

# INNOVATIONS

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# INNOVATIONS

## INNOVATIVE PIPE SYSTEMS

PP-R PRESSURE PIPING - SUCCESSFUL WORLDWIDE



# SUCCESSFUL WORLDWIDE



Australia  
Austria  
Albania  
Algeria  
Bahrain  
Belgium  
Bosnia-Herzegovina  
Botswana  
Brazil  
Brunei  
Bulgaria

Canada  
China  
Croatia  
Cuba  
Czech Republic  
Denmark  
Dominican Rep.  
Egypt  
Estonia  
Faroe Islands  
France

Finland  
Great Britain  
Georgia  
Greece  
Hong Kong  
Hungary  
Iceland  
India  
Ireland  
Israel  
Italy

Japan  
Kazakhstan  
Kuwait  
Latvia  
Lebanon  
Lithuania  
Luxembourg  
Malta  
Morocco  
Moldova  
Namibia

Netherlands  
New Zealand  
Norway  
Oman  
Philippines  
Poland  
Portugal  
Qatar  
Romania  
Russia  
Saudi Arabia

Serbia-Montenegro  
Singapore  
Slovak Republic  
South Africa  
Sudan  
Spain  
Sri Lanka  
Sweden  
Switzerland  
Syria  
Thailand

Tunisia  
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UAE  
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Vietnam

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Maik, Dirk and Gerhard Rosenberg (founder)

## Welcome to Aquatherm

We are a pioneer in polypropylene piping systems, working to bring people the quality, reliability, and performance they need for the most basic elements of their lives.

Aquatherm has attained international renown by always working to be the best. We relentlessly test our existing products to ensure that they continue to meet the highest performance standards. And we are constantly improving and innovating on our existing technologies, searching for ways to make them even better.

But while we strive for excellence, we've also upheld the philosophy that production should never interfere with environmental responsibility. Aquatherm's products are manufactured to the highest ecological standards. Our Aquatherm Greenpipe®, Climatherm®, and Lilac systems are designed to outlast other piping systems and can be fully recycled when their service-life is complete.

For over three decades, Aquatherm has been a global leader in polypropylene pressure piping systems. We've prided ourselves on using the most advanced technology to provide the highest quality product manufactured anywhere in the world.

Aquatherm's products have been installed in over 70 countries, and we are excited to announce that they are now being installed in Canada and the United States. We've even included some new North American references to celebrate our success.

This booklet is designed to help show you how Aquatherm's products and innovative spirit can help improve the quality of your life. Go ahead, take a look for yourself.



**1973**

Founding of Aquatherm  
by Gerhard Rosenberg

**1978**

Transfer to the first factory  
in Biggen, Attendorn

**1985**

Factory 1 in Biggen,  
Attendorn completed

**1992**

Founding of the branch  
in Radeberg near Dresden

**1996**

Founding of the metal processing  
company Aquatherm Metal in  
Attendorn

**1998**

Founding of a subsidiary  
in Carrara, Italy

**1999**

Main site in Attendorn completed  
as one complex (factories 1+2,  
production and storage, laboratory  
and training center)



## THE COMPANY

Certified according to DIN/ISO 9001, Aquatherm is an internationally acclaimed manufacturer of plastic pipe systems for potable water, hydronic heating and cooling, industrial, and rainwater applications.

Aquatherm was founded 1973 for the development, production and installation of in-floor radiant heating. At that time Aquatherm was one of the three first suppliers of in-floor heating in the European market.

In 1980 Aquatherm developed the polypropylene piping system Aquatherm Greenpipe® for potable water and heating installations. Since that time, this innovation has served as the foundation for a steady growth.

In 2005, Aquatherm began distributing in Canada under the direction of Steve Clark. In 2007, Clark assumed responsibility for the United States as well. Currently, Aquatherm piping systems are installed throughout North America in a wide range of applications.

Aquatherm pipe is manufactured to ASTM F2389 and is listed with ICC, CSA, and IAPMO.

## 2001

Extension of plant 2 in Attendorn completed

## 2001

Opening of the new training center in Radeberg

## 2002

Logistics center in Attendorn completed

## 2003

Renovation of the Attendorn training center completed

## 2005

Plant 1, extension of main office building

## 2005

Aquatherm launches in North America

## 2005/06

Completion of the 4-story hall in Attendorn

## 2008

Renovation of the new technology center completed



Presently Aquatherm is located at three sites in Germany covering more than 731,946 sq. ft, with facilities for offices, production and warehousing:

1. **Aquatherm Headquarters at Attendorn (Biggen)**
2. **Aquatherm branch at Radeberg near Dresden**
3. **Aquatherm-metal at Attendorn (Ennest)**

Aquatherm employs over 450 workers at these sites. Each day, well over 90 miles of pipe and 230,000 fittings are produced, stored, and dispatched around the world. The Aquatherm piping systems are produced 24 hours a day, 6 days a week, in order to meet the constantly increasing demands and to guarantee accurate and punctual delivery.

Today, Aquatherm operates in more than 70 countries around the world, and is an undisputed market leader in many fields. Last but not least, Aquatherm is a flexible middle-sized company which is able to compete with much larger corporations.



QUALITY



## TESTED AND PROVEN QUALITY

Aquatherm prides itself on its environmentally friendly production, its exemplary customer service, and on having the highest quality standards for all its products.

