Manufacturing Forward

MCHILL-XL SERIES
PROCESS WATER CHILLERS

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Manufacturing Forward

Mikropor began its journey in 1987 with a passion to create "Tomorrow's Technology" and has become one of the leading manufacturers of atmospheric air filtration solutions and compressed air treatment systems for a variety of industries.

By closely following the latest developments in technology, Mikropor's "Best in Class" products and solutions are appreciated by customers in more than 150 countries.

The company's sustainable growth has been provided by its passion for innovation and commitment to quality, as well as its dedication to technology. Mikropor is an environmentally conscious company that values people, while developing products that extend the needs and expectations of customers.

With this mission, Mikropor continues to become one of the most recognized brands in the world by expanding its global penetration in the field of technological filtration and contributes to a healthier planet.

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MCHILL-XL SERIES PROCESS WATER CHILLERS

Mikropor Process Water Chillers are designed to meet the needs of many applications that require stable working conditions with maximum quality and cleanliness of the cold process fluid.

Mikropor's brand-new compact, robust and reliable Water Chiller called "MCHILL-XL" is designed for industrial applications and manufactured with the highest quality and safety standards. MCHILL-XL is not only extremely compact and easy to use but also ensures an accurate control of water temperature.

Highly Engineered & Compact Design

Refrigeration Circuit

- Chiller Control Management
- EC Fan Motor Fan Speed Control
- Microchannel Aluminium Condenser
- Hermetic Scroll Compressor
- Thermostatic Expansion Valve
- Refrigerant choice between R410a and R454b
- High and Low-Pressure Gauge
- Process Water Pressure Gauge
- Shell & Tube Heat Exchanger with water tank or without tank and water pump
- Sight Glass

Process Water Circuit

- High Performance Stainless Steel Water Pump on the models with water tank
- Storage Tank

Applications

- Food & Beverage Industries, Wineries, Dairies, Breweries, Bottling, Storage, Distilleries
- Plastic Industries-Injection, Extrusion, Blow Molding, Thermoforming
- Laser Industry-Cutting, Welding, Profiling, Optics, Medical
- Chemical & Pharmaceutical Industry-Natural Gas, Jacketed Vessels, Polyurethane, Laboratories, Healthcare, Petrochemical, Temperature Control
- Engineering Industry-Machine Tools, Welding Machine, Cutting, Profiling, Polishing, Rolling, Presses, Hydraulic Control-Oil Cooling, Heat Treatment




MCHILL-XL SERIES ADVANTAGES

Easy Installation

User friendly installation procedure

Optimizes Process Application

MCHILL-XL process chillers use a principle called "Closed Circuit". Using this principle the following advantages are obtianed:

- Highly precise water temperature control regardless of external conditions
- Maintain consistent operating conditions by responding to sudden changes
- Immediate response to sudden consumption changes with closed loop and suitable pump & tank components
- Constant use of same water-hence, recirculation of water entering the "water loop system" and creating health problems caused by waterborne bacteria

MCHILL-XL Model

MCHILL-XL NT Model

Best Components

All components of MCHILL-XL (compressors, condensers, evaporators, tank, pump etc.) are "Best in Class" and specially designed with the right equipment to consume the lowest energy.

Optimum Energy Efficiency

MCHILL-XL is designed by skilled engineers to provide maximum energy savings.

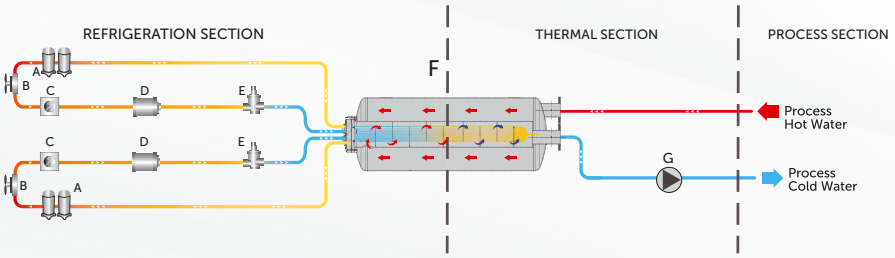
- More efficiency and reduced production cycle time
- Minimized production costs and reduced waste
- Less maintenance and downtime during production

Unlike typical water chillers for processes that have been used for many years, the MCHILL-XL unit is designed to meet the user's need in the simplest way with minimum operating costs and best performance.

