and storage.

Because of the above the pipes are certified or tested as end products by the following organizations:

ISO 9001:2015 from TÜV Germany.

(Company QA Certificate)

ISO 14001:2015, ISO 50001:2015.

MIRTEC Greece, ICC USA, SKZ Germany, CSA Canada, KIWA Netherlands, MPA-NRW Germany for the permeability of oxygen.

State General Laboratory, US NSF, WRAS United Kingdom, ZIK Croatia, PCT Russia, for the suitability of pipes in contact with drinking water.

30 years guarantee for pipe and 10 years for brass fittings for tightness the connections, covered by insurance company Generali for an amount of money up to €5.000.000.



ComoPex



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**5 layer!**  
Strength and durability

Como-PexAlPex Insulated UV Protected

Como-PexAlPex Insulated UV Protected

NEW  
PRODUCT

**ComoPex**  
ALpex

## Pipes and Fittings for Sanitary-Heating

**Como PexALPex** is an innovative pipe able to respond mainly to the distribution of hot and cold drinking water, heating and cooling systems, compressed air installations, industrial installations and various other applications, whose conditions are **harmonized with the corresponding** European and Greek regulations such as EN 21003 and EN 15875.

**Como PexALPex five-layer pipes** combine the advantages of synthetic materials and especially cross-linked polyethylene, such as resistance to high temperatures, reduced friction, resistance to oxidizing effects, resistance to various corrosive chemicals and suitability for sanitary applications, together with the advantages of aluminium, such as retention of the desired shape after bending, impermeability to oxygen and low thermal expansion.

The result is a product consisting of different layers of materials that, **when connected together, acquire improved properties compared to classic metal pipes.**

Interplast's experience in PE-X pipes, the stability of the respective suppliers and its choice of premium raw materials, its long-term specialization in multilayer pipes of large cross-sections combined with the know-how of the subsidiary ELVIOM brass industry, guarantee a product that will contribute to the upgrading of constructions.



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HOUSE OF INNOVATION

# Specifications

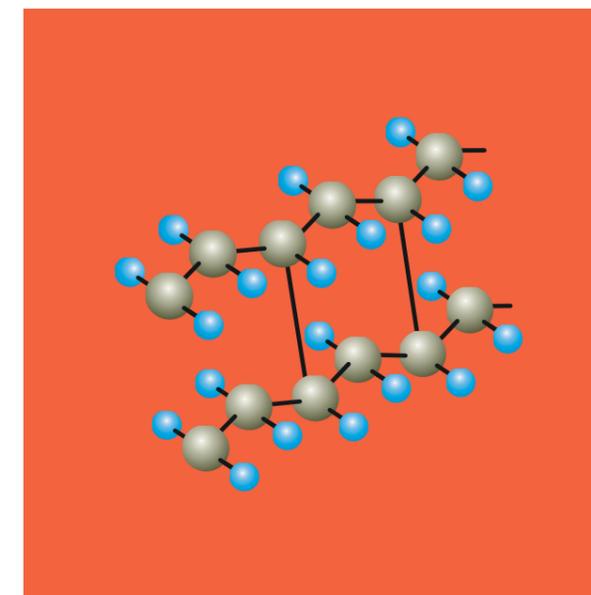
Material	Inner layer cross-linked Polyethylene Inner adhesive layer Aluminum layer Outer adhesive layer Outer layer cross-linked Polyethylene
Colour	White
Dimensions	16 ÷ 32mm
Field of applications	Hot and cold drinking water distribution, heating systems with classic heating elements, fan coils, compressed air distribution systems, industrial installations
Fittings	Mechanical wedging fittings, Mechanical compressing fittings
Thermal operating condition	+95°C / +100°C
Maximum pressure	+10bar
Density	> 0,948g/cm <sup>3</sup> (PE-Xb)
Softening temperature	135°C
Coefficient of linear expansion	0,026mm/m-K
Thermal conductivity	0,42 ÷ 0,52 W/m-K
Internal roughness	0,007mm
Oxygen transmittance	0mg/l
UV Protection	Yes, 5-years
Halogen level	Halogen free

# Pipe Layers

## Outer layer

Made of PE-Xb which provides mechanical, electrical and chemical protection of the aluminium layer from impacts, abrasions, cement and other substances contained in the ground.

In high-density polyethylene, double bonds are created, so that a large number of them are joined with silane molecules to form a homogeneous three-dimensional lattice structure of high molecular weight.



**PE-X naturally has excellent behaviour at high temperatures pressures, improved impact and chemical resistance as well as a very long-life cycle.**

## Intermediate layer

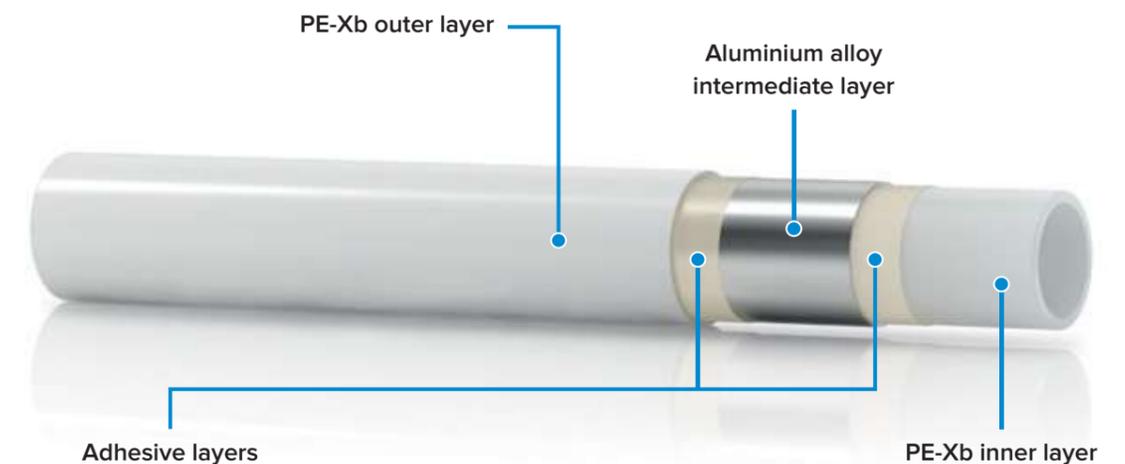
It is made of an **aluminium alloy, a complete oxygen barrier** providing excellent mechanical strength and flexibility during installation.

## Adhesive layers

An additive layer which contributes to the connection of the intermediate aluminium layer with the inner and outer PE-Xb layers.

## Inner layer

The inner pipe layer made of **PE-Xb (NSF-approved raw material), is approved for drinking water according to European and American regulations, which is binding with Interplast in the exports of Como Pex in the United States of America and Canada. PE-Xb material is characterized by an extremely smooth surface that reduces hydraulic resistance.**



# Properties

## Excellent thermal properties

They are designed for a lifetime of more than 50 years, at temperatures up to 95°C and operating pressures from 6 to 10bar. **Temperature peaks of 110°C at an operating pressure of 4bar.**

## Corrosion resistant

Como PexALPex pipes show excellent resistance to corrosion, even in areas where the water is in high mineral content, remaining unchanged over time. Unlike metal pipes, **they do not show any electrochemical corrosion.** Also, **the high velocity of the water does not cause damage to the inner surface.**

## Chemical resistance

The material is resistant to most chemicals, even at high temperatures. **Chemicals** that can cause deterioration, rupture of ordinary plastic pipes **do not affect Como PexALPex.**

## Mechanical strength

Como PexALPex pipes shows **high mechanical impact resistance.** For example, cross-linked polyethylene is used as a protective cover in bearings for transporting very sharp objects in hard metal industries.

## Low coefficient of friction

The material's structure and the smooth texture of the surface, ensure low hydraulic resistances **resulting in low resistance, and small pressure drop in the pipelines.** For this reason, water pumps of lower power and energy consumption can be used, compared to metal pipes.

## Flexibility and shape stability

The combination of cross-linked polyethylene and aluminium, guarantees excellent bending behaviour, so that **the pipe maintains the desired configuration after bending.**

## Thermal expansion

The thermal linear expansion is about 8 times lower than plastic pipes and is completely comparable to that of metal pipes.

## Low weight

The pipes are extremely light compared to metal pipes: their weight is 1/3 of copper pipe and 1/10 steel pipe.

## Soundproofing

**ComoPexALPex system works silently.** The properties of the plastic and the adhesive layers, prevent the transmission of waves and hydraulic hammer unlike metal pipes.

## Oxygen barrier

The aluminium layer is a permanent oxygen barrier, hence corrosion of the metal parts in closed heating and cooling systems is avoiding.

## Thermal conductivity

The thermal conductivity of the tube is 0.42-0.52 W/m-K, about 900 times lower than the copper. This is extremely important to ensure temperature losses. In addition, the insulation ensures water flow speed, up to 1m/sec.

## Clean and non-toxic

Como PexALPex does not contain toxic substances. Sanitary and toxic analyses, approved that it can be used for drinking water use. The pipes passed tests of official institutes (General State Chemistry, WRAS-NSF Great Britain) regarding taste, smell, growth of microorganisms, extraction of substances and metals of public health concern (cadmium, arsenic, etc.).

# Insulated pipe

**Como PexALPex pipes are factory covered with thermal insulation handles** and are suitable for all applications that require a high degree of insulation against condensation and energy loss combined. Additionally, they have a very easy installation procedure.

The characteristics of insulated pipe are:

► **It consists of 35kg/m<sup>3</sup> insulation density.** This fact, contributes definitely to saving energy and avoiding condensation.

► **The insulation is produced in a pre-formed cylindrical shape (tube).** Using special equipment to be cut, extruded, applied to the pipe and welded. Finally, the insulator is covered by a polyethylene protective film. **This method prevents the phenomenon of delamination at the joint point.** That is observed when the insulation is produced in horizontal plates, as a result (due to stresses) an opening at the welding seam. This is happening due to the "memory of initial form of the foam, resulting in the destruction of the insulation in various places.

► **The additional protective film, has a textured surface, and the extrusion of Polyethylene carried out from 8 points.** The final product is robust, durable and it fits tightly to the pipe, which is important for maintaining the original thermal insulation elements.

