
FUTRON
ECO COOLING SYSTEMS
NATURAL - EFFICIENT
www.futron-gmbh.de

Environmentally friendly

With an ear to the customer, FUTRON GmbH develops refrigeration systems based on the natural refrigerant propane. In particular, the desire to move heat pumps and chillers indoors for noise protection reasons led to some new developments. For example, the company launched a multi-channel plate heat exchanger that ensures the safe operation of propane chillers indoors. Demand for this product combination increased by 36% in 2021 alone.

Durable quality convinces customers

However, the development team of engineers, who continuously coordinate with the top management and the sales department, is also concerned about a long service life of the products - completely in the sense of sustainability. FUTRON gives a five-year warranty on most products, full-service contracts even run for more than ten years. This is well received by customers. And above all, the fact that only natural refrigerants are used instead of synthetic ones protects the environment and reduces CO2 emissions - a strong plus in sales.

TOP 100 top100.de Top-Innovator 2022

FUTRON ECO COOLING SYSTEMS

In **responsibility** for our environment, the use of refrigeration systems with natural refrigerants has become an absolute must in all sectors. Every year, synthetic refrigerants leaking into the environment release several million tons of CO2 emissions that are harmful to the environment.

To avoid this, there are natural refrigerants such as propane, ammonia, propene and butane. According to the current state of the art, the required refrigeration technology is capable of using these refrigerants in a highly efficient manner.

Due to the legal situation and the energy crisis we are currently facing, efficient refrigeration systems using natural refrigerants as well as heat pumps are on the rise.

Make your contribution to a better environment and rely on natural refrigerants with a reliable and experienced partner like us at your side.

Bundesamt für Wirtschaft und Ausfuhrkontrolle

FÖRDERFÄHIG

MADE IN GERMANY

ErP READY regulation 2281/2016/EU

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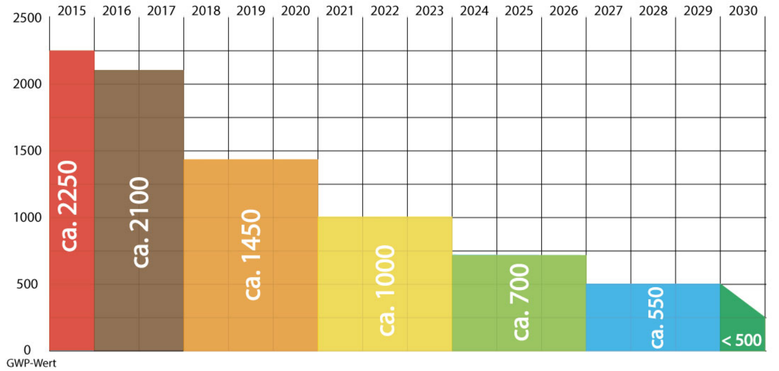
One step ahead of the F-Gas regulation.

From 2020, refrigeration systems with more than 40 tons of CO2 equivalent and a refrigerant with a GWP value of 2500 or more will be subject to a refilling and maintenance ban. This means that if the refrigerant has too high a GWP value and the refrigeration system's charge exceeds 40 tons, this refrigeration system may no longer be refilled in the event of a leak. The exceptions prescribed under Regulation (EU) 517/2014 apply.

For example, the use of refrigerants with a high GWP value is prohibited for refrigeration systems in supermarkets. Likewise, there may be refill bans for refrigeration systems, which means that a refrigeration system may have to be shut down. For this reason (for this), a leakage requirement is imposed on existing systems. Leakage control / recovery and recording protocols are required here.

There are no restrictions when using natural refrigerants such as propane, ammonia or CO2, as the GWP value is very low or equal to 1.



Many years of experience with natural refrigerant

Futron GmbH was founded in 2009, since then we design and manufacture refrigeration systems with natural refrigerants. We draw our experience and skills from the parent company, which has been building large refrigeration plants with natural refrigerants up to 5 megawatts for more than 25 years, making it one of the leading companies in Germany. In the past years we have manufactured and commissioned over 600 plants with propane (40-700kW). We are proud to say that thanks to our previous customers we are one of the leading companies in the field of refrigeration plant construction with a focus on propane refrigeration plants.

We attach great importance to quality, therefore all our products are not only designed and manufactured, but also tested and inspected in our in-house production. To ensure the high quality of our equipment, only renowned components are used.On our test bench, a large part of our systems can be tested with special measuring methods and performance tests before they are put into operation on site.For the function of our refrigeration plants as well as the associated components from our Futron modular system (MultiChiller-Kit), Siemens control systems specially tailored to the plant are used.

We also manufacture the associated control cabinet and can therefore respond to customer-specific requirements and conditions.Our Futron GmbH team consists of highly qualified employees who are regularly trained in their areas of responsibility. They also have extensive experience in handling natural and flammable refrigerants. We work hand in hand with WESKA Kälteanlagen GmbH and train their apprentices in our in-house production.

MADE IN GERMANY

We attach importance to:

- Low refrigerant charge
- Highest quality and safety
- TÜV tested systems

Guiding principle of the Futron

We as Futron GmbH see ourselves as an innovative and forward-looking company. For us, the focus is on satisfied customers and a safe way of working for our employees.

We offer the best possible solution for the respective task and understand fairness, personal responsibility and trust as the basis of our relationship with customers, partners and employees.

F

In order to offer the best possible solutions for our customers, we need constant research and development. We therefore work closely with universities and research institutes, have numerous patents and are one of the most innovative companies in Germany.

U

We are committed to the environment and have therefore used only natural refrigerants since the company was founded. Our products are optimized for durability and sustainability and are produced in a resource-saving manner. We give up to 5 years warranty on our products and offer maintenance-free* system concepts.

*except safety system and gas sensor

T

The team concept is lived in the company. The relationship of trust with our employees is important to us. We treat each other in a friendly, respectful and open manner, thus creating a good working atmosphere. Our managers act as role models and maintain a cooperative management style with flat hierarchies.

R

Discriminatory or criminal behavior such as bullying, racism, sexism or corruption do not stand a chance with us. We do not tolerate violations of the rules. This is ensured by our compliance management system. Our actions are responsible. We are aware that our actions have an impact on other people and the environment.

O

We work in a highly motivated manner and are characterized by reliability and competence. What we do, we do right. We only accept orders if we are sure that we can process them to the customer's satisfaction. Training and further education ensure competence and keep our knowledge up to date.

N

Our most important goal is to meet all the needs of our customers by providing a high quality service. To ensure our quality, we work according to a quality management system.