The quality of the raw materials greatly impacts the quality of a piping system. Therefore, Aquatherm independently tests the purity and strength of its PP-R material before, during and after production. To do this, Aquatherm has its own laboratory at its headquarters in Attendorn. Not only does this testing guarantee constant quality control, but it also helps ensure that the final product will perform under the most demanding conditions. Aquatherm's testing procedures and constant efforts to improve on its product have led to many of the innovations that make Aquatherm piping systems so highly rated.

The results of Aquatherm's research and development program include the patented pipe materials Fusiole® PP-R and Fusiole® PP-R C, from which the internationally renowned piping systems Aquatherm Greenpipe®, Climatherm® and Lilac are manufactured.

The most modern process controls provide optimum quality. Only perfect products are shipped from the Aquatherm factory to the customer, ensuring satisfaction every time.

All Aquatherm pipes and fittings are manufactured to ASTM F2389 and listed under NSF 14. Aquatherm Greenpipe is also listed under ICC 15140 and 15180, IAPMO 2009, and CSA B137.11 as well as NSF 61, NSF 51, and CFAI A508. Climatherm is listed under IMC 1202 and 1203, IAPMO UMC 2009, and CSA B214.

Satisfied customers in more than 70 countries as well as numerous seals of quality and product listings confirm the high quality standard of the Aquatherm products.



### Internationally certified quality

Various national and international independent authorities and institutions confirm Aquatherm's quality standards.



## **aquatherm ECOLOGY**

From its beginning, Aquatherm has always taken environmental protection seriously. For some companies, environmental responsibility is just a fad, but for Aquatherm, it's our way of doing business. Aquatherm piping systems feature not only a long service life, but also excellent environmental and ecological compatibility.

Since the founding of the company in 1973, Aquatherm has worked hard to ensure that its products and manufacturing processes do not pollute earth's sensitive ecosystems and to develop fully recyclable materials which can be added, waste-free, to new production.

Long before environmental protection was recognized as a global issue, Aquatherm piping systems fulfilled the high ecological standards which are demanded today. For over 35 years Aquatherm has applied its philosophy that environmental and economic interests should not be contradictory, neither during production and sales, nor in the application of the product.

Aquatherm pipes require very little energy to manufacture, generate virtually no pollution, contain no hazardous chemicals or VOCs, install without flames or fumes, and are fully recyclable, making them ideal for green building initiatives such as LEED.

The environmentally friendly raw material Fusiole® PP-R is used to manufacture Aquatherm piping systems. To ensure its environmental compatibility, the basic material polypropylene, as well as any additives used (color pigments and stabilizers), are extensively tested, not only by Aquatherm's own laboratory, but also by independent researchers.

Their results show that the material Fusiole® PP-R and the Aquatherm piping systems comply with the highest ecological standards and are thus "future-oriented."





Smell and taste neutrality	•	
Potable rated	•	
100 % corrosion resistant	•	•
Exceptional welding properties	•	•
Connection by heat fusion	•	•
Heat and sound insulating characteristics	•	•
Minimal pipe friction	•	•
High abrasion resistance	•	•
High impact rating	•	•
Chemically resistant	•	•
Freeze resistant	•	•
Recyclable	•	•
Heat stabilized	•	
High heat stabilized		•

## fusiolen® PP-R

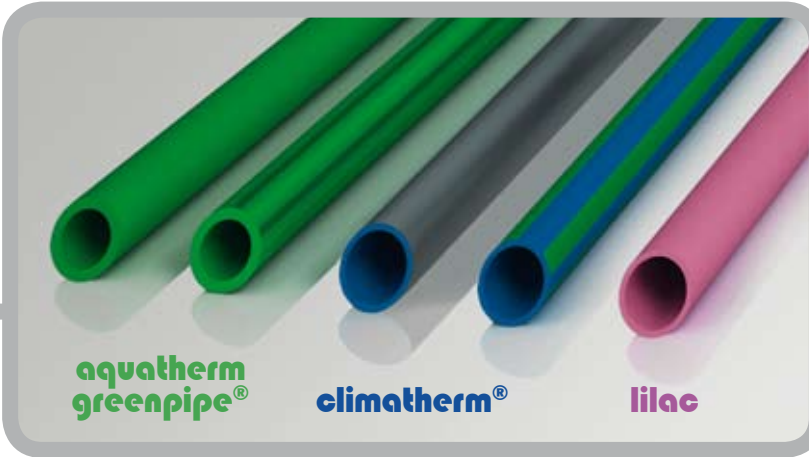
All Aquatherm pipes and fittings are made of Fusiolen® PP-R, which is manufactured exclusively by Aquatherm.

The Fusiolen PP-R material is both physically and chemically resilient to the abuse that can damage other materials. It is also a low-friction material, protecting it from abrasion and reducing pressure loss. The superior welding properties of Fusiolen PP-R result in a permanent, leak-proof connection that is chemically indistinguishable from the rest of the pipe. This and countless other innovations have made the Aquatherm piping systems and the raw material Fusiolen PP-R successful and respected worldwide.

Different fields of application require different performance properties from the piping material. Careful engineering and strict quality controls have allowed Aquatherm to adapt its piping technology to a whole range of applications.

