INDUSTRIAL REFRIGERATION

thermofin®
heat exchangers · Germany

thermofin® A PRESENTATION

Your strong partner

Kickoff

After company foundation in 2002, the first heat exchangers left the factory in Heinsdorfergrund already one year later. Thanks to the long experience and the emphatic support by Willy Löffler, thermofin® strongly established in the branch of refrigeration technology on the German and international market.

With the extension of the product portfolio by energy and power plant cooling in year 2007, we tapped into a new market segment, which significantly contributes to our present success.

Flexibility

In addition to well-engineered standard series, our service range also comprises design, construction and manufacture of heat exchangers according to customers' specifications and in special designs.

Comprehensive service portfolio

Our technical sales team is happy to support you already during projecting of your systems. Our in-house developed selection software based on thermodynamic algorithms facilitates an exact designing and optimization of the heat exchangers, also for special applications and mediums. Our own test stand provides the opportunity to confirm the results by measurements. Following the current developments in the industry, we extended the stand by the refrigerant NH_3 in 2016. An extension of the existing test stand for CO_2 and dry coolers is planned in the near future.

On request, we offer factory approvals and effect measurements and test runs in order to prove the performance of our units in accordance with customers' requirements. We can also supplement the order-related documentation with results of material examinations, x-ray analyses, vibration tests as well as wind and snow load calculations and on demand, we additionally provide calculations according to other regulations and standards such as ASME.

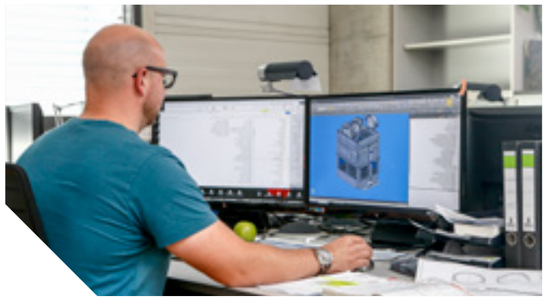
Quality

It is the ultimate objective of our quality policy to preserve the satisfaction of our customers. The quality management system of thermofin GmbH is certified according to the standards of DIN EN ISO 9001:2015.

By further developing our quality management, the process reliability within the company improves continuously. Thanks to the application of modern manufacturing processes and in consideration of permanent quality-ensuring examinations, we are able to guarantee the reliability of our products at any time. At the same time, all materials and components employed in our production process, meet the highest quality standards guaranteed by quality certificates of our suppliers.

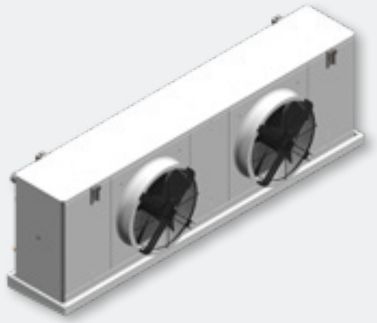
standards and guidelines

- **Quality management system:**
  Certificate according to DIN EN ISO 9001:2015
- **Welding quality requirements:**
  Certificate according to DIN EN ISO 3834-3
- **Manufacturer of pressure equipment according to Directive 2014/68/EU:**
  Certificate according to AD 2000-instructions HP0
- **Manufacture of pressure equipment according to Directive 2014/68/EU:**
  Certificate according to module A2-Directive 2014/68/EU



EVAPORATORS AND AIR COOLERS

Product overview



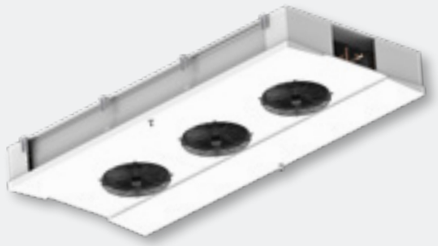
CEILING-MOUNTED EVAPORATORS/AIR COOLERS 08 · 09

TAN/A/S	NH_3 evaporators
TON/L	CO_2 evaporators
TEN/L	HFC/HFO evaporators
TGN/L	glycol air coolers

CEILING-MOUNTED EVAPORATORS/AIR COOLERS 10 · 11

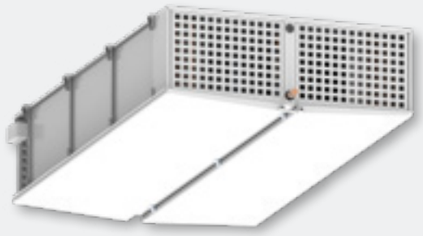
agricultural storage

TANA	NH_3 evaporators
TOLA	CO_2 evaporators
TENA	HFC/HFO evaporators
TGNA	glycol air coolers



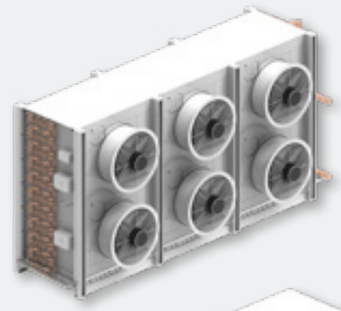
EVAPORATORS/AIR COOLERS WITH DOUBLE COIL 12 · 13

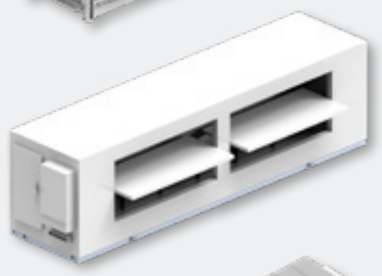
TADN	NH_3 evaporators double coil
TODN/L	CO_2 evaporators double coil
TEDN	HFC/HFO evaporators double coil
TGDN	glycol air coolers double coil

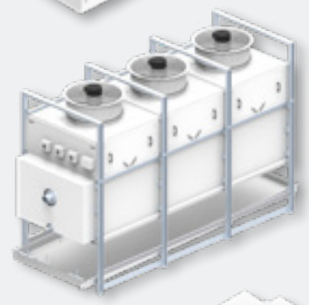


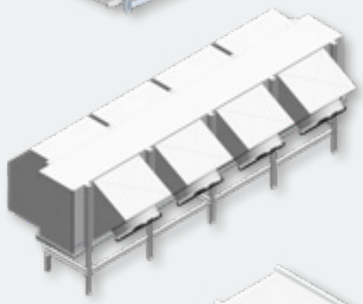
EVAPORATORS/AIR COOLERS FOR PROCESS ROOMS 14 · 15

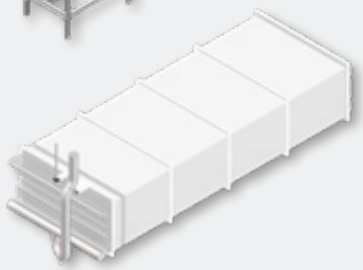
TAP	NH_3 evaporators for process rooms
TOP	CO_2 evaporators for process rooms
TEP	HFC/HFO evaporator for process rooms
TGP	glycol air coolers for process rooms











BLAST FREEZERS 16 · 17

TAFN/A/S	NH_3 blast freezers
TOFL	CO_2 blast freezers
TFN	HFC/HFO blast freezers
TGFN	glycol blast freezers

INSULATED COOLERS 18 · 19

TIA	NH_3 insulated coolers
TIO	CO_2 insulated coolers
TIE	HFC/HFO insulated coolers
TIG	glycol insulated coolers

PENTHOUSE COOLERS 20 · 21

TPA	NH_3 penthouse coolers
TPO	CO_2 penthouse coolers
TPE	HFC/HFO penthouse coolers
TPG	glycol penthouse coolers

FLOOR-MOUNTED EVAPORATORS/AIR COOLERS 22

TAFM	NH_3 floor-mounted evaporators
TOFM	CO_2 floor-mounted evaporators
TEFM	HFC/HFO floor-mounted evaporators
TGFM	glycol floor-mounted air coolers