Naturalness in detail

FUTRON
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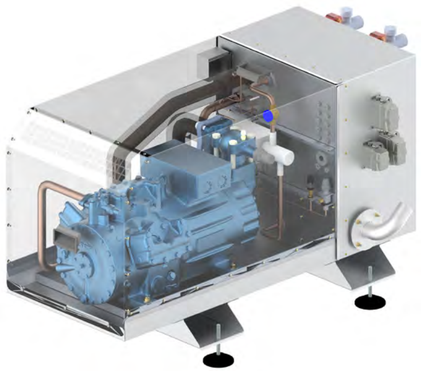
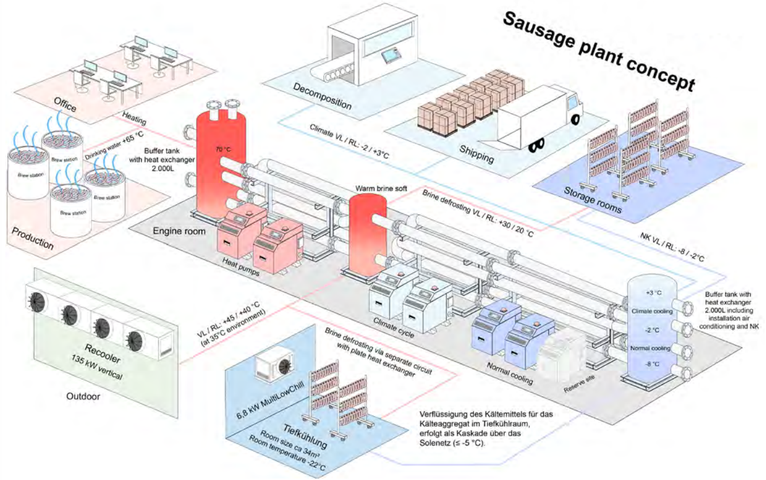
INDOOR INSTALLATION

MultiChiller Serie

The MultiChiller is the all-rounder among refrigeration systems. It can be used for a wide variety of applications and serves a temperature range of approx. -10 °C to +20 °C on the cooling side. The warm side can reach a condensing temperature of up to 65 °C, depending on requirements. Also available as a heat pump.

- Cooling capacities from 5 kW to 75 kW
- Heat capacities from 5 kW to 100 kW
- use of R290, R1270 or R600a
- integrated control based on Siemens Climatix
- maintenance-free refrigeration circuit
- exhaust air system with gas sensor (ATEX)



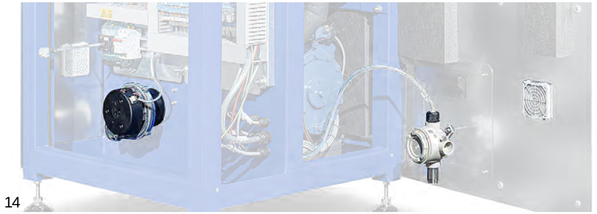


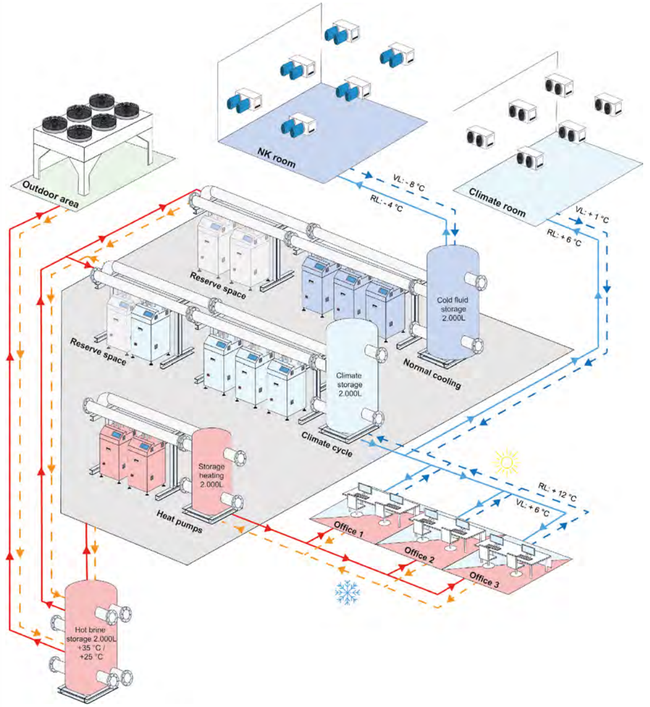
MultiChiller V-Serie / HeatPump

The MultiChiller V with integrated control is the ideal solution for indoor installation. The V series is characterized by a compact solution of the refrigeration technology and the control electronics (Siemens) in one housing. Only the lines for the hot/cold fluid and the electrical supply line need to be connected. As an option, a heat recovery system can be decoupled. Also available as HPR version (heating and cooling with the medium water).

With the MultiChiller V-Series HPR our customers have a unique offer of switchability between cooling and heating. Thanks to the two plate heat exchangers and the simultaneous application of glycol and water of the cooling or heating circuit, the customer has the possibility to switch the unit to cooling in summer and to heating in winter.

- Cooling capacities from 5 kW to 75 kW
- Heat capacities from 9 kW to 100 kW
- Use of R290, R1270 or R600a
- **Refrigerant charge < 30 g / kW**
- Maintenance-free refrigeration circuit
- Exhaust system with gas sensor (ATEX)



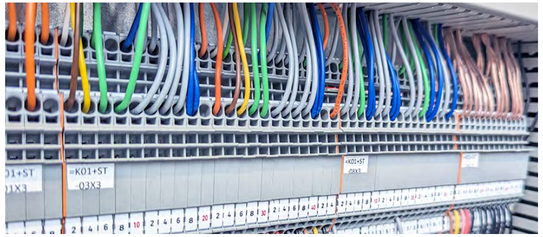


MultiChiller V-Serie XL

The MultiChiller V-Series XL is redundant with the two refrigeration circuits and has a heat output of 50 to 200 kW (100 kW per refrigeration circuit) and cooling output of 50 to 150 kW. The use of two plate heat exchangers in one unit has a low gradient as well as a lower pressure drop and ensures high efficiency.

Only 3.1 kg of propane is required per refrigeration circuit. At the same time, the unit is equipped with two frequency converters. This enables the compressors to start up smoothly so that voltage peaks are avoided. The compressors were installed on a kind of rail system. This means that they can be replaced quickly and at any time.

With the powerful Insevis control, the control can be individually adapted to the device and the requirements of the customer. With the large 7 inch touch panel a good overview of the characteristics of the plant is possible.



