



# **aquatherm** **PREFABRICATION**

Your support  
in the production of  
piping systems, special  
components, and manifolds



**aquatherm**  
state of the pipe

# TABLE OF CONTENTS

|  |    |
|--|----|
| • <b>Introduction:</b><br><b>Time is money in the construction industry</b>                | 3  |
| • <b>Prefabrication:</b><br><b>Your advantages as a planning engineer</b>                  | 5  |
| • <b>Prefabrication at aquatherm:</b><br><b>Five easy steps to your finished component</b> | 6  |
| • <b>Prefabrication at aquatherm in practice</b>   | 8  |
| • <b>Kö-Bogen I in Düsseldorf</b>  | 9  |
| » Prefabrication with aquatherm red pipe   |    |
| » Advantages of prefabrication for Kö-Bogen I  |    |
| • <b>AFAS office building in the Netherlands</b>   | 11 |
| » Prefabrication with aquatherm blue pipe  |    |
| » Advantages of prefabrication for the AFAS office building                                |    |
| • <b>21 Young Street, residential building in London</b>                                   | 14 |
| » Details of prefabrication with aquatherm green and blue pipe                             |    |
| » Advantages of prefabrication for the residential project in London                       |    |
| • <b>Conclusion:</b><br><b>Fully informed. Ready for prefabrication?</b>                   | 16 |
| • <b>Checklist:</b><br><b>What to look out for in prefabrication</b>                       | 17 |

# TIME IS MONEY IN THE CONSTRUCTION INDUSTRY



The installation of plumbing, sprinkler, heating, and air-conditioning systems are one of the biggest time and logistical challenges on the construction site – for architects, planners, construction managers, and specialists who have to assemble the systems on site. The construction and assembly of a functional building element (e.g. manifold for the building's air conditioning system) during ongoing construction site operations is already demanding. If the assembly is carried out under enormous time pressure due to tight deadlines, this can be very stressful for the people carrying out the work.

Added to this are the high labour costs of the skilled workers manufacturing and installing the construction elements. This is a situation that is anything but ideal for planning engineers and many other players.

A solution that is far more resource-efficient, compensates for the shortage of skilled labour, and ensures shorter installation times on the building site is prefabrication.

# FINALLY MEETING **INDIVIDUAL REQUIREMENTS**

Today, there are only a few solutions that cover the distribution of liquid media with a standardised or modular manifold design. There is a good reason for this: modern building projects have individual areas of application. For example, weather-controlled room temperature management, with the help of which heating and cooling can be selected, is just as much a standard feature as a hygienically flawless drinking water installation that is harmless to health. There are also regulations, laws, and architectural features of a building that influence the choice of material and the design of a piping system.

With our prefabrication process, we can take all these circumstances into account on site. With the help of state-of-the-art technologies and around 50 years of experience in the field of plant engineering, we have already mastered numerous projects together with our partners and customers.

In the following, we will show you the advantages you can benefit from and present our prefabrication process in detail, in theory, and in practice. A checklist will help you prepare for the process in the future.



# ADVANTAGES

## OF PREFABRICATION FOR PLANNING ENGINEERS

You already know a **number of the advantages** of using prefabrication. Time delays are eliminated, shortages of skilled workers can be counteracted, and individual requirements in plant construction can be easily considered and mastered.

**But as a planning engineer, you benefit from other positive factors:**

- You receive support during the planning by the aquatherm planning team.
- The team provides you with the CAD and planning data necessary for your project on request.
- aquatherm carries out the plausibility and completeness check together with you.
- 3D drawings minimise planning errors.
- You'll benefit from planning and cost security as aquatherm staff begin detailed planning at an early stage.
- We'll send you detailed planning data for checking and production approval.
- aquatherm prefabrication produces components with the highest precision.
- aquatherm prefabricates piping systems, manifolds, and special components according to the just-in-time principle: We produce as many parts as you need for your construction project and deliver them to your construction site at the right time. This makes the installation even easier to plan. At the same time, you remain flexible and can adjust your time planning if necessary.
- Thanks to prefabrication, you can use the time saved for other, unexpected challenges in the planning or construction phase.
- During the entire prefabrication process, you can rely on our many years of experience in manifold and plant construction.

# **PREFABRICATION AT AQUATHERM: FIVE SIMPLE STEPS TO YOUR FINISHED COMPONENT.**

Now you know the advantages we offer you during prefabrication, we'll now outline the entire process in five simple steps:

1. ■

## **Review and preparation**

Before you make an enquiry, you should review all the data, facts, and CAD drawings available to you on your project. We are also happy to offer you support with preliminary planning. Together we will check your available data.

2. ■

## **Request and check**

aquatherm needs as much input from you as possible. A project description, a CAD drawing, or a dimensioned hand drawing are a good starting point. The aquatherm distribution enquiry form helps to collect the most important information. Once you have completed and submitted this form, our planning team will check the submitted information for plausibility and completeness. You can download our distribution query form for [sanitary](#) as well as for [heating and cooling systems](#).