HEAT PUMP EVAPORATORS/AIR COOLERS 23

TAWN	NH_3 heat pump evaporators
TOWN	CO_2 heat pump evaporators
TWN	HFC/HFO heat pump evaporators
TGWN	glycol heat pump air coolers

HEAT EXCHANGER COILS 24 · 25

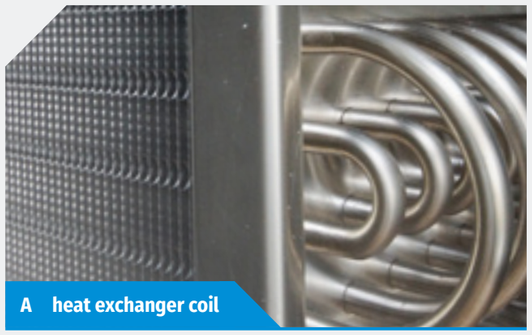
TB...	heat exchanger coils

EVAPORATORS AND AIR COOLERS

Design overview

thermofin® evaporators and air coolers are used for both commercial and industrial refrigeration. Depending on the application, different series for different airflows are available.

For every type of application, the suitable material combinations can be selected from a wide range of possible materials. Units of the “industrial line” are characterised by a high flexibility for the positioning of the medium connections as well as by comprehensive options in design and accessories. Depending on the series, NH_3, CO_2 or HFC/HFO can be used as refrigerant for evaporators. Water and every type of cooling brine can be used as operating fluid for air coolers.



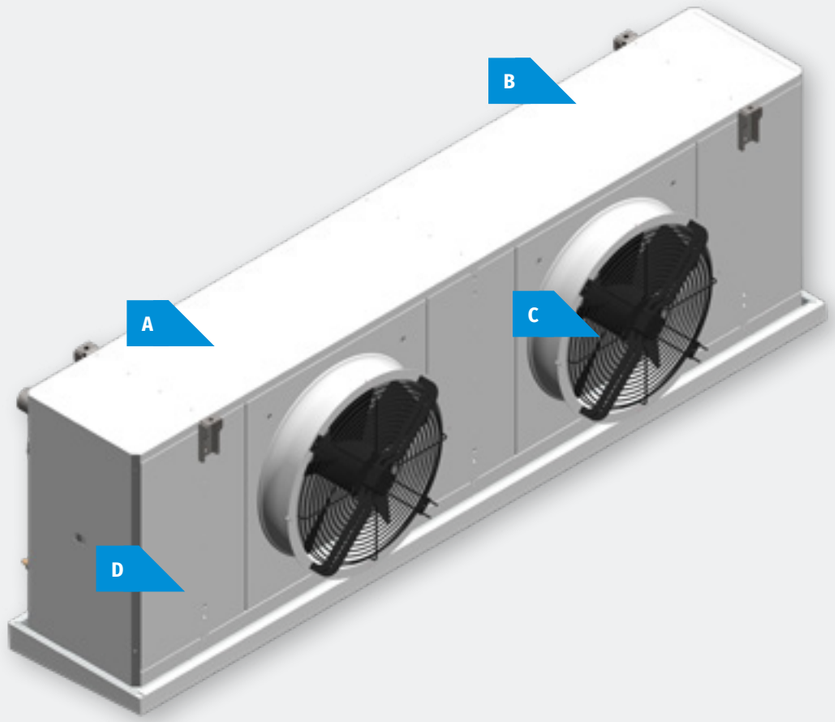
A heat exchanger coil

- tube Ø 12, 16, 20 mm, smooth or inner-grooved
- in-line tube arrangement and large surfaces for sensitive applications
- staggered tube arrangement for an effective heat transfer in case of higher room temperatures
- fin spacing 4 – 12 mm or split spacing for a long operating time between defrost cycles
- operating pressures up to 60 bar (copper), > 60 bar (stainless steel)

materials

tubes: copper, stainless steel 304L (1.4307)/316L (1.4404), hot-dip galvanised steel, aluminium alloy

fins: aluminium, aluminium epoxy resin coated, AlMg, stainless steel 304 (1.4301)/316L (1.4404), copper, hot-dip galvanised steel



B connection system

- flexible arrangement of the cooling medium connections, horizontal or vertical
- optional: insulation end plate, junctions to steel or stainless steel tube

C fans

- Ø 400 – 910 mm, standard IP54 (optional IP55 for EC)
- draw-through or blow-through design
- AC or optional energy-saving EC fans, directly controllable via 0 – 10 V, 4 – 20 mA or Modbus signal
- silent, slowly running fans in case of critical noise requirements
- protective grid with cathodic dip-paint coating or made of stainless steel
- industrial fans with norm motors for a high external pressure drop (e. g. for fast freezing)
- all motors according to ErP 2015 directive
- extensive options for wiring and control

D casing

- for possible designs refer to the respective series
- connection elements made of stainless steel

materials

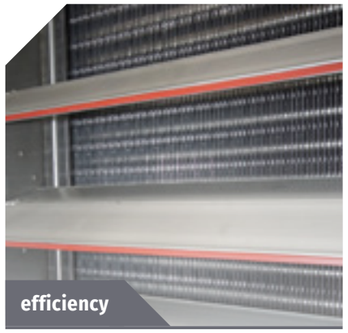
AlMg or galvanised steel, powder coated (standard colour RAL 9010) stainless steel 304 (1.4301)/316L (1.4404)
optional: GRP tray

Ceiling-mounted evaporators/ air coolers

for cold stores, distribution and storage centres, normal and deep-freezing areas

medium	series
NH_3	TAN, TAA, TAS
CO_2	TON, TOL
HFC/HFO	TEN, TEL
glycol	TGN, TGL
airflow	draw-through

Options



- defrost dampers combined with hot-gas or brine defrost system
- design possible with different materials
- motor-driven or air-actuated damper design

- precise airflow for the focused cooling of certain areas

- tilting functions for fans and defrost trays allow the easy access for cleaning inside of the units

Accessories

- heating coil
- defrosting:
  - electrical, hot-gas, brine, water
- electric fan ring heaters
- double and insulated tray
- defrost dampers
- shut up with draw-in hoods
- draw-in / blow-out hoods
- legs (feet)
- insulation end plates
- tiltable fans
- CIP system for cleaning
- streamers for an increased air throw
- air hose connections
- pre-wired fans
- repair switches
- “wireless” fan control
- heated tray to prevent the formation of condensate
- UV-C system

Ceiling-mounted evaporators/ air coolers

AGRICULTURAL STORAGE

for the efficient cooling of fruits and vegetables with optimized airflow and minimal dehumidification

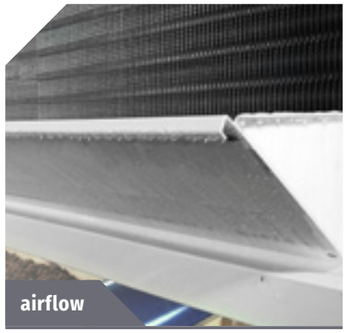
medium	series
NH_3	TANA
CO_2	TOLA
HFC/HFO	TENA
glycol	TGNA
airflow	blow-through

Accessories

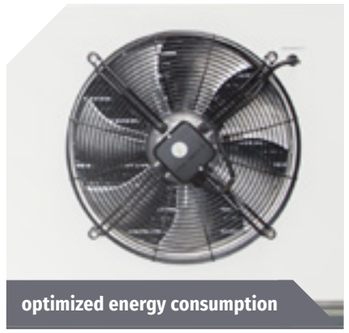
- defrosting:
  - electrical
  - hot-gas
  - brine
  - water
- double and insulated tray
- blow-out hoods
- legs (feet)
- CIP system for cleaning
- tiltable fans
- pre-wired fans
- repair switches
- “wireless” fan control
- UV-C system