**Interplast, faithful to the principles of quality demanded by the technical world, inside the country and abroad, continues to detailed design of innovative products.**





Dry screed high efficiency  
Underfloor Heating and Cooling System



Decreased height  
Increased efficiency

[interplast.gr/en](http://interplast.gr/en)

 HOUSE OF INNOVATION

## ecoFloor PLUS SYSTEM

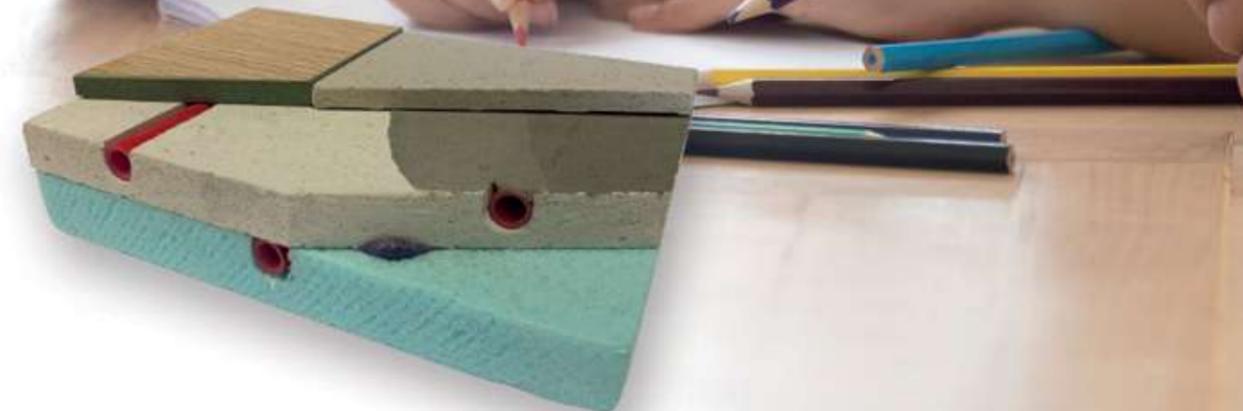
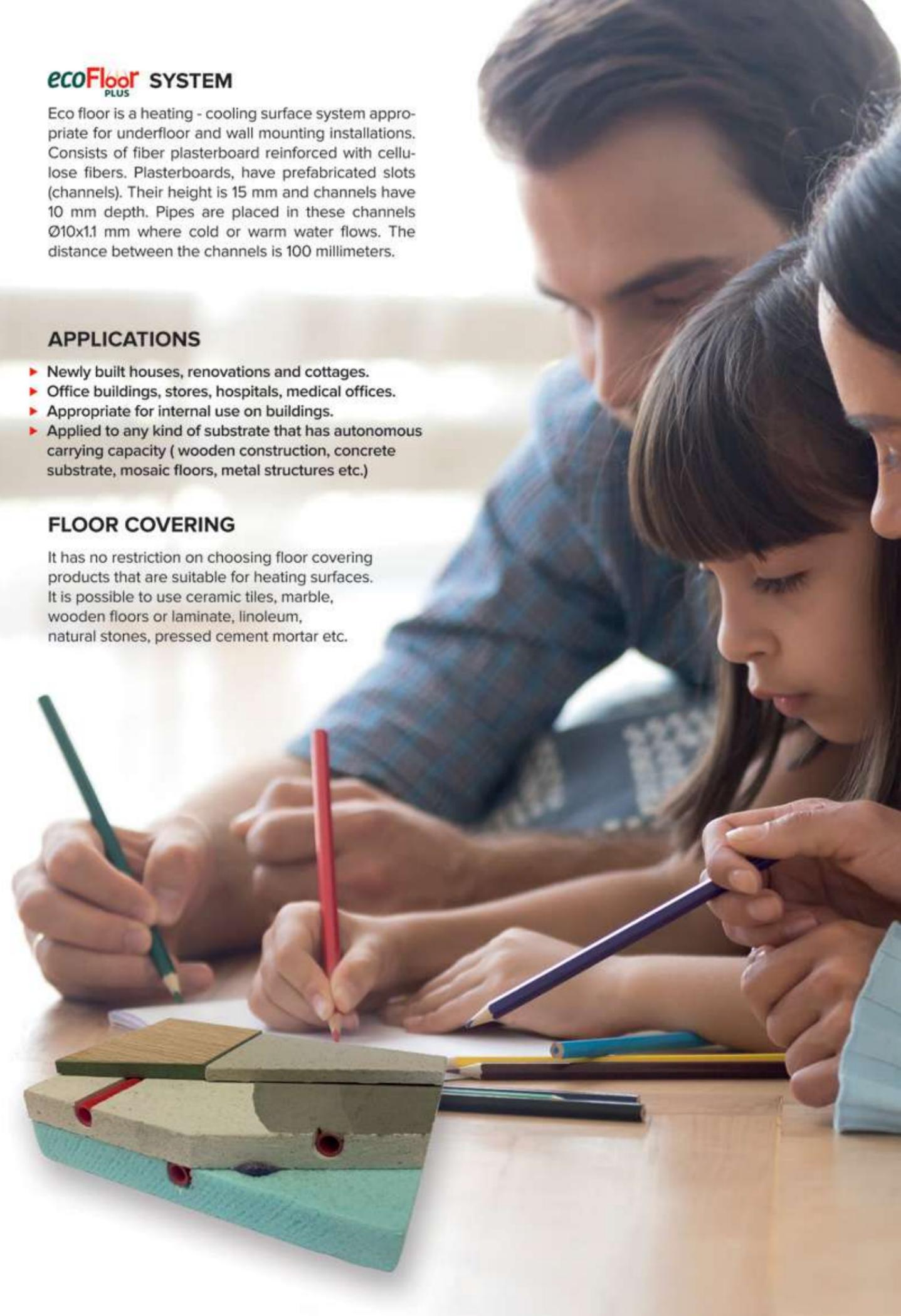
Eco floor is a heating - cooling surface system appropriate for underfloor and wall mounting installations. Consists of fiber plasterboard reinforced with cellulose fibers. Plasterboards, have prefabricated slots (channels). Their height is 15 mm and channels have 10 mm depth. Pipes are placed in these channels  $\varnothing 10 \times 1.1$  mm where cold or warm water flows. The distance between the channels is 100 millimeters.

### APPLICATIONS

- ▶ Newly built houses, renovations and cottages.
- ▶ Office buildings, stores, hospitals, medical offices.
- ▶ Appropriate for internal use on buildings.
- ▶ Applied to any kind of substrate that has autonomous carrying capacity ( wooden construction, concrete substrate, mosaic floors, metal structures etc.)

### FLOOR COVERING

It has no restriction on choosing floor covering products that are suitable for heating surfaces. It is possible to use ceramic tiles, marble, wooden floors or laminate, linoleum, natural stones, pressed cement mortar etc.



## PLASTERBOARD

Placing the gypsum fiberboard requires a flat surface, clean without any elevation differences. Its properties are different from those of structural gypsum board or cement board. **The new product is hydrophobic (water repellent), of high density and of high thermal conductivity.** Using common woodworking tools (jigsaw, router) it is easy to cut and shape the gypsum fiberboards.

Produced and tested in accordance with European specifications DIN EN 15823, EN 10456 and has ETA (European Technical Approval) certification. Interplast has five types of gypsum fiberboard. **15mm thick plate with knots, 15mm thick plate with notches (channels), 15mm thick plate with notches (channels) and turns (directions changes), 15mm thick plate without notches and 9mm thick plate without notches.**



## FULLMASSE

Mortar suitable for filling in voids, where no pipe is placed, as well as overlaying the gap between pipe and gypsum fiberboard.

It mechanically strengthens the gaps (grooves) and bridges the pipe with the fiberglass, effectively aiding the heat transfer.

Available in 25kg bags.  
It is mixed with water at a ratio of 10lt / 25kgr.  
Coverage 0.5kgr/m<sup>2</sup>.



## DISTRIBUTION MANIFOLD

**We use the same successful distribution manifold type as the classic system.**

In the inlet we connect 1" supply circuit nipple with thermometer and all 3/4" return nipples have thermometers for better and easier adjustment of the circuits. At each outlet of the collector (supply / return) we attach special brass mechanical clamping tee 'Y' (splitter) part, which has two Ø10 sockets.

The **distribution cabinet** is made of metal, suitable for built-in installations, made of 1mm thick galvanized steel and painted with electrostatic paint.

**It is adjustable in depth and height and has a removable frame.**

## BASIC SYSTEM COMPONENTS

**ComoFloor Ø 10x1,1 mm pipe**, which contains a special additive that doubles the thermal conductivity of tubes.

The new pipe was the result of **Interplast** research in collaboration with the **Aristotle University of Thessaloniki**, by whose report we are mentioning some of the pipe characteristics and the results of their use:

*Increased mechanical strength compared to the typical ones.*

*Increased Elasticity by 10%.*

*Excellent material homogenization.*

*Decrease of inertia phenomenon during the startup of the system.*

*More economic operation due to the double thermal conductivity of the pipes.*

## STUDY

As Aristotle said, **'well begun is half done'**.

For Interplast, the study of composite surface heating and cooling systems is of particular value. The accuracy of the calculations guarantees the combination of optimal efficiency and economical operation. The design of the system varies based on the geographical location, thermal insulation adequacy, possible specific requirements and geometry of the building.

**The energy applications department is staffed by specialized Mechanical Engineers with many years of experience.**

Ongoing updating and training on new materials and technology requirements lends a similar theoretical background to the department's human resources, enabling it to meet any requirements of the scholar partner and installer technician.

