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# COOLINN

The NEXT Generation of electrical Cryo-Chambers

**Flexible between  $-115^{\circ}\text{C}$  and  $-40^{\circ}\text{C}$  ( $-130^{\circ}\text{C}$  in modification)**

Best user experience, temperature distribution  
and low dew point – Get cold feet elsewhere

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**COOLINN**  
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# ABOUT COOLINN

COOLINN is an innovative start-up located in Karlsruhe that opened in 2019 to revolutionize the cold therapy world.

The COOLINN whole-body cryo-chamber is the only chamber that uses ambient air to reach up to  $-115^{\circ}\text{C}$ , optional up to  $-130^{\circ}\text{C}$ . This unique technology makes the chamber not only the most efficient, safest and environmentally friendliest but also a chamber which is not affected by any political regulations.

This means that our cryo-chamber will still be able to operate after 2030, unlike most of the competing products.

COOLINN attaches great importance to quality and user experience. For this reason, the cryo-chamber in Karlsruhe is available to

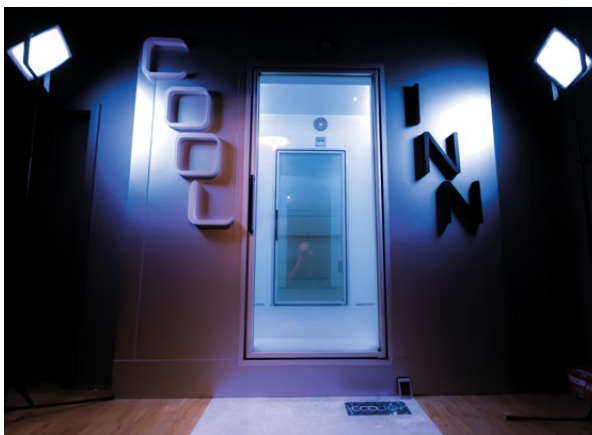
the public. COOLINN tests concepts and works closely with the SRH University of Health to investigate the health benefits and the usability for the customers.

We at COOLINN aim to provide the best possible support to ensure that every customer achieve their goals. Whether it is the treatment of rheumatic arthritis, depression or pain, the support of regeneration or enhancing the performance of athletes, there is a wide field of applications cryotherapy can be used.

Besides the cryotherapy, we also offer cosmetic and wellness treatments, like massages or facial cleansings, at our location provided by a certified cosmetician.

To further strengthen the COOLINN experience every customer can relax in our spacious lounge to let the new body sensation truly sink in. To top it off it is also possible to book our lounge for events like concerts or pitch meetings.

COOLINN would be pleased to inspire you as a prospective buyer with the quality and the unique technology.



# ENVIRONMENTAL PROTECTION

Having come across the problem of global warming, the global community has united in attempts to decrease the rising man-made climate change on our planet. These attempts lead to the signing of the Paris agreement by 195 countries in 2015 to restrict global climate warming to considerably less than 2° C till the year 2100. In order to reach such an ambitious goal, most countries signed international agreements restricting the

the global warming process. In this regard, the implementation of ambient air as the most accessible and safest refrigerant available contributes to the reduction of greenhouse emissions. The MIRAI Intex refrigeration machines used for the COOLINN



emission of polluting gases as well as the manufacture and use of dangerous substances, including toxic and chemical refrigerants.

Especially in the field of refrigeration technology, the European Union has committed itself to the reduction of using fluorinated gases and producing it on its territory, to slow down

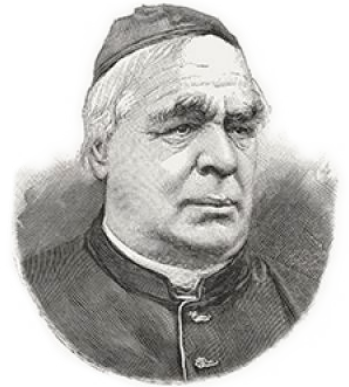
cryo-chamber only uses ambient air as a refrigerant. This is the most environmentally friendly solution on the market.

