

# ACJA

HP - Systeme®



**Flow dynamic water treatment  
for the reduction of microbiological contamination  
and for the prevention of the formation of new germs  
in domestic and process water**

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## General Information

Due to the acceptance that our worldwide most valuable and important nourishment – clean drinking water – will not be endless and freely available anymore, the purification of water is getting very important.

Today one is by all means aware of the fact that even small amounts of artificially caused contaminations (chemical as well as physical origin) have a considerable effect on the ecological equilibrium of our water and nature altogether.

Therefore the protection of the resource "clean water" and the responsible exposure with it must be of a high priority.



Reason enough for our company to look for ways to clean contaminated water and microbiological polluted water and to prepare it for the purpose of a further application

- **ecologically justifiable**
- **effectively lasting**
- **and economically reasonable**

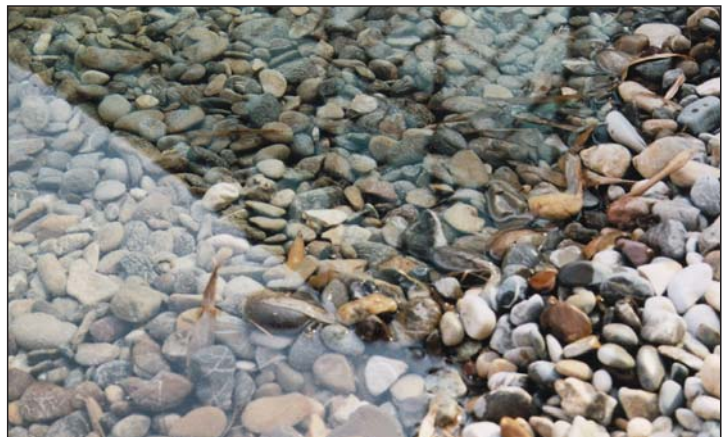
The **AQUA HP-SYSTEM** is breaking new and innovative grounds to reduce microbiological impact to an absolute minimum, and to prevent the formation of new germs respectively.

The knowledge of the specific physical-chemical attributes of the water was consequently brought and implemented into the development of a flow dynamic technology.

With the **AQUA HP-SYSTEM** an extensive research design and development project was completed and successfully implemented in industrial and operational practice.

With the development of the technology of the **AQUA HP-SYSTEM** we provide the industry, industrial user and municipal facilities with a robust and environmentally sound process, which is also low on maintenance.

Without the application of chemicals or irradiation methods and with a low energy input the water will be kept low on germs and the formation of new germs will be reliably and permanently prevented.



## Technique

### Flow dynamic water treatment

The **AQUA HP-SYSTEM** is a flow dynamic technology which primarily offers the following characteristics:

- **water shear rate**
- **high pressure difference**
- **vacuum**
- **air suction**



The core of the **AQUA HP-SYSTEM** is a reaction container, which is arranged similar to a cyclone. Water is being pumped by a high pressure pump into the reaction container and within a chamber accelerated in such a way that very high flow- and rotation velocities are being produced. The flow volume is being driven so that several water layers, centrifugal and centripetal, abrade against each other and develop large gravitational forces.

A special construction in the reaction container leads to a vacuum of about -1,0 bar (Venturi injector effect). As a consequence of these developing vacuums, the **AQUA HP-SYSTEM** has to intake ambient air and feeds this natural mixture of air-oxygen directly into the reaction container. The oxygen which is released in the water and the air-oxygen form free radicals and act as an oxidation grade.

For a successful operation of the **AQUA HP-SYSTEM** a primary water pressure of 5,0 to 7,0 bar is essential – pre-connection of an adequate high pressure pump.

The following factors are responsible for the decomposition of microbiological contamination in the water:

- **water shear rate**
- **changing pressure differences from +5,0/7,0 to -0,1 bar**
- **vacuum**
- **cavitations**
- **oxidation**

The membranes of the cell of bacteria, germs and viruses are being closed, the microbiological material is being destroyed and mortified mechanically. Due to the take in of air-oxygen and in the water as well as the subsequent release of oxygen, the mortified cell material is mortified to a large extent.

Another advantage of the **AQUA HP-SYSTEM** is the fact that the high physical exposure of the water and the high accumulation with natural oxygen is leads to a modification of the viscosity.

The treated water is "softer", wash- and cleaning processes, i.e. in washing units for metal parts, can be improved and optimised explicitly.