Aquatherm piping systems meet the requirements of a global market and are widely used in potable water systems, heating and cooling distribution, industrial and agriculture applications, and even for recycled and rainwater applications.

Fields of application of the  
**aquatherm greenpipe®**, **climatherm®**  
 and **aquatherm lilac** pipe systems:



System recommended due to its technical advantages: ●  
 Application of the system is suitable: ○

Potable water	●		
Heating distribution	○	●	
Ground source heat loops	○	●	
Chilled water distribution	○	●	
Swimming pools	●	●	
Chemical transport	●	●	
Recycled water and rainwater	○	○	●
Irrigation	○	●	●
Compressed air	○	●	
In-floor heating	○	●	
Industrial	●	●	
Food processing	●		
Ship building	●	●	○



## Faser-composite technology

The faser-composite pipes made in the multi-layer extrusion process have a higher stability due to the fiber and polypropylene blend in the middle layer.

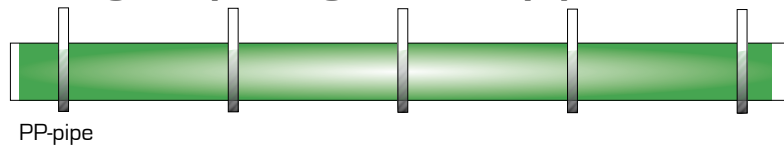
This gives Aquatherm systems many advantages, compared to other plastic pipes.

- Reduced expansion
- Higher flow rate due to increased inner diameter
- Greater support spacings
- Lighter weight

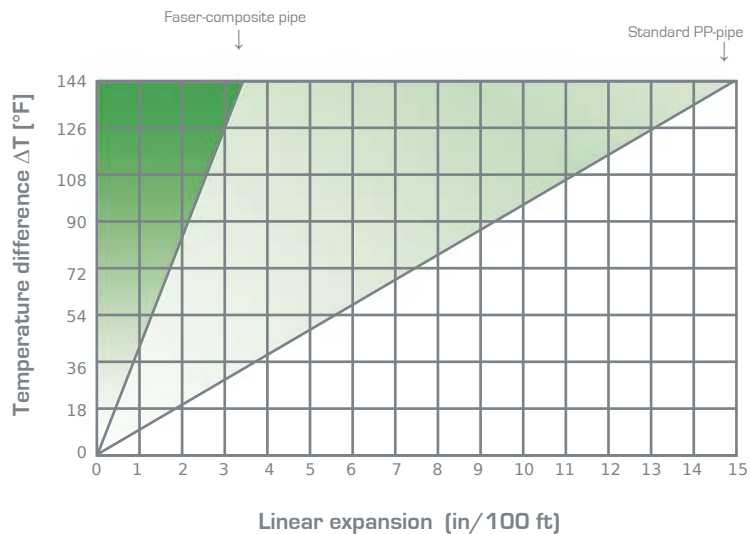
The following types of pipe are produced using this technology:

- **aquatherm greenpipe®** faser-composite pipe
- **climatherm®** faser-composite pipe

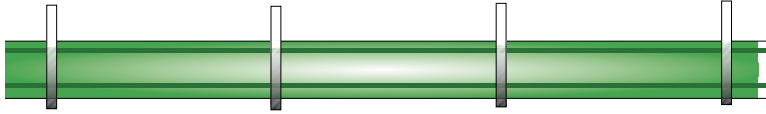
## Hanger spacings for PP-pipe



Graph for determination of expansion:

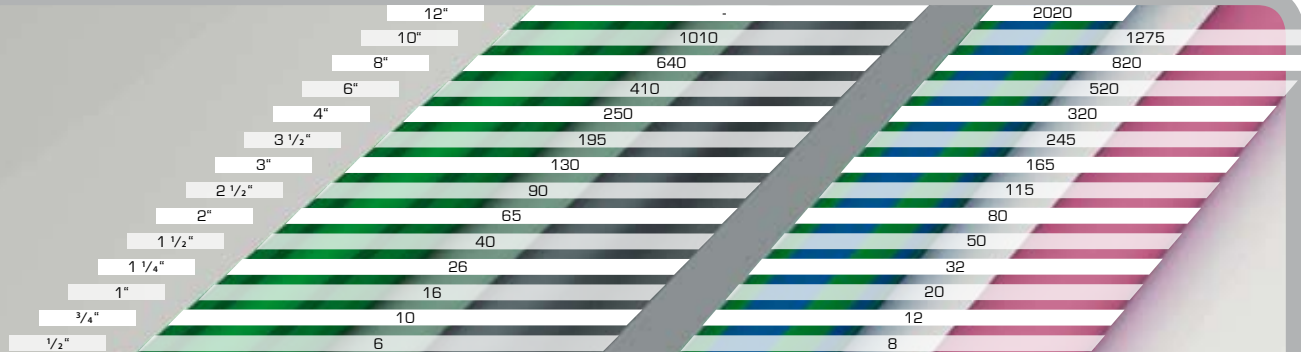


## and PP-R faser-composite pipe



Faser-composite pipe allows approximately 30 % greater spacing

## Comparison of flow rates in GPM (based on 8 f/s)



**aquatherm greenpipe®** faser-composite  
pipe SDR 7.4  
**climatherm®** faser-composite pipe  
SDR 7.4 & SDR OT 7.4

**climatherm®** faser-composite pipe SDR 11 & SDR 11 OT  
**climatherm®** pipe SDR 11  
**aquatherm greenpipe®** pipe SDR 11  
**aquatherm lilac** pipe SDR 11



# HEAT FUSION I



## Socket Fusion

When a pipe and fitting are heat-fused together, the joint becomes a single homogeneous material throughout, leaving no chance for leaks or failures. Pipe and fitting are heated by means of specific welding tools and carefully pressed together for a quick and simple connection.

