



MIRAI

MIRAI COLD PRODUCT PORTFOLIO

ULTRA-LOW TEMPERATURE
REFRIGERATION TECHNOLOGY
DOWN TO -160°C

PROCESS COOLING | PHARMACEUTICAL STORAGE | FREEZE-DRYING
SOLVENT RECOVERY | BLOOD PLASMA FREEZING
CRYOTHERAPY | GAS LIQUEFACTION



AIR CYCLE TECHNOLOGY

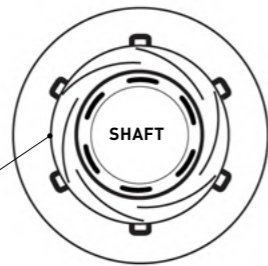
REVOLUTIONIZED BY MIRAI

Air cycle technology has a history of over 100 years and is widely utilized in various industrial applications. MIRAI Intex® builds on this very **environmentally friendly technology** but elevates it to a new level through the incorporation of several patented technical innovations. These result in entirely innovative, **future-proof solutions for industrial low and ultra-low-temperature refrigeration under the brand of MIRAI Cold.**



▶▶ AIR CYCLE TECHNOLOGY

The heart of the system is the **turbo-module unit, developed and manufactured by MIRAI Intex®**, for the most efficient and reliable performance. MIRAI Cold machines don't use traditional friction bushings requiring lubrication but instead use so-called "Air bearings." A key technological feature is that the turbo expander and compressor are located on the same shaft. Due to the air bearings, the need for complex oil management is eliminated, ensuring higher reliability and minimal maintenance.



USE OF AIR BEARING

- ▶ No contacting pairs, no oil.
- ▶ No wear.

Leaf Foil

The technology is based on the heating capability of air during compression and cooling down during expansion. Repetition of compression and expansion cycles allows reaching and maintaining ultra-low temperatures down to -160°C.

▶▶ OPEN CYCLE SYSTEM

MIRAI Cold Open cycle refrigeration machines supply air directly to the cold room, eliminating the need for evaporators and auxiliary fans inside the chamber. Operating at low pressure, open cycle systems are safer and more efficient than any alternative. At ultra-low temperatures, humidity crystallizes into ice instantly. Therefore, the system is supplied with the **unique Snow Catcher, developed by MIRAI Intex®**, which reduces ice accumulation in the chamber and on stored products.



Snow Catcher

▶▶ CLOSED CYCLE SYSTEM

In the case of a closed cycle system, air is pressurized inside the machine in a closed loop. MIRAI Cold machines are equipped with an **additional heat exchanger** for the secondary working fluid with optimization for silicone oil. MIRAI Cold machines could **be easily retrofitted to existing installations or used as cryochillers or refrigeration units for brand new installations.** MIRAI Cold closed cycle machines are the true **plug & play refrigeration solution for ultra-low temperatures with the environment and sustainability** in mind.

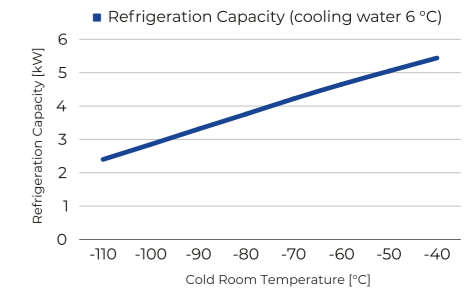


APPLICATIONS ▶▶ PHARMACEUTICAL STORAGE
FOOD/TUNA STORAGE
BIO MATERIAL STORAGE
CRYOTHERAPY
CLIMATE TESTING

MIRAI Cold 10

REF: MC 10 O/W

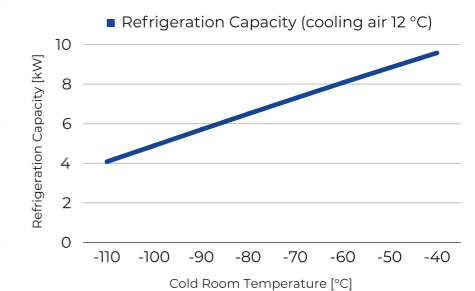
REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	10 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	1.2 bar
AIR SUPPLY TO CHAMBER	from 250 to 600 kg/h
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	Maximum 70 db
DIMENSIONS (LxWxH)	103 x 145 x 179 cm
WEIGHT	800 kg



