



# The Pfannenberg Thermal Management Concept



Air/Air Heat Exchangers

A/C Cooling Units

Air/Water Heat Exchangers

# Pfannenbergs unique thermal management concept

**Optimal thermal management for all requirements due to coordinated hardware and software.**

- Complete program of thermal management units:
  - Air/Air Heat Exchangers
  - A/C Cooling Units
  - Air/Water Heat Exchangers

All three cooling technologies are cut-out compatible designed to be mounted to cabinets from all leading electrical enclosure manufacturers

- Efficient **ECOOL**-Technology
- Calculate the perfect thermal management solution: Pfannenbergs Sizing Software (PSS) helps you to find the most suitable solution for individual application
- Monitor your processes: **ECOOL**-Plant for cooling units – Premium software service tool for units with Pfannenbergs Multi Controller (MC)



# 1 Enclosure cut-out 3 Cooling technologies 9 Device versions

**Manufacturers of machines, plant engineers, end users and distributors profit from increased flexibility and cost savings:**

- All three cooling technologies are completely interchangeable to suit customer's cooling demand
- Only one standardized enclosure cut-out
- Through one standard cut-out size, only few enclosure variants are needed
- Minimum logistic expenditure
- Flexibility of appropriate cooling technology – even after the planning phase
- Simple upgrade of the cooling technology when temperature conditions change
- Easy and fast installation reduces service and maintenance costs

Air/Air Heat Exchangers

A/C Cooling Units

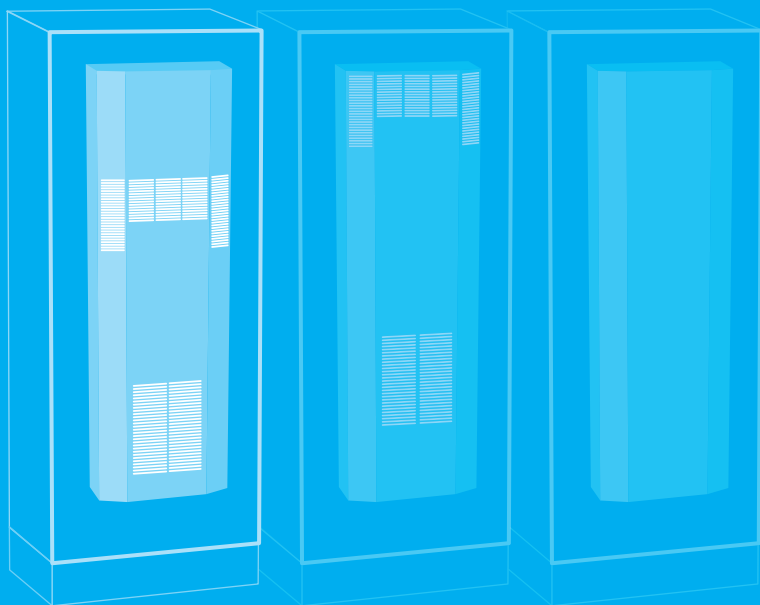
Air/Water Heat Exchangers

Secure climatisation  
solution with ambient air

#### ADVANTAGES

- Cost efficient solution for applications with  $\Delta T > 10K$
- Available in six performance classes from 20 W/K to 100 W/K in three sizes
- Maximum distance between intake and exhaust vents optimizes airflow within the electrical enclosure which eliminates potential hot spots
- Integrated thermostat for temperature control
- Additional thermostat for high temperature warning
- High maintenance friendliness
- Mounting-friendly seal, no elaborate reworking of the installation cut-out
- IP rating is achieved

# Air/Air Heat Exchangers



## FIELD OF USE

Application in which the ambient air is contaminated with dust, or liquids, rendering the use of a filterfan impractical.

## SOLUTION

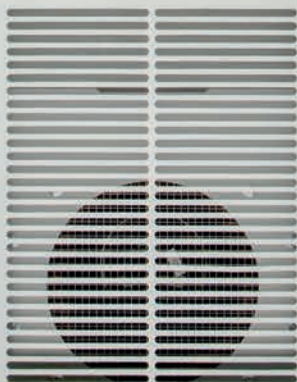
If the ambient temperature is low enough but the use of filterfans is not possible due to rough ambient conditions – it is advised to use air/air heat exchangers.

The air/air heat exchanger separates the external air circuit from the internal one. Due to this separation the risk of damages on the components through harmful dust and fluids is minimized.

The robust steel construction of the air/air heat exchangers enables the safe operation in tough industrial environments.