2x MultiChiller MCVXL 67-8-19 E-S HP (Heat Pump)

Technical data per MCVXL:

Refrigerant:	R290 (propane)
Refrigerant charge:	2.800 g (per circuit)
Medium cold:	ethylene glycol 34 %
Medium warm:	water
Injection valve:	elektronisch
Safety devices:	Gas warning system R290 ATEX exhaust system for flammable gases
Installation conditions:	Indoor installation
Housing:	stainless Steel
Compressor:	semi-herm. Reciprocating piston
Capacity control:	FU

Performance data:

Hot brine VL/RL:	60 / 65 °C
Medium hot brine:	water
Cold brine VL/RL:	30 / 25 °C
Medium cold brine:	ethylene glycol 34 %
Heating power:	93,4 kW
COP-heating:	4,9

MultiLowChill deep freezing

Bundesrepublik Deutschland

Urkunde

über die Erteilung des
Patents Nr. 10 2016 111 292

Bezeichnung:
System zum Konditionieren von Luft eines Raumes und Anordnung des Systems

IPC:
F25B 7/00

Inhaber/Inhaberin:
Futron GmbH, 08491 Netzschkau, DE

Erfinder/Erfinderin:
Fuhrmann, Jörg, 08491 Netzschkau, DE

Tag der Anmeldung:
21.06.2016

Tag der Veröffentlichung der Patenterteilung:
29.03.2018

Die Präsidentin des Deutschen Patent- und Markenamts

Cornelia Rudloff-Schäffer

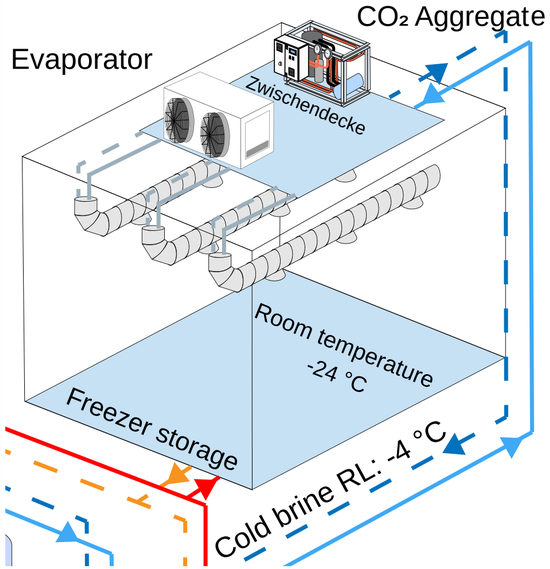
München, 29.03.2018

Den aktuellen Rechtsstand und Schutzumfang entnehmen Sie bitte dem DPMAregister unter www.dpma.de

The MultiLowChill is the solution for deep-freeze rooms. All components such as compressor, evaporator, desuperheater, condenser, expansion tank, switching and safety devices are compactly accommodated in the housing. The refrigerant is condensed as a cascade via a customer-side brine system (≤ 5 °C). The MultiLowChill contains the refrigerant CO2 and can achieve cooling capacities of up to 10 kW as a single unit. When using several units as a hydraulic network, higher total capacities and redundancy are available according to the number of units. The MultiLowChill is supplied with a separate and ready-to-use Siemens control. Access via Ethernet (HMI for Web using a browser) is possible. Since March 2018 our MultiLowChill has a published patent.

MultiFreeze deep freezing

The MultiFreeze is a CO2 freezer unit with fluid re-cooling (<+ 1 °C). It can reach cooling capacities from 5 to 50 kW (-24°C room temperature). This unit has an expansion tank to increase reliability. The compressor is a frequency controlled semi-hermetic reciprocating compressor. In addition, the unit is equipped with a high-quality Siemens control system.



Efficiency at the highest level

FUTRON
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OUTDOOR INSTALLATION

IndustryChill / Industrial heat pump

The IndustryChill as well as the HeatPump is a water-cooled dual-circuit water-to-water chiller / heat pump for indoor installation as well as outdoor installation for industrial use. The refrigerant used is propane (R290) or propene (R1270). The IndustryChill is designed in a capacity-optimized version. All refrigeration components are mounted on a solid frame.

This industrial heat pump has two high quality and high performance compressors, which are equipped with capacity controller and frequency converter. The flooded dual-circuit shell and tube evaporator can keep the refrigerant charge low and ensure efficient operation of the system.

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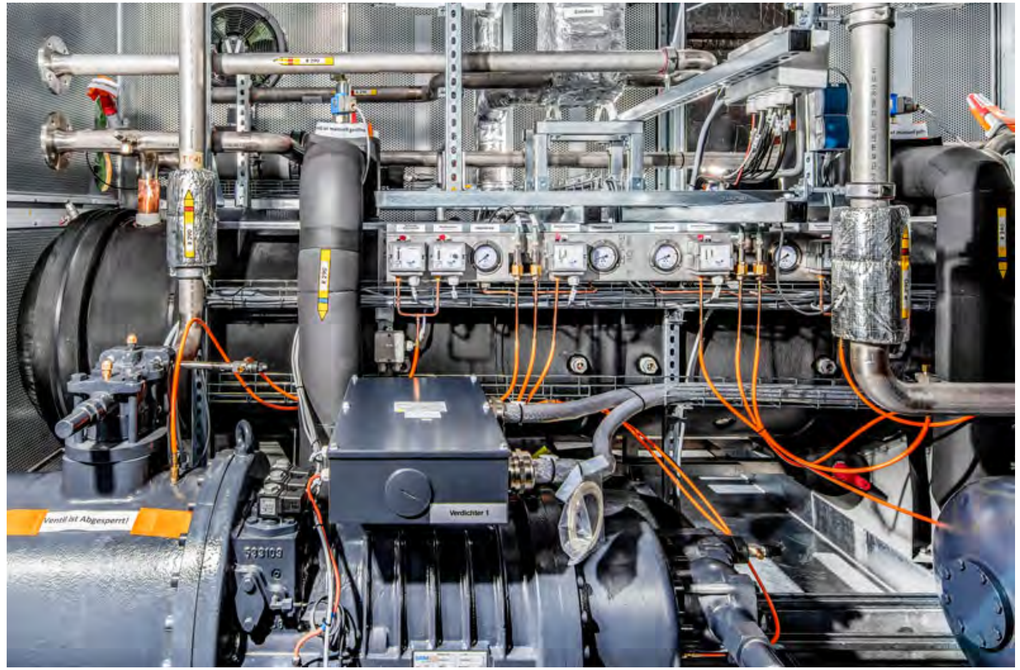