- Wide operating conditions related to both inlet and outlet water temperature
- Thanks to the "Global Design", the MCHILL-XL can operate in the highest ambient temperature conditions around the world
- A wide range of optional accessories allow MCHILL-XL to be customized for various special applications
- A fully packaged and easy-to-use solution with integrated pumps, tanks and safety systems which make it perfectly suitable to the needs of industrial processes

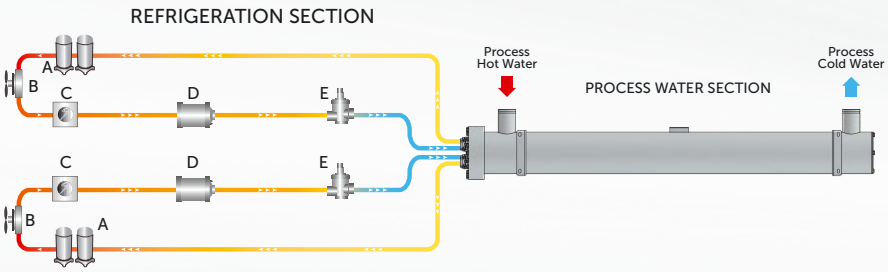
MCHILL-XL SERIES-WORKING PRINCIPLE

The MCHILL-XL Process Chillers includes 3 sections:



A - Compressor
B - Condenser
C - Sight Glass
D - Filter Dryer
E - Expansion Valve
F - Shell and Tube Heat Exchanger with Tank
G - Chiller Water Tank

The MCHILL-XL-NT Process Chillers includes 2 sections:



A - Compressor
B - Condenser
C - Sight Glass
D - Filter Dryer
E - Expansion Valve
F - Shell and Tube Heat Exchanger

How it works

As illustrated in the picture, the Thermal Liquid loop section operates as a closed circuit. The generated cold water is delivered to the application by the water pump in MCHILL-XL. Once the cooling is completed, the cold water removes process heat and returns to MCHILL-XL at higher temperature. Thereafter, the process water keeps on circulating through the pressurized system in the same manner.

MCHILL-XL SERIES STANDARD FEATURES

Refrigerant Circuit-Main Components

Refrigerant Scroll Compressors

- Leading Refrigerant Compressor Brands
- Hermetic Scroll Compressor
- Durable and Long-Life Compressor Models
- Single or Multiple Compressor Operation

R410a and R454b Refrigerant

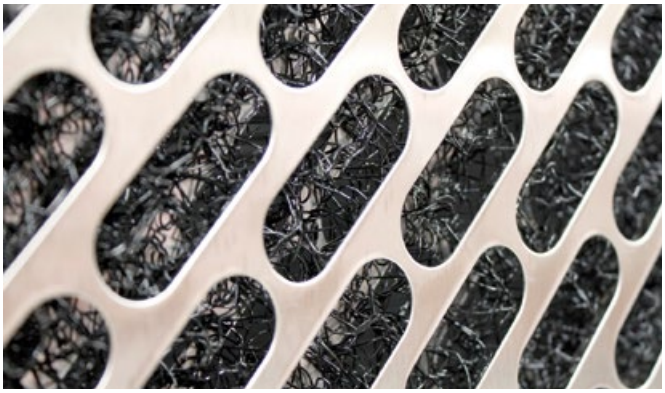
- R410a and R454b Refrigerant Options
- High Thermodynamic Properties
- Efficient Refrigeration Performance
- Environment Friendly (R454b)