Options

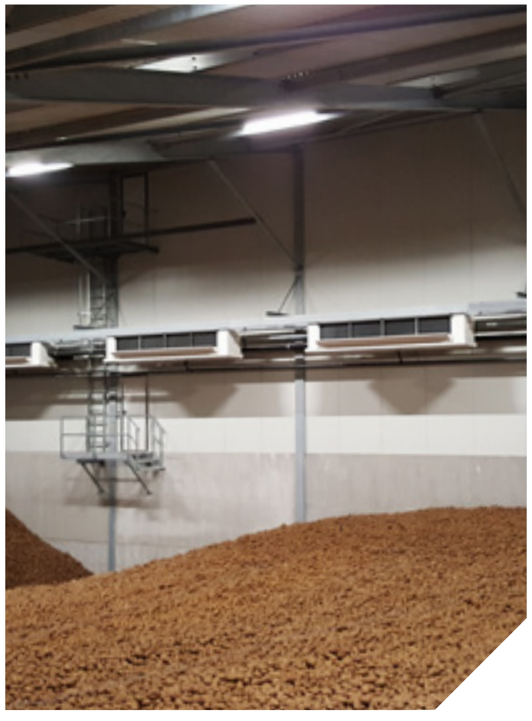
- in-line tube arrangement and large surfaces for sensitive applications
- high efficiency thanks to low pressure losses



- minimal dehumidification of the products thanks to blow-through fans
- support of the "Coanda effect" by a guiding sheet on the air outlet



- use of EC fans
- highly efficient speed control
- adjustment of air volume flow depending on cooling load



Evaporators/air coolers with double coil

space saving thanks to particularly flat design

medium	series
NH_3	TADN
CO_2	TODL, TODN
HFC/HFO	TEDN
glycol	TGDN
airflow	blow-through, blowing out on both sides (option draw-through, blowing out downwards)

Options

cleaning and hygiene

- tilting functions for fans and drip trays allow the easy access for cleaning inside of the units

condensate water pump

- condensation water is pumped in a higher drain which is not installed inside the cold room
- no disturbing condensate line in ceiling area
- easy cleaning of the cold room

optimized energy consumption

- use of EC fans
- highly efficient speed control
- adjustment of air volume flow depending on cooling load

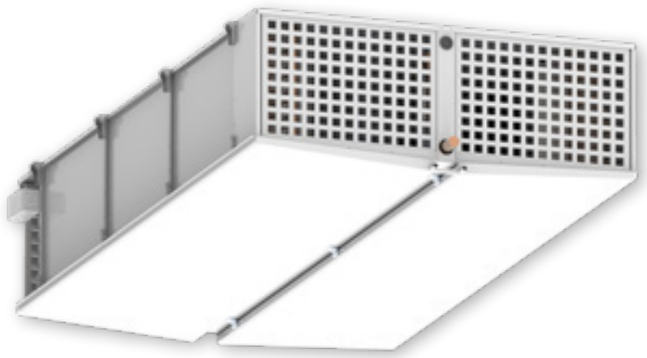
Accessories

- heating coil
- defrosting:
  - electrical
  - hot-gas
  - brine
  - water
- double and insulated trays and fan plates
- legs (feet)
- insulation end plates
- tiltable fans
- CIP system for cleaning
- pre-wired fans
- repair switches
- “wireless” fan control
- heated tray to prevent the formation of condensate
- UV-C system

Evaporators/air coolers for process rooms

with a draught-free airflow and a low noise level

medium	series
NH_3	TAP
CO_2	TOP
HFC/HFO	TEP
glycol	TGP

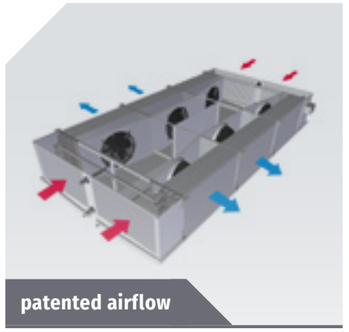


airflow drawing in laterally, blowing out through the coil

Accessories

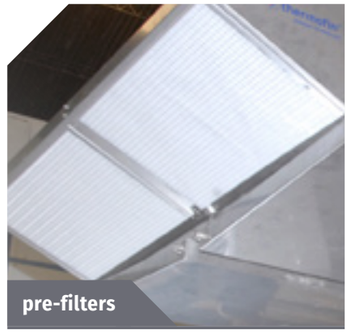
- heating coil
- air filters
- defrosting:
  - electrical
  - hot-gas
  - brine
- double and insulated drip trays
- pre-wired fans
- repair switches
- “wireless” fan control
- heated tray to prevent the formation of condensate
- UV-C system

Options



patented airflow

- patented design with a “draught-free” airflow for the application in process and working rooms
- flat unit design
- silent, slowly running fans

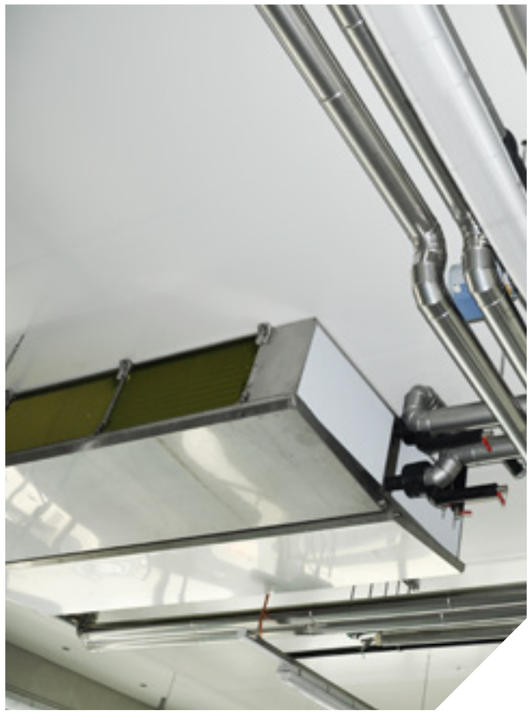


pre-filters

- for the protection against soiling, the units can be equipped with air filters mounted to the air inlet

cleaning and hygiene

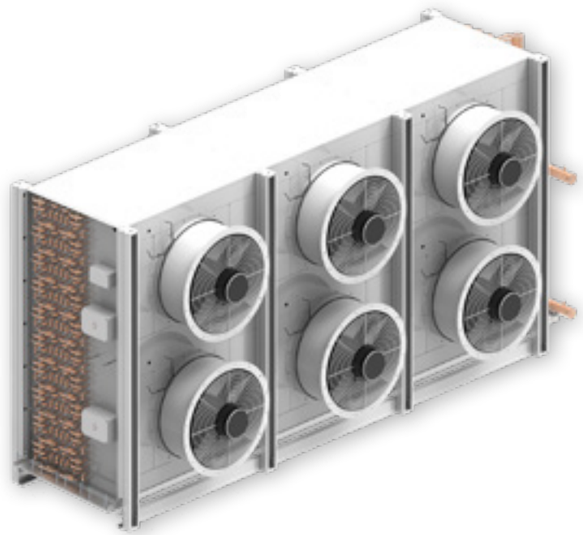
- tilting functions with quick-fit fasteners on the drip trays allow the easy access for cleaning works inside of the units
- trays are inclined to length-side towards the condensate water discharge
- condensate discharge pump to avoid a condensate water piping in the room
- direct assembly to the ceiling prevents dirt accumulation on the upper side of the unit



