

CRYOTHERAPY SOLUTION

MIRAI INTEX | SAVE THE PLANET WITH US



MIRAI Cold 10 D (MC 10 C/W/D)

MIRAI Cold 10 D is a special type of closed cycle machine operating only with air in a closed loop closed by a radiative heat exchanger placed in the cold chamber. "D" stands for Direct Expansion where air is directly expanded to the external heat exchanger. System is equipped with auxiliary fan providing air flow through heat exchanger and temperature uniformity in the chamber. This is a very convenient solution for small and medium size **Whole-Body Cryotherapy** chambers. The MIRAI Cold 10 D with radiative heat exchanger is the ultimate package developed to use the full potential of the closed air cycle technology.

ADVANTAGES



THE MOST ECO-FRIENDLY REFRIGERATION MACHINE



SAFEST SOLUTION ON THE MARKET, LOW PRESSURES



ANY TEMPERATURE IN THE RANGE FROM -40 °C TO -130 °C



HIGH ENERGY EFFICIENCY



MAXIMAL TEMPERATURE ACCURACY & UNIFORMITY



MINIMAL SERVICE REQUIREMENTS



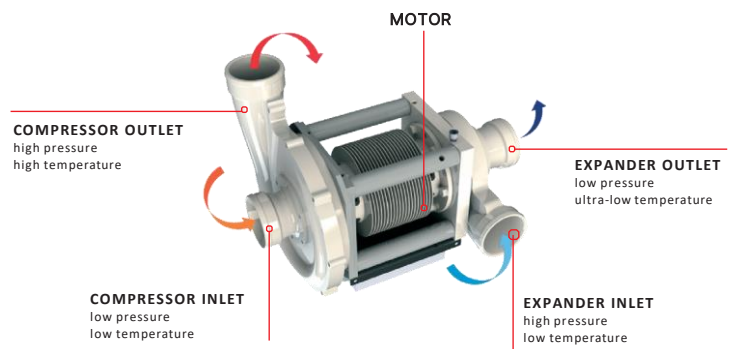
REMOTE CONTROL, MONITORING AND SOFTWARE UPDATES



EASE OF INSTALLATION AND PROJECT PLANNING



LOW NOISE AND NO VIBRATION



AIR CYCLE TECHNOLOGY

The heart of the air cycle system is turbo-module unit developed and manufactured in-house. The technology is based on the heating capability of air during compression and cooling down during expansion. While repeating the cycle of compression, cooling and expansion we can achieve temperatures down to **-160 °C**.

A key technological feature is that the turbo expander and compressor are located on the same shaft. The energy produced during the expansion process is transferred through the shaft to the compressor, which allows to **reduce energy consumption up to 30 %** compared to vapor compression systems.