Double material thickness at the joint means double safety at the otherwise critical point of a piping system.

With Aquatherm's heat fusion technique, you will easily get a permanent, leak-proof connection every time.



# HEAT FUSION II

## Fusion Outlets

By using fusion outlets, you save material and time.

Fusion outlets use only one fast connection for mounting the outlet on the side of the pipe. And outlets don't weaken the structure of the pipe, so they can be placed closer together than other branch connections.

Simply drill the pipe, insert the iron, and heat up the outlet and the pipe. After only 30 seconds, remove the iron and fuse the parts for a fast and easy connection that won't leak or fail.





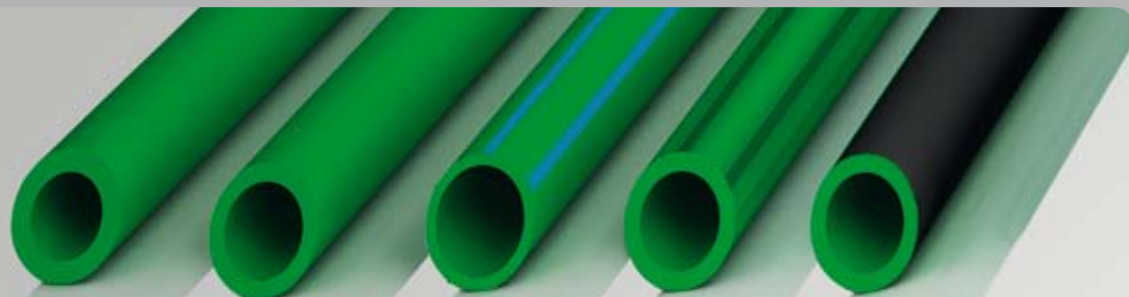
## aquatherm greenpipe®

Aquatherm Greenpipe® is a PP-R pressure piping system with heat fusion connections. It has been used around the world for over 25 years and is highly recognized by experts as one of the most extensive, long lasting, and high performing plastic piping systems available. Aquatherm Greenpipe is rated for use in potable water and food-grade applications.

The system includes SDR 11 pipes for cold water applications and SDR 7.4 pipes for hot water applications. The hot water pipe is reinforced with a fiber-composite layer that reduces linear expansion by 75%. More than 400 joining and connection elements, as well as valves and ball valves, complete the system. The products are available in nominal sizes from ½" – 10" external diameter.



# PIPES



**SDR 6**  
pipe  
1/2" - 3 1/2"

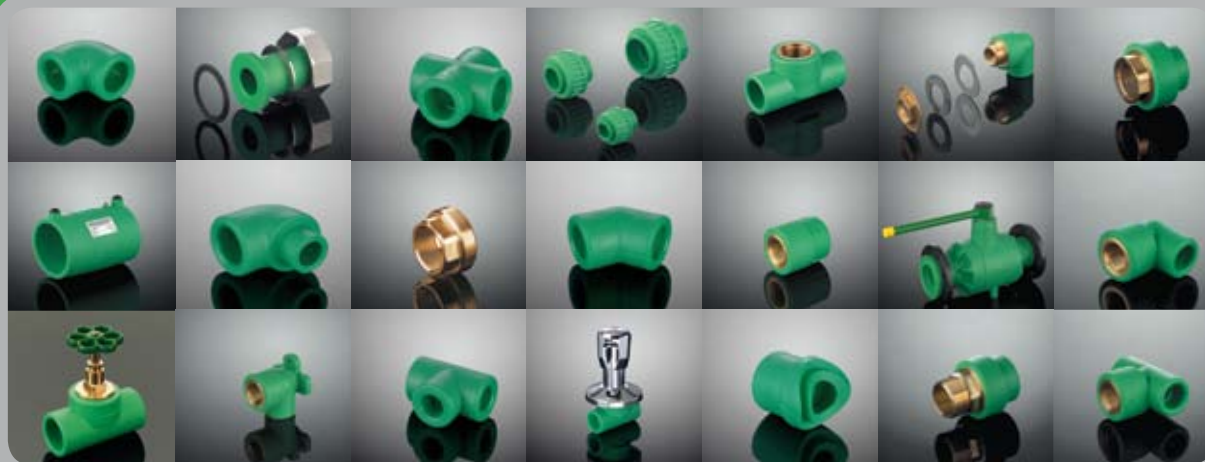
**SDR 7.4**  
pipe  
1/2" - 3 1/2"

**SDR 11**  
pipe  
1/2" - 10"

**SDR 7.4/11**  
fiber composite pipe  
1/2" - 10"

**SDR 7.4/11**  
UV fiber composite pipe  
1/2" - 10"

# PRODUCT RANGE





## climatherm®

The Climatherm® pipe system is engineered specifically for applications outside the potable water installation, such as hydronic heating and cooling distribution, geothermal technology and industrial applications.

