

MX SEMI PORTFOLIO

SUSTAINABLE SOLUTION FOR YOUR
SEMICONDUCTOR PRODUCTION



» CRYOGENIC ETCHING

» DEEP REACTIVE ION ETCHING



» 2 OPERATING CHANNELS

» THE WIDEST TEMPERATURE RANGE

From -160 °C to +90 °C*

Accuracy ± 0.025 °C at idle

Accuracy ± 0.5 °C under changing load

» EASY CONNECTIVITY

Plug & Play system, configurable connections

» QUICK SWITCHING BETWEEN
COOLING AND HEATING MODES

» ZERO GWP

With the air cycle technology

Not a subject of F-Gas Regulation

» COMPACT AND NARROW DESIGN

» FAST RETURN OF INVESTMENT

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

MX SEMI is the ideal solution for the **semiconductor production**, applicable for **single and dual channel processes**.

In addition to safe and environmentally friendly cooling, it represents the latest solution in technology, providing highly-precise temperature and process control for dramatic changes in temperature and machine load.

This advanced refrigeration system is tailored to meet the diverse needs of industries ranging semiconductor production.

FEATURES



QUICK SWITCHING BETWEEN COOLING AND HEATING MODES
From +40°C to -100°C - within 2 min



SUSTAINABLE SOLUTION FOR SEMICONDUCTOR PRODUCTION
Complies with all current and future international environmental standards



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



LOW OPERATING COSTS
Long equipment lifecycle
Low maintenance



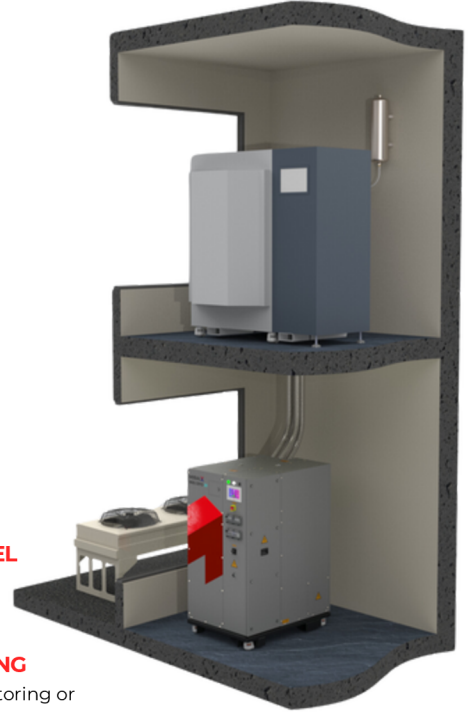
NO VIBRATION
Turbo-compressor design
eliminates vibration



ENERGY EFFICIENCY
High cycle efficiency
Inverter driven motor



TEMPERATURE ACCURACY
± 0.5°C under changing load
± 0.025°C at idle



OPTIONS



INDIVIDUAL WATER CONNECTION



EXTERNAL EXPANSION TANK
Installation of external expansion tank, up to 80 liters in capacity.