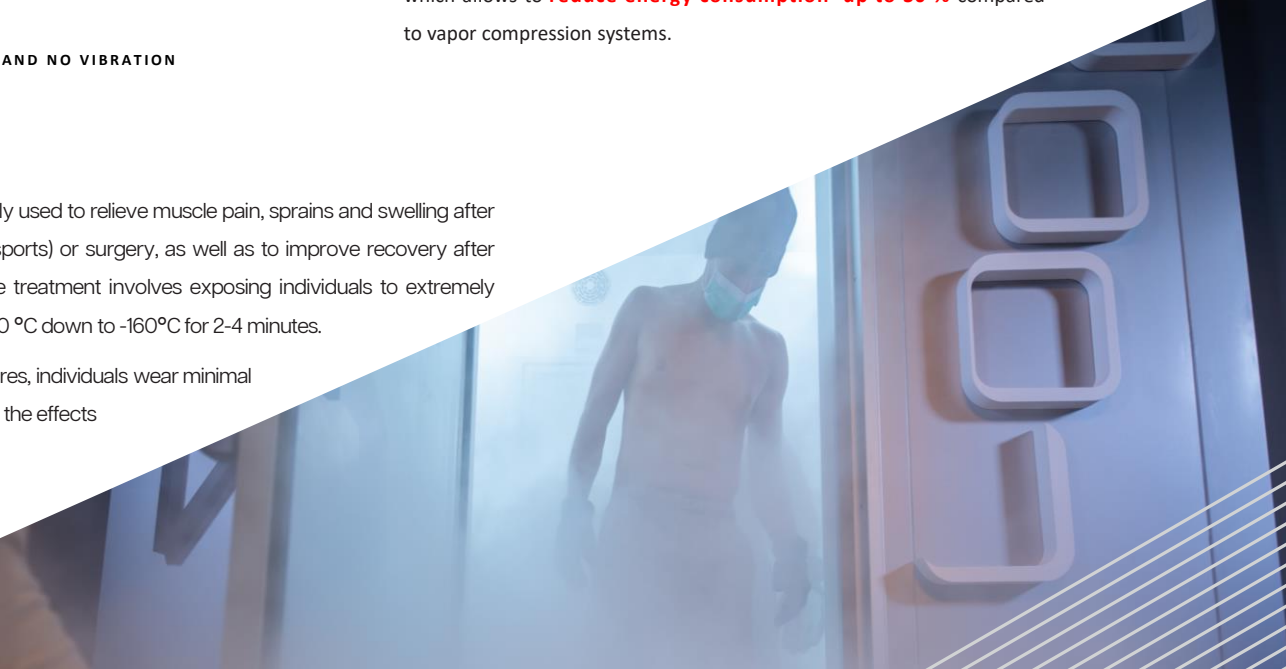


Video of Air Cycle Technology

APPLICATION

Cryotherapy is mainly used to relieve muscle pain, sprains and swelling after soft tissue injuries (sports) or surgery, as well as to improve recovery after sports activities. The treatment involves exposing individuals to extremely cold dry air from -100 °C down to -160°C for 2-4 minutes.

During these exposures, individuals wear minimal clothing to maximize the effects of cryotherapy.



MIRAI COLD 10 D

DIRECT EXPANSION



| | MC 10 C/W/D | Performance Boost | Heat Exchanger |
|---------------------------------|------------------------|------------------------|--|
| REFRIGERANT | Natural Air (R729) | Natural Air (R729) | Natural Air (R729) |
| TEMPERATURE RANGE | from -40 °C to -110 °C | from -40 °C to -110 °C | Description: |
| SYSTEM COOLING | Water-cooled | Water-cooled | Special air / air heat exchanger |
| REFRIGERATION CAPACITY -110 °C* | Up to 3.0 kW | Up to 5.0 kW | Fan for chamber air circulation incl. |
| RATED MOTOR POWER | 15 kW | 15 kW | Developed and optimized by Mirai Intex |
| DIMENSIONS (L x W x H) | 109 x 145 x 179 cm | 109 x 145 x 179 cm | 20 x 99 x 194 cm |
| WEIGHT | 830 kg | 830 kg | TBD |

HEAT EXCHANGER

Designed and developed by Mirai Intex for MC 10 D. Maximal performance is achieved by optimal internal pressure drop. Surface is hydrophobic to minimize ice accumulation. Auxiliary fan speed is automatically controlled by the machine. Fan motor is placed outside the chamber to prevent heat gains and use of heaters.

LOW SYSTEM PRESSURE

Direct expansion machines are no exception regarding the low working pressures. Maximum pressure for standard MC 10 D is 3 bar and 5.8 bar for Power Boost option. System Pressurization Unit (SPU) manages pressure of the air refrigeration cycle by pressurizing or draining appropriate amount of air while controlling air purity and dryness. SPU comes standard with MC 10 D.

PART LOAD EFFICIENCY

Factory installed frequency inverter allows automatic load adaptation to the cooling demand of the cryo chamber throughout different times during the day. This significantly reduces the operating costs. Other inverter benefit is quick power acceleration back to 100 %.

IMPORTANT FEATURES

Automatic precise temperature maintenance, unique defrost procedures, fast recovery between whole-body cryotherapy sessions.

ADVANCED REMOTE CONTROL AND MONITORING SYSTEM

MIRAI Cold 10 D has an optional advanced control system with Mirai's easy-to-use interface. The advanced system offers the possibility to control chamber functions (e.g., lighting, procedure profiles and many others). New generation Remote Monitoring System (RMS) is also an option. RMS allows not only to access machine remotely but also to control it. Preventive maintenance and machine software updates are other benefits of the RMS.



Our portfolio covers a wide range of applications starting from Biomedical and Food Storage to Freeze-drying and process cooling. Refrigeration machines developed and produced by MIRAI Intex are made of high-grade components and materials, to ensure long-term, efficient and reliable operation. Our commitment to climate protection is visible through our manufacturing practices and our environmentally friendly product design.

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