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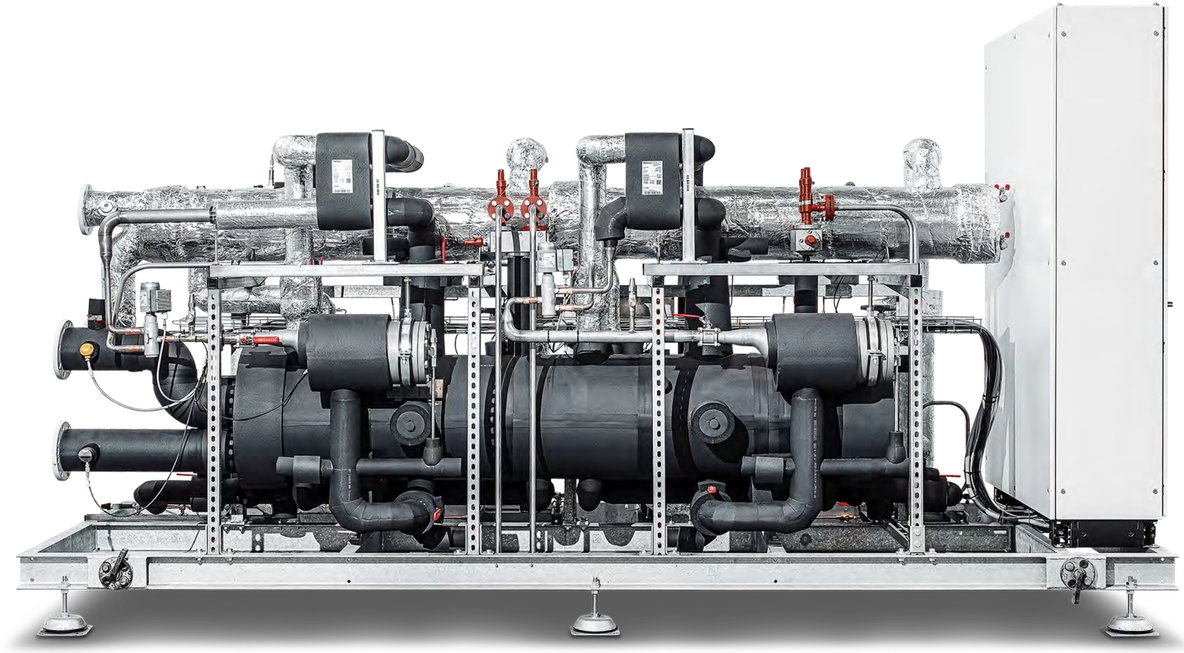
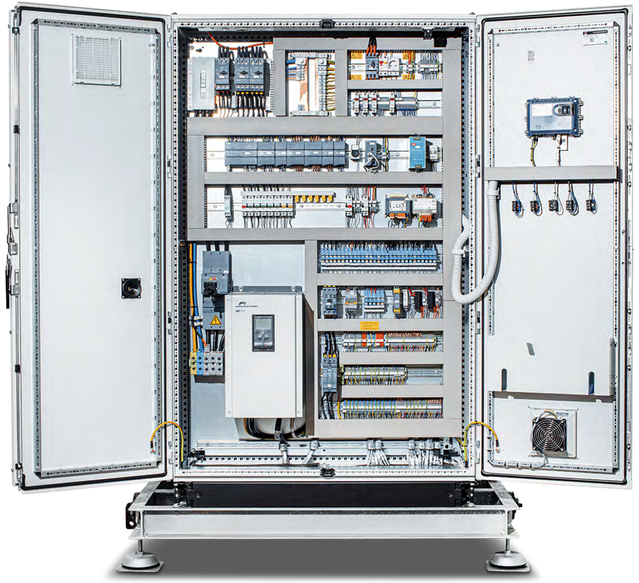




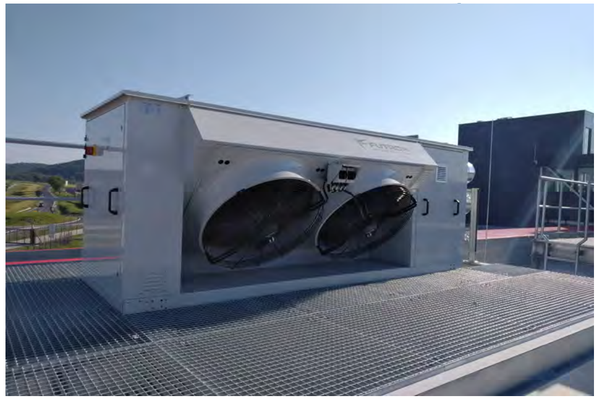
The robust and excellent insulation of the piping and system components, as well as the use of flow monitors and resistance sensors, protect the system from frost damage.

The control cabinet is mounted on the entire plant frame and contains all components for controlling the plant. The control is based on Siemens S7 components. The visualization is done via a 7 inch TP700 ComfortPanel and can also be made larger on customer request. The main components in the control cabinet are the frequency converter, motor protection switch and the Siemens S7 components. Optionally, the control system can be adapted to customer requirements.

MultiAirChill / Heat pump

The MultiAirChill (MAC) is our classic solution for outdoor installation with direct condensing. It has a charge-optimized condenser to reduce the refrigerant charge to a low level. The brine chiller is suitable for high ambient temperatures >40°C and is supplied as a ready-to-connect unit.

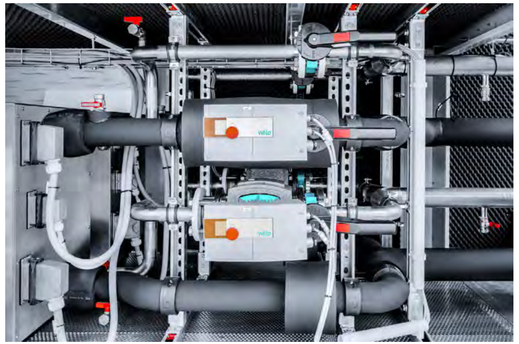
For the MAC, a choice can be made between two design variants, depending on requirements and performance demands. Heat recovery by using the desuperheating energy is available as an option. The unit is equipped with a two-stage gas sensor and safety exhaust as standard.

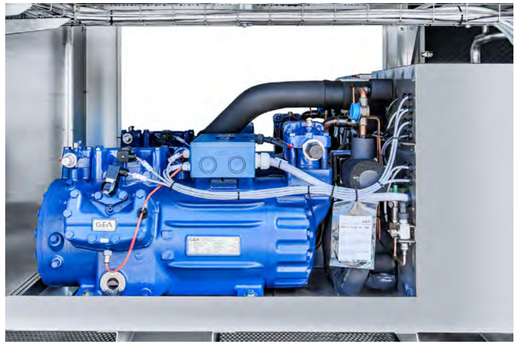


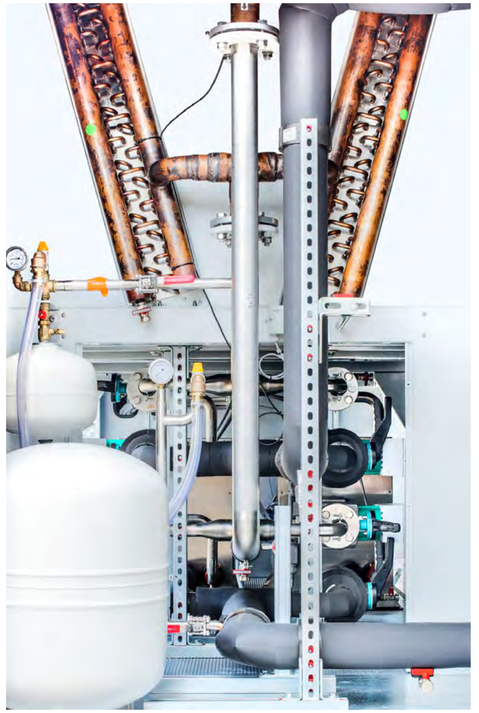
MultiEcoChill

The MultiEcoChill (MEC) is the ideal solution for installation in all areas. Special installation conditions do not have to be observed. In the MEC, the MultiChiller forms the basis for cold generation. This means that many variants are possible. Free cooling, redundant refrigeration circuit, heat recovery, heat pump circuit, hydraulic separator and the installation of consumer pumps are configurable.