In addition to the general advantages of the Aquatherm Greenpipe system, Climatherm is high-heat stabilized, allowing the pipe to be manufactured using thinner walls while maintaining the temperature and pressure ratings. This gives the system a higher flow rate, lower weight, and a more competitive cost.

Climatherm comes as SDR 11 and has the expansion controlling "faser-composite" technology. The nominal sizes range from 1/2" to 12" external diameter.

The Climatherm system uses the same fittings as the Aquatherm Greenpipe system, making installation simple and easy.

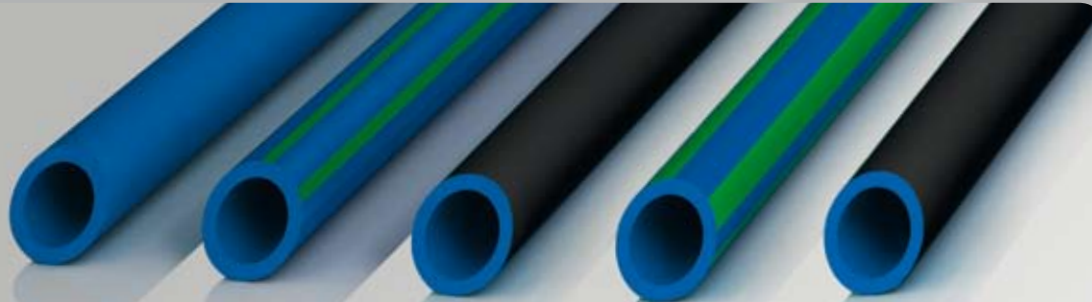
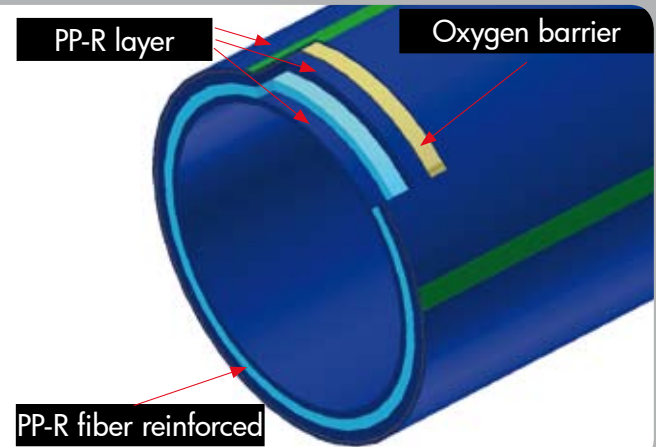




# climatherm®

## with oxygen barrier

With the redeveloped Climatherm OT faser-composite pipe, Aquatherm launches an oxygen-tight pipe. This is the first PP-R pipe anywhere in the world to be equipped with an oxygen barrier and can be used when no oxygen penetration is permissible.



**SDR 11**  
**pipe**  
1/2" - 6"

**SDR 7.4/11**  
**OT faser-composite pipe**  
1/2" - 12" oxygen tight

**SDR 7.4/11**  
**OT UV faser-composite pipe**  
1/2" - 10" oxygen tight

**SDR 7.4/11**  
**faser-composite pipe**  
1/2" - 12"

**SDR 7.4/11**  
**UV faser-composite pipe**  
1/2" - 10"

# PIPES

## aquatherm advanced pipe wrap

Taking convenience and versatility to a whole new level, the Aquatherm Advanced upgrade combines fire protection, vapor barrier, and thermal insulation into one external wrap, making Aquatherm piping systems that are truly complete.



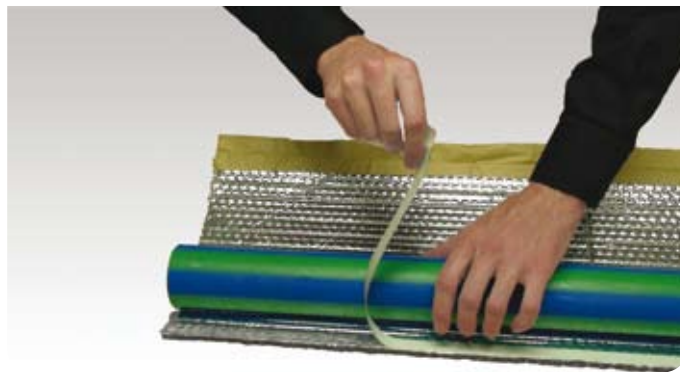
The Aquatherm Advanced upgrade uses a reflective insulation wrap that provides code-acceptable insulation for most applications. By capitalizing on the natural insulation of the PP-R material, Aquatherm Advanced is able to offer the most efficient insulation value for the application.

The insulation for Aquatherm Advanced generally meets or exceeds the heat transfer requirements for 1 1/2" inches of insulation, as given in ASHRAE and ICC energy codes.

The insulation wrap also meets ASTM E84-07 and CAN/ULCS102.2-07, making the system safe for use in:

- Return air plenums
- Exposed installation in high-rise buildings
- Non-combustible construction

The insulation comes in pre-cut sheets for ease of insulation.



