

*Corrosion-resistant pipe systems made of polypropylene
For supply networks and ship operating systems*

NEXT GENERATION OF MARITIME PIPES



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We are part of the solution!



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Efficient and lightweight piping systems for shipbuilding

For many years, the global shipbuilding market has been growing steadily while simultaneously undergoing a period of significant change. Large ships now dominate the shipping industry due to a significant increase in global trade and tourism.

This trend is accompanied by stricter environmental and pollution control standards as a result of expanding trade and the growth of the tourism sector. aquatherm supports the maritime industry in addressing these emerging technical and operational challenges by offering high-quality polypropylene piping systems.

Resistant to corrosion, wear and chemical attack, aquatherm piping systems are ideal for:

- Extreme sea conditions
- Providing excellent economic efficiency
- Long service life

Salt water resistance:	100 years
Deep sea approved:	3,000 m
Temperature range:	-40 °C to +90 °C
Thermal conductivity:	0.15 W/mK



Cruisers



RO-PAX



Commercial
vessles



Offshore &
accommodation
vessles



Icebreaker
& expedition



Naval

fusiolen®

All aquatherm products are made of fusiolen® polypropylene. It is characterised by high chemical and mechanical resistance, temperature resistance and fatigue resistance. These properties have a positive impact on the longevity of our products.



Less weight, greater efficiency: Potential for savings on board

Thanks to a wide range of superior products, integrated systems and additional technologies for the shipbuilding industry, aquatherm covers all major installations onboard the vessel, including ballast and cooling systems, water treatment solutions, as well as hot and cold water distribution systems.

Lower density and weight

aquatherm polypropylene pipes help you to save weight. While steel has a nominal weight of 7800 kg/m^3 and GFK of $2,000 \text{ kg/m}^3$ our pipes feature a density of only 980 kg/m^3 .

Iron-free is rust-free

Rust is an iron oxide formed by the redox reaction of iron and oxygen in the presence of water or atmosphere moisture. Several forms of rust can be distinguished both visually and through spectroscopy, and they form under different conditions.

aquatherm polypropylene pipes are corrosion resistant and rust free.

This has a positive effect on the service life of the piping.

For many years, customers around the world have been relying on professional support in the development of efficient, durable and cost-effective systems, benefiting from increased productivity through lower frequency of maintenance and docking, and lower overall operating costs.

aquatherm polypropylene pipes provide various benefits such as:

- Light weight
- Fast installation
- Corrosion resistance



Joining Technology

Butt welding & socket welding

High accuracy, very high bond strength, and ease of use are convincing advantages that make this cost-effective and reliable technology ideal for large-diameter pipes.

aquaTherm offers a wide range of processing machines, from manual devices to CNC-controlled welding machines, while ensuring maximum flexibility of application and quality. The pipe and fitting become a single piece, with no potential leak paths.

Flange connection

While butt welding is mainly carried out in the workshop, flanges may be used for connections on site. This saves time and costs.

Flanges are available in PN 10 and, on special request, also in PN 16, both seawater-resistant. Flange adapters are available as standard and for special butterfly valves on request. Gaskets are supplied in EPDM quality.

Suitable for many maritime applications:

- Hot & cold fresh water
- Ballast & trim water
- Black & grey water
- Fresh water flushing lines
- Water treatment
- HVAC & chilled water





HVAC and chilled water

Onboard ships and offshore structures, the right HVAC system is essential for a well-controlled climate and the comfort of passengers and crew. The system needs to be planned and designed in the best possible way, considering the type of vessel, health, safety, and environmental aspects to ensure safe and efficient operation.