Pfannenberg   
ELECTRO TECHNOLOGY FOR BUSINESS



Air/Air Heat Exchangers

A/C Cooling Units

Air/Water Heat Exchangers

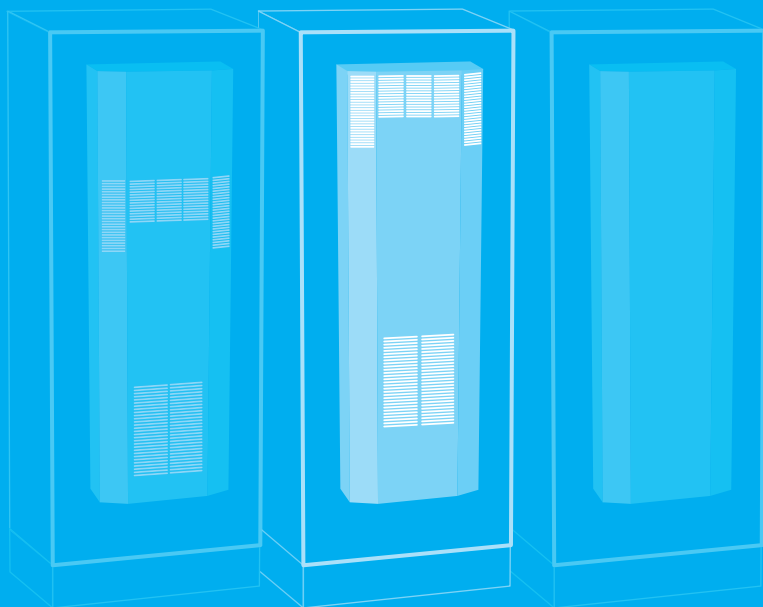
Universal solution  
for many ambient  
conditions

#### ADVANTAGES

- Available in 5 performance classes in 3 sizes
- Significant energy saving due to market leading energy efficiency ratio (EER)
- Condenser coils with wide fin spacing for maximum machine availability
- Maximum distance between intake and exhaust vents optimizes airflow within the electrical enclosure which eliminates potential hot spots
- Available with a standard controller (SC) or with a multi controller (MC, extended functionality)
- USB interface (MC version) for easy retrieval of parameter settings or historical data (Pfannenberg **ecool**-Plant software available free of charge)
- Power-saving mode is integrated in the multi controller as standard
- Optional pre-filter is added in a few seconds



# A/C Cooling Units



## FIELD OF USE

Applications where the ambient temperature outside the electrical enclosure is not enough to ensure an optimal temperature for the electrical components.

## SOLUTION

Pfannenbergs A/C cooling units offer the same advantages as air/air heat exchangers in terms of safety and protection against contaminated ambient air.

Despite high cooling capacity **eCOOL** A/C cooling units stand out with their low energy consumption compared to ordinary devices – general reduction of up to 43% of energy consumption is achieved.

Multi master function: It is possible to connect 20 **eCOOL** A/C cooling units for simultaneous operating mode by a simple two wire connection.

Alternatively, if there is no spare space on the side of the electrical enclosure – top mounted DTT series A/C cooling units achieve the same cooling performances as DTI/DTS units.





Air/Air Heat Exchangers

A/C Cooling Units

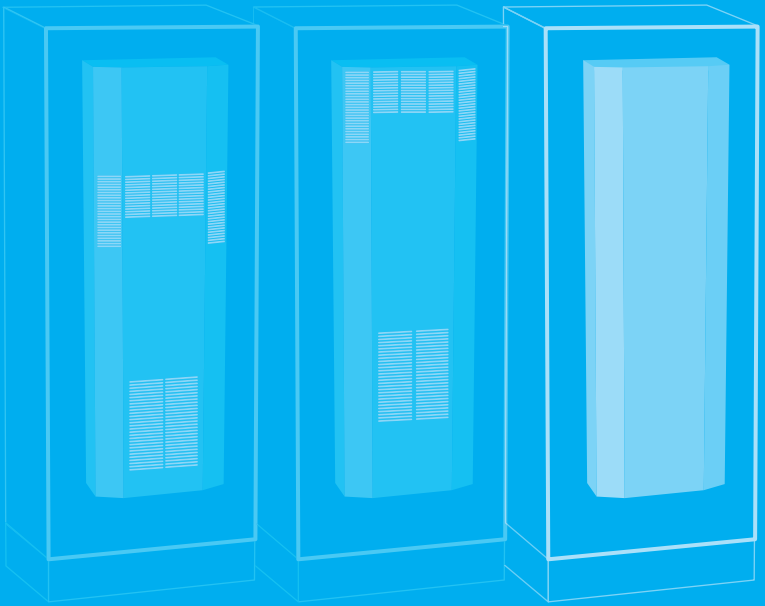
Air/Water Heat Exchangers

Energy efficient solution  
for harsh ambient  
conditions

#### **ADVANTAGES**

- Liquid cooling reduces maintenance and increases energy efficiency
- Multiple benefits for environments with high ambient and airborne contaminants
- Simple changeover from active cooling units to air/water heat exchanger
- Maintenance friendly: Enormous saving potential for the service costs
- Integrated thermostat and magnetic valve for temperature control
- Temperature monitoring with alarm contact
- Compatible with our Pfannenberg line of chillers