Additionally, the MIRAI refrigeration machine has no phase change, uses no oil, and thanks to the air bearing it is wear-free. This culminates in the highest level of reliability available on the market with an assumed service life of 30 years and more, which minimizes the consumption of resources.

## WHY CRYOTHERAPY?

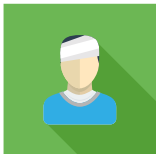
**Sebastian Kneipp**, the forefather of cold therapy, discovered the healing effects of cold in the early 19th century. It is said that he suffered from tuberculosis and healed himself with the help of ice-cold baths in the Donau and gained worldwide fame.

Thanks to his education in the early years, we are able to enjoy such a wide access to cryotherapy methods today.



## OVERVIEW OF APPLICATION AREAS

### Cold support against Chronic pain



Studies show that whole-body cryotherapy significantly reduces pain for people with chronic rheumatism (e.g. arthritis). Through reducing the skin temperature below 13.6 °C the nerve conduction is increasingly suppressed which results in a local pain reduction. The advantage of whole-body cryotherapy is that it is compatible with other forms of therapy and therefore enhances the effectiveness of rehabilitation programs.

By drastically cooling the skin at the neck and numbing the nerve conductivity the treatment of migraines can be positively influenced. A potential additional effect is the cooling of the blood passing through the carotid arteries, which are close to the skin's surface, to the brain.

## Cold supports against psychological diseases

Customers who use whole-body cryotherapy regularly report a more euphoric mood and an increase in overall happiness. The procedure stimulates the central nervous system resulting in an increase in adrenaline and endorphins levels which ultimately lifts the spirits and energy levels. A promising and steadily growing field of research of whole-body cryotherapy is the treating of depressions and its symptoms.



## Cold support increases regeneration

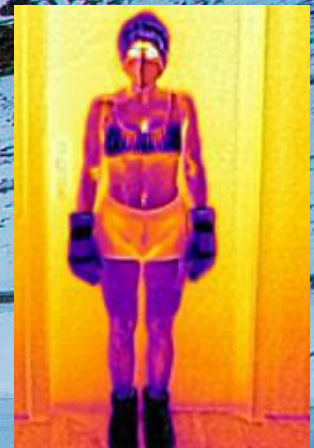
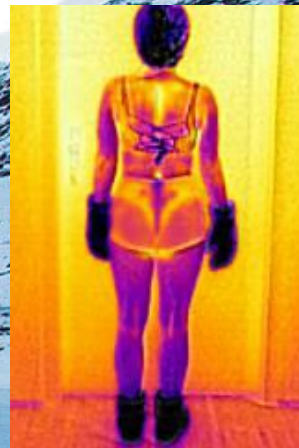


Professional athletes as well as amateur athletes traditionally use ice baths or hot-cold baths to improve the regeneration process and therefore improve their performance. Whole-body cryotherapy likewise can help you improve your sports performance by shortening recovery times and increasing the body's metabolism.

## OVERVIEW OF APPLICATION AREAS

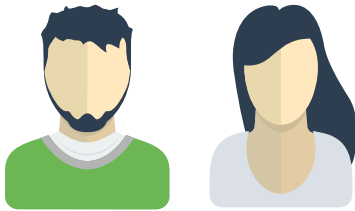
- Pain relief and improved muscle healing pain therapy
- Reduction of (chronic) inflammation
- Treatment of anxiety and depression
- Improvement of symptoms of eczema
- Migraine headache treatment
- Enhancing regeneration and performance
- Improving sleep quality
- Improving skin conditions
- Weight loss

## Heat camera pictures of users



# THE UNIQUE COOLINN EXPERIENCE

## FOR THE USER



You begin an expedition into the unknown. Temperatures that have never been on earth and none of your ancestors have ever experienced.

In the first chamber (-60°C), the humidity sublimates on your body and prepares you for the climax of your expedition.

After a few seconds, you will enter the treatment chamber and feel for the first time -115°C. Your body reacts to this extreme cold with a survival mechanism that stimulates your blood circulation. This heightened state is mentioned by many clients as an incredible body sensation often described as a deep meditative state which brings an incredible out-of-body experience.