Blast freezers

with high freezing performance for a quick conservation of different products

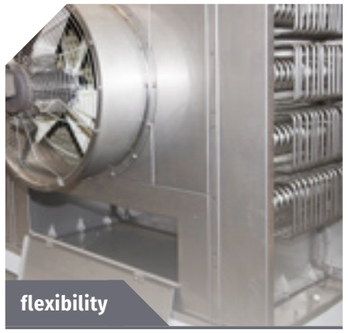
medium	series
NH_3	TAFN, TAFA, TAFS
CO_2	TOFL
HFC/HFO	TFN
glycol	TGFN
airflow	draw-through or blow-through



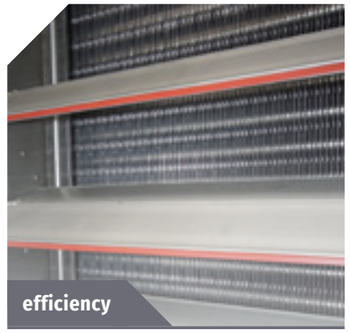
Accessories

- defrosting:
  - electrical
  - hot-gas
  - brine
  - water
- electric fan ring heaters
- double and insulated tray
- defrost dampers
- legs (feet)
- insulation end plates
- tiltable fans
- pre-wired fans
- repair switches

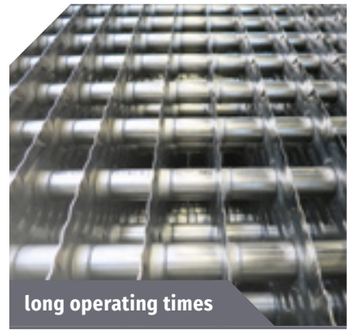
Options



- variable designs according to customers' requirements



- defrost dampers combined with hot-gas or brine defrost system
- design possible with different materials
- motor-driven or air-actuated damper design



- split fin spacings extend the operating time between the defrost processes and ensure an efficient operation of the unit

Insulated coolers

effective use of the building thanks to the installation on the external wall of the cold room

medium	series
NH_3	TIA
CO_2	TIO
HFC/HFO	TIE
glycol	TIG

Design

- steam-proofed insulation cell with insulation wall thicknesses from 80 – 200 mm, RAL 9010
- steam-proofed, lockable access door, door frame electrically heated
- accessible water-proof floor plate made of stainless steel
- indoor illumination
- automatic damper control via TFC – thermofin® flap control
- AC axial fans or EC radial fans depending on application
- control cabinet and bus capable connection
- defrosting with outside air (option)

Accessories

- heating coil
- defrosting:
  - electrical
  - hot-gas
  - brine
- cell made of stainless steel
- weather resistant roof in case of an outside installation

Options

- the damper separates the cold room from the insulated cooler, with it, no heat enters the cold room during the defrost process
- efficient and quick defrosting with closed damper thanks to the circulation mode inside of the unit

- for different airflow options, the units can be designed with radial or axial fans
- optimal use of the cold room thanks to the unit positioned laterally outside of the cold room

- patented service-friendly arrangement of fans above the heat exchanger coil facilitates the cleaning of the coil and the tray
- service interventions at normal ambient temperature

Penthouse coolers

effective use of the building thanks to the installation on the roof of the cold room or in false ceilings

medium	series
NH_3	TPA
CO_2	TPO
HFC/HFO	TPE
glycol	TPG

Design

- steam-proofed insulation cell with wall thicknesses from 80 – 200 mm, RAL 9010
- steam-proofed lockable access door, door frame electrically heated
- draw-in area along the floor with access grid
- indoor illumination
- electrically actuated defrost damper
- AC axial fans or EC fans
- control cabinet for damper control and repair switches

Accessories

- heating coil
- defrosting:
  - electrical
  - hot-gas
  - brine
- weather-resistant roof in case of an outside installation

Options

- the air is drawn in upwards through the roof of the cold room and blown out through an air duct
- optimal use of the cold room thanks to the unit positioned on the suspended ceiling or the roof

- patented damper arrangement ensures an optimal airflow through the heat exchanger coil
- defrost dampers mounted to the heat exchangers prevent a heat entry to the cold room during the defrost process

- service-friendly arrangement of fans and electrical components

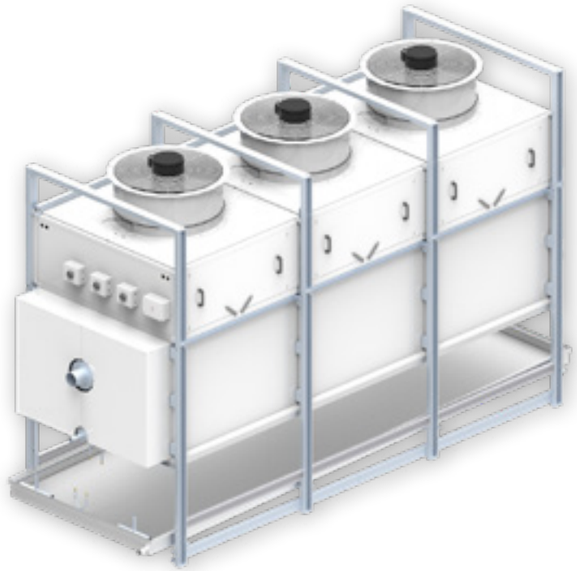
Floor mounted evaporators/ air coolers

optimal use of the cold room thanks to a duct-guided airflow

medium	series
NH_3	TAFM
CO_2	TOFM
HFC/HFO	TEFM
glycol	TGFM
airflow	vertical, blowing out upwards

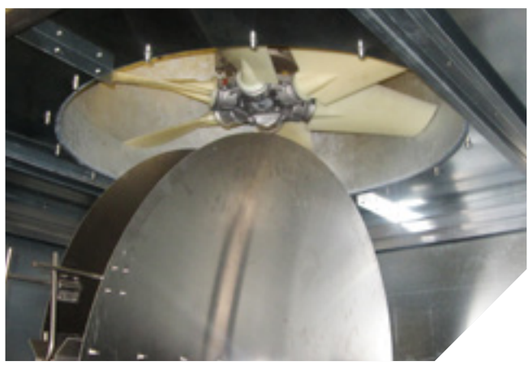
Design

- galvanised steel casing, not painted
- air-actuated defrost dampers
- duct connections
- AC axial fans for a high external pressure drop



Accessories

- defrosting:
  - electrical
  - hot-gas
  - brine
- electrical coil and/or tray edge heaters
- electric fan ring heaters
- pre-wired fans
- repair switches



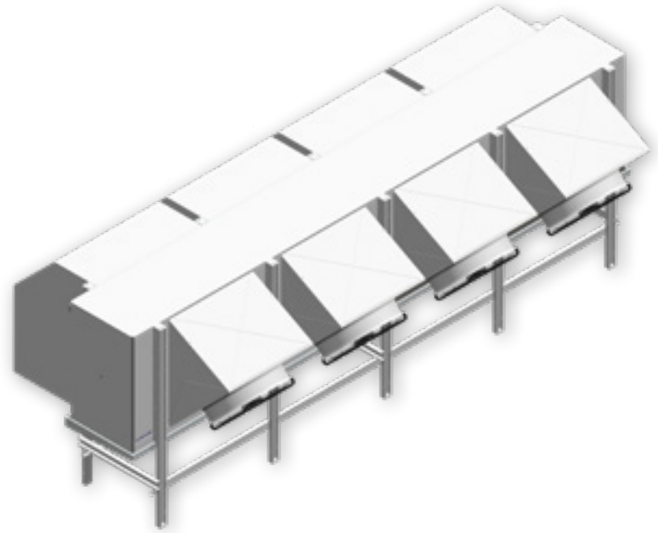
Heat pump evaporators/ air coolers

optimal defrost cycles thanks to reduced heat losses during defrost process

medium	series
NH_3	TAWN
CO_2	TOWN
HFC/HFO	TWN
glycol	TGWN
airflow	draw-through

Design

- external installation
- weather protection thanks to draw-in and blow-out hoods for long operating times