For chilled water units and absorption chillers, there is usually a long-distance pipe network connecting the cooling plant with the air handling units in the cabins/workspaces or with the electrical equipment cooling units.

aquatherm blue SDR 7,4 MF

MF = multilayer, with fibre reinforced

Article no.	d	s
Socket welding process		
2012020006	20	2.8
2012025008	25	3.5

aquatherm blue SDR 11 MF RP

MF = multilayer, with fibre reinforced
RP = Increased pressure resistance

Article no.	d	s
Socket welding process		
2014040012	40	3.7
2014050014	50	4.6
2014063016	63	5.8
2014075018	75	6.8
2014090020	90	8.2
2014110022	110	10.0
2014125024	125	11.4

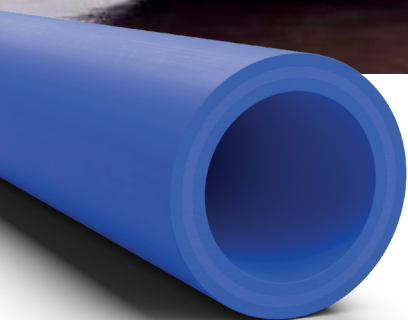
The typical medium for energy transport is water or a water/glycol mixture, mainly to avoid large refrigerant pipe systems. In some applications, seawater can be used as a cost-free cooling medium.

For these challenging applications, it is very important to select the right pipe system. aquatherm blue pipe, available in dimensions from 20 to 630 mm, is the best choice due to its chemical resistance, allowing a service life of up to 100 years.

Compared to metal or GFR pipes, aquatherm polypropylene pipes feature a lower weight, which can help reduce fuel costs.

Legend:
d: diameter in mm
s: wall thickness in mm

Article no.	d	s
Butt welding process		
2014160026	160	14.6
2014200028	200	18.2
2014250030	250	22.7
2014315032	315	28.6
2014355034	355	32.2
2014400036	400	36.3
2014450038	450	40.9



AQUATHERM BLUE MF

aquatherm blue MF is a multi-layer, fibre-reinforced composite pipe. The composite pipes are manufactured using the multi-layer extrusion process and offer increased stability thanks to the fibre reinforcement in the middle layer.

REFERENCE

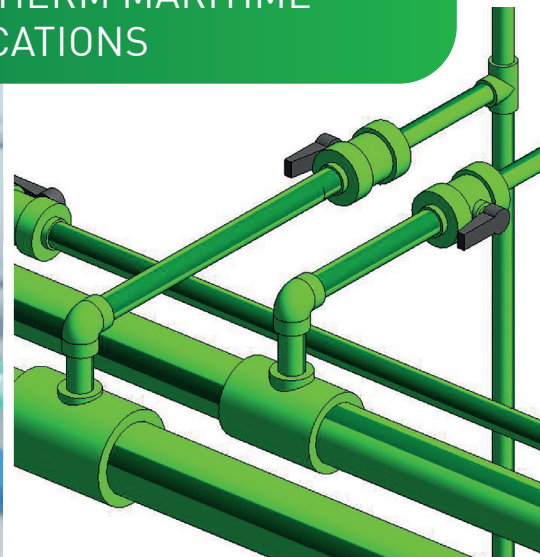
Snow Dragon 2

The corrosion-resistant piping system aquatherm green pipe was used for potable water, while aquatherm blue pipe was used for the ship's grey and black water system. During the renovation of the sister ship "Snow Dragon 1", aquatherm products also replaced the existing metal pipes in the areas of potable water as well as grey and black water.

Why trust AQUATHERM BLUE?

- High corrosion resistance
- High temperature resistance
- Resistance to chemicals
- Lighter than metallic materials*
- High pressure resistance
- Thinner insulation compared to metallic pipes

*Comparative LCA: 100 ft of pipe weighs: aquatherm blue: 7.44 kg; copper pipe: 13.5 kg; steel pipe: 48 kg



Hot and cold fresh water

According to the German “Drinking Water Ordinance” and many other international regulations of health organisations such as the WHO, the consumption or use of water should never pose a risk to human health. The chemical and microbiological composition of the water must be monitored by the health authorities, but also by the facility management to ensure high drinking water quality.

aquatherm green SDR 7,4 MF

MF = multilayer, with fibre reinforced

Article no.	d	s
Socket welding process		
1012020506	20	2.8
1012025508	25	3.5

aquatherm green SDR 9 MF RP

MF = multilayer, with fibre reinforced
RP = Increased pressure resistance

Article no.	d	s
Socket welding process		
1013032010	32	3.6
1013040012	40	4.5
1013050014	50	5.6
1013063016	63	7.1
1013075018	75	8.4
1013090020	90	10.1
1013110022	110	12.3
1013125024	125	14.0

The aquatherm green piping system ensures that excellent drinking water quality is maintained over the long term. It is not only corrosion-resistant, tasteless and odourless, but also complies with the necessary international regulations on hygiene and drinking water.