R454B

New Technology, Aluminium Microchannel Refrigerant Condenser

- Less Energy Loss with Low Pressure Drop
- High Heat Transfer Capacity
- Surface Coating Protects Against Corrosive Environments
- Requires Less Refrigerant Gas
- Resistant to Any Galvanic Reaction and Corrosion

Cleanable Condenser Pre-Filters

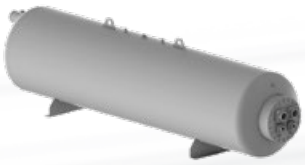


To protect the condensers all MCHILL-XL chillers include progressive composite fiber mesh filters which can be easily removed for service and cleaning. Stainless steel frame avoids corrosion even when the filter is washed with water or other washing fluids.

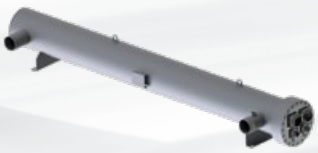
EC Fan Motor-Variable Speed Motor

- Leading Fan Motor Brands
- EC-Variable Speed Fan Motor
- Durable and Long-Life Fan Motor Models
- Lower Energy Consumption
- Low Noise Level

Evaporator



Tank-Equipped Evaporator



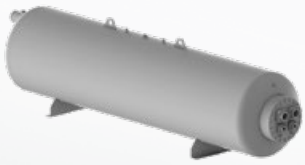
Shell & Tube (Tankless Evaporator)

- Brazed Plate Stainless Steel
- Extremely Efficient
- High Heat Transfer Surface Area
- Provides continuous and stable cooling with Shell & Tube evaporator
- Insulated water tank

MCHILL-XL SERIES STANDARD FEATURES

Refrigerant Circuit-Main Components

Protection of the Evaporator



Tank-Equipped Evaporator

Shell & Tube (Tankless evaporator)

- Electronic Control for Anti-Freeze
- A Differential Pressure Switch for No or Lower Water Flow
- A Mechanical Water Filter

Electronic Expansion Valve

- Increases Energy Efficiency, Enabling More Economical Operation
- Provides Precise Control for Enhanced Performance and Reliability

Water Circuit-Main Components

Expansion Tank

Pressurised

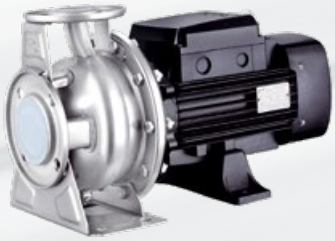
When cooling water temperature increases the water expands. In order not to increase the pressure an expansion tank is used on the water storage tank.

Integrated Cold Storage Tank

MCHILL-XL cold water storage tank is heat insulated and made of carbon steel material. The following equipment are also provided together with the storage tank in the MCHILL-XL system.

- Expansion Tank
- Inlet-Outlet Manual Valve
- Safety Valve
- Automatic Venting Valve
- Level Sensor
- Water Filter
- Drain Valve
- Water Pressure Gauge

Integrated Water Pump - 3 bar (Water tank compatible)



- Stainless Steel Body
- Special Seals for Process Fluids
- High Capacity Centrifugal Pump
- Long Lasting Centrifugal Pump
- Maintenance-Free Operation
- High Efficiency-Stainless Steel Impeller

For Maximum Control

The large water storage tank is placed right after the heat exchanger water outlet to limit the temperature fluctuations during the sudden load changes. The tank's generous dimensions ensure stable water temperatures.

MCHILL-XL STANDARD FEATURES

For Sudden Consumption

Large liquid storage tank provides constant and precise liquid outlet temperature even at sudden consumptions.

For Energy Efficiency

Cold water storage tank and cooling capacity of the system are directly associated with each other. When developing the MCHILL-XL, Mikropor's professional engineers have utilized these parameters to provide maximum energy savings by minimizing switch on/off rates of compressors.

For System Protection

Volumetric changes in the system are compensated by the control equipment in the system. Thus, the constant cold-water circulation occurs smoothly in the process circuit.