Accessories

- defrosting:
  - electrical, hot-gas, brine
- electric fan ring heaters
- double and insulated tray
- defrost dampers
- draw-in/blow-out hoods
- legs (feet)
- insulation end plates
- pre-wired fans
- repair switches
- “wireless” fan control

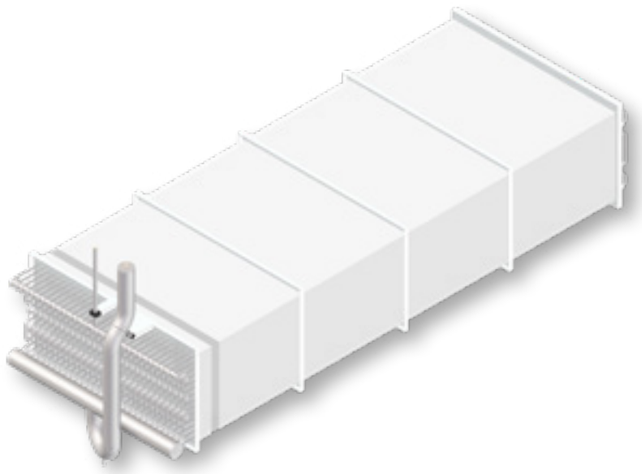
Heat exchanger coils

optimized dimensioning for different cases of application

series

TB ...

for different refrigerants such as NH_3, CO_2, propane and HFC/HFO as well as cooling mediums such as water and water-glycol mixtures



Design

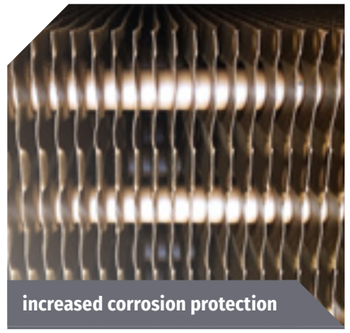
- tube arrangement, tube diameter, fin spacing and materials are selected according to application
- fin designs:
  - AlMg, stainless steel 304 (1.4301)/316L (1.4404)
  - 1 mm fin thickness for particular cleaning works (option)

Accessories

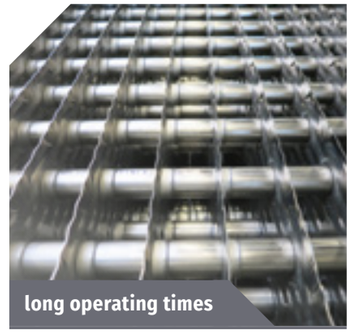
- defrosting:
  - electrical
  - hot-gas
  - brine
  - water
- legs (feet)
- drip tray
- casing on air inlet/outlet
- insulation end plates

Options

- thermodynamically optimized designs
- freely configurable: thermofin® optimizes the heat exchanger coils according to customers' requirements



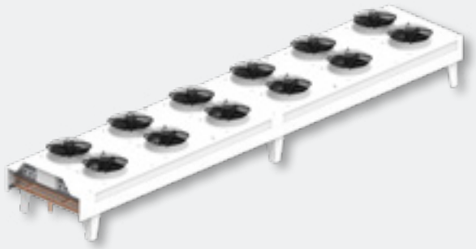
coating:
- cathodic dip-paint coating
- heresite



- split fin spacings extend the operating time between the defrost processes and ensure an efficient operation of the unit

CONDENSERS AND GAS COOLERS

Product overview



CONDENSERS/GAS COOLERS 30 · 31

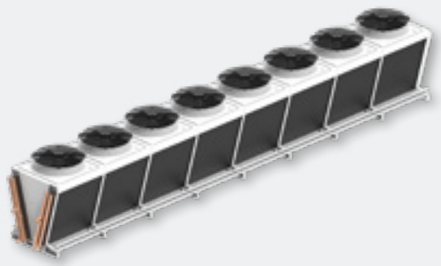
horizontal

TACH	NH_3 condensers
TOCH/TOCCH	CO_2 gas coolers
TCFF	condensers “Free Flowing”
TCH/TCCH	propane-, HFC/HFO condensers

CONDENSERS/GAS COOLERS 30 · 31

vertical

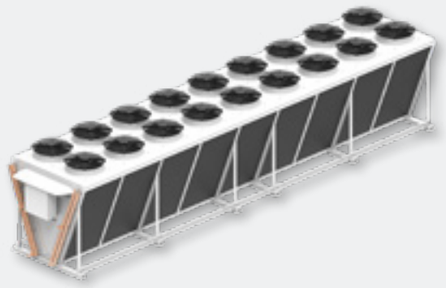
TACV	NH_3 condensers
TOCV/TOCCV	CO_2 gas coolers
TCV/TCCV	propane-, HFC/HFO condensers



CONDENSERS/GAS COOLERS 32 · 33

V-shape, single-row

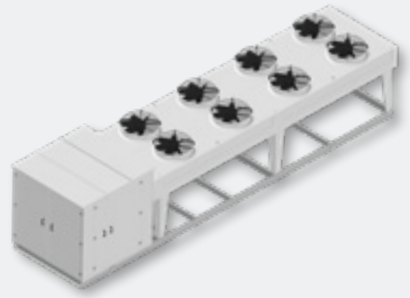
TACW	NH_3 condensers
TOCW	CO_2 gas coolers
TCW	propane-, HFC/HFO condensers

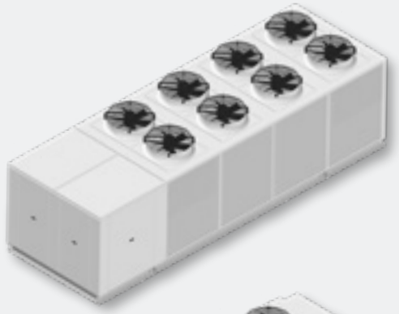


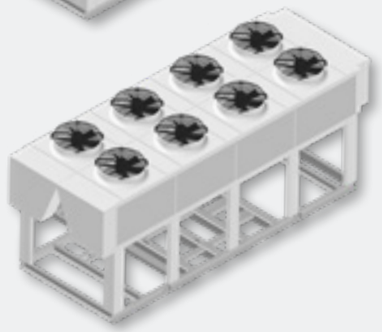
CONDENSERS/GAS COOLERS 32 · 33

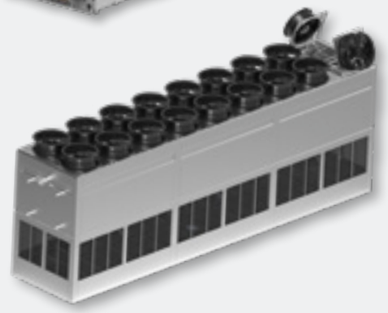
V-shape, double-row

TACD	NH_3 condensers
TOCD	CO_2 gas coolers
TCD	propane-, HFC/HFO condensers









CONDENSERS/GAS COOLERS 34 · 35

with housing

TACHH	NH_3 condensers horizontal
TACDH	NH_3 condensers "V-shape"
TOCHH	CO_2 gas coolers horizontal
TOCDH	CO_2 gas coolers "V-shape"
TCHH	propane-, HFC/HFO condensers horizontal
TCDH	propane-, HFC/HFO condensers “V-shape"

COMPACT CONDENSERS/GAS COOLERS 34 · 35

TACK	NH_3 compact condensers
TOCK	CO_2 compact gas coolers
TCK	propane-, HFC/HFO compact condensers

CONDENSERS/GAS COOLERS 34 · 35

with double coil, W-shape

TADW	NH_3 condensers
TODW	CO_2 gas coolers
TCDW	propane-, HFC/HFO condensers

HYBRID CONDENSERS 36 · 37

THACD/THACW	hybrid NH_3 condensers
THCD/THCW	hybrid HFC/HFO condensers

EVAPORATIVE CONDENSERS 38 · 39

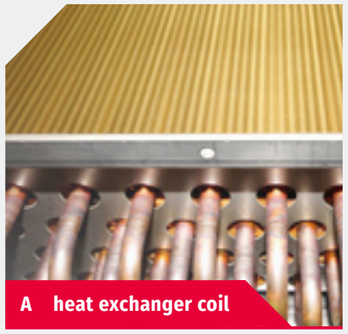
TACE	evaporative NH_3 condenser
TCE	evaporative HFC/HFO condenser

CONDENSERS AND GAS COOLERS

Design overview

thermofin® condensers are available in a wide performance range. Depending on the application, you can select between different series within the “industrial line”.