The MEC is used in retail, breweries, data centers, office complexes and in various process cooling applications. Depending on the cooling capacity, the refrigerant charge is only 1.0 to 2.4 kg / refrigerant circuit. Therefore, a safe installation in the general access area is allowed according to DIN EN 378-1. Due to our service concept „Jump In and Jump Out“ a quick exchange of a MultiChiller is possible.



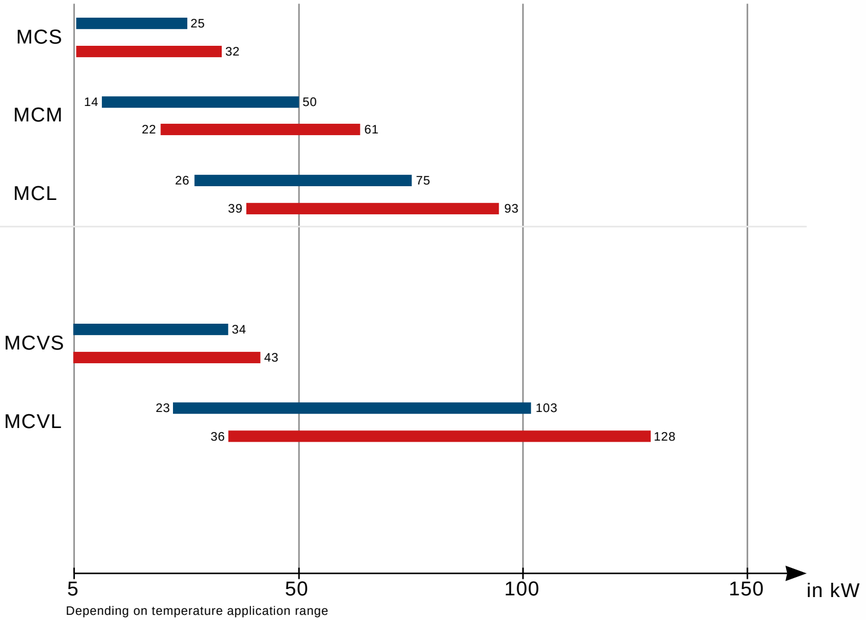




Capacity indoor installation

MultiChiller S / M / L

MultiChiller V-Serie

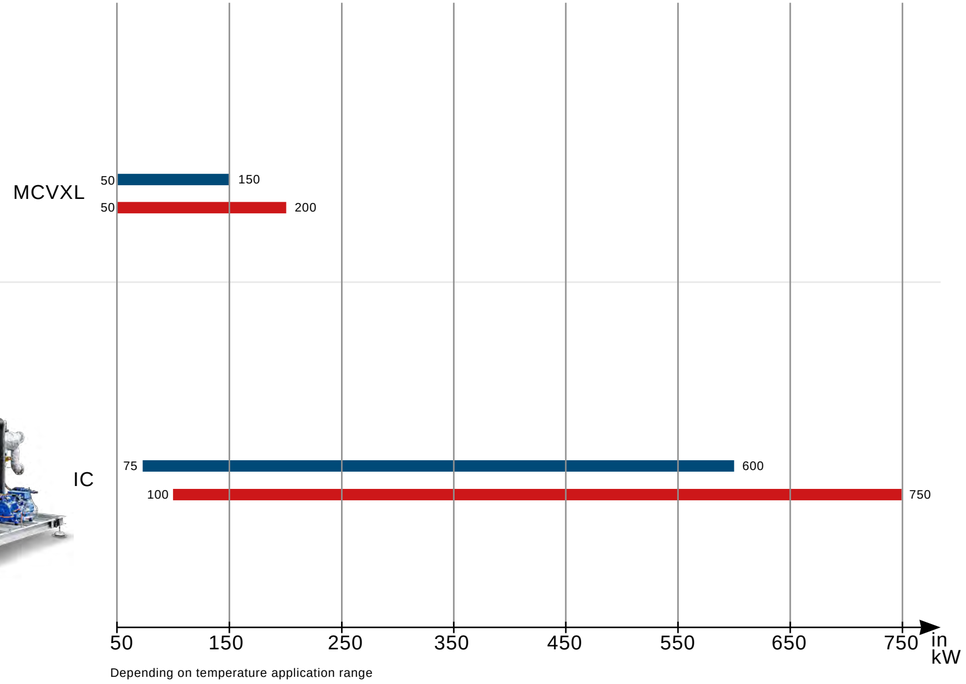


Depending on temperature application range

Capacity indoor installation

MultiChiller V-Serie XL

IndustryChill

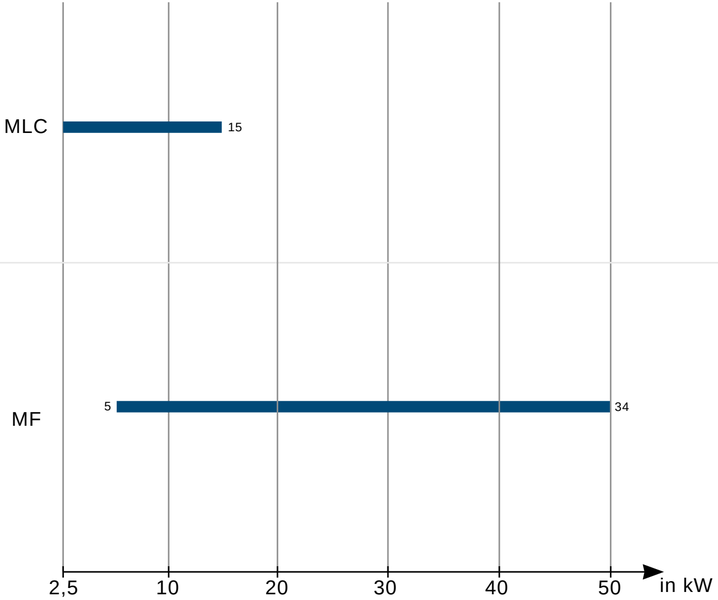


Depending on temperature application range

Capacity deep freezing

MultiLowChill

MultiFreeze



Depending on temperature application range

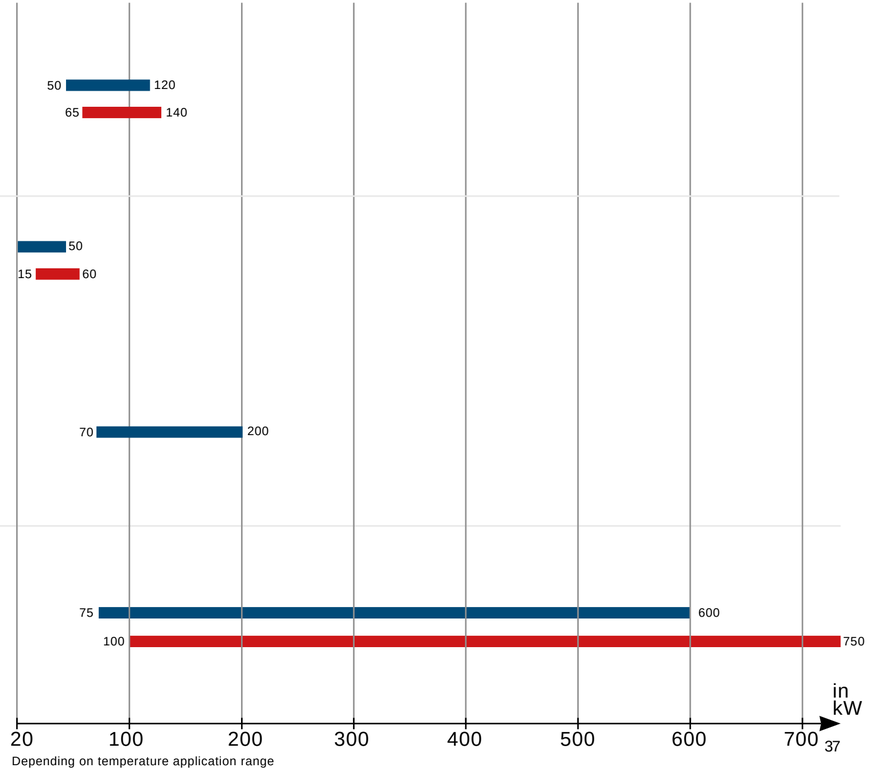