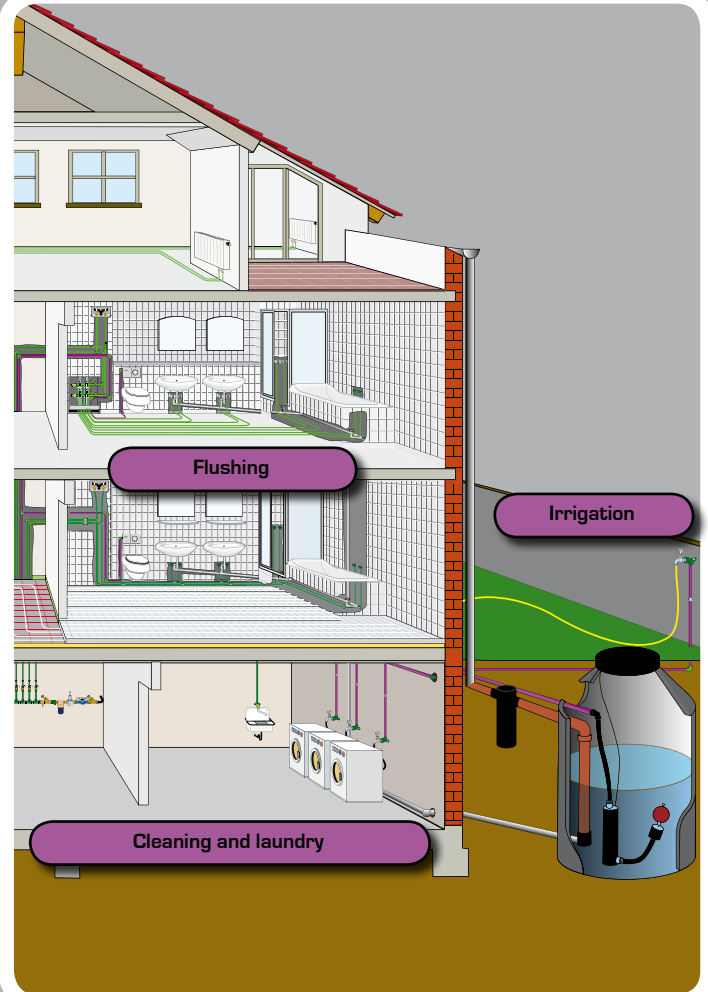


## aquatherm lilac

Water conservation systems are being specified and installed much more frequently as building and plumbing codes are updated to encourage improved water conservation. Most codes require that these systems be kept entirely separate from the potable water supply, and that the piping be color-coded and labeled to identify it as non-potable.

The water from reclaimed, recycled and rainwater sources can be used for **flushing**, **irrigation**, **cleaning** and **laundry** (local codes permitting).

The Aquatherm Lilac pipe system has been developed exclusively for these applications. The piping uses the same durable, corrosion-resistant PP-R material that has been successfully used for hot-and-cold water distribution for over 25 years. This, combined with design modifications, coloring, marking, and independent third-party certification by NSF International, make Lilac the ideal choice for water conservation.







## climasystem

### **Aquatherm Climasystem: Heating and cooling system for ceiling, wall and other applications**

An individual's physical well being directly depends on the basic environmental conditions of the surroundings. Working efficiency varies according to temperature, so climate control is extremely important.

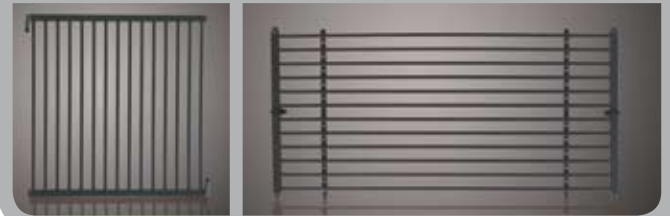
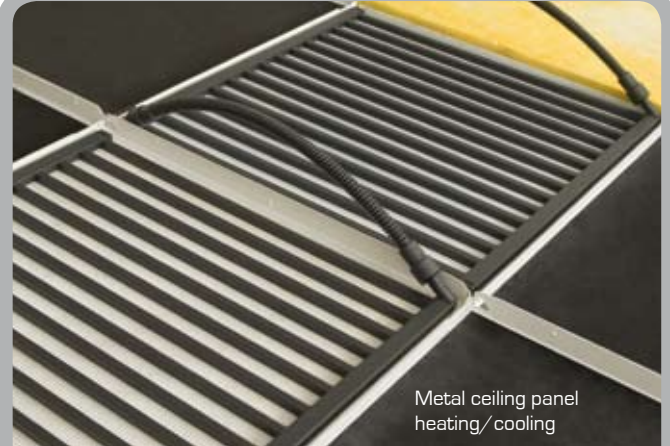
In offices, commercial and residential buildings, meeting rooms, and similar facilities, Climasystem panels have become increasingly popular for radiant heating and cooling through the ceilings and walls.

The revolutionary Aquatherm Climasystem delivers pleasant room conditions without noise and forced air movement. With this technology, cooling or heating is easy to control. The system can be designed with automatic change-over of hot or chilled water, allowing for individual room or zone control. And radiant zones won't interfere with each other, so everyone can be as comfortable as possible.