MIRAI Cold 15

REF: MC 15 O/A

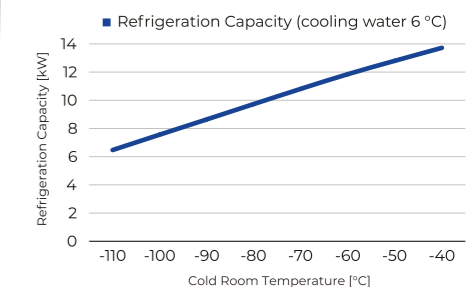
REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	15 kW
COMPRESSOR	MIRAI Turbo (air-cooled)
COMPRESSOR OUTLET PRESSURE	1.2 bar
AIR SUPPLY TO CHAMBER	From 360 to 1 200 kg/h
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	Maximum 75 db
DIMENSIONS (LxWxH)	155 x 185 x 204 cm
WEIGHT	2 050 kg



MIRAI Cold 22

REF: MC 22 O/W

REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	22 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	1.2 bar
AIR SUPPLY TO CHAMBER	from 500 to 1 560 kg/h
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	Maximum 75 db
DIMENSIONS (LxWxH)	155 x 185 x 200 cm
WEIGHT	2 000 kg



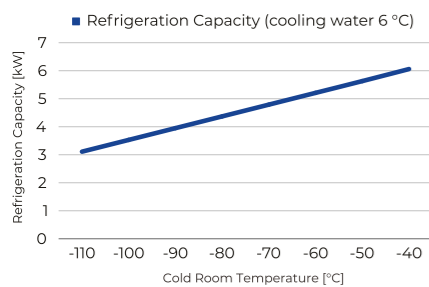
*For availability of MIRAI Cold with Power Supply 480 V or other, please contact: sales@mirai-intex.com

OPEN CYCLE SYSTEM

Temperature range from -40 °C to -110 °C

CLOSED CYCLE SYSTEM

Temperature range from -40 °C to -110 °C

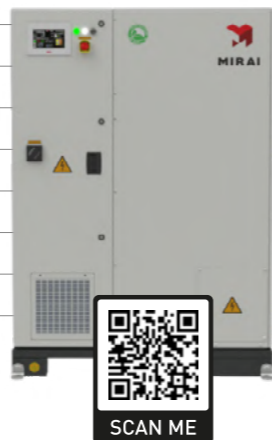


APPLICATIONS CRYOTHERAPY
FOOD FREEZING
PHARMACEUTICAL FREEZING

MIRAI Cold 10 D

REF: MC 10 C/W/D

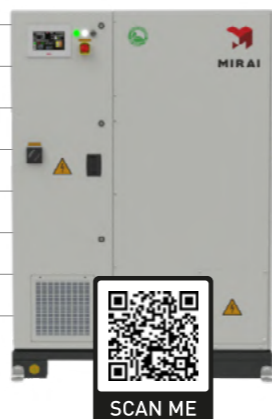
REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	10 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	4 bar
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	70 dB
DIMENSIONS (LxWxH)	109 x 145 x 179 cm
WEIGHT	750 kg



MIRAI Cold 15 D

REF: MC 15 C/W/D

REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	15 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	6 bar
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	70 dB
DIMENSIONS (LxWxH)	109 x 145 x 179 cm
WEIGHT	750 kg

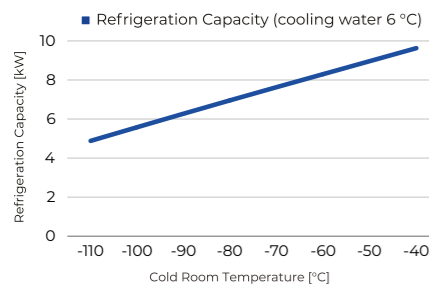
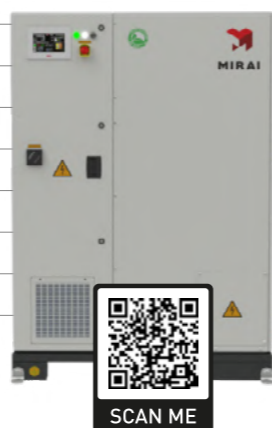