**Interplast using state-of-the-art technologies has been equipped with advanced calculation software for the new dry screed system, the results of which are absolutely accurate.**

## Thermal performance table for underfloor heating, dry screed

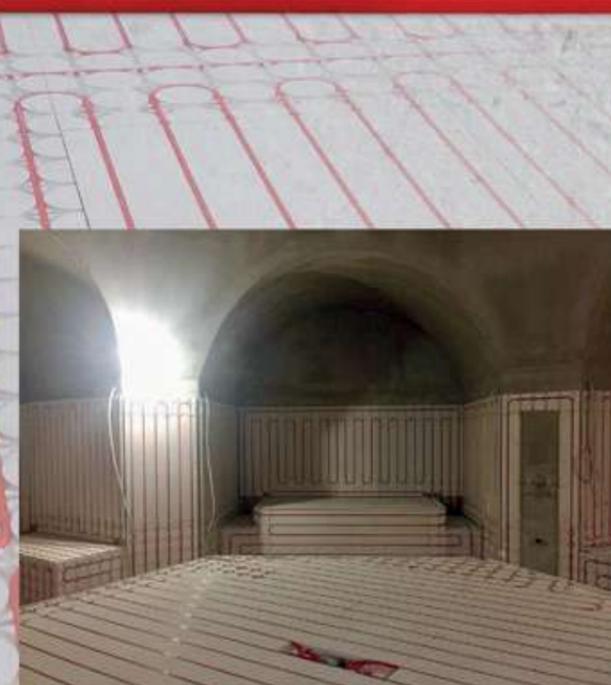
Thermal performance data were calculated by numerical simulations according to EN 15377.

Heat flow density and temperature limits according to EN1264.

■ Ta [°C] Room temperature  
■ Tw [°C] Inlet water temperature (add)  
■ Ts [°C] Temperature on the final floor surface  
 Temperature difference: Δt = 5°C, Pipe distance: 10cm, Gypsum board panel 15mm

Thermal resistance Coefficient		RλB=0,01m <sup>2</sup> *K/W	RλB=0,05m <sup>2</sup> *K/W	RλB=0,10m <sup>2</sup> *K/W	RλB=0,15m <sup>2</sup> *K/W	
Final Flooring		Ceramic Tiles	Parquet / Laminate (max 10mm)	Carpet or Parquet (Max 20mm)	Thick Carpet (max 10mm)	
Room Temperature		Ta	20°C	20°C	20°C	
System Thermal Power,	60W/m <sup>2</sup>	Tw	36,4	39,0	42,4	46,0
		Ts	25,6	25,7	25,7	25,7
Thermal Flowing Density q/A to w/m <sup>2</sup>	80W/m <sup>2</sup>	Tw	40,9	44,3	48,9	53,7
		Ts	27,4	27,4	27,3	27,3
	95W/m <sup>2</sup>	Tw	44,3	48,4	52,2	59,5
		Ts	28,6	28,6	28,2	28,6
	100W/m <sup>2</sup>	Tw	45,5	49,7	53,8	
		Ts	29,0	29,0	28,6	

Interplast S.A. - Como-Floor



## AUTOMATIONS

The control of the system is carried out through a stand-alone special equipment consisting of a **6-zone or a 8-zone digital control base, room thermostat, temperature/humidity sensors, and zone electric motor.**

The equipment is available in two types: wired and wireless at 24 / 230V respectively. All types have **self-diagnosis, pump control, cooling/heating switching, and source activation.**

**ecoFloor PLUS**

## ADVANTAGES

**System height from 4 to 6cm along with final flooring.** A key feature of the floor is the special gypsum fiberboards, produced under pressure from gypsum reinforced with cellulose fibers and specially treated with hydrophobic additives for high moisture resistance.

Ideal system for **insulating building floors from air-carried sounds.**

**Immediate heating distribution and elimination of inertia phenomenon.** Due to its low mass and excellent conductivity as a system (pipe - gypsum fiber-board) heats the space immediately.

**It warms up to 8% faster than classic radiators.**

**Total energy saving 20% compared to classic floor heating and 50% compared to radiators.** The new system achieves nearly the same performance per square meter as the conventional underfloor system, with approximately **60% less water mass** in its network.

**Low weight load.**

The weight of the new system without final floor is  $20\text{kg/m}^2$  compared to the conventional  $90\text{kg/m}^2$  system.

**Certified system performance**

with a constant coefficient of thermal conductivity that is not dependent on any other factor (e.g. thermal concrete).

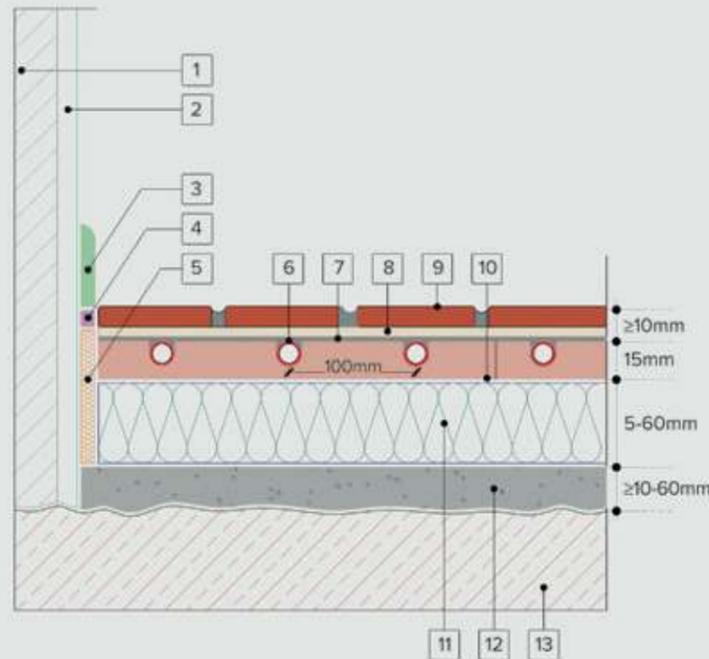
The new system does not require thermal concrete.

No drying procedure of the floor is required.

Low floor thermal expansion.

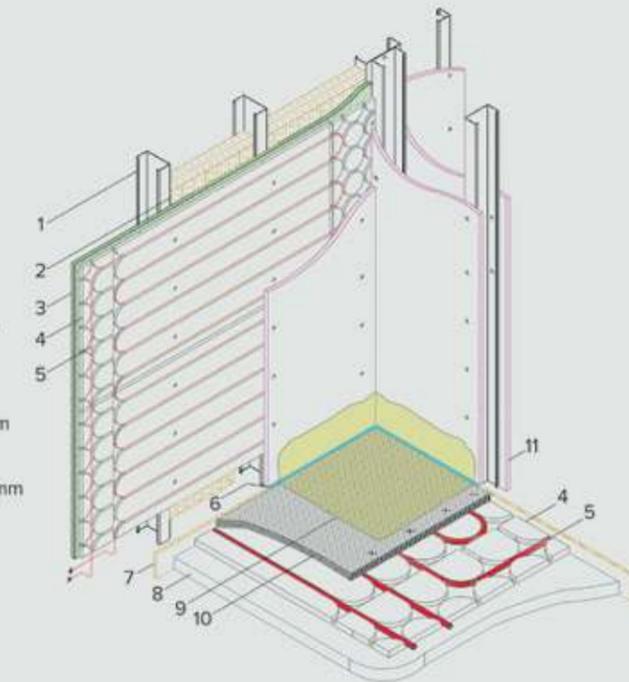
It is combined with all heat sources.

### EcoFloor Plus Floor Section Plan, Gypsum Fiber Board



- 1 Wall
- 2 Roughcast
- 3 Skirting board
- 4 Elastic grout
- 5 Perimetric insulation tape PE
- 6 Como Floor Pipe with Oxygen Barrier PE-Xb  $\varnothing 10 \times 1,1\text{mm}$
- 7 FullMasse
- 8 Tile adhesive
- 9 Ceramic Tile
- 10 Gypsum finer board 15mm
- 11 Thermal Insulation substrate EPS or XPS 200 (kPa)
- 12 Primer Eco Plus, self-leveling plaster
- 13 Reinforced concrete

### Heated Floor and Wall Section Plan Floor - wall sealer for bath areas



- 1 CW AQUAPROFIL pillar
- 2 NaturBoard KR POD 100
- 3 Hydrophobic gypsum board 1200x2500x125mm
- 4 Gypsum fiber board 15mm with notches
- 5 Como Floor Pipe with Oxygen Barrier PE-Xb  $\varnothing 10 \times 1,1\text{mm}$
- 6 Elastomer
- 7 Perimetric insulation tape PE
- 8 Thermal insulation substrate EPS or XPS 200 (kPa)
- 9 Roof sealant
- 10 Gypsum finer board 9mm without notches
- 11 Hydrophobic gypsum board or gypsum fiber board



## CERTIFICATES

Como-Floor pipes and fittings exceed the requirements set by European norms, the world-wide accepted German **DIN** standards and British **BS**.

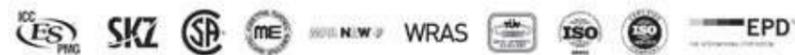
As a result, Como-Floor pipes do not fail to meet the regular biannual tests carried out by official institutes that deal with random samples from production and storage.

As a result, the pipes are certified as end products by the following organizations:

- **ISO 9001: 2015** by TÜV Germany, **ISO 14001:2015, ISO 50001:2015, EPD** Sweden.
- **EBETAM-MIRTEC** Greece, **ICC** America, **SKZ** Germany, **CSA** Canada.
- **MPA-NRW** Germany for oxygen permeation of pipes. **KIWA** Netherlands.
- **WRAS** Great Britain.

### Guarantee:

**30 years guarantee** for the pipe and 10 years for the brass fittings in terms of tightness of the connections, covered by Generali insurance company for an amount of up to **€5.000.000**.