## ADVANTAGES:

- For wet and dry construction
- No draft
- Silent operation
- Dust reduction
- Simple control technique
- Thermal properties of the building are enhanced
- Easily expandable
- Quick installation thanks to high degree of prefabrication
- Even temperature distribution
- Safe connection techniques by heat fusion
- Push-fit connection for ceiling elements
- Oxygen barrier
- Minimal construction thickness
- Greater architectural design freedom
- Energy saving

Climasystem is exclusively made from Fusiolen® PP-R. The material is low-friction, non-corrosive, and heat-fusible, offering maximum security, life span, and performance. The panels can be installed directly in parallel as well as in series, depending on the design specification.





## aquatherm pre-insulated pipeline systems

For transporting central heating and cooling energy around a campus or large facility, most engineers use an underground distribution system. Often, these systems are directly buried, which puts high demands both on the pipe and on its insulation.

Aquatherm Greenpipe® and Climatherm® fasar-composite pipes are ideal for potable water and hydronic distribution systems because they are rated for continuous operation of 100 psi at 180 °F, with a maximum pressure of up to 300 psi and temperatures up to 200 °F.

The insulated Climatherm fasar-composite pipes are also suitable for cooling refrigerant and cooling solvent supplies.

The pipe insulation is factory-made with PUR-solid foam, which surrounds the pipe completely. An outer coating of a HDPE protects the insulation from mechanical or weather damage.

These pre-insulated pipes use the standard Aquatherm fittings. The pipes and fittings are connected on site by socket fusion welding for 1" - 4" pipe and by butt-welding technology for 6" - 12" pipe. The welded joints are then covered by insulation sockets, which provide continuous insulation for the distribution pipeline.

Aquatherm district heating pipelines are available in lengths of 20' and 40'. Fittings are available with a leg length of 20" and 40". Special designs are available upon request.



## Custom-made manifold construction:

Time is money. This piece of wisdom proves true every day, especially in the building industry. Finding the time and space to install piping in a construction project is always a challenge, not only for the architect and planner, but for the mechanical contractor as well.

With so many parts of a building to look after, site managers are seldom able to pay proper attention to the construction of distribution manifolds. Manifolds are often large and complicated, making them difficult to assemble on site, they are also critical to the performance of the piping system, which means they have to be done right. Problems with manifolds can quickly rack up a lot of expenses and slow down construction.

To help avoid these difficulties, Aquatherm now offers an alternative to its customers. Using our expertise in designing with polypropylene, we can design and build your manifold for you, based on your specifications. Heat-fused joints are strong and flexible, making pre-assembled sections safe and easy to ship.

In a fully equipped workshop environment, we can build your manifolds with the care and precision they deserve. Send us your completed drawing or sketches with specifications. We will return an estimate with a material list and a blueprint of the finished manifold.

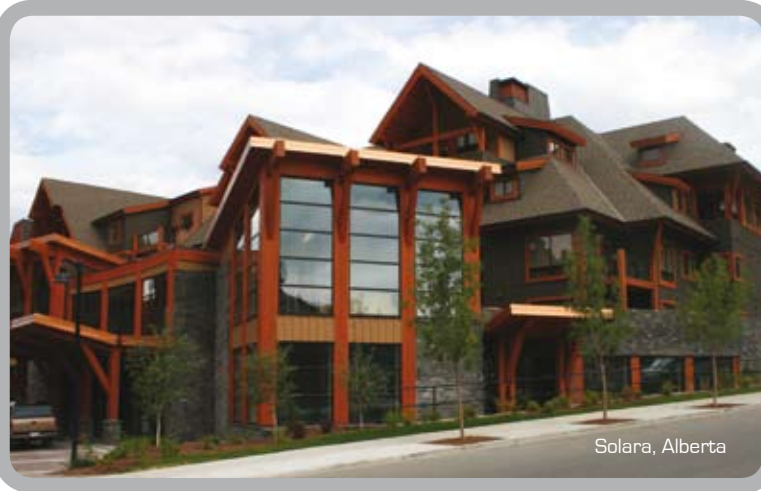
For more information, contact our design department.



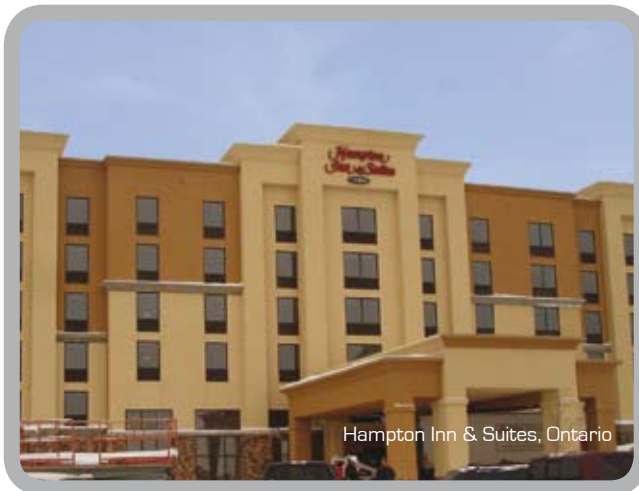
# N/A REFERENCES



Opryland Hotel, Tennessee  
(Image Courtesy of Gaylord Entertainment)