VARIOUS HIGH-LEVEL COMMUNICATION PROTOCOLS



EXTENDED WARRANTY
Up to 3 years



MACHINE WHEELS
For convenience transportation of machine in manufacture



REMOTE MONITORING
Available remote monitoring or remote access systems

INSTALLATION

PLUG & PLAY SOLUTION

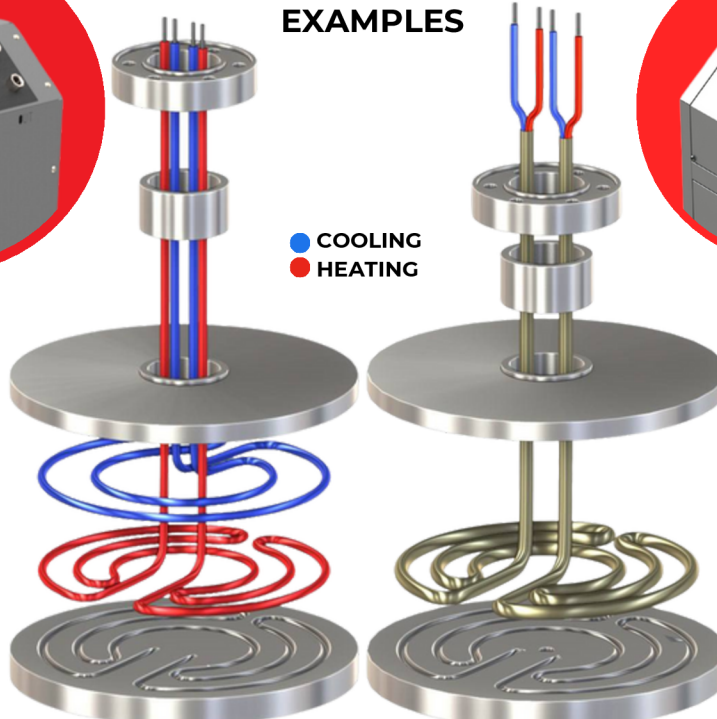
The **MIRAI X SEMI** machines are ideal solution for retrofitting in existing installation and is easy to implement in new projects due to its Plug & Play design, compatible with multiple industry standard connection types.

MX SEMI 20

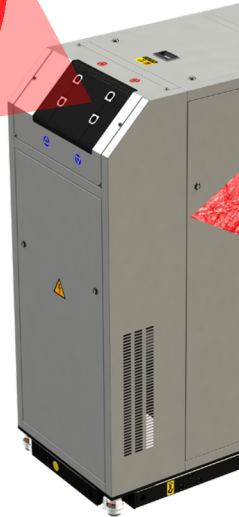
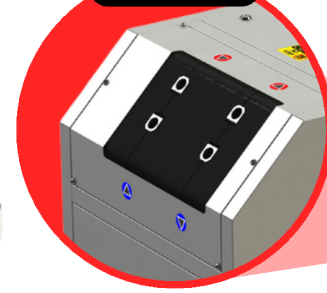


LOOPS OPERATING EXAMPLES

● COOLING
● HEATING



MX SEMI 40



CONTROL PANEL



The control panel is a tool to set the operation of the machine, it has 2 circuits of operation, each with 3 modes.

» **Cold loop:** Cooling mode, Heating mode, Standby mode*

» **Heat loop:** Cooling mode, Heating mode, Standby mode*

This control panel allows you to easily change settings without any additional intervention in the machine, simply by using the touch screen or by sending a command signal from high-level control system.

Allows to use industrial protocols:

- » ProfiNET
- » EtherCAT
- » EtherNET/IP
- » Powerlink

Another protocols by request.

*WHEN MACHINE IS READY TO WORK, BUT DOES NOT SUPPLY HTF

LOW OPERATING COSTS

Compared to existing semiconductor solutions, Mirai Intex offers an unparalleled system from both environmental and economic perspectives.

This is achieved through:

- » Free refrigerant
- » Exceptional performance at ultra-low temperatures, especially under partial load conditions
- » Zero additional costs related to safety and environmental compliance
- » Minimal service expenses.