**ecoFloor PLUS**

interplast.gr/en

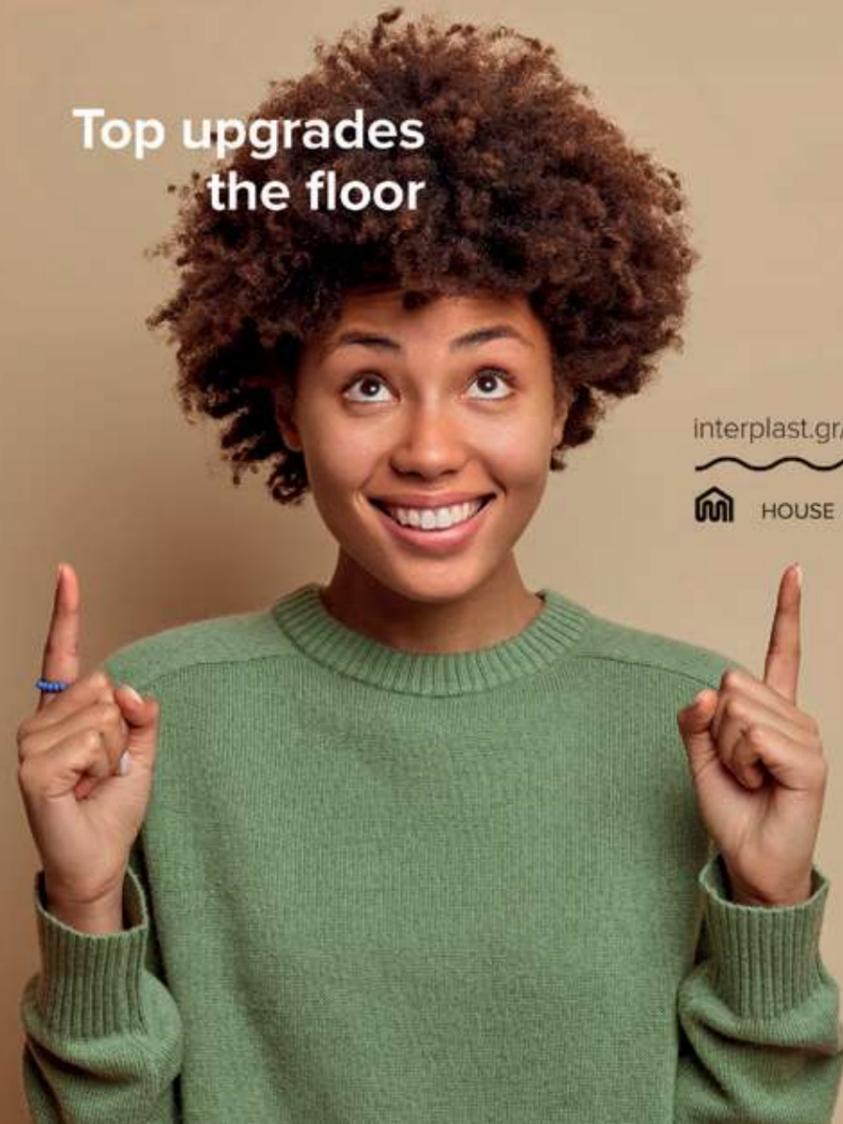


HOUSE OF INNOVATION



Radiant Ceiling  
Heating & Cooling  
System

Top upgrades  
the floor



[interplast.gr/en](http://interplast.gr/en)  
HOUSE OF INNOVATION



## THE **ecoTop** SYSTEM

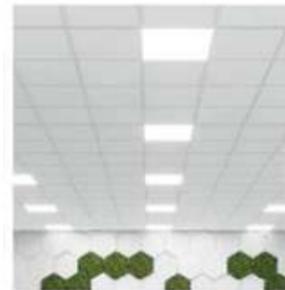
EcoTop is a surface heating and cooling system, dry type, suitable for installation on ceilings and walls. It consists of base plasterboards with prefabricated grooves. These grooves are used for the installation of the pipes in which hot or cold water circulates. Prefabricated insulation material is placed at points adjacent or in contact with the structural elements, behind the base plasterboards, as well as on their upper part. The final (visible) layer consists of a coverage-layout plasterboard. The entire system is suspended on the ceiling with a special metal support structure.



## APPLICATIONS

The new EcoTop system is suitable for:

- ▶ New constructions
- ▶ Renovations
- ▶ Holiday houses
- ▶ Office buildings
- ▶ Hotels
- ▶ Shops
- ▶ Hospitals - Clinics



## ADVANTAGES

- ▶ Energy savings
- ▶ High system performance
- ▶ Certified system performance with a constant thermal conductivity coefficient that does not depend on any other factor
- ▶ Rapid heating and cooling
- ▶ Reduced thermal inertia
- ▶ Ideal for new and existing buildings as no large-scale interventions are needed locally
- ▶ Low system height
- ▶ Heating and cooling system
- ▶ Quick and easy installation
- ▶ Uniform room temperature profile
- ▶ High thermal comfort
- ▶ Can be combined with all energy sources
- ▶ Low weight load



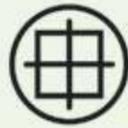
## KEY PARTS OF THE SYSTEM



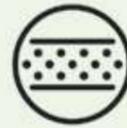
Interplast Manifold



Interplast Pex-B pipe with oxygen barrier



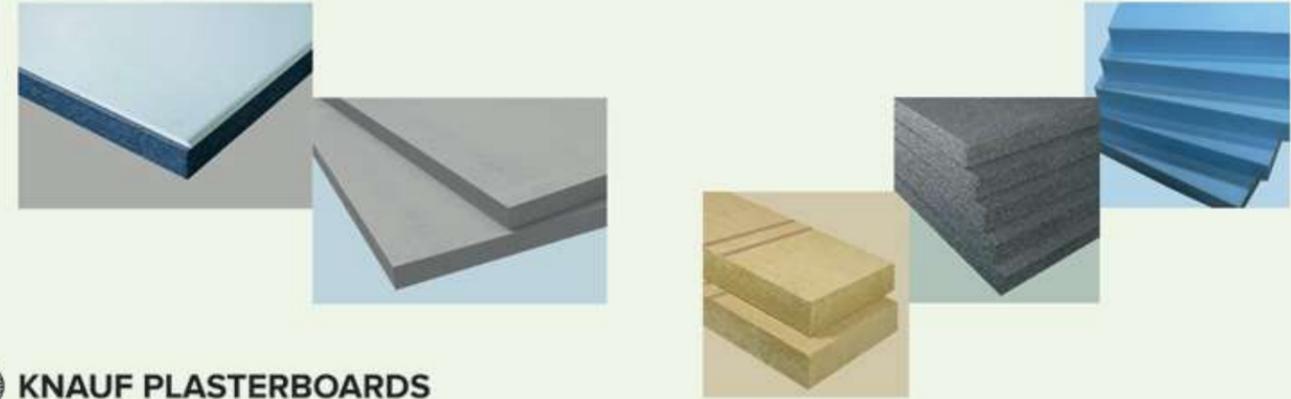
Metal support structure



Insulating material

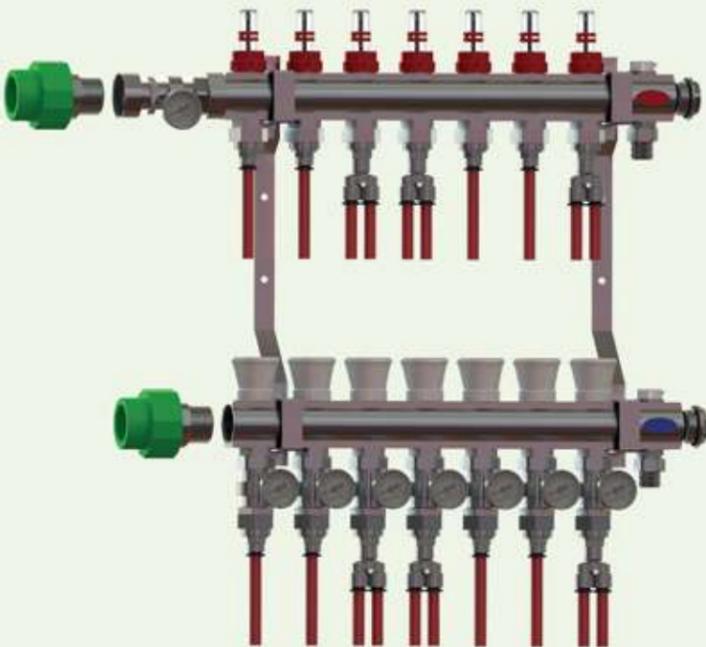


Knauf Base and coverage plasterboard



### COLLECTOR / DISTRIBUTOR MANIFOLD

The adjustment and independent operation of the hydraulic circuits is implemented using a collector / distributor pair which is manufactured in its entirety by Interplast and Elviom. The distributor is equipped with volumetric flow control valves, either flow meter type (0.1-5 lt/min) or Allen. The collector is equipped with shut-off and check valves (M30x1.5), suitable for the installation of a thermoelectric actuator. Specially designed protective cells are also available for the use of a mechanical or electronic thermometer, with the option to control the temperatures in each circuit separately. The metal parts of the manifold are made of a special brass alloy CW617N which is highly resistant to dezincification. Each pair can handle 2 to 24 hydraulic circuits and is equipped with a manual ventilator and a fill-discharge valve.



### PEX-B PIPE WITH OXYGEN BARRIER

The system uses a Ø10x1.1mm pipe with oxygen barrier which is produced by Interplast. The pipe contains a special additive that doubles its thermal conductivity. The new pipe was the result of a three-year research in cooperation with the Aristotle University of Thessaloniki. Certain characteristics of the pipes and results from their use are listed below, as stated in the relevant AUTH report:

- Increased mechanical strength of the pipes compared to conventional pipes
- 10% increase in elasticity
- 10% increased stress at the point of leakage
- Excellent homogenization of the material
- Reduced "inertia" effect upon system start-up
- More cost-effective operation of the facilities due to the doubling of the thermal conductivity of the pipes

The special additive is applied in the same way and with equal success to all polyolefin pipes when increased thermal conductivity is desired.



### METAL SUPPORT STRUCTURE

The system is suspended on the ceiling using a special metal support structure. The metal support structure consists of the suspenders and the main and secondary guides, which are placed at specific distances. The load category of the metal support structure is 0.3<p<0.5KN.



### KNAUF PLASTERBOARDS

The system uses special hydrophobic plasterboards manufactured by Knauf. The structure is built with base plasterboards, which have factory-made grooves where the pipe can be placed, and coverage plasterboards, which constitute the final layer of the heat exchanger complex.



### INSULATING MATERIAL

There are various insulating material options, depending on the requirements and the specifications of the space considered.

## DESIGN-PERFORMANCE DATA

Interplast assigns great value to the study of highly complex surface heating-cooling systems. Correct calculations guarantee a combination of optimal performance and cost-effective operation. The design of the systems is differentiated according to factors such as geographical location, thermal insulation adequacy, any special requirements, and the geometry of the building.