Capacity outdoor installation

MultiEcoChill

MultiAirChill single circuit

MultiAirChill dual circuit

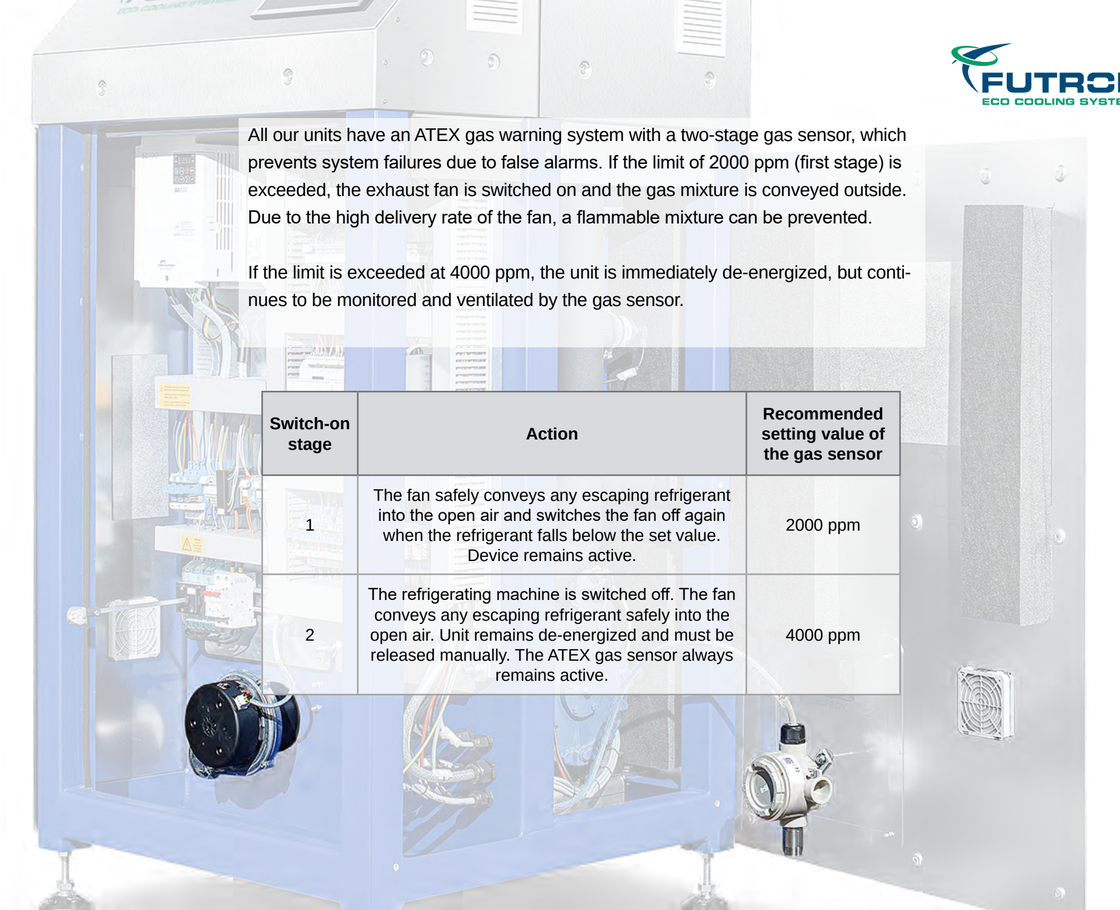
IndustryChill



Depending on temperature application range

Sophisticated Security

Operated with the natural refrigerant propane in the primary circuit (only inside the unit), our systems find the highest ecological as well as economical appeal.

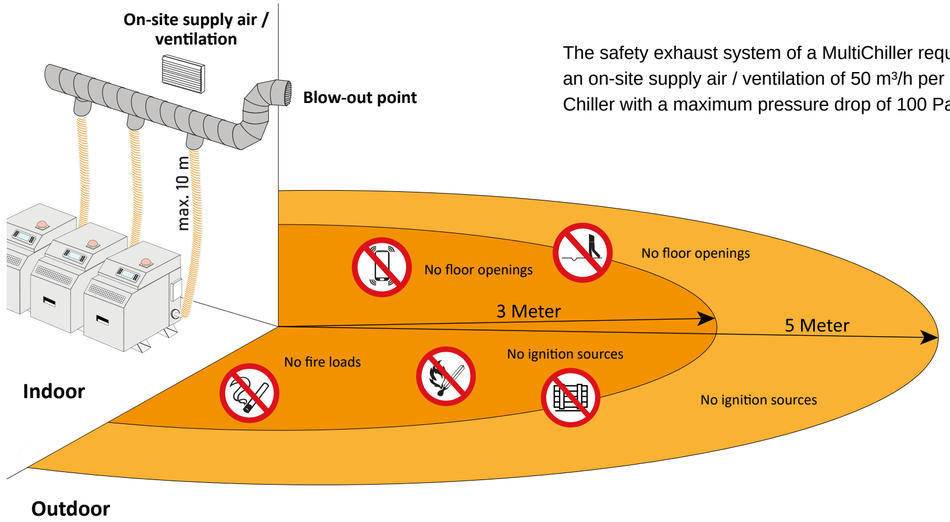


All our units have an ATEX gas warning system with a two-stage gas sensor, which prevents system failures due to false alarms. If the limit of 2000 ppm (first stage) is exceeded, the exhaust fan is switched on and the gas mixture is conveyed outside. Due to the high delivery rate of the fan, a flammable mixture can be prevented.

If the limit is exceeded at 4000 ppm, the unit is immediately de-energized, but continues to be monitored and ventilated by the gas sensor.