After the cold sauna, your body is tingling over the whole surface and it releases hormones that make you smile from ear to ear.

Apart from the positive effects during the application and a whole new body experience, the cold therapy provides a simple post-treatment with the help of a thermal imaging camera in cooperation with a physiotherapist.

## FOR THE OPERATOR



The most important point for the operator is a reliable system and satisfied customers.

The technology we use for our cryo-chamber is widely used by pharmaceutical companies for cryogenic applications.

The pharmaceutical industry already knows that reliability, efficiency and independence from political regulations are much more important than the first investment costs.

With our technology, the operator is able to serve customers 24 hours a day, 7 days a week with the best results through real -115 °C temperatures.

The de-icing process of the cryochamber is automated and can easily run during customer operation. This leads to a permanently high customer frequency.

In addition, all rotating parts of the machine are air-bearred resulting in a wear- and vibration-free machine which concludes in extreme low maintenance effort, wear of the machine and no requirements for the machine room.

## AN UNFORGETTABLE EXPERIENCE WHICH LEADS TO RECURRING SALES

Cold has the physical property to descent, which would result in the shins being cooled the most and subsequently burn them. But thanks to consistent air circulation a homogeneous temperature distribution in the COOLINN chamber from head to toe is achieved which leaves no room for shin burns.

## HARMLESS TO HUMANS AND THE ENVIRONMENT

Ambient air surrounds us every day and shines with a non-toxic, non-flammable and harmless characteristic. Therefore using air as a refrigerant is the safest and environmentally friendliest solution.

## LOW OPERATING COSTS

Our solution can maintain the set temperature without any interruption even with high customer traffic. Therefore no de-icing process during the daily business is needed.

To generate these low temperatures, our solution uses only ambient air which is free of charge, is not subject to any political regulations and does not need any special installations for the installation site. Hence there are no worries about political regulations because of environmental protection!

Through the minimum of wear in the solution a reduction of 90% maintenance costs can be achieved.

## RELIABLE AND DURABLE TECHNOLOGY

The technology we are using made its industry debut in the aircraft and pharmaceutical sectors thanks to the high reliability of the system.

The air bearing of the rotating parts, the oil-free operation, and the non-existent phase change of the refrigerant (free ambient air) minimizes the wear and the probability of failure to a minimum.

The refrigeration system is application-optimized with high temperature accuracy and is stepless adjustable between -40°C and -115°C, optional up to -130°C.

# THE UNIQUE TECHNOLOGY IN DETAIL / 1

## TECHNICAL OVERVIEW

**Current challenges require state-of-the-art technology.**

With our expertise in the fields of refrigeration technology, plant engineering and project management we have developed the COOLINN cryo-chamber that meets our expectations of German engineering at its finest.

Regarding the technology used in cryo-chambers there is a big issue at the market when it comes to costs, temperatures and effects for the customers.

A lot of cryo-chamber operators are misled by the low investment costs of conventional refrigeration technology and forget to pay attention to the quality, reliability and political framework of these machines.

Furthermore they are not aware that low running costs are more important for a successful business than a cheap first investment in the long run.

Real temperatures results into real improvement of the customer's condition, satisfaction and thus leads to returning customers.