The energy applications department is staffed by specialised Mechanical Engineers with many years of experience. The continuous provision of updated information and training in line with the requirements of new materials and technologies ensures the proper theoretical background of the department's human resources, who are able to meet any requirement of the partner-designer and the installer-technician.

In order to exploit cutting-edge technologies, Interplast has acquired for its new heating systems an advanced calculation software that provides perfectly accurate results.

Thermal efficiency data have been calculated by numerical simulations according to EN 15377.

Thermal flow density and temperature limits have been calculated according to EN 1264.

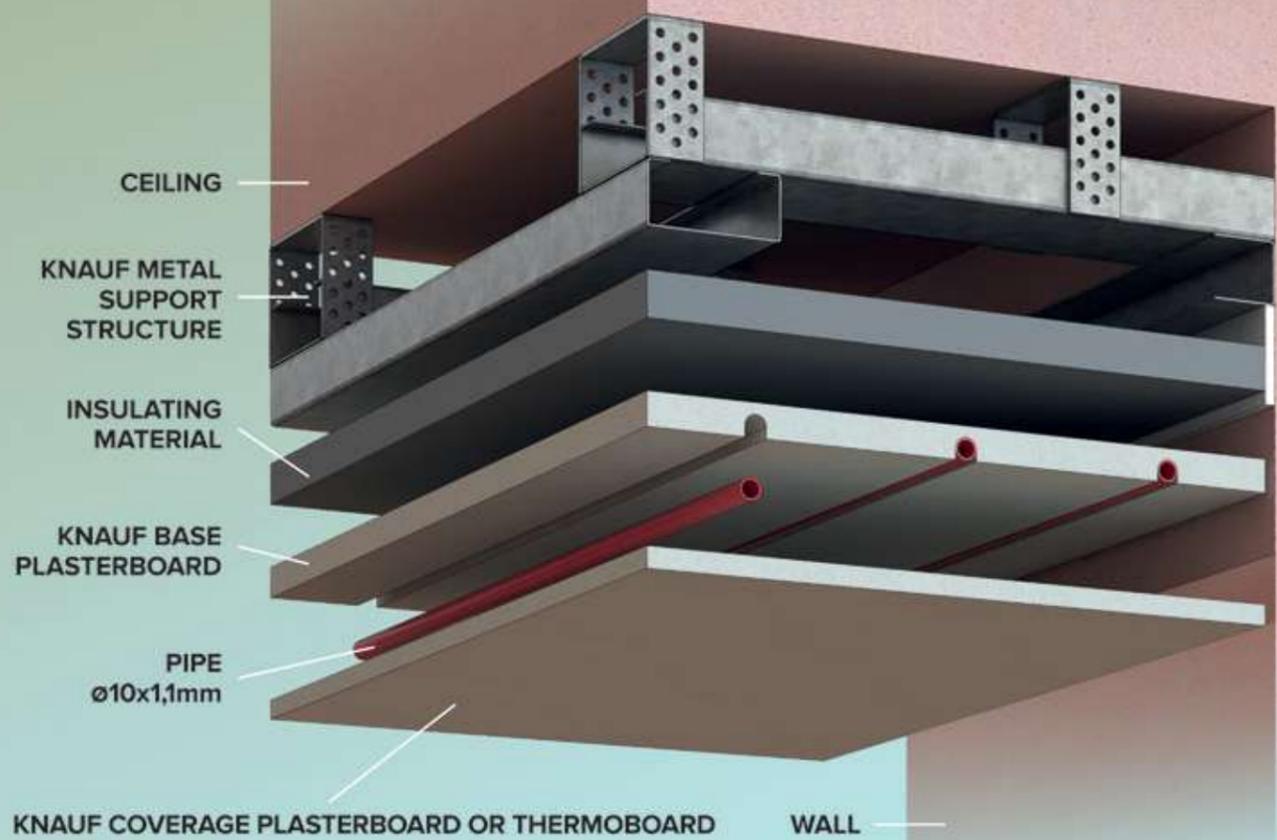
### Thermal Efficiency Table

Thermal Resistance Coefficient R (m <sup>2</sup> *K/W)		0,045	0,019
Ceiling Coating Material (mm)		Plasterboard 9,5	Thermoboard 10
Ambient Temperature (°C)		Ta	20
Thermal Efficiency of the System	60	Tw	37
		Ts	28,9
	70	Tw	39,5
		Ts	30,5
	80	Tw	42
		Ts	32
Density of Thermal Flow (W/m <sup>2</sup> )	90	Tw	44,4
		Ts	33,5
100	Tw	46,9	
	Ts	35,1	
110	Tw	49,4	
	Ts	36,7	

### Cooling Efficiency Table

Thermal Resistance Coefficient R (m <sup>2</sup> *K/W)		0,045	0,019
Ceiling Coating Material (mm)		Plasterboard 9,5	Thermoboard 10
Ambient Temperature (°C)		Ta	26
Cooling Efficiency of the System	40	Tw	17,4
		Ts	22,3
	45	Tw	16,4
		Ts	21,9
	50	Tw	15,3
		Ts	21,4
Density of Thermal Flow (W/m <sup>2</sup> )	55	Tw	14,3
		Ts	20,9
60	Tw	13,2	
	Ts	20,5	

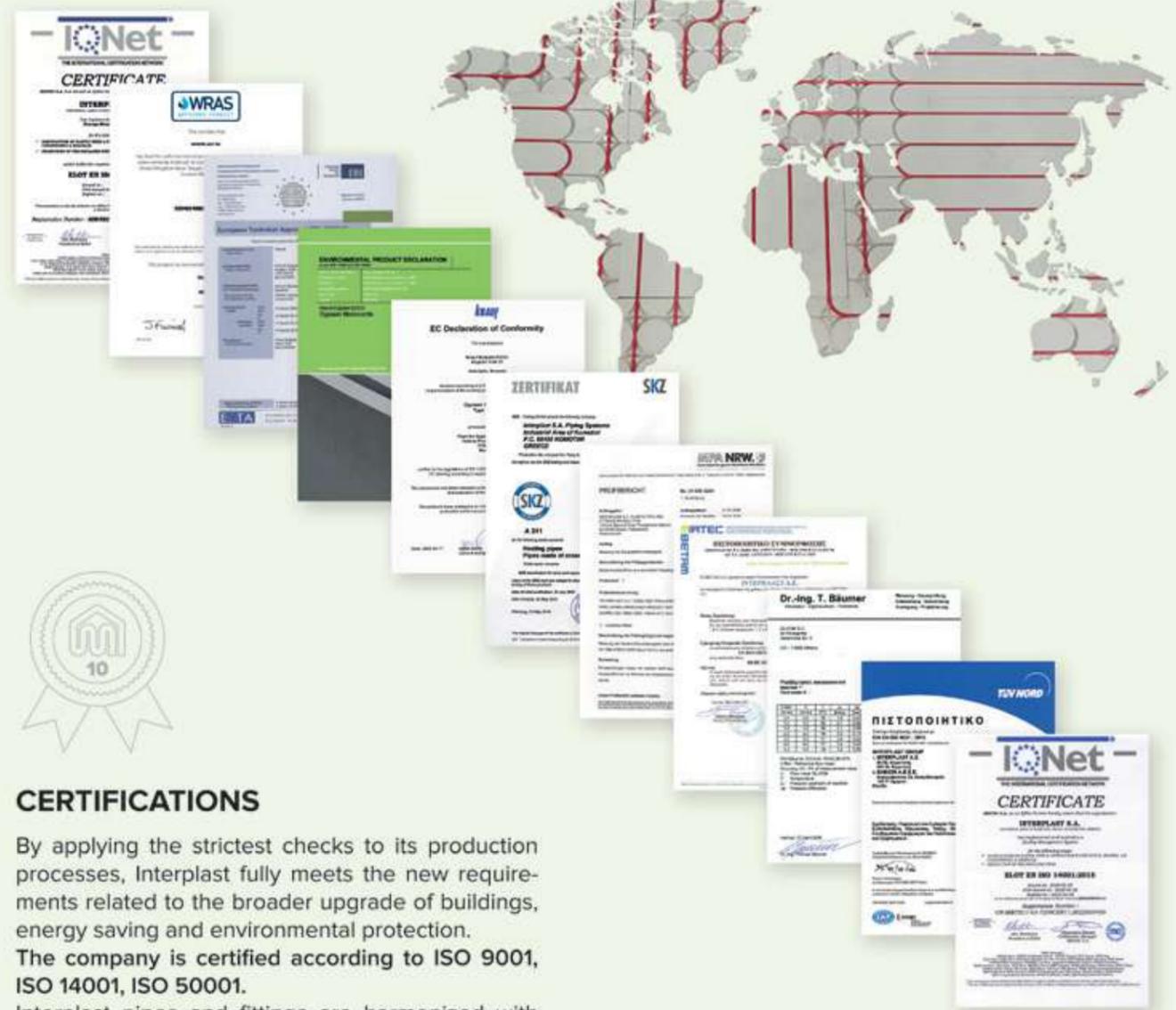
□ Tw: Input Temperature □ Ts: Surface Temperature  
 ΔT: 5 degrees Celsius Insulation: EPS80, 20mm



## CONTROL SYSTEMS

The system is controlled via autonomous special equipment consisting of the following: digital control base of 6 or 10 zones, room thermostat, electrothermal actuators for the zones, and a wireless gateway. The equipment can be managed by smart-phones, tablets and PC (SmartHome System).

All types include fault self-diagnosis, circulator control, switching between cooling/heating, and source activation. Optional external sensor for surface temperature control and dew point detection. Works for heating and cooling.



## CERTIFICATIONS

By applying the strictest checks to its production processes, Interplast fully meets the new requirements related to the broader upgrade of buildings, energy saving and environmental protection. The company is certified according to ISO 9001, ISO 14001, ISO 50001.

Interplast pipes and fittings are harmonized with and exceed the specifications set by International (ISO), European (EN), German (DIN), British (BS) and American (US) standards. Interplast products are subject to periodic tests by internationally certified institutes without any production failure.