3. ■

### **Planning and coordination**

aquatherm plans the piping system, the manifold, or the special component after previous examination. Decades of accumulated expertise and know-how are used here. Our planning team forwards the documents to the construction department and a detailed CAD drawing (in 3D) is made. With this drawing, we can ensure that only necessary material is used for the production of the components. After production, you will receive the drawing for inspection and production approval. Check the material we send you with the trades involved. Our drawings contain CAD parts lists with item numbers for each of the fitting pieces we produce. This way, the trades on the construction site will know exactly how the fitting pieces are to be assembled. On request, we will send you our CAD data for transfer to your existing planning software.

4. ■

### **Production**

In the next step, the individual components are produced. Our prefabrication is equipped with the most modern and partly self-developed processing machines. The 25-member team manufactures piping systems, manifolds, and special components on a production area of approx. 1000 sqm. All prefabricated elements are subjected to a tightness and function test by aquatherm before they leave the factory. In this way aquatherm guarantees a warranty of 10 years with a sum insured of 20 million Euro per case of damage.

5. ■

### **Delivery**

After we have checked the individual assemblies, we deliver the finished piping systems, manifolds, and/or special components via wholesalers directly to the construction site. On request we train the installation team or support them with our own service technicians during the installation on site.





# PREFABRICATION AT AQUATHERM **IN PRACTICE**

As highlighted, aquatherm only needs a few simple steps to prefabricate your components. In our article ["Prefabrication on the construction site saves time and money"](#) you already saw two of our projects where aquatherm prefabrication played an important role.

With the help of the following examples, we would like to further deepen the possibilities and advantages that our prefabrication process offers you.



# KÖ-BOGEN I IN DÜSSELDORF



© Image: KB Düsseldorf Holding GmbH & Co. KG

The Kö-Bogen I is one of the landmarks of Düsseldorf. Behind the unusual façade is a mixture of shopping, gastronomy, and office space. The two 26-metre-high buildings have a floor area of around 42,000 m<sup>2</sup>.

## **Prefabrication with aquatherm red pipe**

Not only is the architecture impressive – safety and fire protection are also state-of-the-art. The Federal Association for Technical Fire Protection (bvfa) awarded the Kö-Bogen I the "Sprinkler Protected" seal of approval for its comprehensive fire protection measures.

The sprinklers are connected to the **aquatherm red pipe** system on three floors. The system was laid invisibly in the concrete of the ceiling. Branch and supply pipes required for the project were prefabricated by aquatherm according to the client's specifications. In 25 construction stages, 3400 sprinkler connections and 6500 pipe metres, including fittings, were installed.

## **Advantages of prefabrication for the Kö-Bogen I**

As the string and supply pipes were prefabricated by aquatherm, numerous welds and thus additional labour and time were not required on the construction site. The sealing test had already taken place in the aquatherm factory in Attendorn in the south of Westphalia, and the pipes could be delivered to Düsseldorf ready for installation.

Laying directly into the concrete was made possible by the material of aquatherm red pipe: the material fusiolen® PP-R FS developed by aquatherm from the raw material polypropylene. This plastic is not only flame retardant but also corrosion resistant. In a sprinkler system consisting of metal, corrosion occurs as soon as metal meets damp concrete. In such a case, special protection could be used as a countermeasure. However, this makes the installation of metal pipe systems in concrete even more complex and cost intensive.

aquatherm red pipe was chosen for the sprinkler system but not only because of the advantages mentioned above. The material that aquatherm's product is made of is also far ahead of systems made of metal due to its sustainability and longevity. Its material, polypropylene, is one of the two most important standard plastics. Compared to other pipe materials, studies show polypropylene pipes have significantly lower CO<sub>2</sub> emissions. The raw material is characterised by a long service life, very good environmental compatibility, and recyclability.

# AFAS OFFICE BUILDING IN THE NETHERLANDS



© Image: AFAS Software

In the Netherlands, the AFAS headquarters is one of the most sustainable office buildings – it is completely energy neutral. The goal that the software company from Leusden near Utrecht pursued: The company headquarters should be sustainable and completely oriented towards digitalisation and new forms of working, learning, and dwelling. Around 500 employees not only benefit from this special working environment, but customers and visitors also appreciate this mix.



The "AFAS Clubhouse" consists of several buildings that are connected to each other. The centrepiece of this facility is an atrium with an inner garden. From here, employees can reach their offices in the main building, the sports areas, the training centre, and many other areas. A theatre seats 850 guests.

What makes these buildings so sustainable? 1009 solar panels mounted on the roofs of the office buildings cover the annual consumption of 133 households. 100 charging stations on the premises ensure that electric cars are always ready for use. In addition, there are a large number of sensors. These ensure that energy is only consumed where it is needed. Thanks to a sophisticated ventilation concept, the employees enjoy excellent air quality.