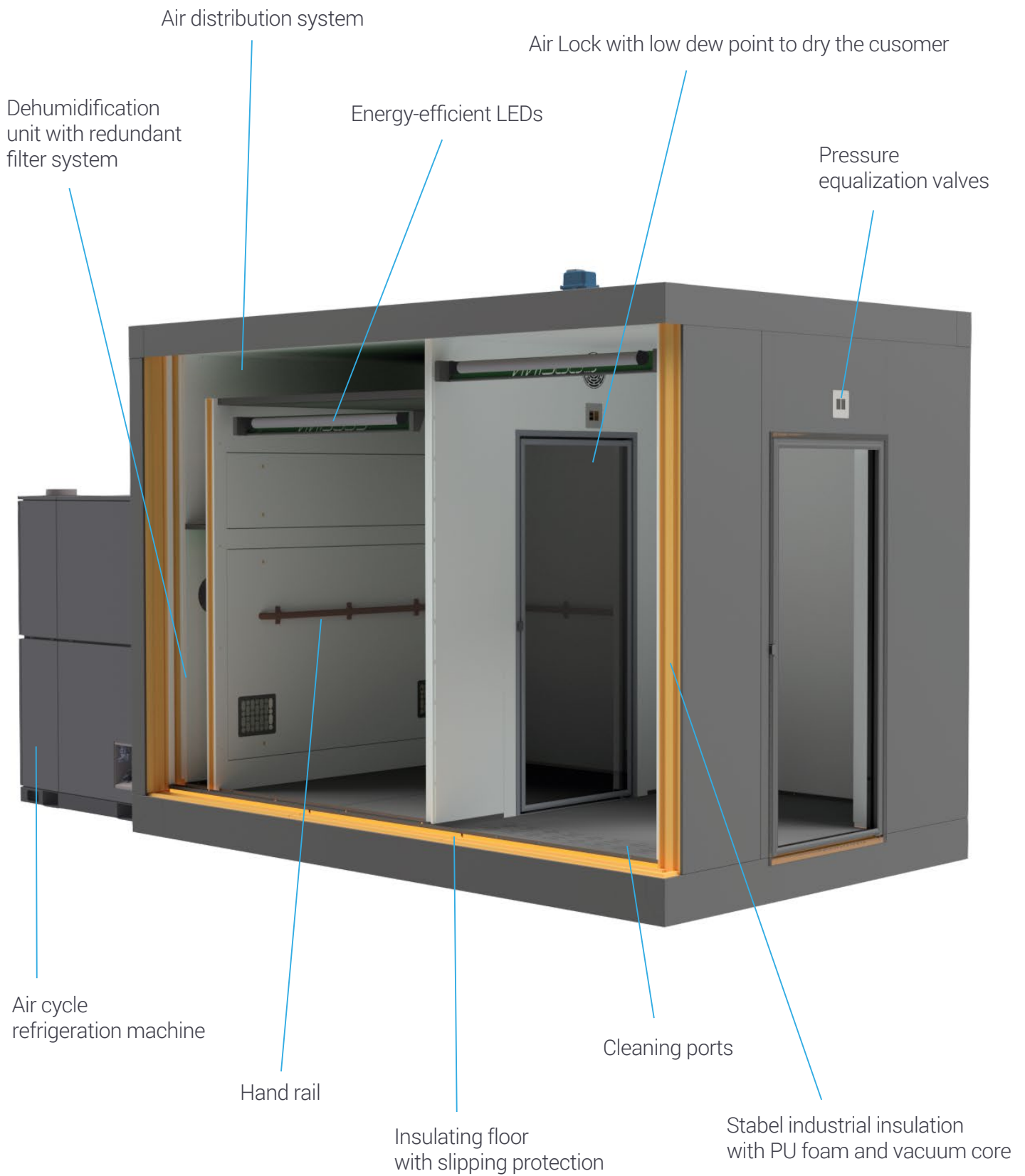
**FRONT VIEW**



**BACK VIEW**





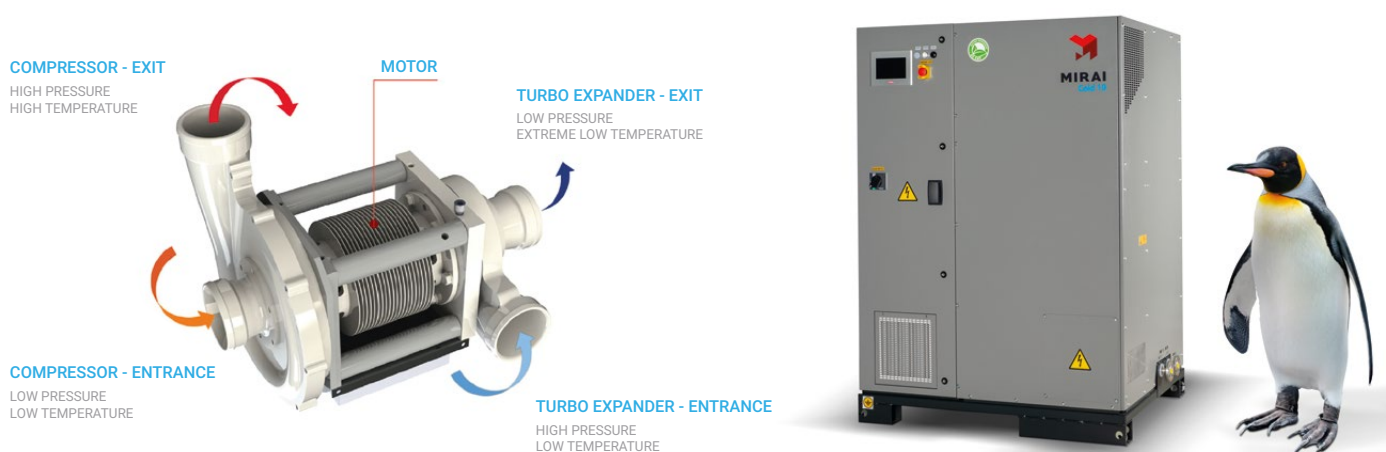


# THE UNIQUE TECHNOLOGY IN DETAIL

## THE REFRIGERATION

**Sustainable, reliable, efficient and safe for people and the environment**

Thanks to the air cycle refrigeration technology from Mirai Intex the machine runs without oil, with air as the only refrigerant and a maximum overpressure of 1 bar. Its core component is a compressor-expander-unit which compresses and expands on the same shaft for energy recovery. Additionally, it is equipped with low-wear air bearings.



With our technology you are ready for the future. Air as a refrigerant is not affected by political regulations like the F-gas regulation or the Kigali protocol.

For example, the low-temperature refrigerant R23 (GWP 14800) which is currently experiencing an unpredictable shortage and price increase is likely to be banned in the near future. One of the most common causes of failure in refrigeration systems is compressor damage caused by liquid refrigerant entering the compressor or insufficient lubrication caused by a high oil circulation ratio. Additionally, in cascade systems for low-temperature systems several compressors must operate simultaneously which increases the possibility of a failure.