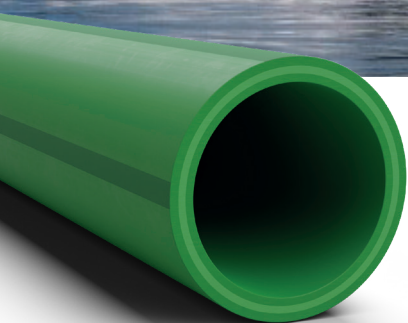
Its technical suitability and performance has been proven worldwide for decades. A variety of 450 different pipes and fittings with dimensions from 20 to 355 mm ensures safe and easy installation. Pre-fabricated pipe spools are also available.

Legend:
d: diameter in mm
s: wall thickness in mm

Article no.	d	s
Butt welding process		
1013160026	160	17.9
1013200028	200	22.4
1013250030	250	27.9
1013315032	315	35.2



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AQUATHERM GREEN MF RP

aquatherm green MF RP is a multi-layer, fibre-reinforced composite pipe with increased compressive strength.

REFERENCE

Hybrid-Superyacht “Artefact”

To ensure the highest quality in the piping systems of the “Artefact”, Nobiskrug Werft also uses products from aquatherm. For the drinking water piping, aquatherm green was used.

The odourless and tasteless piping system, which is made from polypropylene, is particularly suitable for drinking water applications as it is completely free from heavy metals and toxic chemicals.

Why trust AQUATHERM GREEN?

- Absolutely corrosion resistant
- Easy processing
- Up to 100% recyclable
- High stability
- Suitable for drinking water



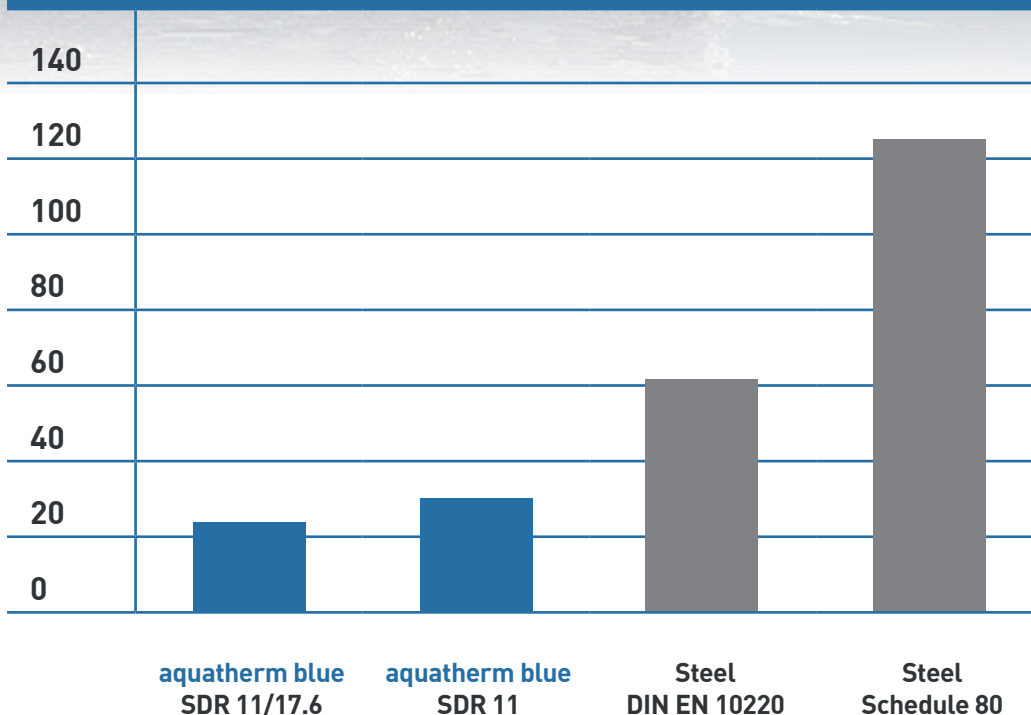
Butt welding & socket welding

High accuracy, very high bond strength, and ease of use are convincing advantages that make this cost-effective and reliable technology ideal for large-diameter pipes.

aquatherm offers a wide range of processing machines, from manual devices to CNC-controlled welding machines, while ensuring maximum flexibility of application and quality. The pipe and fitting become a single piece with no potential leak path.