TECHNICAL PARAMETERS

MX SEMI 20
MIRAI XS 20

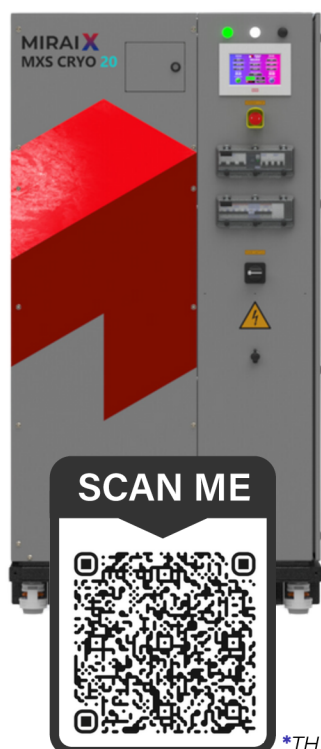
MX SEMI 40
MIRAI XS 40

REFRIGERANT	Natural Air (R729)	
MOTOR POWER	20 kW	40 kW
TEMPERATURE RANGE*	From -160°C up to +90°C	
COOLING CAPACITY AT SET POINT -80°C**	7.7 kW	17 kW
TEMPERATURE ACCURACY	±0.025°C at idle ±0.5°C under changing load	
COMPRESSOR	Mirai Turbo-Compressor (water-cooled)	
HEATING	12 kW	18 kW
PUMP	2.2 kW	4 kW
DIMENSIONS (HxLxW) ±5 mm	1815x940x1360	1972x1770x800
POWER SUPPLY	~3PE, 400 V/440V/480V +/- 10%, 50HZ/60 Hz	
SOUND PRESSURE, AT A DISTANCE OF 1M FROM RM	Up to 75 dB	
HTF CONNECTION	Any, upon customer specifications	

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

**CONDITIONS FOR HTF FRAGOL THERM X-T9-A TEMPERATURE DIFFERENCE 10°C. WATER TEMPERATURE +10°C, PRESSURE DROP ON HTF SIDE 0.2 BAR

RM - REFRIGERATION MACHINE



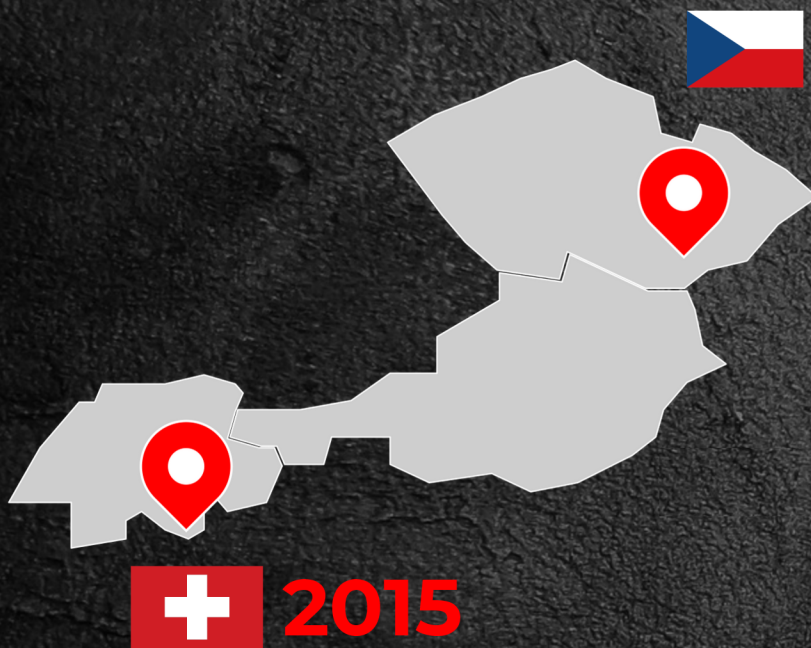
MORE
INFORMATION



MORE
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ABOUT MIRAI

MIRAI INTEX is a leading provider of innovative air cycle refrigeration solutions, dedicated to delivering cutting edge technology under the MIRAI Cold brand, with a focus on sustainability and performance. With a track record of excellence and a commitment to customer satisfaction, MIRAI INTEX continues to push the boundaries of what is possible in the field of refrigeration and introduces the new product line for process cooling, MIRAI X CRYO, meeting the stringent requirements of various industry applications. The latest innovation, the MIRAI Propane Turbo-Compressor, was developed to enhance the cooling industry and has already strongly resonated with the market.



2017-NOW

Brno, Czech Republic

- » Headquarters
- » Manufacturing Facility
- » Service Support
- » Testing Facility
- » Research & Development

2015

Founded in
Schwitzerland

With our latest innovative development, MIRAI INTEX reinforces its commitment to Climate Action, aligning with one of the key goals of **Sustainable Development**.



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