MIRAI Cold 20 D

REF: MC 20 C/W/D

NEW

REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	20 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	5 bar
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	70 dB
DIMENSIONS (LxWxH)	109 x 145 x 179 cm
WEIGHT	750 kg



APPLICATIONS FREEZE-DRYING
PROCESS COOLING
SOLVENT RECOVERY
BLOOD PLASMA FREEZING
RUBBER GRINDING

MIRAI Cold 10 T

REF: MC C/W/T

REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	10 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	4 bar
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	70 dB
DIMENSIONS (LxWxH)	109 x 145 x 179 cm
WEIGHT	790 g



MIRAI Cold 15 T

REF: MC 15 C/W/T

REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	15 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	6 bar
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	70 dB
DIMENSIONS (LxWxH)	109 x 145 x 179 cm
WEIGHT	830 kg

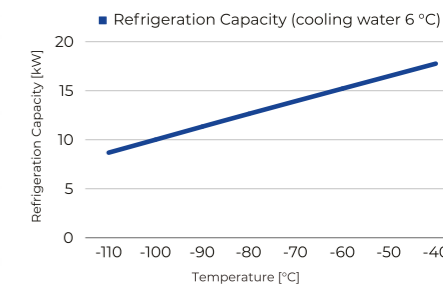
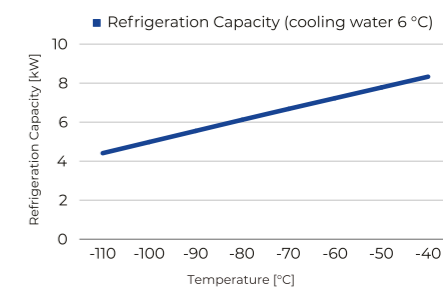
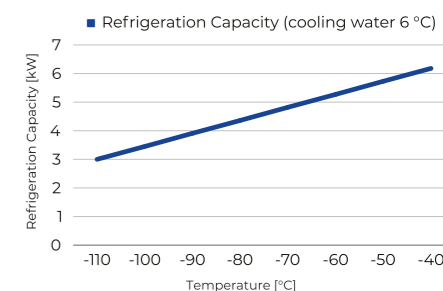


MIRAI Cold 30 T

REF: MC 30 C/W/T

NEW

REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	30 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	4 bar
POWER SUPPLY*	-3 PE, 400 V, 50 Hz
NOISE LEVEL	73 dB
DIMENSIONS (LxWxH)	150 x 194 x 230 cm
WEIGHT	2 300 kg




CLOSED CYCLE SYSTEM

Temperature range from -40 °C to -110 °C

CLOSED CYCLE SYSTEM

Temperature range from -40 °C to -110 °C

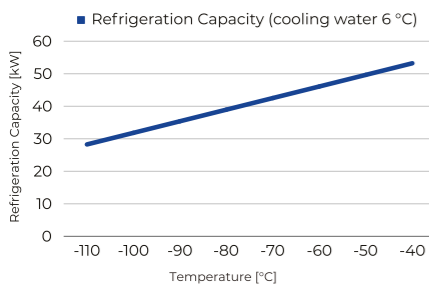
APPLICATIONS  FREEZE-DRYING
PROCESS COOLING
SOLVENT RECOVERY
BLOOD PLASMA FREEZING
RUBBER GRINDING

MIRAI Cold 80 T

REF: MC 80 C/W/T

NEW DESIGN

REFRIGERANT	Natural Air (R729)
TEMPERATURE RANGE	from -40 °C to -110 °C
RATED MOTOR POWER	80 kW
COMPRESSOR	MIRAI Turbo (water-cooled)
COMPRESSOR OUTLET PRESSURE	10 bar
POWER SUPPLY*	-3 PE+N, 400 V, 50 Hz
NOISE LEVEL	75 dB
DIMENSIONS (LxWxH)	228 x 288 x 192 cm
WEIGHT	4 340 kg