Mounted empty housings are just as possible as pre-wired controllers for the fans, coated fins or modified leg (foot) heights. All thermofin® condensers are available in different noise levels and of course suitable for outside installation. Depending on the series, NH_3, CO_2, propane or HFC / HFO can be used as refrigerant.



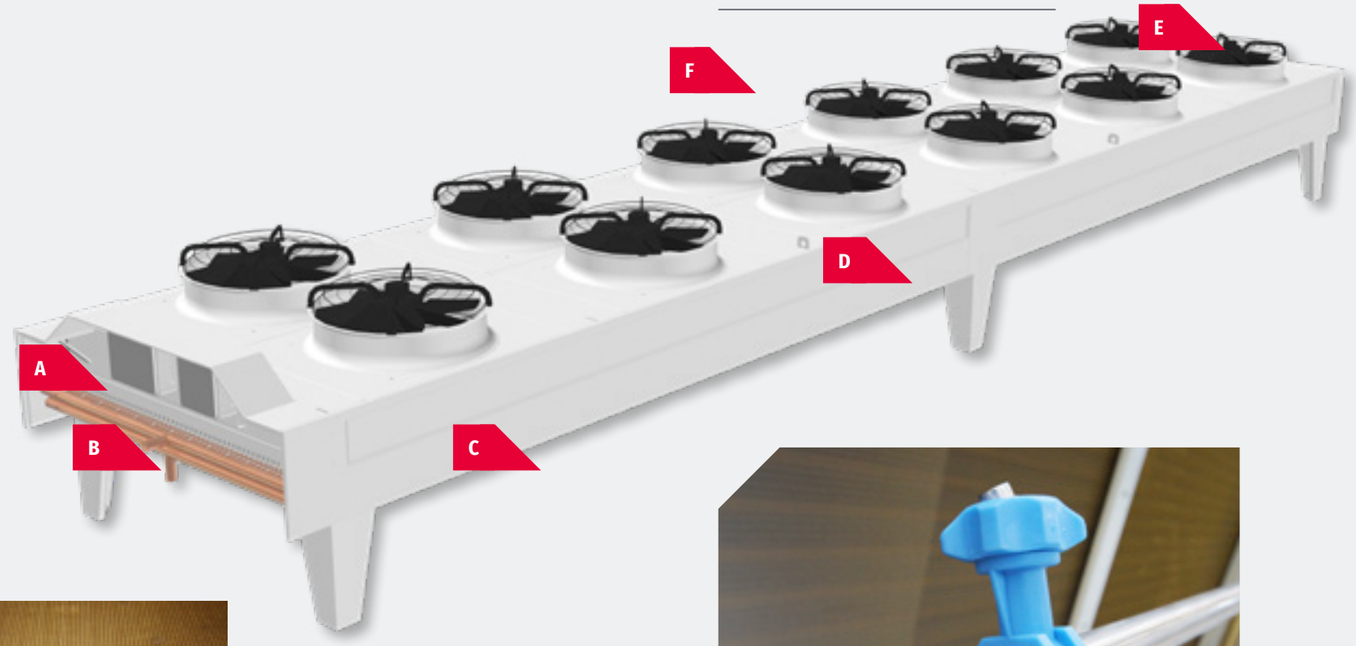
A heat exchanger coil

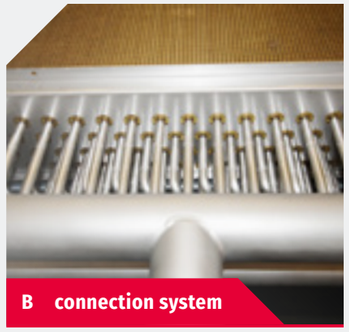
- tube Ø 5, 9.52 or 12 mm, smooth or inner-grooved
- efficient staggered tube arrangement
- standard fin pitch 2.0, 2.2, 2.4 or 3.0 mm, smooth surface
- operating pressures up to 130 bar

materials

tubes: copper, stainless steel 304 L (1.4307) / 316L (1.4404)

fins: aluminium, aluminium epoxy resin coated (UV resistant), AlMg, stainless steel, copper





B connection system

- connection diameter is optimized to the respective case of application

F operational reliability

- high leakage protection – core tubes without contact to the casing
- heat exchanger coils are float mounted inside of the casing
- fluid-containing tubes without bearing function

C adiabatic system for peak loads

- spraying with variable selection of nozzles
- tubing in stainless steel 316L (1.4404)
- pre-assembled spraying bar system in tiltable design for purposes of transport
- in case of multiple spraying bars: possibility of sequential activation
- possible accessories: control valves incl. the adiabatic control via TCS system

E fans

- Ø 450 – 1,000 mm, standard IP54 (optional IP55 for EC fans)
- AC or optional energy-saving EC fans, directly controllable via 0 – 10 V, 4 – 20 mA or Modbus signal
- optimized to specific noise requirements
- all motors according to ErP 2015 directive
- extensive options for wiring and control

D casing

- sendzimir galvanised steel, powder coated (standard colour RAL 7035, special colours possible)
- option: stainless steel 316L (1.4404), coating is possible
- connection elements made of stainless steel 304 / 316
- corrosion protection class C3 (option: C4, C5I / M)

Condensers/gas coolers

HORIZONTAL · VERTICAL

optimal system component thanks to the wide range of performance

medium	series
NH_3	TACH
CO_2	TOCH, TOCCH
propane, HFC/HFO	TCH, TCCH, TCFF (for refrigeration units without collector with integrated oil separator)
airflow	vertical

medium	series
NH_3	TACV
CO_2	TOCV, TOCCV
propane, HFC/HFO	TCV, TCCV
airflow	horizontal

Options

electric design

- repair switches / motor protection switches (wired individually or pair-wise)
- wiring to terminal box
- TPD — thermofin® power distribution
- control cabinet for the integration of all electrical components
- TCS — thermofin® control system

efficiency

- spraying system for peak loads in case of high ambient temperatures
- low water consumption
- optimized energy consumption
- hygiene and frost protection thanks to the fully-automated drain system
- control with TCS controller (max. 4 spraying zones)

service and cleaning

- smooth fin surfaces prevent soiling and facilitate cleaning
- longer operating times
- optional: tiltable fans

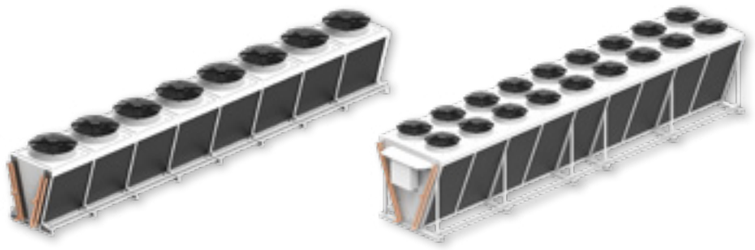
Accessories

- circuit partition
- inspection openings
- extended legs (feet)
- shortened legs (feet)
- special colours
- spraying system
- vibration dampers
- tiltable fans
- streamers for an increased air throw
- diffusers
- K65-joint for gas coolers

