





When it's about economy and long service life

Chillers from the Rack, EB, HK, AR and PWW series

Pfannenberg Chillers guarantee a central and economic provision of cooling using either water or oil as a medium. All cooling tasks can be accomplished simply and securely via a closed pipeline system. The variety of uses ranges from the cooling of control cabinets, fluid media and production processes to applications on test rigs, in tool construction or in laboratories.

In order to ensure fast availability of our chillers, we have set up our own central production and logistics site in Italy.

Expertise in process cooling!

In this day and age, if you want to be the best in process cooling, you have offer more than just superior quality. The ability to partner with customers and sharing competence, as well as offer excellent service is an absolute must - and that requires the highest level of innovation and technology.

From the idea to the product

No matter whether it is a question of air conditioners or large projects, standard solutions or individual developments, your problems and activities will be in good hands with us. We can guarantee you a face to face meeting on site. Using successful solutions, we would like to introduce our company as a solid, flexible and reliable partner.

Everything from a single source

Within a prescribed period, innovative technology is developed and successfully implemented. For target markets, we not only carry out development together with our customers, but also provide consulting for installation and project management.

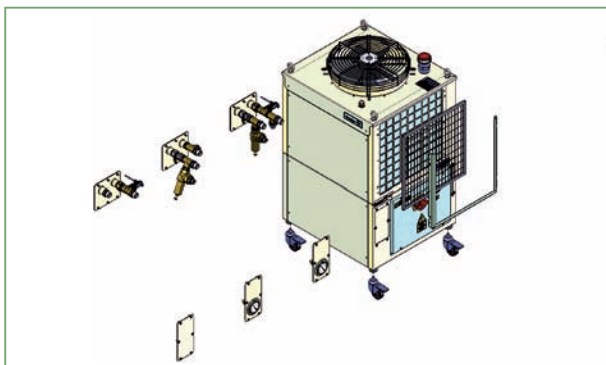


Process chiller design

Pfannenber process chillers are designed based on three main areas: the refrigeration circuit, the hydraulic circuit and controls.

Refrigeration circuit

The refrigeration circuit's main purpose is to guarantee the heat transfer from the medium, which is passing through the evaporator and therefore, to cool the particular medium down to the desired temperature for the particular application. The heat, which is transferred from the medium to the refrigerant is then carried back to a compressor and then passes on to the different phases of the refrigeration cycle. This is an continuous cycle, which we are rejecting heat (condenser) and in wich we are absorbing heat (evaporator).



Hydraulic circuit

The hydraulic circuit is specifically designed to deliver a certain medium at a calculated flow rate, temperature and pressure to the consumers's application. The flow rate, temperature and pressure varies based on the particular application.

Controls

In order to guarantee the accurate delivery of the medium to the consumer's application, proper controls are necessary.

For example, a standard method of controlling a temperature is by using a digital controller with a medium sensor and based on the set-point, will control the refrigeration circuit in order to maintain the accurate temperature for the particular application.

There are many methods of providing accurate controlling of the refrigeration and hydraulic circuits and these are based on the application criteria. At Pfannenber, we have the competence to provide consultation to determine sizing and ensure proper configuration of a process chiller in order to meet your application needs.

The perfect solution...

High-tech machines need high-tech components and systems, such as:

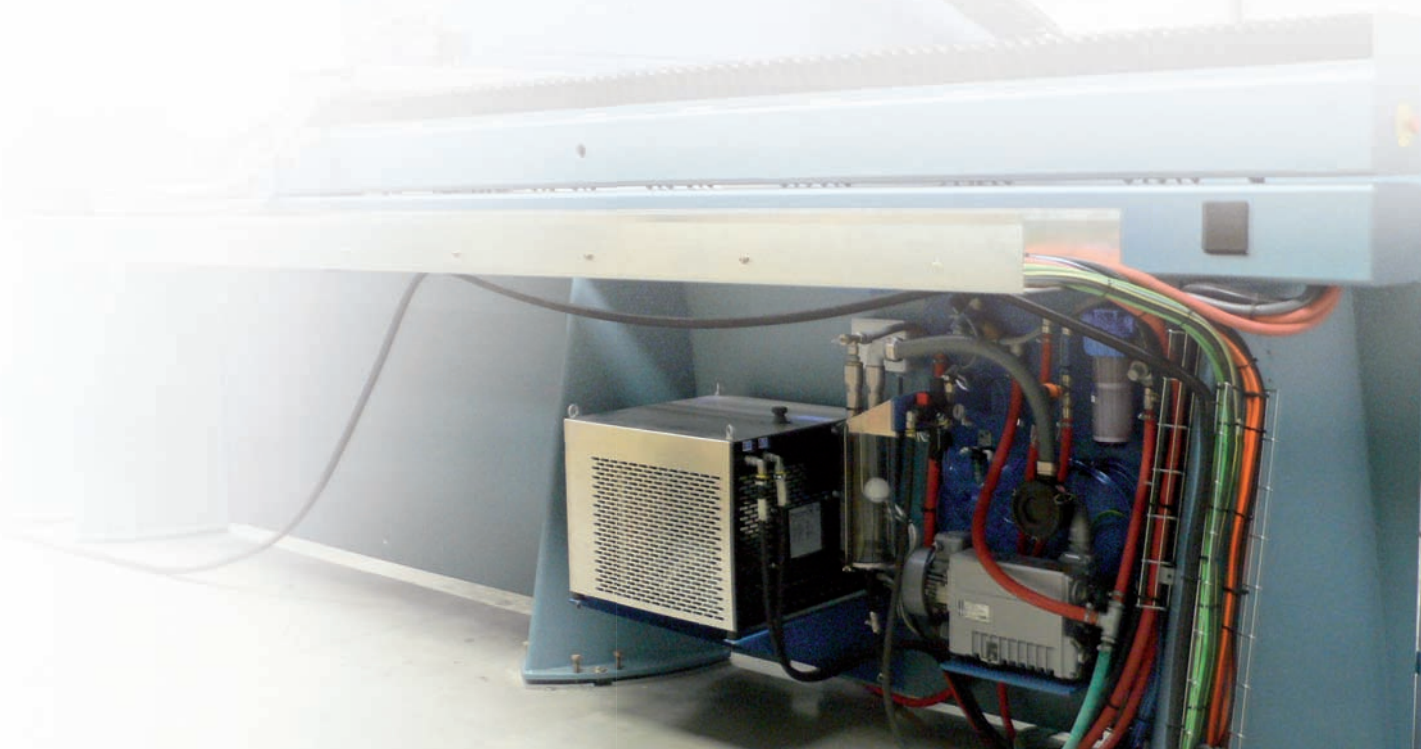
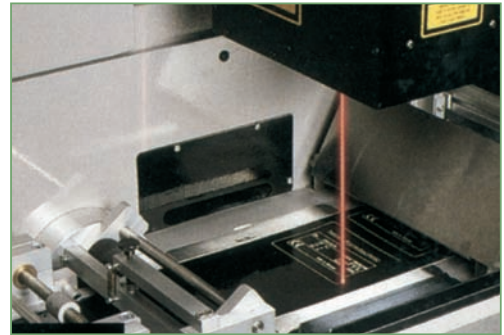
- spindle, linear and torque motors
- all types of motors
- laser sources
- print systems
- x-ray tubes

Heat is created wherever these items are in use, in addition to the ambient temperature which in some areas can be very high during certain seasons. This must be controlled since too much heat leads to machine failure or shutdown, in turn causing a loss of production.

Wherever precise, exact temperatures are required, water is a proven cooling agent and it is impossible to imagine cooling without it. This is where chillers are used. Chillers produce cold water (10 °C – 35 °C) as a cooling agent - or bring water, oil and emulsions to the exact temperature required.

...whatever the application

Our many years of experience from across such varied industries as the cooling of complex machine tools and machining centers, colour systems for printing presses, glue and colour cooling for wood working machines, welding systems for plastic film for packaging machines, laser sources for marking lasers, x-ray tubes for measuring systems all combine to guarantee precision and quality. Our successful engineering team is constantly developing and improving chiller technology. We are also your competent partner for custom-made and special solutions.



Cost-efficiency Master Plan

We secure your future with our modern philosophy

Pfannenbergs subscribes to a corporate philosophy which focuses on the concerns and objectives of the users with respect to cost efficiency. This starts during the planning phase and extends far beyond the operation phase. Furthermore, Pfannenbergs is one of the few suppliers who can supply a complete solution, i.e. a chiller solution as well as the complete handling and maintenance of your cabinet thermal management.

Pre-sales The right product at the right time – at Pfannenbergs, service starts even before delivery. An analysis of the business environment, of the objectives and of the technology which the user has available is our investment in a sustainably successful cooperation.