# Air/Water Heat Exchangers



## FIELD OF USE

Pfannenbergs' Air/Water heat exchangers are usually used in the following situations:


- Applications with high ambient temperatures, such as plastic mould injection or foundries
- Processes with harsh environments containing airborne particulate e.g. sugar production or flour in food production
- Environments where machines or production processes are already cooled with liquid

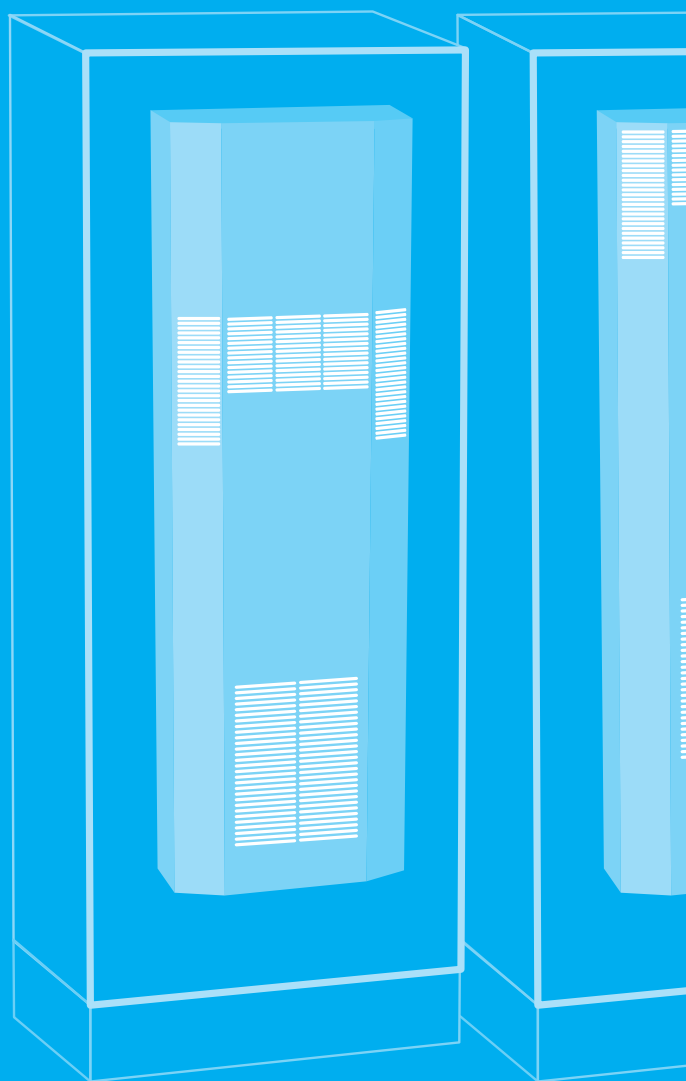
## SOLUTION

Air/water heat exchangers do not use any ambient air in hot or contaminated environments.

It is possible to connect these units to already existing liquid supply for machines or processes thus using resources effectively.

In combination with chillers which are placed outside of the production areas - the heat can be piped away as part of the liquid solution, this way keeping the heat away from production halls.

Pfannenbera 



The Pfannenberg  
**ECOOL** series

Energy efficient  
Easy to install  
Service friendly



## OUR OFFER

Maximum cost efficiency with highest performance capacity.

## YOUR ADVANTAGES

- Industrial design: rugged, industrial steel construction with removable cover
- Condenser coils with wide fin spacing for maximum machine availability
- Tool-free installation in less than three minutes
- Reduced energy consumption by up to 43%
- Market leading coefficient of power
- Optimized service factors MTTR and MTBF
- Service friendly due to easy replaceable components

In addition to the presented cooling solutions, the patented Pfannenberg filterfans and chillers complete the **ECOOL** series.

# Single person installation and service friendliness

**Pfannenbergs thermal management units stand out through their remarkable customer friendly construction**

## Easy installation



The Plug&Play system enables a single person installation within minutes. Pfannenberg climatisation units PAI, DTI and PWI are mounted with only six fastening clips.