### Certifications - Tests:

ISO 9001 TÜV Germany, ISO 14001:2015, ISO 50001:2015, EPD Sweden, EBETAM-MIRTEC Greece, ICC USA, SKZ Germany, CSA Canada, CSTB France. MRA-NPW Germany for oxygen barrier, KIWA Netherlands, WRAS Great Britain.

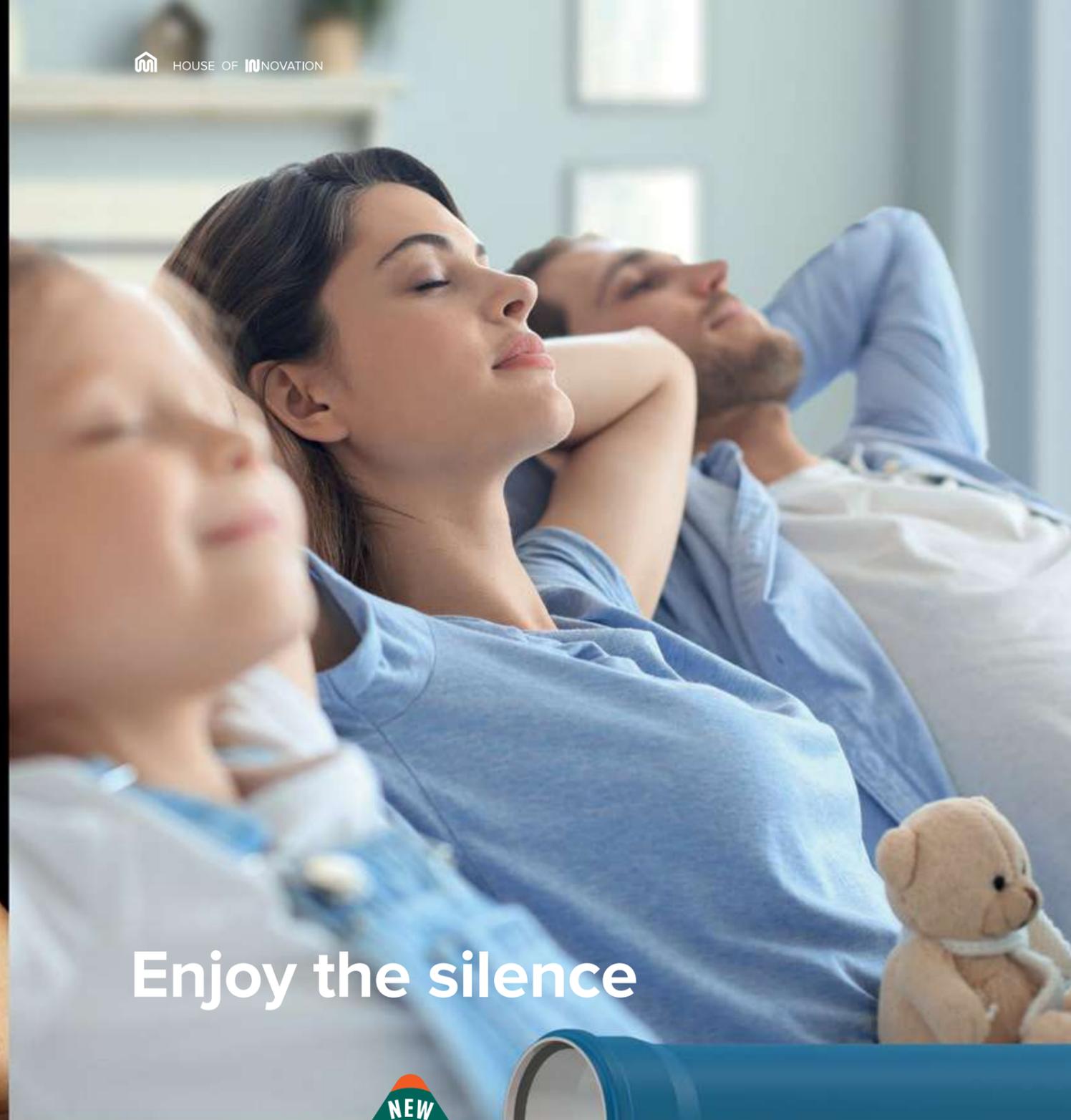
### Warranty:

**30-year warranty** for the pipe and **10-year warranty** for the metal fittings regarding the sealing of connections, by the insurance company Generali for a monetary amount up to **€5,000,000**.



# Quality certificates

Having obtained 50 certifications, Interplast aims for the highest quality with production according to international specifications and tests determined by US and European standards at the most modern production plants.



Enjoy the silence

NEW PRODUCT



Innovation  at home!



ATLASPLUS  
**Echosilent**

Drainage Silent PP System

# Comfort

Modern constructions have formed demanding regulations on installing networks. One of the most demanding networks of a building is the drainage system. Additionally, to high mechanical strength, high degree of functionality and a low level of noise during its operation are required in order to meet the demands.

## Comfortable living

Customers can realize living comfort of Atlas Plus Echo-silent. **The system produced under the latest technology, is optimized in acoustics**, ensuring the highest level of noise regulations.

## Installation speed

A distinct advantage of the Atlas Plus Echo-silent is the **quick installation**. Easy-to-use system that can minimize installation time without need of using power tools.

## Certified system

Atlas Plus Echo-silent is a high-quality building drainage system that produced according to EN 1451, **meeting national and international quality and safety standards**.

**These particular challenges we face can only be overcome with this specialized drainage solution.**

Atlas Plus Echo-silent® offers much more than a common soundproof drainage system. All our systems are produced after comprehensive research and thorough laboratory tests. **Every Interplast solution is supported by our engineers and experienced staff.**

## Atlas Plus Echo-silent: designed to reduce noise

Echo-silent comes from the ancient Greek word “ēchō” (ἠχώ), the acoustic phenomenon due to the reflection of sound waves. **The Atlas Plus Echo-silent system is made by mixing plastic and absorbent material.**

The mineral filler (PP-MD) of the intermediate layer maximizes sound absorption.

The material formula has been developed by Interplast's R&D Department and offers a unique combination of acoustic performance, weight and mechanical strength.

The triple layer tube structure is produced with the latest co-extrusion technology. Each layer has an autonomous function achieving the reduction of sound levels, the increase of mechanical characteristics as well as the optimization of the flow.

**The Echo-silent fittings in combination with the Atlas Plus Echo-silent® system effectively isolates vibrations. Moreover, noise is reduced to 15dB and the volume flow rate is four liters per second.**

This remarkable sound absorption makes the system ideal for residences, multi-use apartments, hospitals, hotels and other commercial buildings where reduced noise levels are required.



State-of-the-art type of material



Latest co-extrusion technology



High noise reduction

# Enjoy life

Atlas Plus Echo-silent is ideal for reduced noise levels.



Hotels  
Spas  
Residencies



High-rise buildings  
Block of flats  
Commercial buildings



Hospitals  
Care buildings

## Acceptable noise in our everyday environment

The acceptable level of noise to which a person can be exposed while performing daily activities and relaxing is described as "the value of the lower limit of noise". Noise in sewage systems is produced by sewage falling vertically through drains, as well as sewage in horizontal pipes passing through hidden ceilings.

## Reduction of noise from the supply

Noise transmitted from the supply, is damped through the system

- Sound-insulating bracket with rubber lining
- Sealed rubber ring connection between pipe and fitting

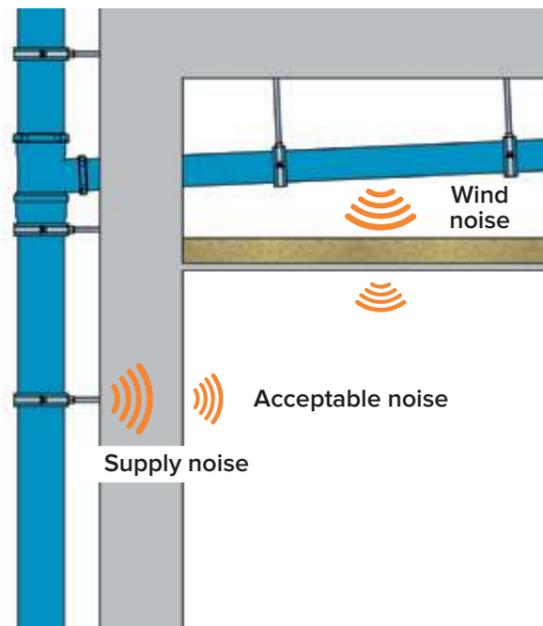
## Wind noise reduction

Airborne noise is effectively reduced due to PP-MD pipes and fittings.

## Acceptable noise levels

Effective reduction in noise levels compared to acceptable noise in our everyday environment:

- Living space (night) 25dB
- Hospital wards (day) 30dB
- Non-inhabitable spaces (day) 40dB
- Atlas Plus Echo-silent soundproofing system 15dB



# ...responsibly!

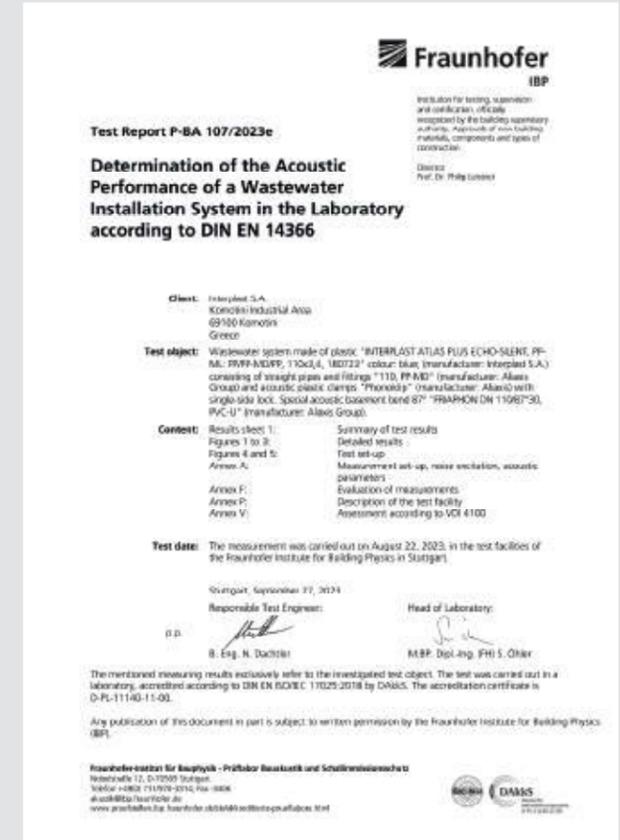
## Proven results that respond to the strictest requirements

The tests of the noise emitted by the Atlas Plus Echo-silent system, were carried out in accordance with the European standard EN 14366 "Laboratory measurement of noise from waste facilities".