CLOSED CYCLE SYSTEM

Gas Liquefaction

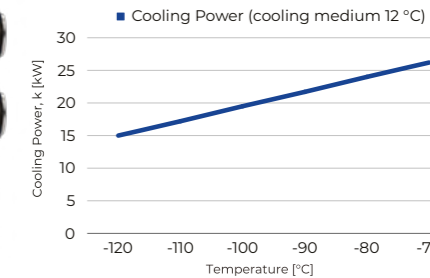
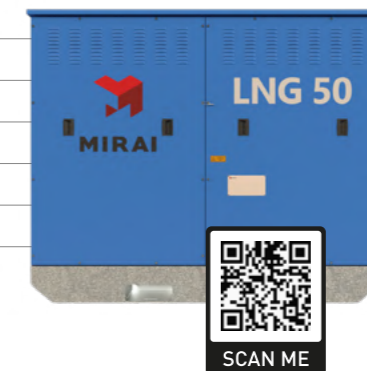
APPLICATIONS  GAS LIQUEFACTION

MIRAI Cold 50 LNG

REF: MC 50 C/W/LNG

NEW

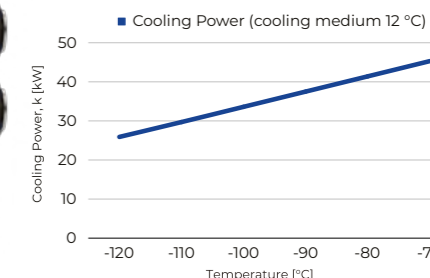
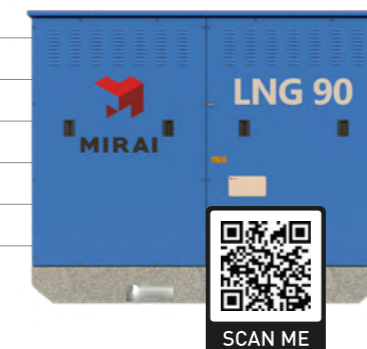
REFRIGERANT	Nitrogen (R728)
TEMPERATURE RANGE	From -70°C to -120°C
RATED MOTOR POWER	50 kW
COMPRESSOR	MIRAI Turbo
POWER SUPPLY*	-3 PE, 400 V, 50 Hz
NOISE LEVEL	75 dB
SYSTEM COOLING	Water-cooled
DIMENSIONS (LxWxH)	238 x 232 x 219 cm
WEIGHT	3 800 kg



MIRAI Cold 90 LNG

REF: MC 90 C/W/LNG

REFRIGERANT	Nitrogen (R728)
TEMPERATURE RANGE	From -70°C to -120°C
RATED MOTOR POWER	90 kW
COMPRESSOR	MIRAI Turbo
POWER SUPPLY*	-3 PE, 400 V, 50 Hz
NOISE LEVEL	75 dB
SYSTEM COOLING	Water-cooled
DIMENSIONS (LxWxH)	238 x 232 x 219 cm
WEIGHT	3 800 kg

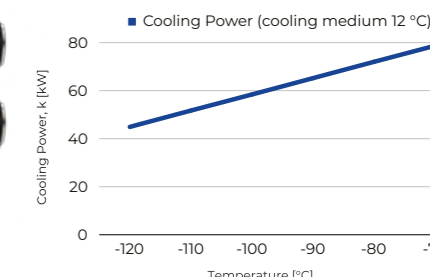
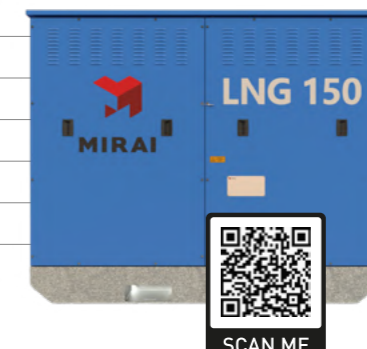


MIRAI Cold 150 LNG

REF: MC 150 C/W/LNG

NEW

REFRIGERANT	Nitrogen (R728)
TEMPERATURE RANGE	From -70°C to -120°C
RATED MOTOR POWER	150 kW
COMPRESSOR	MIRAI Turbo
POWER SUPPLY*	-3 PE, 400 V, 50 Hz
NOISE LEVEL	75 dB
SYSTEM COOLING	Water-cooled
DIMENSIONS (LxWxH)	238 x 232 x 219 cm
WEIGHT	4 000 kg



In 2022 Mirai Intex placed in the market **Natural Refrigerant-based equipment** mitigating lifetime GHG emissions equal to

1,181,946 metric tons of CO₂e
(GWP₂₀ Years)

This is approximately equivalent to

263,000 CARS off the street

www.atmosphere.cool

*For availability of MIRAI Cold with Power Supply 480 V or other, please contact: sales@mirai-intex.com

WHY CHOOSE MIRAI **Cold** AIR CYCLE TECHNOLOGY?