# HOTELS & RESORTS



# RESIDENTIAL







Copperwood, Alberta

NA REFERENCES



# CAMPUSES



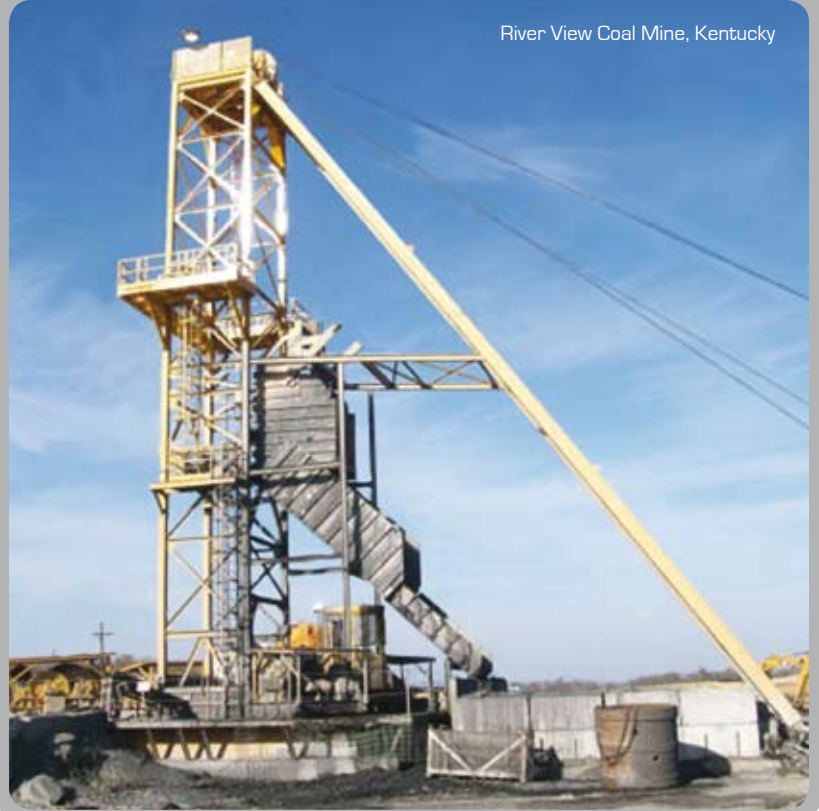
# COMMERCIAL & INDUSTRIAL



High Desert Milk, Idaho



Golden Alaska, Alaska



River View Coal Mine, Kentucky

# REFERENCES







Pandion Vista, Cologne, Germany



Davinci Haus, Germany



Residential building, Germany



Residential building, Spain

## RESIDENTIAL & BUSINESS



Galileo Tower Frankfurt, Germany

# SHIPS



Aida Aura, Germany



Costa Victoria, Italy



Carnival Valor, Italy



Desh Viraat, India





REEFERENCE

Carnival Conquest, currently one of the largest passenger ships in the world

# HOTELS



Riu Palace Adeje Tenerife, Spain



Hotel Ankara, Turkey



The Bellevue Hotel, Philippines



Hotel Meliton, Greece.



# REFERENCES

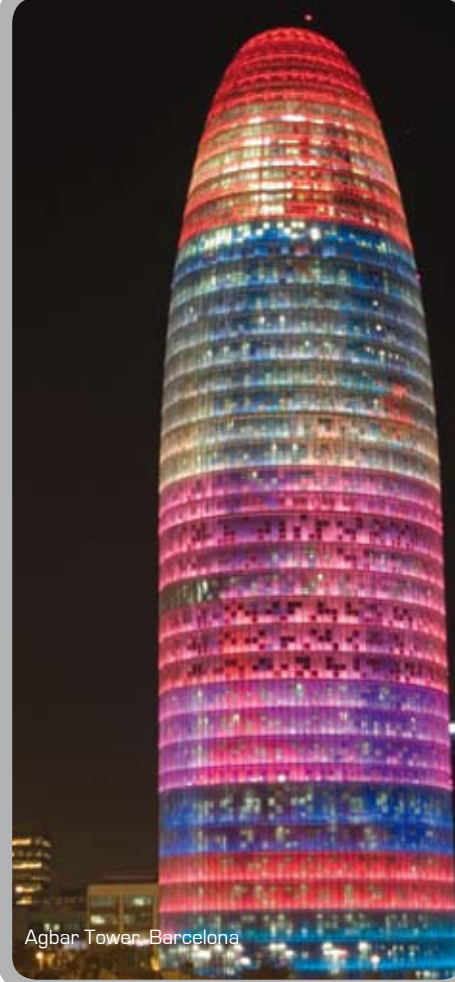




# REFERENCES



Rayonex Schwingungstechnik GmbH, Germany



# STADIUMS



Leipzig's Central Stadium, Germany



Veltins Arena Gelsenkirchen, Germany



Millerntor Stadium, Germany



"Real Madrid" training center, Spain



Brita Arena Wiesbaden, Germany

# Aquatherm piping systems are engineered to...



Optimize and reduce insulation

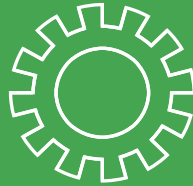
Save material costs

Shorten installation times

Improve energy savings

Easily adapt to other pipes  
and equipment

Use low-cost fusion outlets



Resist scaling, corrosion, and  
abrasion

Prevent leaks and failures

Increase system service life

Survive impact, freezing, and  
harsh chemicals

Limit linear expansion for  
better performance



Eliminate flames and noxious  
fumes

Have a lower environmental  
impact

Operate for over 50 years

Never contain toxic  
chemicals or heavy metals

Be fully recyclable