Condensers/gas coolers V-shape

SINGLE-ROW · DOUBLE-ROW

ideal for high power requirements with small installation surface, groupage of units to a field



medium	series
NH_3	TACW
CO_2	TOCW
propane, HFC/HFO	TCW

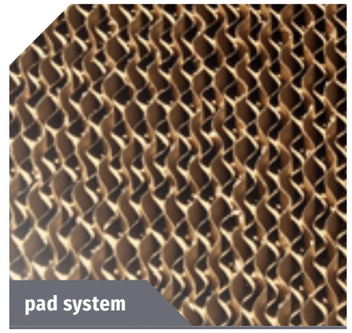
medium	series
NH_3	TACD
CO_2	TOCD
propane, HFC/HFO	TCD

airflow drawing in laterally, blowing out vertically upwards

Options

- spraying system for peak loads in case of high ambient temperatures
- low water consumption
- optimized energy consumption
- hygiene and frost protection thanks to the fully automated drainability
- control with TCS controller (max. 4 spraying zones)

- smooth fin surfaces prevent soiling and facilitate cleaning
- longer operating times
- optional: tiltable fans



- activation of the humidification system in case of higher performance requirements
- even humidification of the entire surface on the length of the water distribution pipe
- no aerosol output
- direct assembly on the air inlet sides
- easy replacement of the pads thanks to a modular design

Accessories

- circuit partition
- special colours
- spraying system
- vibration dampers
- tiltable fans
- streamers for an increased air throw
- diffusers
- K65-joint for gas coolers

Condensers/ gas coolers

WITH HOUSING

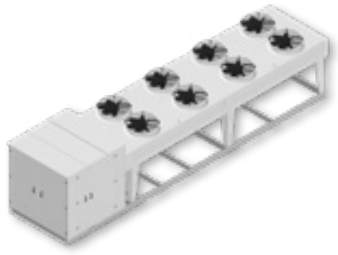
Compact condensers/ gas coolers

WITH HOUSING

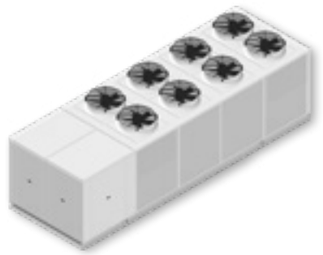
Condensers/gas coolers double coil

W-SHAPE

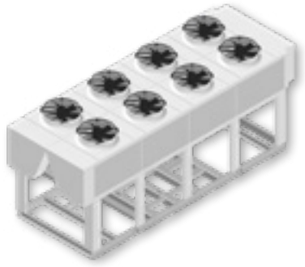
in different versions for receiving customized components



medium	series
NH_3	TACHH, TACDH
CO_2 propane, HFC/HFO	TOCHH, TOCDH TCHH, TCDH



medium	series
NH_3	TACK
CO_2 propane, HFC/HFO	TOCK TCK



medium	series
NH_3	TADW
CO_2 propane, HFC/HFO	TODW TCDW

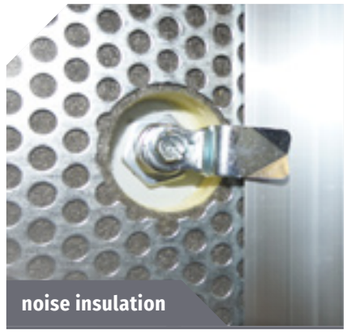
Options

electric design

- repair switches / motor protection switches (wired individually or pair-wise)
- wiring to terminal box
- TPD — thermofin® power distribution
- control cabinet for the integration of all electrical components
- TCS — thermofin® control system

housing

- individual dimensions
- galvanised steel or stainless steel
- optional: special colours and increased corrosion protection
- door design according to customers' requirements
- base frame
- connection elements made of stainless steel

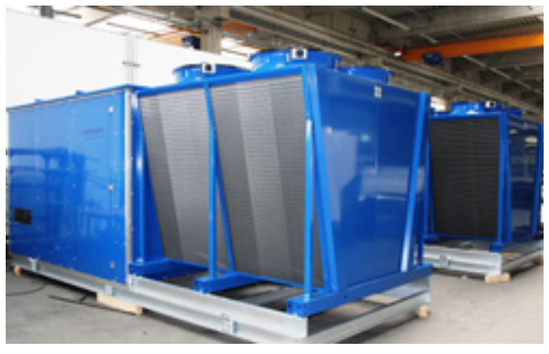


noise insulation

- casing in simple or double wall, noise optimized design

Accessories

- circuit partition
- inspection openings
- special colours
- spraying system
- vibration dampers
- tiltable fans
- streamers for an increased air throw
- diffusers
- K65-joint for gas coolers



Hybrid condensers

SINGLE-ROW · DOUBLE-ROW

with an outstanding performance potential thanks to the interaction between wet and dry cooling

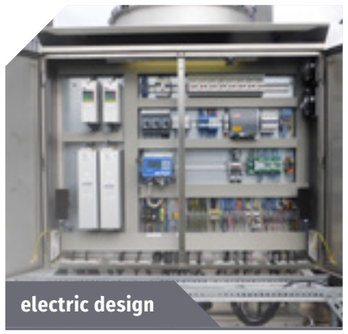
medium	series
NH_3	THACD, THACW
HFC/HFO	THCD, THCW

airflow drawing in laterally, blowing out vertically upwards

Design

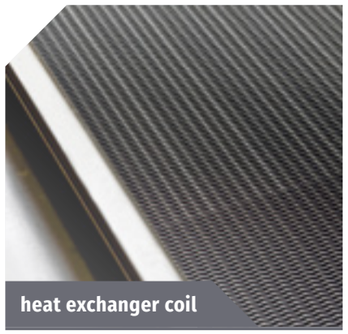
- parts with contact to water made of stainless steel
- fans Ø 800 to Ø 2,000 mm
- fan selection optimized to noise values and energy efficiency
- continuous speed control of the fans
- completely piped water circuit
- water collection tray
- filling level sensor
- submersible pump for water circuit
- conductivity measurement with automatic deluging system
- automatic control of the biocide mixture supply
- access door with automatic fan stop
- all valves and service points easily accessible

Design/Options



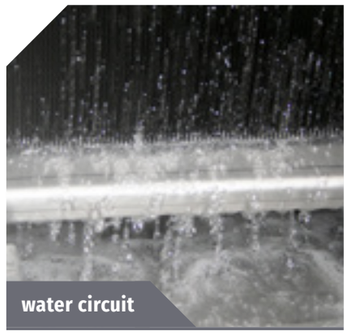
electric design

- control system with TCS for the regulation of all unit functions
- connection to higher level control
- regulation of summer/winter mode with draining
- continuous regulation of the fan speed
- regulation of the deluging water circuit with desludging and refilling function



heat exchanger coil

- high protection against corrosion thanks to cathodic dip-paint coating
- protective grid for the filtration of pollen and dust
- integrated desuperheater



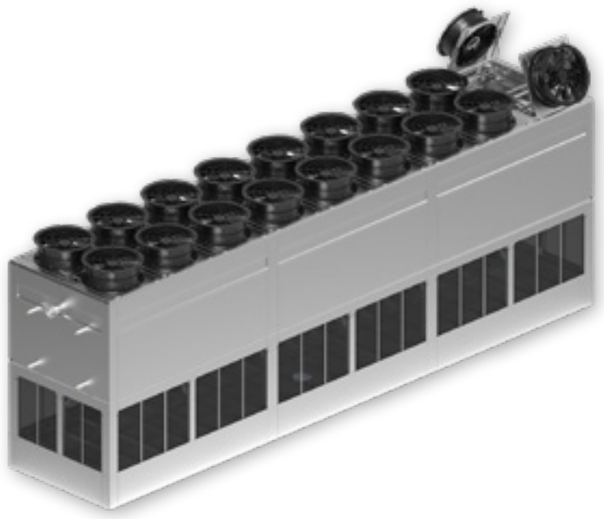
water circuit

- deluging of the finned surface for an increased performance and a decreased medium temperature
- UV lamps to prevent microbial growth
- long cleaning intervals due to optimized tray design