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## Applications of the AQUA HP-SYSTEM in the systems- and process technology

### **Ponds- and well systems Rain water utilisation systems Irrigation plants**

Decomposition and prevention of algae growth  
Prevention of general organic contamination  
Reduction of cleaning expenditure



### **Industrial parts washing system Washing bays for cars and trucks Bottle purification plants**

Prevention of general organic contamination  
Prevention of odour formation  
Improvement of the sprinkler capability and increase of the washing and purification effect  
Extension of the washing base lifetime  
Reduction of cleaning expenditure  
Reduction of detergent



### **Open/closed cooling water circulation Air purification systems / circulation spray humidifier Process water circulation**

Decomposition of bio film  
Prevention of algae and bio film growth  
Prevention of biological fouling in cooling installations  
Abandonment of biocides  
Reduction of cleaning expenditure

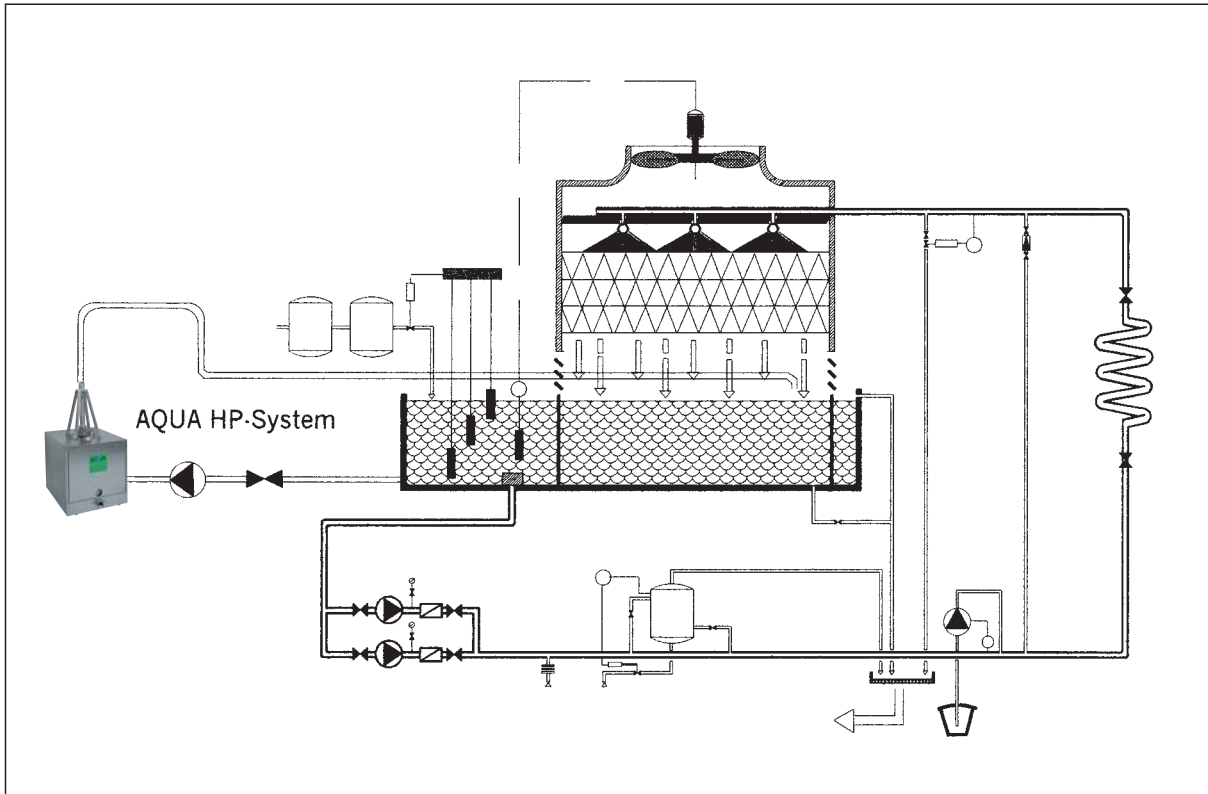
### **Cooling oil systems Grinding dilution circulation Water from paint finishing systems**

Reduction of microbiological problems  
Reduction of fungal and yeast  
Strong reduction of biocides and bactericides  
Strong decrease of odour formation  
Decomposition of external oil portions  
Extension of the washing base lifetime  
Reduction of cleaning expenditure