Concept design Design that is perfectly adjusted to your application.

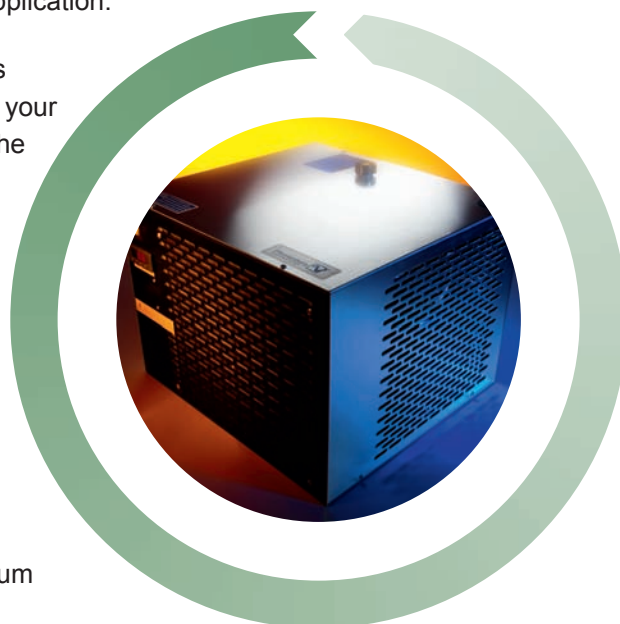
Installation and start-up operation Pfannenbergs offers support in the installation and start-up operation of the chiller at your site. This ensures a smooth start and contributes to extending the long service life of the chiller.

Coaching and service Training courses by Pfannenbergs experts, in combination with customised maintenance and repair packages, ensure that your production processes run smoothly and guarantee longer service life.

Energy efficiency Our chillers achieve top grades in energy consumption.

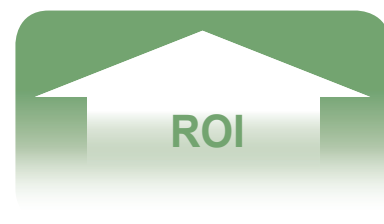
Reliability More than 20 years of experience in the field of recooling and the use of high-quality components ensure optimum long-term stability and top MTBF (mean time between failures).

Service friendliness Minimum MTTR (mean time to repair) and the shortest time needed to replace units thanks to perfect accessibility, standardised parts and a carefully thought-through plug-and-play concept minimise your repair costs and downtimes.



Benefits: risk minimisation and cost savings

Pfannenbergs's master plan as described above spells crucial benefits for manufacturers and users. After all, Pfannenbergs makes sure that the total cost of ownership (TCO) of your components is considerably reduced while your return on investment (ROI) receives a powerful boost.



New **ECOOL** passive/active chillers from Pfannenberg

The new generation of passive/active chillers comes with all **ECOOL** features:

- climate protection
- energy efficiency
- easy handling

That is the reason they carry the new **ECOOL** logo.

Our chillers with passive/active cooling possess unexpected energy savings potential.

Below we give you a good example of potential savings when using the Pfannenberg **ECOOL** passive/active chiller:

Pfannenberg **ECOOL**/VLV passive/active combination

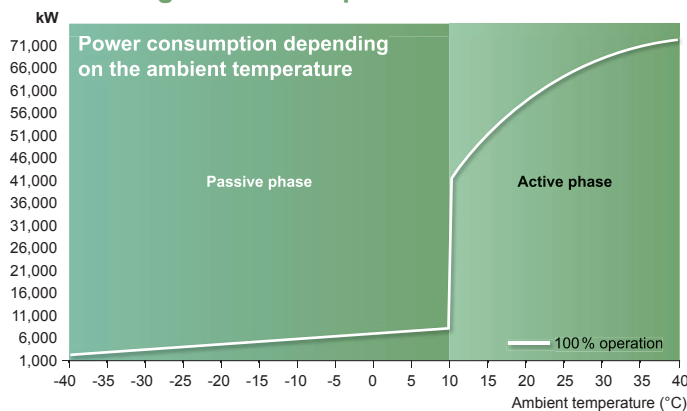
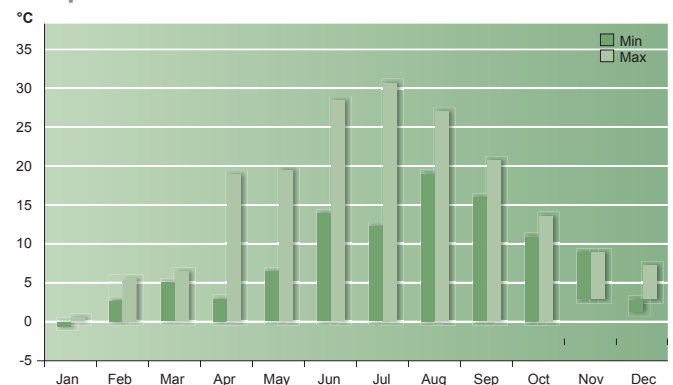