The Atlas Plus Echo-silent® system is certified to produce a sound pressure level of 15dB with a flow rate of 4l/s, using rubber-lined Echo-silent supports.

The results of 15dB were taken on the underlying floor of the room near the drain, where the waste flow is higher.

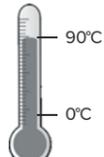
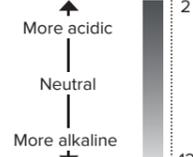
All tests were carried out at the accredited Fraunhofer building physics institute in Germany. The results are available in the test report P-BA 53/2022e.



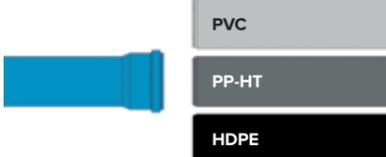
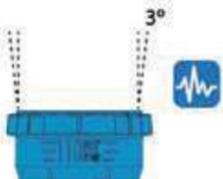
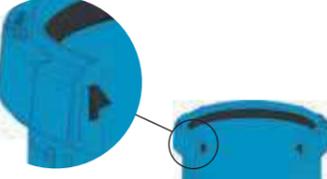
Determination of the Acoustic Performance of a Wastewater Installation System in the Laboratory according to DIN EN 14366		P-BA 107/2023e																																							
		Results sheet 1																																							
<b>Client:</b>	Interplast S.A., Kamilon Industrial Area, 69100 Kamilon, Greece																																								
<b>Test object:</b>	Wastewater system made of plastic: "INTERPLAST ATLAS PLUS ECHO-SILENT, PP-MD, PP-MD/PP, 110x110, 110x110, 110x110" colour: blue, manufacturer: Interplast S.A., consisting of straight pipes and fittings: "110, PP-MD" manufacturer: Alkox Group and acoustic pipe clamps: "Phonoklip B, 110" manufacturer: GRIPE, mounted as single clamps. The basement level was a special acoustic 80' basement level: "FRAPHON DN 110/80'30, PVC-U" manufacturer: Alkox Group. Test object no.: 5.12151; see figure 4 and 5.																																								
<b>Test set-up:</b>	The pipe system was mounted according to figure 4 and 5 (see also Annex A). The pipe system consisted of straight wastewater pipes (nominal size OD 110), three inlet tees (80') a special acoustic 80' basement level: "FRAPHON DN 110/80'30, PVC-U" manufacturer: Alkox Group and a horizontal drain section. The inlet line in the basement and on the ground floor were closed by lids supplied by the manufacturer. The pipe system was supported by the manufacturer's brackets: "Interplast ATLAS PLUS ECHO-SILENT, PP-MD, PP-MD/PP, 110x110, 110x110" colour: blue, manufacturer: Interplast S.A. Three-layer pipes with shaped pipe sockets: Material: PP-MD, PP-MD/PP, wall thickness: 3.2 mm, weight: 1.65 kg/m, density: 1.20 g/cm³, colour: translucent by light. One layer fittings: "110, PP-MD" manufacturer: Alkox Group; Material: PP-MD, wall thickness: 3.5 mm, density: 1.15 g/cm³, colour: translucent by light. Plug connection of the pipes and fittings (shaped pipe sockets). Accessories: Acoustic pipe clamps: Acoustic pipe clamps: "Phonoklip" manufacturer: Alkox Group without electronic insert and with one-sided closure. In every storey (EG and UG) two pipe clamps as fixing clamps without spacers were mounted. One in the upper wall area and one in the lower wall area. The clamps were mounted in such a way that the two safety clips of the clamps did not touch each other. The clamps were fixed to the installation wall with dowels and three rods with about 10 mm gaps to the installation wall (figure 5). Basement level: "FRAPHON DN 110/80'30, PVC-U" manufacturer: Alkox Group with an integrated vibration pad to reduce impact noise. The wastewater installation system was mounted by a technician under the authority of Fraunhofer IBP.																																								
<b>Test facility:</b>	Installation test facility #12, noise per unit area of the installation wall: 220 kg/m², mass per unit area of the ceiling: 440 kg/m². Installation rooms: sub-basement (UG), basement (UG) front, ground floor (EG) front and top floor (EG), measuring rooms: UG front, UG rear (EG) in Annex P and DIN EN 14366: 2023 (01).																																								
<b>Test method:</b>	The measurements were performed according to DIN EN 14366: 2023-02, noise emission by steady-state flow with 0.5 l/s, 1.0 l/s, 2.0 l/s and 4.0 l/s. Additional evaluation for comparison with requirements following German standards DIN 4109:2018-01 and VDI 4106:2012-10 (details in Annexes A, F and V).																																								
<b>Result:</b>	<table border="1"> <thead> <tr> <th>Flow rate (l/s)</th> <th>0.5</th> <th>1.0</th> <th>2.0</th> <th>4.0</th> </tr> </thead> <tbody> <tr> <td>Airborne sound pressure level <math>L_{w,lab}</math> according to DIN EN 14366 for the basement test-room</td> <td>47</td> <td>49</td> <td>50</td> <td>53</td> </tr> <tr> <td>Structure-borne sound characteristic level <math>L_{w,lab}</math> according to DIN EN 14366 for the basement test-room</td> <td>&lt;10</td> <td>10</td> <td>&lt;10</td> <td>15</td> </tr> <tr> <td>Installation sound level <math>L_{eq}</math> [dB(A)] following DIN 4109 in the basement test-room</td> <td>UG front</td> <td>47</td> <td>49</td> <td>50</td> <td>53</td> </tr> <tr> <td></td> <td>UG rear</td> <td>1.2</td> <td>15</td> <td>1.2</td> <td>19</td> </tr> <tr> <td>Installation sound level <math>L_{eq}</math> [dB(A)] following VDI 4106 in the basement test-room</td> <td>UG front</td> <td>45</td> <td>47</td> <td>47</td> <td>50</td> </tr> <tr> <td></td> <td>UG rear</td> <td>10</td> <td>12</td> <td>&lt;10</td> <td>16</td> </tr> </tbody> </table>		Flow rate (l/s)	0.5	1.0	2.0	4.0	Airborne sound pressure level $L_{w,lab}$ according to DIN EN 14366 for the basement test-room	47	49	50	53	Structure-borne sound characteristic level $L_{w,lab}$ according to DIN EN 14366 for the basement test-room	<10	10	<10	15	Installation sound level $L_{eq}$ [dB(A)] following DIN 4109 in the basement test-room	UG front	47	49	50	53		UG rear	1.2	15	1.2	19	Installation sound level $L_{eq}$ [dB(A)] following VDI 4106 in the basement test-room	UG front	45	47	47	50		UG rear	10	12	<10	16
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	UG rear	10	12	<10	16																																				
<b>Test date:</b>	August 22, 2023																																								
<b>Notes:</b>	For comparing test results with requirements according to DIN 4109 and VDI 4106 note Annex A, sound levels below 10 dB(A) are not measured in the official test report, since they are subject to an increased measurement uncertainty and moreover are not noticeable in a normal living environment. The above-mentioned measurement results require careful assembly of the pipe clamps (see test set-up).																																								
	The test was carried out in a laboratory, accredited according to DIN EN ISO/IEC 17025:2018 by DAAS. The accreditation certificate is D-PL-11140-11-00. Stuttgart, September 27, 2023 Head of Laboratory:																																								