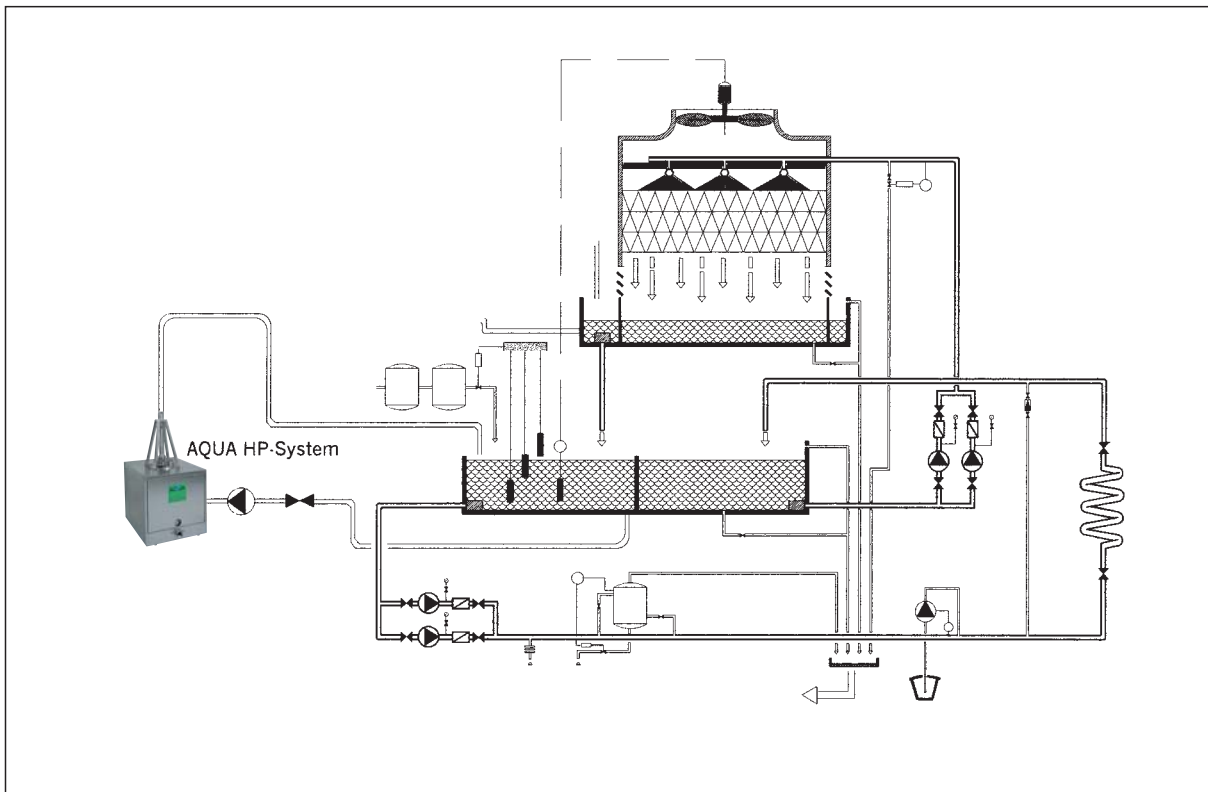


## Installation Examples

### AQUA HP-SYSTEM in cooling water circulation



### AQUA HP-SYSTEM in cooling water circulation



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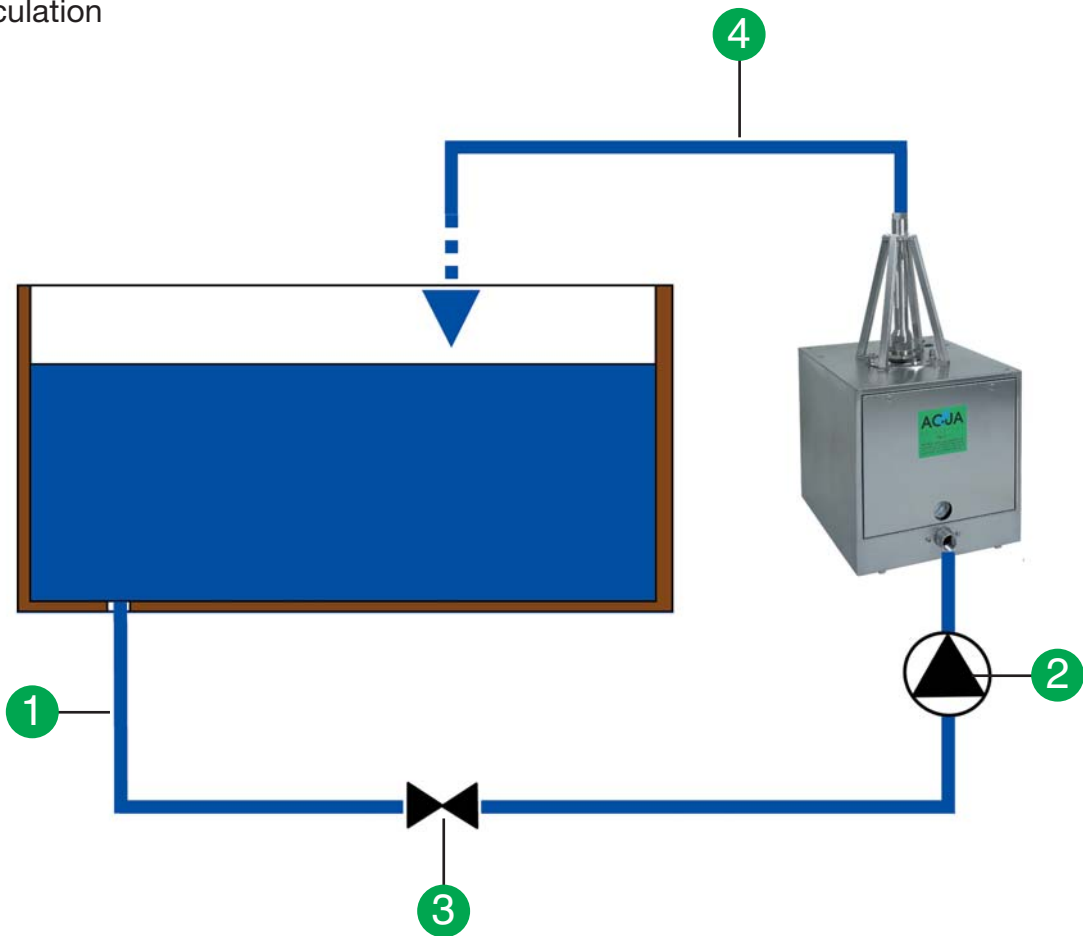
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## Installation instructions

In circulation