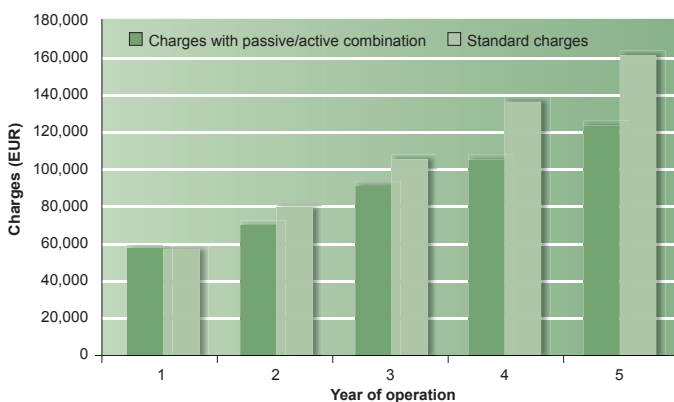
Chart of the power consumption in ambient temperatures between -40 °C and +40 °C. At a ΔT of 10 K ($t_{\text{water}} - t_{\text{environment}}$) the combination works in the passive mode up to an ambient temperature of +10 °C. Only once this temperature is exceeded does an automatic switch to the active mode take place.

Temperatures in 2008



The average temperatures in Germany in 2008 are shown here. During about five months a year the average temperature is less than +10 °C. Using the information from the chart on the left you can easily determine how many kWh you can save in one year because the chiller can remain in passive mode for five months.

Cost comparison



Cost development of Pfannenberg passive/active chillers and standard active chillers in a comparison:

Depiction of the total costs from energy costs, maintenance costs and acquisition costs.

After just two years the ROI (return on investment) is ensured.

Optimum in energy efficiency + Perfect service friendliness = Cost savings without any compromises!

Five series for every application

Rack

The compact design of the unit allows it to be attached to the widest variety of machine types. This unit is used in the fields of laboratory equipment, pharmaceutical and medical equipment, laser equipment, automation equipment and also in industrial automation for work spindles.

EB

The EB series has been specially developed for applications that require stable temperature control. Equipped with a programmable control module, these units can be used to realise small hystereses of the fluid temperature. For monitoring the functions of the chiller, a control module is optionally available that indicates the individual function statuses via an LED display.

HK

The HK series has been designed for indoor and outdoor applications for the cooling of water, oil and emulsions. These units have a 'stand-alone' design for automatic operation. They can be used throughout the entire range of industries. The cooling circuit is controlled by a programmable temperature module; this ensures high temperature accuracy.

AR

The AR series arose from the requirements of the application area of the mechanical engineering sector as well as the cigarette and packaging industry. The characteristic feature of this series is the implementation of the housing, which is based on standard control cabinet sizes. This allows optimum integration of the cooler in switchgear.

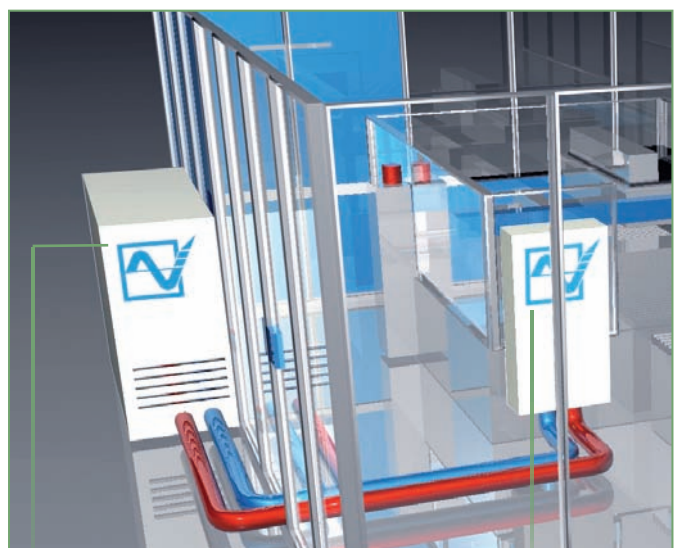
PWW

The PWW series is a new generation of cooling units based on the passive cooling principle. It has been specially designed for applications where process water is already available. Process water flowing through the integrated heat exchanger on the primary side will be regulated to keep the cooling water on the secondary side at a stable temperature. Due to the smart design of the closed loop circuit the PWW can be easily adapted to the existing water supply.