KEY ADVANTAGES



THE MOST ECO-FRIENDLY
REFRIGERATION MACHINE



MINIMAL SERVICE
REQUIREMENTS



SAFEST SOLUTION
ON THE MARKET



REMOTE MONITORING
AND SOFTWARE UPDATES



ANY TEMPERATURE IN THE RANGE
FROM -40 °C TO -160 °C



NO VIBRATION
LOW NOISE



HIGH ENERGY EFFICIENCY



ECONOMICAL IN USE



AUTOMATED CONTINUOUS
HUMIDITY EXTRACTION



EASE OF INSTALLATION AND
PROJECT PLANNING



MAXIMAL TEMPERATURE
ACCURACY & UNIFORMITY



LEGAL COMPLIANCE



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MIRAI-INTEX.COM

MIRAI X CRYO PRODUCT PORTFOLIO

CRYOCHILLERS FOR ECOLOGICAL
PROCESS COOLING

FROM -160 °C TO +90 °C



- » MX CRYO 10
- » MX CRYO 15
- » MX CRYO 20
- » MXS CRYO 20

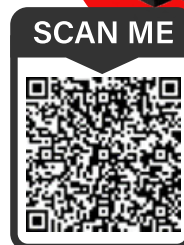
TECHNICAL DATA

MIRAI X CRYO 10/15/20

REF: MX CRYO 10/15/20

REFRIGERANT	Natural Air (R729)
MOTOR POWER	10 kW 15 kW 20 kW
TEMPERATURE RANGE*	From -160°C up to +90°C
TEMPERATURE ACCURACY	±0.025°C at idle ±0.5°C under changing load
COMPRESSOR	Mirai Turbo-Compressor (water-cooled)
HEATING	12 kW
PUMP	2.2 kW
DIMENSIONS (HxLxW) ±5 mm	1800x1340x990
POWER SUPPLY	~3 PE+N/3PE, 400 V/440V/480V, 50HZ/60 Hz
SOUND PRESSURE, AT A DISTANCE OF 1M FROM RM (dB)	Up to 75
HTF CONNECTION	Any, upon customer specifications

*THE TEMPERATURE RANGE VARIES ACCORDING TO THE TYPE OF HTF USED.



DOWNLOAD
DATA SHEET



DOWNLOAD
DATA SHEET

TECHNICAL DATA

MIRAI XS CRYO 20

REF: MXS CRYO 20

REFRIGERANT	Natural Air (R729)
MOTOR POWER	20 kW
TEMPERATURE RANGE*	From -160°C up to +90°C
TEMPERATURE ACCURACY	±0.025°C at idle ±0.5°C under changing load
COMPRESSOR	Mirai Turbo-Compressor (water-cooled)
HEATING	12 kW
PUMP	2.2 kW
DIMENSIONS (HxLxW) ±5 mm	1815x940x1360
POWER SUPPLY	~3 PE+N/3PE, 400 V/440V/480V, 50HZ/60 Hz
SOUND PRESSURE, AT A DISTANCE OF 1M FROM RM (dB)	Up to 75
HTF CONNECTION	Any, upon customer specifications

*THE TEMPERATURE RANGE VARIES ACCORDING TO THE TYPE OF HTF USED.



AIR AS REFRIGERANT

0 GWP, 0 ODP, and 0 TFA
Environmentally friendly
Refrigerant free of charge



NO VIBRATION

Turbo-compressor design
eliminates vibration



LOW OPERATING COSTS

Long equipment lifecycle
Low maintenance



SERVICEABILITY

No leak checks
No refrigerant recovery



ENERGY EFFICIENCY

High cycle efficiency
Inverter driven motor



TEMPERATURE ACCURACY

0.025°C accuracy at idle
± 0.5°C under changing load