### General

The **AQUA HP-SYSTEM** is integrated in existing circulations (i.e. cooling water circulations etc). If this is not possible, a dedicated treatment circulation has to be created (i.e. treatment tank).

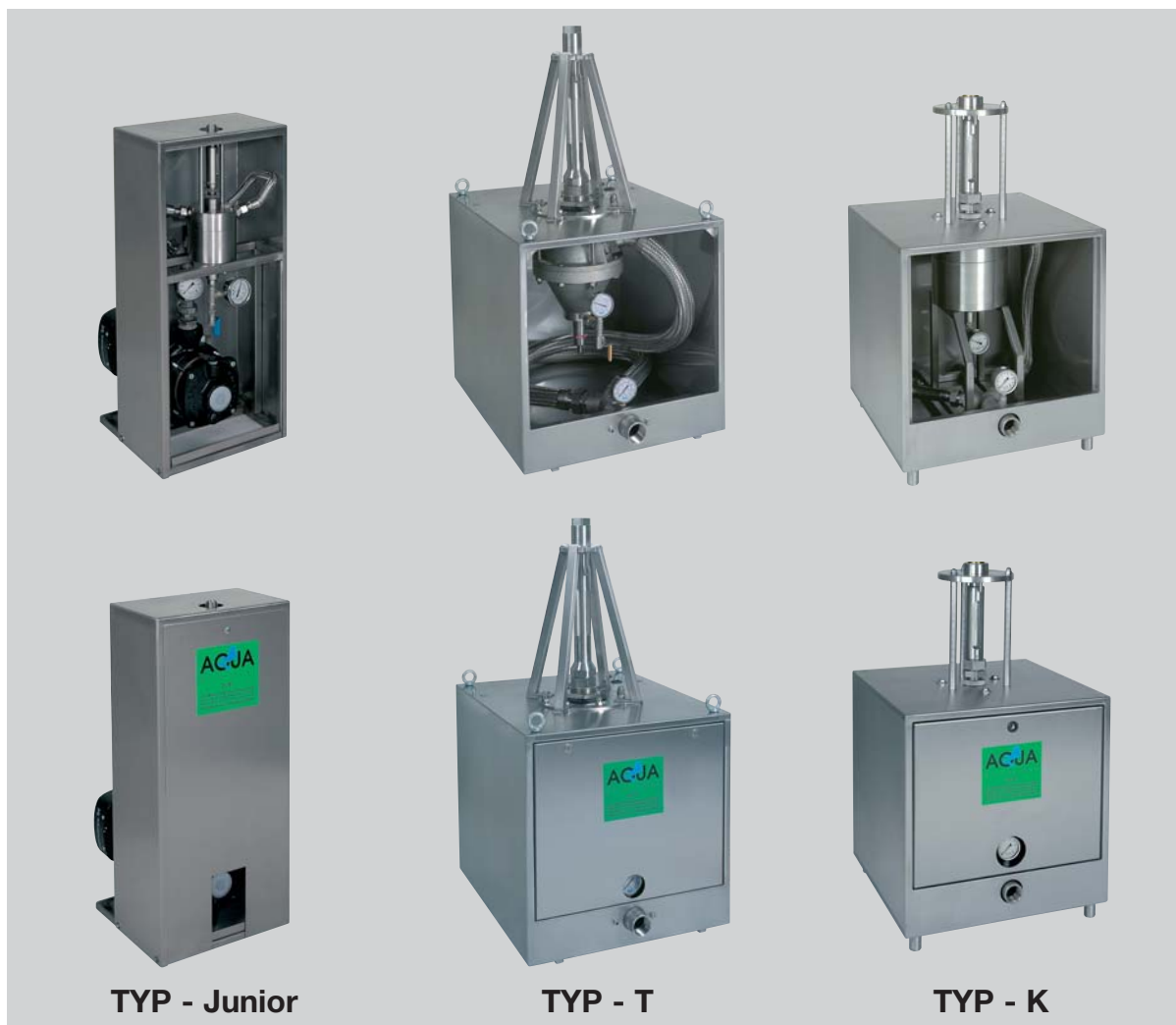
For an optimal operation it is very important that a constant water volume flow and pressure (approx. 5,0 to 7,0 bar) is available for the operation of the unit.