The 100% system solution for all branches of industry

The Pfannenberg chillers offer decisive advantages in combination with the Pfannenberg air/water heat exchangers:

- in applications where power losses must not enter the surrounding space
- if aggressive ambient air restricts the use of conventional cooling units
- if a very high IP class is required (up to IP 65)
- if maintenance-free cooling units are necessary



Chiller

Air-/water heat exchanger

All Chillers at a glance

Type	Cooling capacity ¹	Rated voltage ²	Dimensions (HxWxD)	Approvals					Page
				UL	cUL	GOST	CSA	CE	
Rack Chillers (water)									
Rack 1100	1100 W	230 V AC	395 x 450 x 480 mm	●	●	●		●	100
Rack 1700	1700 W			●	●	●		●	100
Rack 2400	2400 W		500 x 580 x 580 mm	●	●	●		●	100
EB Chillers (water)									
EB 30 WT	3000 W	400 V / 460 V 3 ~	955 x 550 x 610 mm	●	●	●		●	102
EB 43 WT	4300 W			●	●	●		●	102
EB 60 WT	6000 W			●	●	●		●	102
EB 75 WT	7500 W		1290 x 705 x 765 mm	●	●	●		●	104
EB 90 WT	9000 W			●	●	●		●	104
EB 130 WT	13000 W			●	●	●		●	104
EB 150 WT	15000 W			●	●	●		●	104
EB 190 WT	19000 W		1410 x 1230 x 790 mm	●	●	●		●	106
EB 250 WT	25000 W			●	●	●		●	106
EB 300 WT	30000 W		1410 x 1680 x 790 mm	●	●	●		●	108
EB 350 WT	35000 W			●	●	●		●	108
EB 400 WT	40000 W			●	●	●		●	108
EB Chillers (oil)									
EB 30 (oil)	3000 W	400 V / 460 V 3 ~	955 x 550 x 610 mm	●	●	●		●	110
EB 43 (oil)	4300 W			●	●	●		●	110
EB 60 (oil)	6000 W			●	●	●		●	110
EB 75 (oil)	7500 W		1290 x 705 x 765 mm	●	●	●		●	112
EB 90 (oil)	9000 W			●	●	●		●	112
EB 130 (oil)	13000 W			●	●	●		●	112
EB 150 (oil)	15000 W			●	●	●		●	112
EB 190 (oil)	19000 W		1410 x 1230 x 790 mm	●	●	●		●	114
EB 250 (oil)	25000 W			●	●	●		●	114
EB 300 (oil)	30000 W		1410 x 1680 x 790 mm	●	●	●		●	116
EB 350 (oil)	35000 W			●	●	●		●	116
EB 400 (oil)	40000 W			●	●	●		●	116
HK Chillers (WT)									
HK 55 (WT)	55000 W	400 V / 460 V 3 ~	1800 x 2500 x 1110 mm	●	●	●		●	118
HK 62 (WT)	62000 W			●	●	●		●	118
HK 70 (WT)	70000 W			●	●	●		●	118
AR Chillers (WT)									
AR 10 WT	10000 W	400 V / 460 V 3 ~	2000 x 1000 x 600 mm	●	●	●		●	120
AR 12 WT	12000 W			●	●	●		●	120
AR 15 WT	15000 W		2001 x 1000 x 800 mm	●	●	●		●	120
AR 18 WT	18000 W			●	●	●		●	120
PWW Chillers									
PWW 9.000	9000 W	230 V AC	500 x 580 x 580 mm	●	●	●		●	122
PWW 12.000	12000 W			●	●	●		●	122
PWW 18.000	18000 W			●	●	●		●	122
PWW 24.000	24000 W			●	●	●		●	122

¹ performance data based on 50Hz operation
² different voltages available on request

● available
○ pending
◐ upon request



Further information can be found on the Internet:
www.pfannenberg.com · www.pfannenberg-spareparts.com
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