# Installation advantages

## Significant advantages

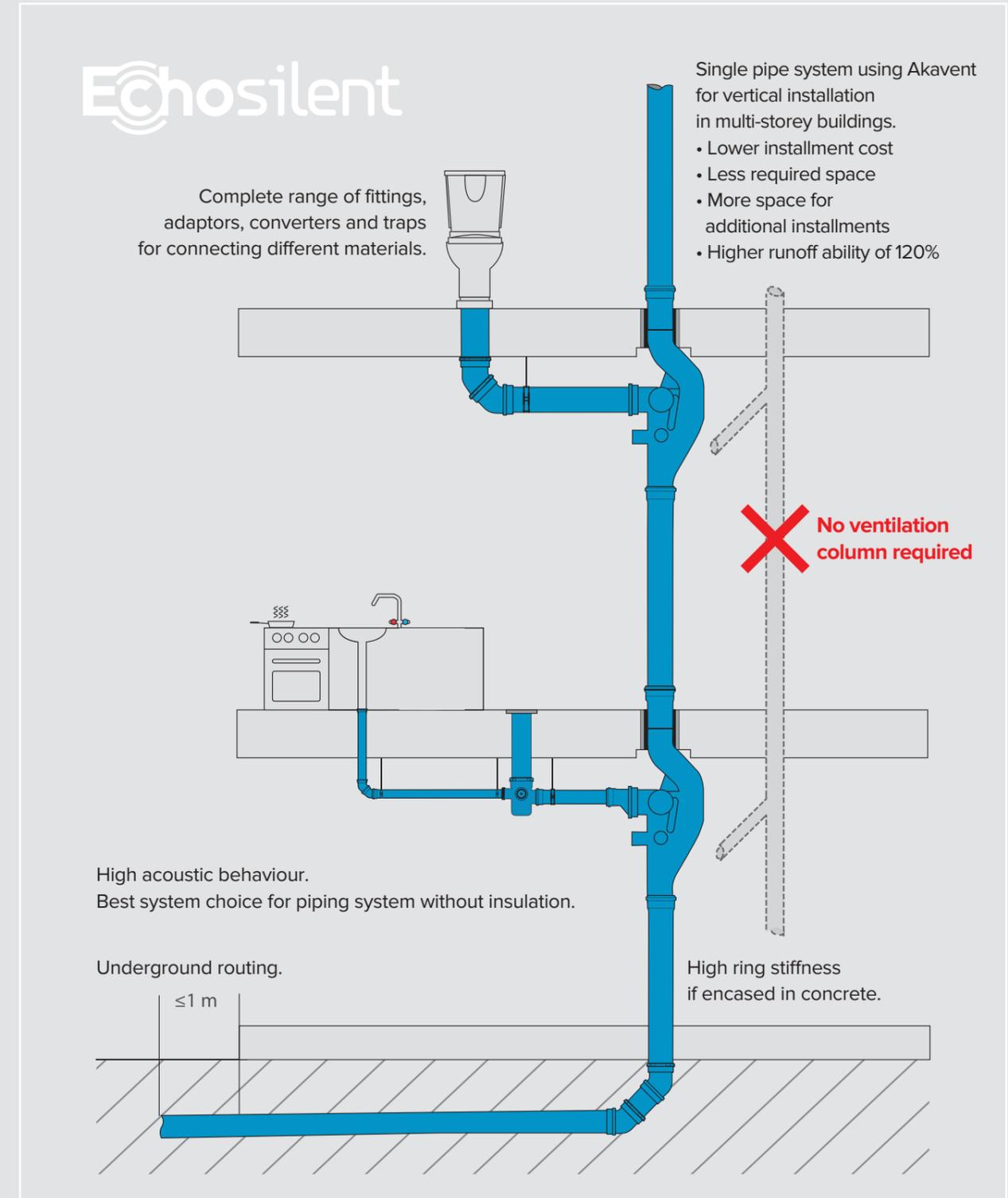
		
<p>High noise reduction without insulation</p>	<p>High resistance to sewage temperatures up to 95°C (maximum price)</p>	<p>High chemical resistance from pH2 up to pH12</p>
		
<p>With the three-layer pipe the smooth interiors surfaces do not cause deposition and clogging</p>	<p>100% sustainable system, recyclable, certified company according to ISO14001</p>	<p>Installation ability at temperatures up to -15°C</p>

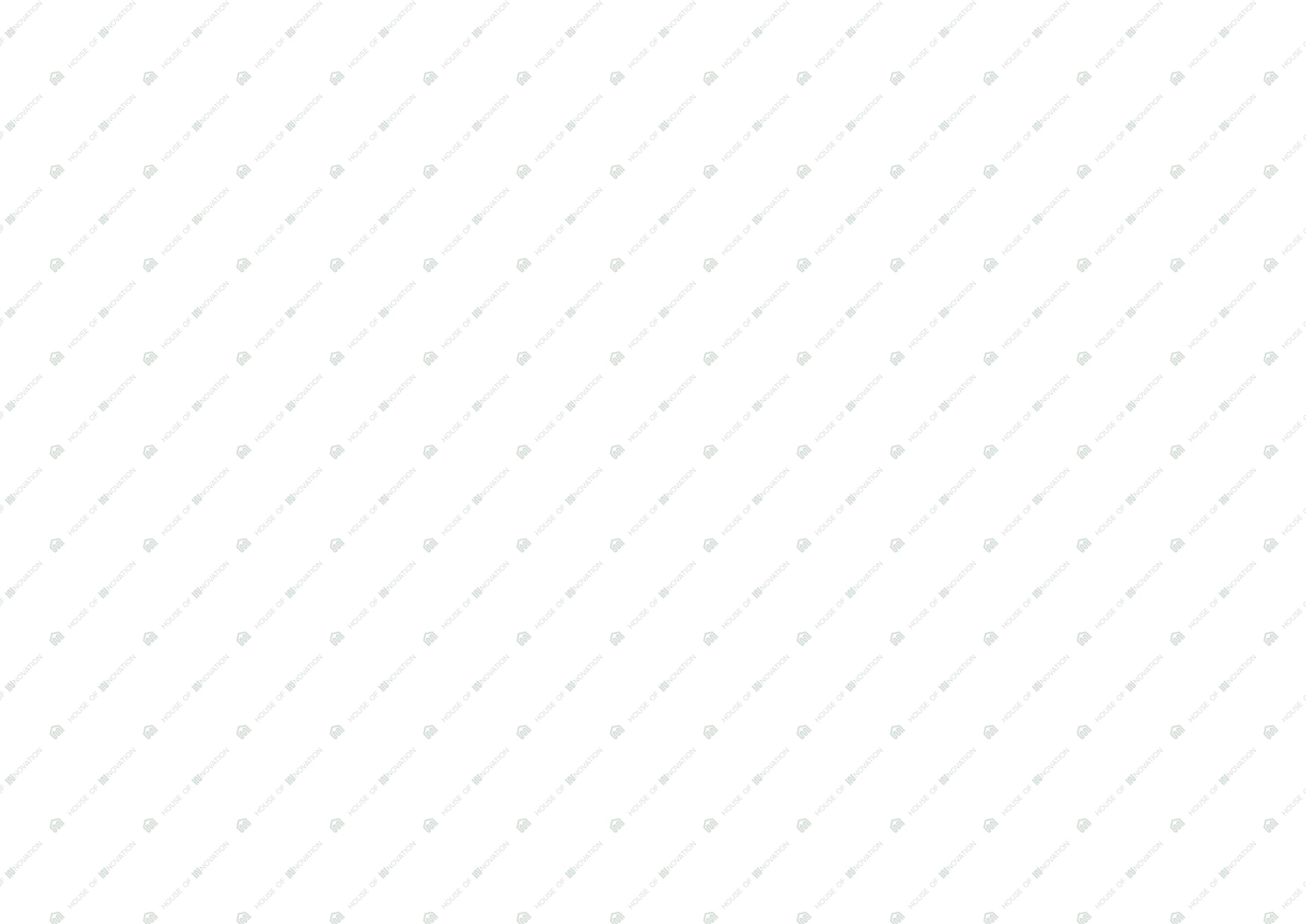
## Advantages of the system

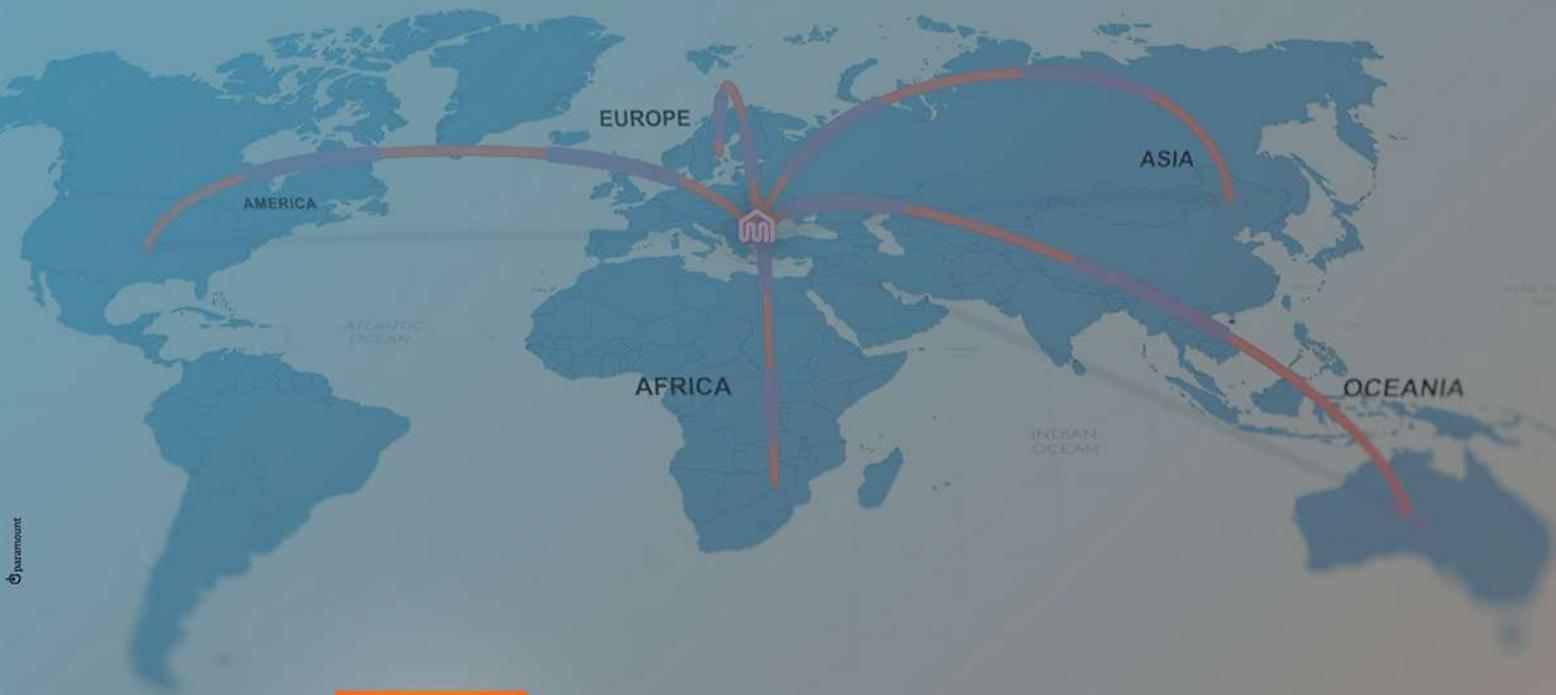
		
<p>Soundproof, rubber lined supports reduce to a minimum the acoustic noises and vibrations</p>	<p>Quick installation of elastic finger links without the need of special tools</p>	<p>Parallel ventilation column is not required in high-rise buildings that use the Echo-silent system</p>
		
<p>Ability to transition to PVC, PP-HT and HDPE without additional accessories transition required</p>	<p>The rubber joint ring increases flexibility of the pipe system against territorial movements or earthquakes</p>	<p>Cap technology with tight rubber retention ring and installation angle indicator</p>

## A full range system

The Atlas Plus Echo-silent system offers a versatile system for wide application. It can be used on the top level of a skyscraper to the exit point of the building structure. **The Atlas Plus Echo-silent system has a range of diameters (40-160mm), special components, acoustic performance, durability, ring stiffness and an installation advantage that makes it usable anywhere in the building.**







**Interplast S.A.**  
Plastic Piping Systems

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