In contrast to conventional technologies, our solution includes no phase change of the refrigerant. So we avoid the risk of damaging the compressor by flooding it with liquid refrigerant. The fact that no oil is needed and all rotation parts have air bearings results in almost no wear during operation.

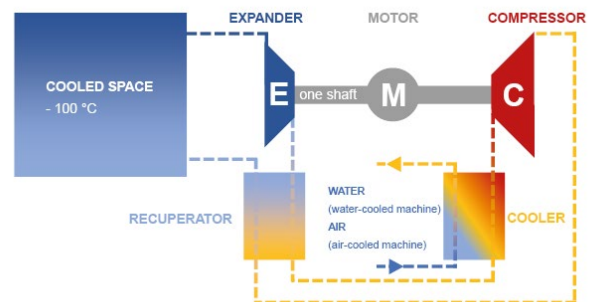
These characteristics make the air cycle technology the most reliable of all refrigeration machines.

The air cycle refrigeration technology is one of the most efficient for deep temperature applications starting at  $-40\text{ }^{\circ}\text{C}$ . Due to the lock and the excellent insulation, we have developed an unbeatable efficient solution.

Our COOLINN cryo-chamber operates with an air cycle refrigeration machine in the open cycle. It sucks in air from inside the cold room, cleans the air using two redundant filters the “catcher”, refrigerates it and blows the air back into the cold chamber. This results in a very homogeneous temperature distribution. Due to the extremely low air temperature at the room inlet the dew point temperature is reduced up to 20 K.