## Easy service



Few screws and the easy access of the components make the devices particularly service friendly.

# Cut-out compatible:

## Three cut-out sizes – 20 compatible units

Which device fits into which device cut-out?



Cut-out	Cooling unit 300 – 4000 Watt	Air/water heat exchanger 500 – 5000 Watt	Air/air heat exchanger 20 – 100 W/K
<b>Size 1</b>	DTx 6801	PWx 6502	PAX 6203
	DTx 6501	PWx 6302	PAX 6173
	DTx 6401		
	DTx 6301		
	DTx 6201		
<b>Size 2</b>	DTx 9341C	PWx 6302C	PAX 6133
	DTx 9141	PWx 6152	PAX 6103
			PAX 6073
<b>Size 3</b>	DTx 9041	PWx 6105	PAX 6043
		PWx 6052	

*All devices are available as semi recessed DTI units or external DTS units*

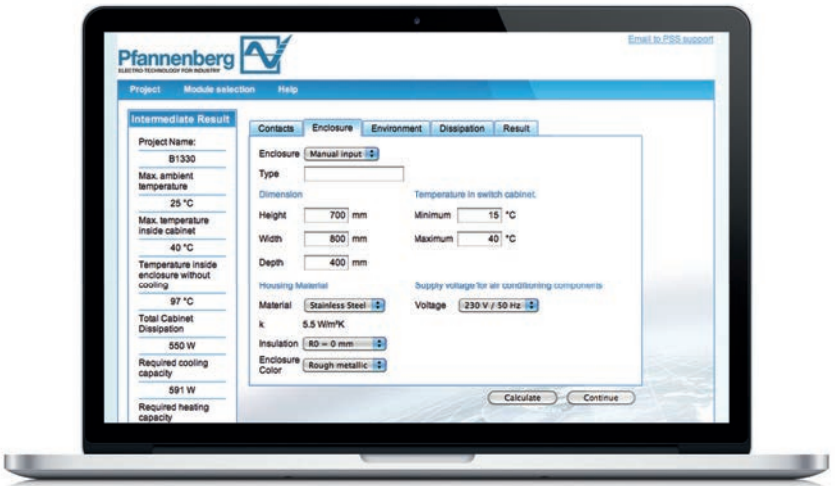
### FURTHER ADVANTAGES OF ALL UNITS:

- Available in stainless steel hood
- Special order RAL colours
- CAD drawings available on [www.pfannenber.com](http://www.pfannenber.com) for all leading design packages.
- International approvals including CE, UL and EAC for the Russian market



# PSS

## Pfannenberg Sizing Software



The PSS software is a free, very user-friendly tool, with which you can easily and quickly determine the correct solutions for your thermal management project.

It also contains an open library for personal selection of enclosures and components.



Free download:  
[www.pfannenberg.com](http://www.pfannenberg.com)



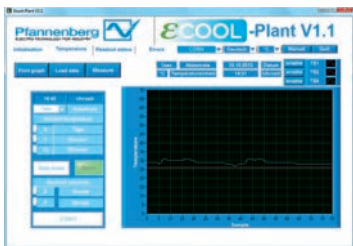
Online version:  
[pss.pfannenberg.com](http://pss.pfannenberg.com)



Free app for tablets:  
iPad + Android

# ECOOL-Plant –

The cockpit for your thermal management!



ECOOL-Plant is the Pfannenberg system software with which you can not only read out status information of ECOOL cooling units, but also set and adjust parameters. There is the possibility to communicate directly with the cooling units or to incorporate the software into the user interface of your machine control.


ECOOL-Plant is an important tool for service technicians, to read status information at the cooling unit and to parameterise it. The software provides, amongst other things, information about the temperature progression and the running time of the components, thus giving important indications on necessary adjustments or maintenance intervals.

Machine manufacturers (OEMs) implement ECOOL-Plant in the user interface of the machine control. With this, the machine operator is constantly informed about the status of the controls and the temperature conditions and can react to any deviations promptly.

ECOOL-Plant is compatible with all ECOOL cooling units which are equipped with a multi controller (MC).

# We support you with the planning and development of your project!

On our website you can find the following downloads:

- EPlan Macros
- Pfannenbergs Sizing Software (PSS)
- -Plant Software

System solutions from one source:


In addition to devices for the thermal management of electrical enclosures, the Pfannenbergs portfolio covers filterfans, chillers, heaters, thermostats and hygrometers. Furthermore, Pfannenbergs offers a wide spectrum of signaling devices like flashing lights, sounders, combined devices and signal towers, to protect your business, keeping your personnel safe and machines productive.

## Contact us.

## We are happy to assist you!

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