Switch-on stage	Action	Recommended setting value of the gas sensor
1	The fan safely conveys any escaping refrigerant into the open air and switches the fan off again when the refrigerant falls below the set value. Device remains active.	2000 ppm
2	The refrigerating machine is switched off. The fan conveys any escaping refrigerant safely into the open air. Unit remains de-energized and must be released manually. The ATEX gas sensor always remains active.	4000 ppm

Indoor installation

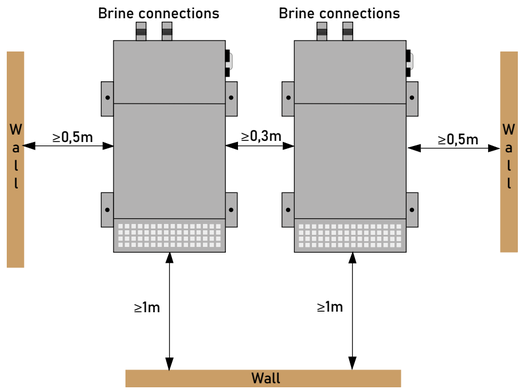


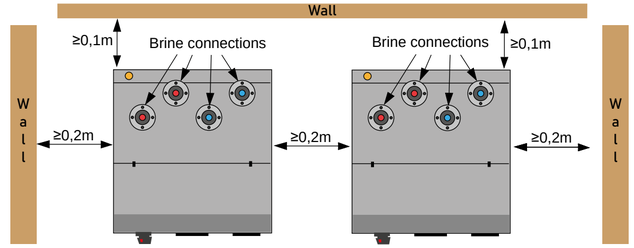
The safety exhaust system of a MultiChiller requires an on-site supply air / ventilation of 50 m³/h per Multi Chiller with a maximum pressure drop of 100 Pa.

The MultiChiller is designed for indoor installation. The entire refrigeration circuit is located in a ventilated housing (according to DIN EN 378-1). The system is designed to be technically tight in the long term. The housing is sufficiently mechanically ventilated so that an explosive atmosphere cannot occur in the event of a leak. No zoning is required.
Further information can be found in the operating instructions „Analysis and evaluation of hazards and risks“. The refrigerants R290, R1270, R600 and R600a are heavier than air. The safety suction of the MultiChiller must be connected via an antistatic hose with a max. length of 10 m and led outside. Greater lengths require recalculation and, if necessary, support by a ventilation duct.

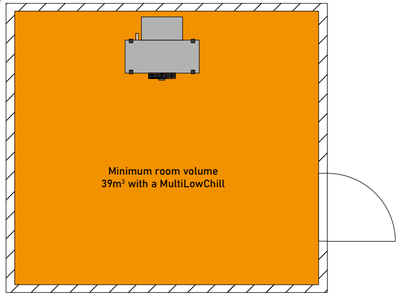
The following information must be observed for the blow-out point:

- Floor inlets, vents, floor flaps, or similar openings in the immediate vicinity of the blowout location must not be present. We recommend a distance of at least 5 m.
- Floor recesses and depressions in which blown-out refrigerant can collect are not permitted.
- Leaked refrigerant must not be allowed to enter neighboring areas through openings (e.g. vents for fresh air, door openings, etc.). It is not permissible for air to be routed through the installation room into an area where people are present.
- There must be no ignition sources at the discharge point of the MultiChiller suction unit.
- Sufficient ventilation must be provided for the installation room in the form of mechanical ventilation or a sufficiently large area to the outside. In the case of mechanical ventilation, the supply and exhaust air must be separated sufficiently far from each other so that no exhaust air can be sucked in and the installation room is ventilated evenly. Note: The gas sensor is very sensitive to silicones.
- There must be no hydrocarbon compounds in the installation room, e.g. in solvents, adhesives, spray cans.
- There should be no heavy dust accumulation in the installation room.
- During hot work, such as welding, soldering, adequate ventilation must be provided.

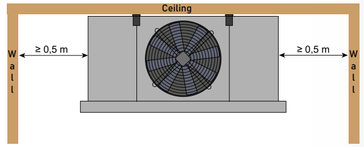


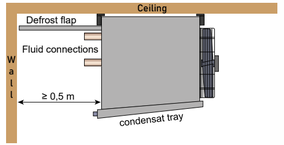


Indoor installation with CO_2



$$\text{Minimum room volume} = \frac{\text{Refrigerant charge}}{\text{ATEL / ODL}}$$





The MultiLowChill is a permanently sealed design of the system in accordance with DIN EN 378-1 and the Pressure Equipment Directive, whereby a hazard due to CO2 (R744) can be reliably prevented. The operator is responsible for carrying out a classification according to the local conditions during installation.

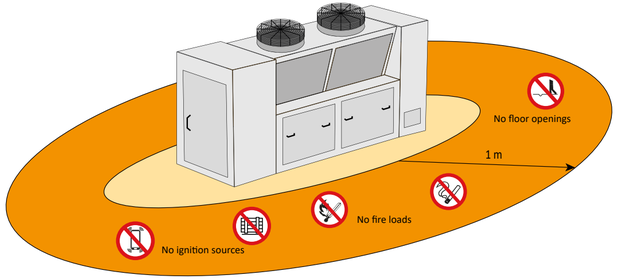
Due to the anesthetic and suffocating effect of high concentrations of CO2, the practical limit value in the cold room must be observed. If the practical limit value can be exceeded at the installation site due to the conditions there, gas warning sensors must be installed for monitoring.

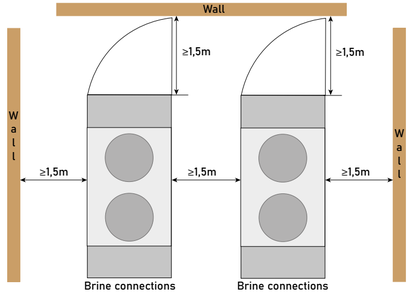
The practical limit value for carbon dioxide (CO2) is 0.1 kg/m3 according to DIN EN 378-1, Annex E, Table E1 (refrigerant number 744) and is based on empirical values, see the above standard Chapter 5.2 Designation and classification of refrigerants.

To calculate the minimum room volume, the ATEL / ODL (toxicity / oxygen deficiency limit) of 0.072 kg/m3 according to DIN EN 378-1, Annex E, Table E1 (refrigerant number 744) and the allowable concentration (RCL) according to Table C3, are used for the refrigerant R744.

Depending on the version, the MultiLowChill can hold a maximum refrigerant charge of 2.8 kg CO2. In order not to exceed the ATEL / ODL limit, the minimum room volume must be 39 m3. If the room volume is below this minimum requirement, a gas warning system must be installed. Furthermore, the regulations listed in Appendix D „Protection of persons in cold rooms“ according to DIN EN 378-1 must also be observed.