Evaporative condensers

high performance potential by evaporative cooling

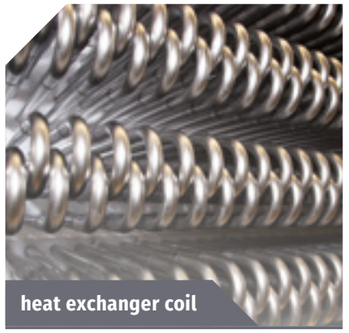
medium	series
NH_3	TACE
HFC/HFO	TCE
airflow	drawing in laterally, blowing out vertically upwards



Design

- completely made of stainless steel
- fans Ø 800 to Ø 2,000 mm
- fan selection optimized to noise values and energy efficiency
- continuous speed control of the fans
- water sound absorbers
- completely piped water circuit
- filling level sensor
- automatic deluging system
- automatic conductivity measurement
- option: open water circuit or a closed one with pump
- biocide connection possible

Design/Options



- corrosion protection ensured by heat exchanger coils made of stainless steel 316L (1.4404)

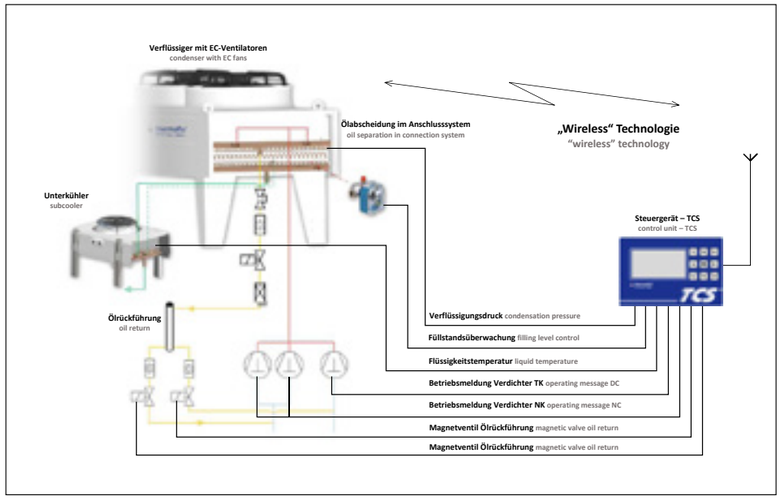
- stainless steel casing in robust industrial design
- optional: railing and access ladder

- completely welded water collection tray made of stainless steel 304 (1.4301)
- UV lamps to prevent microbial growth
- long cleaning intervals due to optimized tray design
- tray heater (frost protection)

Control technology and system concepts

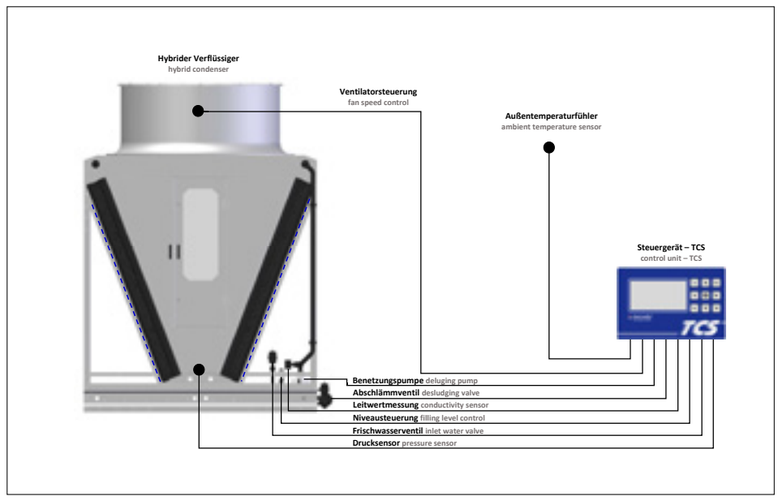
Condensers with options for "systems without receiver"

- condenser with downstream controlled subcooler
- integrated oil separator and oil return
- controlled EC fans
- integrated filling level sensor
- “wireless” fan control



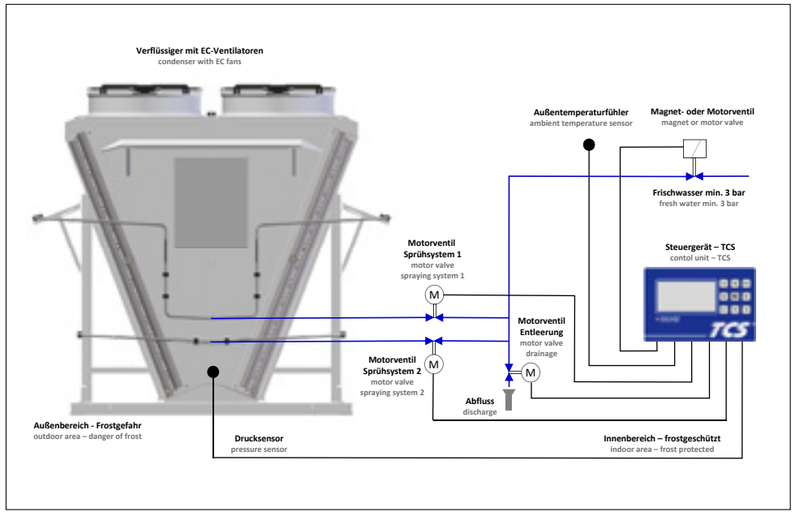
Hybrid condensers

- deluging depending on the condensation pressure, ambient temperature and fan speed
- max. 2 separate deluging zones
- frost protection thanks to a fully-automated drainage



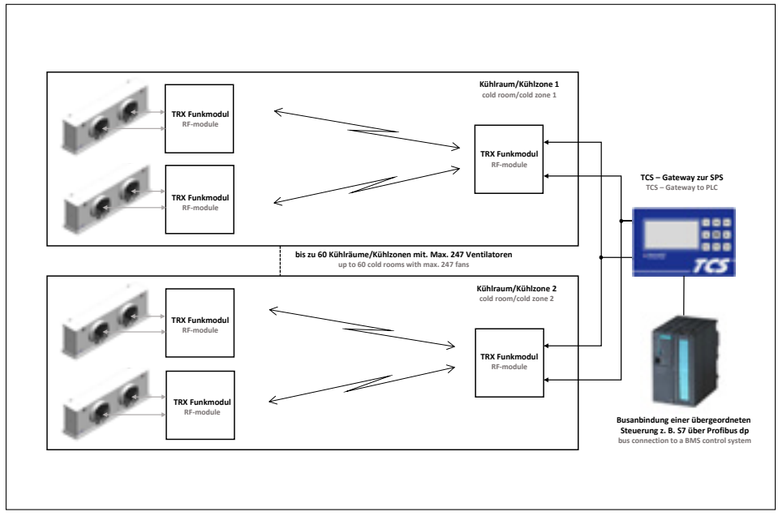
Condensers with spraying systems

- spraying system depending on the condensation pressure, ambient temperature and fan speed
- max. 4 separate spraying zones
- hygiene and frost protection thanks to a fully-automated drainage



Evaporators/air coolers with EC fans

- “wireless” connection via RF modules to each EC fan (up to 247 fans)
- multi-room and/or multi-zone control up to 60 rooms/zones
- connection to a upstream control via Modbus/Profibus/CANbus/BACnet
- all data of a fan are available from the upstream control



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