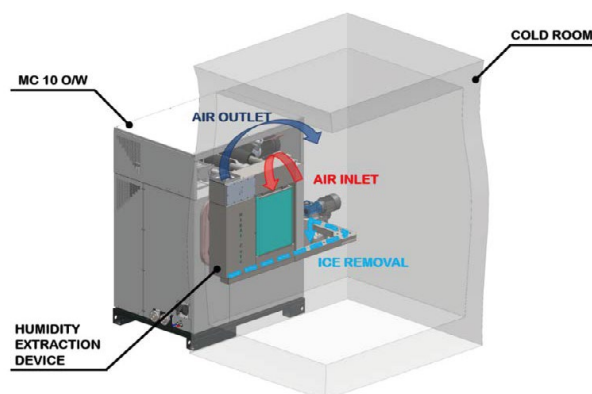
A very important element is the catcher inside the cryo-chamber through air is sucked in and fed back into the cold room. Controlled by a differential pressure gauge, the ice accumulated on the surface of the filters is removed by compressed air and transported from the cold room via a conveyer belt. Compared to conventional refrigeration systems (with room-side evaporators) this results in the following advantages:

- Significantly lower cooling capacity is required which results in cheaper running costs for the operator
- Low dew point in the cold room because the entering air is highly supercooled
- Continuous defrosting of the cold chamber without heating processes which consults in a permanent operation for the operator



## STRUCTURE AND INTEGRATION:

In our solution, the air cycle refrigeration machine is integrated into the front of the cold chamber in the machinery space and connected to the snow catcher unit on the inside. The air is sucked in from the cold chamber and blown evenly in the cold room via a distribution system which is attached to the catcher. The ULT chamber is accessed through an integrated lock which is not actively cooled but serves as a buffer zone for the cold chamber. It is cooled passively by thermal conduction through the partition as well as convection from the cold chamber and the ambient air.

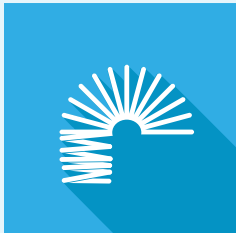


# ADVANTAGES IN THE OVERVIEW



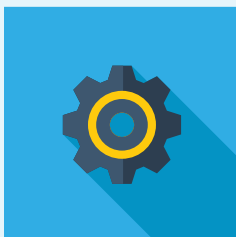
## FUTURE-PROOF

Air is free, safe and has no regulations.



## FLEXIBLE

Flexible temperature adjustment without any add ons or new components from -115° C to -40° C (optional -130°C)



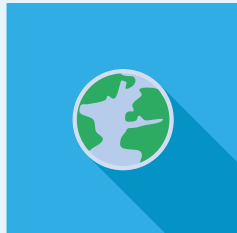
## HIGH RELIABILITY

Proven technology - Made in Germany. No interference due to liquid refrigerant flooding the compressors or negative pressures in the system. Low wear technology



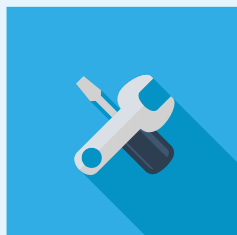
## **SIGNIFICANTLY HIGHER EFFICIENCY**

Speed-controlled, no evaporator, expander with energy recovery to the turbine, low spec. surface, vacuum insulation and lock.



## **SAFE FOR PEOPLE AND THE ENVIRONMENT**

Completely natural refrigerant with no high pressures, without toxicity and without flammability. 0 GWP, 0 ODP, 0 TFA.



## **LOW MAINTENANCE & DURABLE**

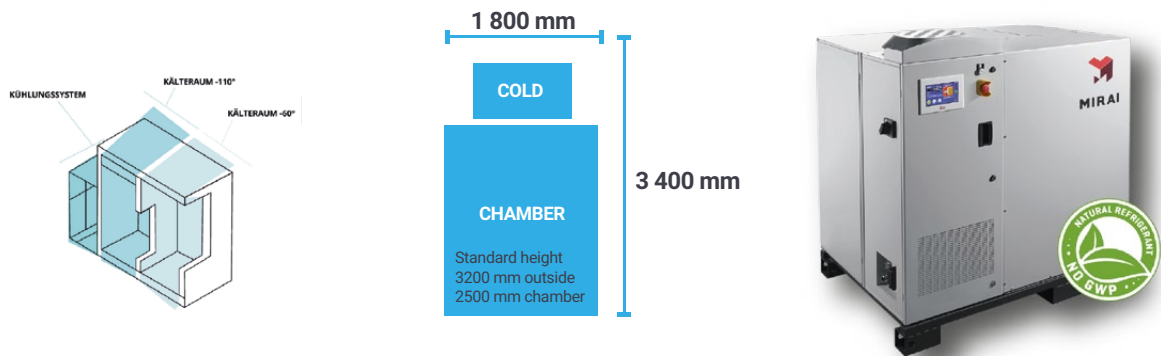
No leak test required, compressor with air-bearings = no wear, no oil.  
High quality insulation.