Outdoor installation



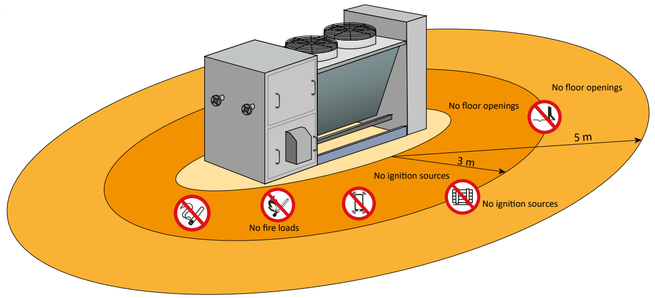


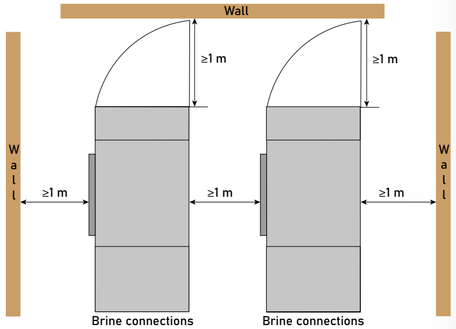
Outdoor installation of the MultiEcoChill - systems with a refrigerant charge < 5 kg The MultiEcoChill is designed for outdoor installation. The system is designed to be technically tight in the long term. The housing is sufficiently mechanically ventilated so that an explosive atmosphere cannot develop in the event of a leak. No zoning is required. Further information in the operating instructions: Analysis and evaluation of hazards and risks. The refrigerants R290, R1270, R600 and R600a are heavier than air. Therefore, the refrigeration system must be located so that no refrigerant can enter a building in the event of a leak. Furthermore, in the event of a leak, refrigerant must not be allowed to enter ventilation openings for fresh air, door openings, floor flaps or similar openings. No persons or property may be endangered.
The operator is responsible for checking the local conditions during installation.

- There must be no floor inlets, vents, floor flaps or similar openings directly under the plant. We recommend a distance of at least 1 m around the plant.
- Floor recesses and depressions in which leaked refrigerant can collect must also be avoided. If there are heels in the installation area, gas warning sensors must be used.
- Ignition sources and fire loads are to be avoided at a distance of 1 m.

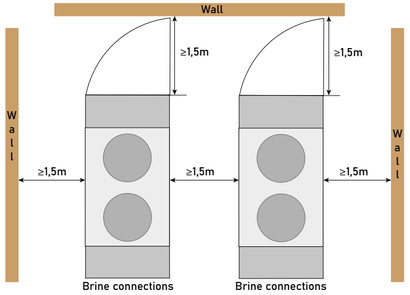
Sufficient space must be provided around the refrigeration units for maintenance purposes. Due to the low refrigerant charge quantities, no further installation instructions regarding unauthorized persons are required. Appropriate measures must be taken to prevent mechanical impact and to comply with the general regulations for flammable substances. This can be done by means of signs or by fencing off the distances to be maintained.

Outdoor installation





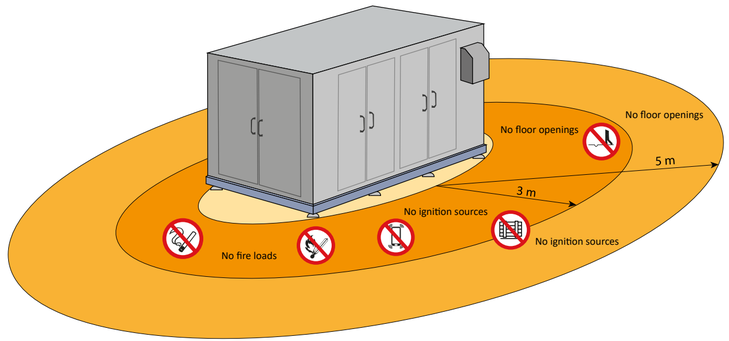
single circuit

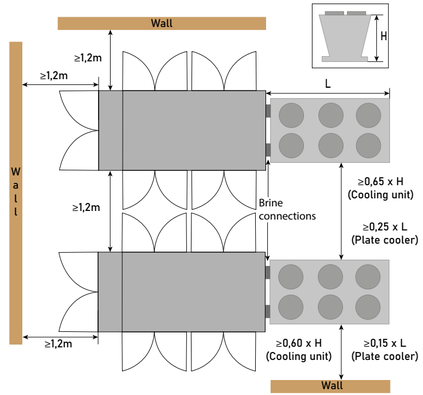


dual circuit

The system is designed to be technically tight in the long term. The housing is sufficiently mechanically ventilated so that an explosive atmosphere cannot develop in the event of a possible leak. No zoning is required. Further information in the operating instructions: Analysis and evaluation of hazards and risks. The refrigerants R290, R1270, R600 and R600a are heavier than air. Therefore, the refrigeration system must be located so that no refrigerant can enter a building in the event of a leak. Furthermore, in the event of a leak, refrigerant must not be allowed to enter ventilation openings for fresh air, door openings, floor flaps or similar openings. No persons or property may be endangered.

MultiAirChill and IndustryChill





The operator is responsible for checking the local conditions during installation.

- Floor drains, vents, floor flaps or similar openings in the immediate vicinity of the installation site must not be present. We recommend a distance of at least 5 m.
- Avoid floor recesses and depressions in which leaked refrigerant can collect. If there are heels in the installation area, gas warning sensors must be used.

Sufficient space must be left around the cooling units for maintenance purposes. The chillers must be installed in such a way that they are protected from unauthorized persons and measures must be taken to prevent mechanical impact.

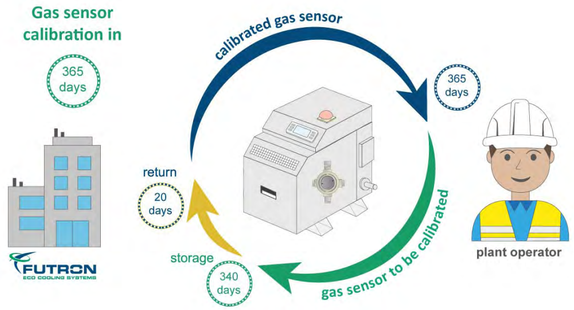
All-round carefree

Service tailored to you

The Futron gas sensor circulation process

A calibration of the gas sensor must take place every 365 days. With the gas sensor recirculation method from us, you change the gas sensor yourself and at the same time have a competent contact person for the calibration.

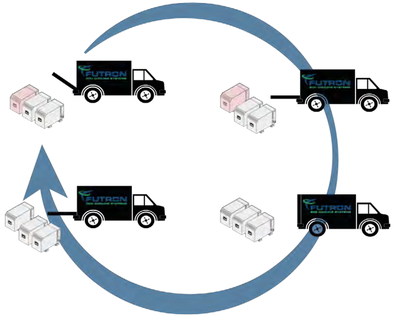
We will gladly do this for you. We check, document the measurement deviation (measurement accuracy), calculate the measurement uncertainty and provide you with a calibration certificate.



The Futron „Jump In and Jump Out“ Service Concept

An important aspect in today‘s world is the fast and uncomplicated replacement of defective components/devices. This reduces the need for cost-intensive specialist and service personnel. If there is a defect in one of the devices, the corresponding chiller is therefore removed and sent in for repair or replaced.

The Plug‘n‘Play system enables easy separation of all interfaces using coded plug systems and Victaulic® connections. The entire cooling capacity of the system can therefore be restored within a very short time. The “Jump In and Jump Out” system also avoids work on refrigeration circuits on site.



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