© Image: AFAS Software

## **Prefabrication with aquatherm blue pipe**

The cooling water system which AFAS chose fitted into their chosen sustainability concept. Over 6000 metres and in sizes between 40 and 75 mm, the [aquatherm blue pipe](#) system was installed.

This aquatherm product is characterised by its high temperature and pressure resistance. Furthermore, aquatherm blue pipe has good [welding properties](#). The fusion to a homogeneous and materially cohesive unit, by which a maximum of safety and durability is achieved, also speaks for the use of this plastic pipe.

The official Dutch partner of aquatherm, ERIKS, was responsible for the planning and installation of the piping system together with Homji Technical Systems. As Homji has its own prefabrication workshop, many elements of the system could be prefabricated in the workshop and transported to the AFAS construction site ready for installation. Efficient planning of the prefabrication significantly reduced the installation time for the project.

## **Advantages of prefabrication for the AFAS office building**

Prefabrication not only significantly reduced the installation time for the piping system, another challenge in the shape of the building with almost no straight walls, was much easier to overcome. By using prefabricated components, the system could be easily installed in every room.

# 21 YOUNG STREET, RESIDENTIAL DEVELOPMENT IN LONDON



Due to the demolition of a multistorey car park from the 1960s at 21 Young Street, the British residential property company Grainger plc had the opportunity to construct a new building. The new complex was to be built on the edge of one of London's oldest squares. The aim: to adapt the new building to the listed residential buildings around Kensington Square.

The architects of Assael Architecture Ltd were inspired by the traditional mansions of Kensington Court. They created an elegant brick building that extends from five to eight storeys along Young Street. In total, 53 luxurious flats and penthouses were created

on 80,000 square metres. High-quality materials such as marble, woods and Fortuny fabrics were used for the interior of the flats and penthouses. But the building services also had to meet the highest standards.



## **Prefabrication details with aquatherm green and aquatherm blue pipe**

For the pipe systems, the specialist planner originally wanted to use copper and steel. After a recommendation of the installation system by Greenside Integrated Services Limited, the decision was made to use the systems of aquatherm. Instead of metal, the high-quality plastic polypropylene was used. The installers, who were responsible for the installation of the piping system on site, learned the processing methods required for the plastic pipes during special aquatherm training courses.

A total of 25,000 metres of aquatherm pipes in dimensions from 20 to 125 mm were laid. [aquatherm green pipe](#) was installed, ensuring hygienically perfect drinking water for several decades.

For the heating, cooling, and condenser pipes, the clients and responsible planners chose aquatherm blue pipe. This aquatherm product with its physical properties is adapted to the special needs of the heating and cooling sector. It is characterised by a high temperature and through-load capacity.

## **Advantages of prefabrication for the housing project in London**

Components and manifolds of aquatherm green and aquatherm blue pipe were prefabricated and assembled in the aquatherm factory beforehand. This meant that the parts could then be delivered to site ready for installation. Greenside's installers saved a lot of time during the installation, which they completed before schedule.

# ALL-ROUND INFORMATION. READY FOR PREFABRICATION?

Now you know how we design and build piping systems, manifolds, and special components. And we do it directly in our own factory, completely to the specifications defined by the customer. The prefabricated parts are then delivered ready for installation anywhere in the world.

During the whole process of prefabrication, our customers can rely on our 50 years of experience in the field of systems engineering. aquatherm piping systems are an important part of luxury cruisers, football stadiums, hotel complexes, hospitals and server centres worldwide.

Are you interested in our services in the field of prefabrication or in our modular construction method? Then please do not hesitate to **contact us**. We will be happy to answer any questions you may have. As a strong partner, we will provide you with full support for your planning and construction projects.

# CHECKLIST:

## WHAT TO LOOK OUT FOR IN PREFABRICATION

There are a few points you can keep in mind that will make the prefabrication process even easier for you:

- ☐ If you decide to use our high-quality plastic pipes in your construction project, be sure to exchange information with our field service or our planning team if you have any uncertainties. With an on-site inspection together with our staff, you can plan better and ensure reliability.
- ☐ Prepare the most important project information. This can be CAD drawings, dimensioned hand sketches, and other details.
- ☐ Fill out the aquatherm distribution query forms. This enables the planning team to check submitted information for plausibility and completeness.
- ☐ Check the CAD drawing created by the planning team together with your installers and other trades people. Approve it.
- ☐ Pipe systems, manifolds, and special components are prefabricated. Aquatherm manufactures the components according to the just-in-time principle, so that you can save time and resources on the construction site. Report changes on the construction site in time so that they can be considered during the prefabrication. We can react flexibly to your challenges.
- ☐ The components are delivered to the construction site. Make sure that all the required parts are available.
- ☐ Take further advice or support if questions arise with you or the contractors. Our field service, planning team, and service technicians are there to help you every step of the way.





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