# WE OFFER INDIVIDUAL SOLUTIONS

With years of experience in special plant construction and our strong partners, we can provide you with special solutions on request, which can handle up to 1000 people per day. Whether unusual floor plans or mobile solutions, we do both. We are happy to fulfill your wishes.

## 2-PERSON CHAMBER (AIR AS REFRIGERANT, WATER-COOLED)

For smaller areas, we recommend our 2-person chamber. Despite the small construction space it is easily possible for 2 persons at a time to comfortably undergo the unique cold experience. In order to achieve the desired temperatures with our smaller chamber, an additional water-cooling is necessary. To enter the chamber accessibly at ground level, we recommend dropping the level of the Chamber by about 25 cm



### REFRIGERANT:

Air



### NOISE-LEVEL RANGE 1 METER

70 db



### ELECTRICAL FEED:

400 V – 50 Hz – 15 kW



### COLD WATER SUPPLY:

16 kW, +6° C



### TEMPERATURE RANGE:

-115° C to -40° C



### WEIGHT CHAMBER:

1000 kg



### WEIGHT REFRIGERATION UNIT:

700 kg



### SEWAGE CONNECTION:

DN 50

### Documentation

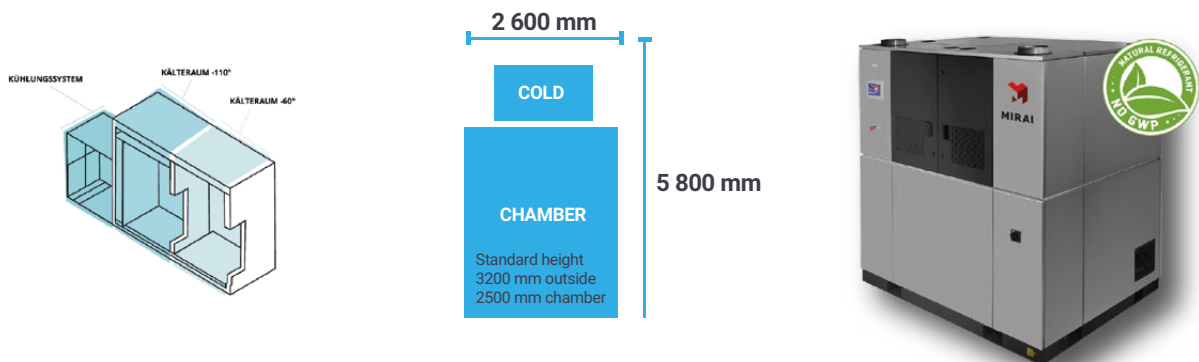
The unit will be delivered with a CE certification and a german manual.

### Instruction

Of course, we will instruct your employees so that they can independently and properly use the whole-body cryo-chamber. If you have any questions or are unsure, please do not hesitate to contact us.

## 4-PERSON CHAMBER (AIR AS REFRIGERANT, AIR-COOLED)

For a higher customer frequency or for commercial use, we recommend our 4-person chamber.



### REFRIGERANT:

Air



### NOISE-LEVEL RANGE 1 METER

70 db



### ELECTRICAL FEED:

400 V – 50 Hz – 23 kW



### SEWAGE CONNECTION:

DN 50



### TEMPERATURE RANGE:

-115° C to -40° C (optional down to -130° C)



### WEIGHT CHAMBER:

1600 kg



### WEIGHT REFRIGERATION UNIT:

2050 kg



### EXHAUST AIR:

70 db (50 db optional)

# CONTACT



## COOLINN GMBH

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COOLINN