CO₂ emissions (tonnes) for PP and steel pipes based on the chilled water system for a ship with approx. 200 cabins

(approx. 5,700 m pipe in 32 - 355 mm)



* Source: CO₂ emissions for PP (1.70 kg/kg) are based on EU Plastics association and for steel (1.54 kg/kg) on frauenhofer institut



Ballast and water treatment

To guarantee safe operating conditions throughout the voyage, it is necessary to determine and constantly maintain certain parameters relating to lateral stability, roll, trim, maneuverability and stresses in the hull of the vessel. Ballast water systems are used to provide the required weight in strategic locations inside the ship. In order to maintain optimal ballasting of the vessel afloat and during loading/unloading, ports install ballasting and ballast tank systems for the accurate pumping and transport of ballast water.

aquatherm polypropylene pipes provide:

- High corrosion resistance
- Maximum safety
- High reliability and flexibility
- Low friction value

These features make aquatherm polypropylene pipes ideal for ballast water pumping systems. In combination with fast, reliable and safe welding technologies, these lightweight systems become a convincing argument also for fuel savings. Ships must purify ballast water of a wide variety of marine organisms. To prevent any undesirable effects arising from this, reliable and durable solutions from aquatherm support the shipbuilding industry in all phases of the purification process, from pre-treatment, filtration, or coagulation through to disinfection using chemical or physical means, whilst complying with all necessary international regulations.



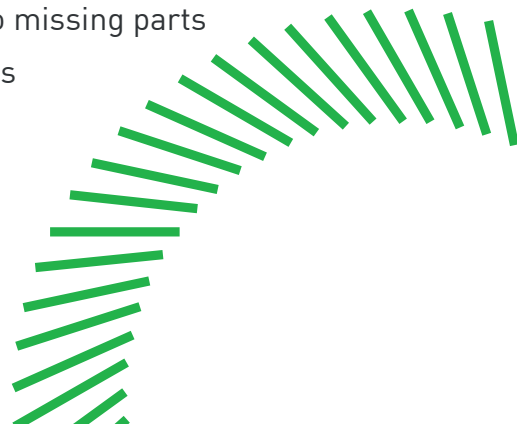
Customised prefabrication

Due to the diversity of today's applications in the maritime engineering sector, there is hardly any possibility of covering the distribution of fluid media using standardised or modular manifold designs. Every construction project has its own individual requirements.

aquatherm supports its customers with prefabricated manifolds customised according to medium type, application, architectural circumstances, as well as applicable regulations and laws.

Benefit from:

- Tested quality with a 10 year warranty
- Highest accuracy due to detailed planning
- No delays due to missing parts
- Low tooling costs





More than 5,000 vessels are equipped with aquatherm pipes worldwide

Ship	IMO Hull No.	Type
Saipem FDS	1861	Crane vessels
Heerema New	3402	Crane vessels
Costa Victoria	9109030	Cruise
Carnival Conquest	9198355	Cruise
Caribbean Princess	9215490	Cruise
AIDAvita	9221554	Cruise
AIDAaura	9221566	Cruise
Odfjell GVA 7500 Semi	3023	Drilling rig
GroupoR 7500 Semi	3026	Drilling rig
97K	1747	Drillship
PPM	1809	Drillship
Pride	1862	Drillship
Schahin	1869	Drillship
DPW Nr.1	2148	Drillship
Mecklenburg Vorpommern	9131797	Ferry
Ulysses	9142459	Ferry
Salammbô 7	9142467	Ferry
Stena Britannica	9419175	Ferry
Tanit	9598579	Ferry
Allseas Platform	3401	Heavy lift vessel
Thetis	F357	Naval
Absalon	L16	Naval
Danish Royal Yacht	5437661	Sailing yacht
White Pearl - A	1012141	Sailing yacht
BBLS FPSO	1763	Tanker

**International
Maritime
References**

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in
Germany**



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