The treated water passes through an outlet pipe ④ with approx. 1,0 to 1,5 bar out of the **AQUA HP-SYSTEM**. A free outlet of the treated water has to be provided, a reduction of the predetermined nominal width of the pipe may not be undertaken, i.e. filter units, non-return valves or similar. Furthermore it is to be pointed out that only long bows are being used. The outlet pipe has to end above the water surface. The integration of the **AQUA HP-SYSTEM** into a closed water circulation is an exception.

### Materials to be applied:

For pipes ①, ④ and fittings ③ commercially available parts for the pipe installation have to be used (depending on the available pressure – see pump capacity). The pump ② has to be chosen according to the recommendation of the pump manufacturer. This can be requested as part of the delivery.

## Our Products at a glance



TYP - Junior

TYP - T

TYP - K

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Description	Capacity	Weight	System Dimensions		
			B	T	H
Typ K0 JUNIOR	≈ 0,5- 2,5 m <sup>3</sup> /h	≈ 40 kg	≈ 35	≈ 48	≈ 75
Typ K1- 9	≈ 4,5- 6,5 m <sup>3</sup> /h	≈ 102 kg	≈ 55	≈ 55	≈ 96
Typ K1-11	≈ 6,0- 8,5 m <sup>3</sup> /h	≈ 102 kg	≈ 55	≈ 55	≈ 96
Typ K2-13	≈ 8,5- 11,0 m <sup>3</sup> /h	≈ 102 kg	≈ 55	≈ 55	≈ 96
Typ T1-16	≈ 9,0- 15,0 m <sup>3</sup> /h	≈ 80 kg	≈ 55	≈ 66	≈ 108
Typ T1-21	≈ 15,0- 24,0 m <sup>3</sup> /h	≈ 80 kg	≈ 55	≈ 66	≈ 108
Typ T2-27	≈ 24,0- 33,0 m <sup>3</sup> /h	≈ 80 kg	≈ 55	≈ 66	≈ 108
Typ T3-34	≈ 32,0- 43,0 m <sup>3</sup> /h	≈ 82 kg	≈ 55	≈ 66	≈ 108
Typ T4-40	≈ 41,0- 51,0 m <sup>3</sup> /h	≈ 82 kg	≈ 55	≈ 66	≈ 108

Material: Stainless steel - DIN 1.4301 - DIN 1.4408 or similar.

Outlet nozzle: Stainless steel/ Acrylic

Subject to changes, which serve the technical progress.

Your competent consultant:

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