Control and Safety Groups-Main Components

Electronic Controller

All MCHILL-XL models have a standard microprocessor which offers:

- Ease of Use
- Precise Control
- Reliable Operation
- Remote Control
- High Quality PLC and Touch Screen
- High Efficient and Economical Control Algorithm
- User Friendly Touch Screen
- Real-Time P&I and Power Monitoring
- Fieldbus connectivity enables direct integration of smart actuators—such as inverters, EC fans, variable flow-rate pumps, and others—without requiring additional modules.
- Interface Capability with Frequently Used Communication Protocols in BMS Connectivity (Modbus® (RTU and TCP/IP), BACnet™ (MS/ TP and IP), SNMP, LonWorks®, Konnex® and Johnson METASYS®.)
- Remote control and diagnostics enabled by Wi-Fi module. (Optional)

MCHILL-XL SERIES STANDARD FEATURES

Refrigerant Gas Pressure Gauges

All MCHILL-XL models have a standard refrigerant gas high and low-pressure gauges.

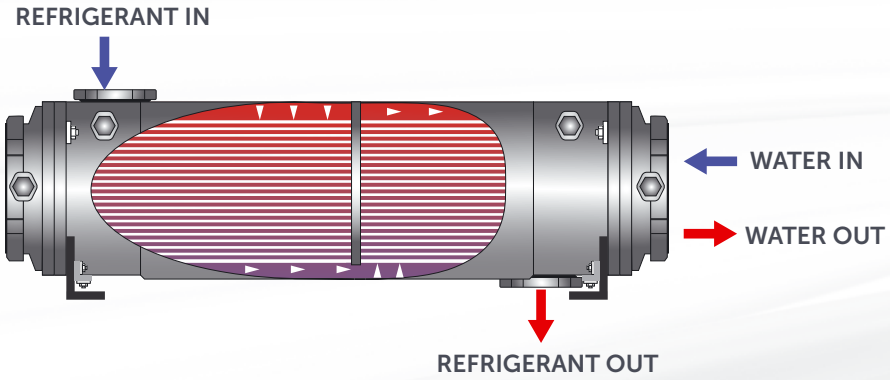
Temperature and Pressure Sensors

In MCHILL-XL systems, pressure and chilling temperatures are measured electronically. The measured data is processed continuously by Microprocess Controller to ensure the safest and most efficient operating conditions within the system. Moreover, the temperature or pressure of both high and low-pressure manifolds and water in the storage tank can also be constantly measured along the system's cooling section.

Together with the standard features, Mikropor also offers the following options for the cold water loop system of MCHILL-XL to provide and higher quality cold water when requested by users alternatively. These features are not avaible in all sizes. For more information, do not hesitate to contact Mikropor Sales Team.

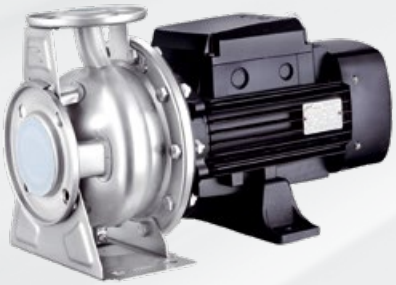
Water Cooled Option

In some cases or applications where air-cooled models cannot be used or where warm water supply is required, MCHILL-XL offers water-cooled models that include a Water Cooled Condenser and a Presostatic Water Control Valve.



MCHILL-XL SERIES STANDARD FEATURES

3 bar water pump is supplied as a standard unit, but in some applications more pressurized cooled water may be required. In these cases, a 5 bar water pump can be offered as an option.



Other Option Features

- Low Ambient Temperature Option
- High Corrosive Environments Option
- Heater for Storage Tank Option (Water tank compatible)

MCHILL-XL MODEL					
For R410A					
	UNIT	**MCHILL-XL 236**	**MCHILL-XL 272**	**MCHILL-XL 301**	**MCHILL-XL 331**
Cooling Capacity*	kW	236	272	301	331
	kcal/h	203000	233000	259000	285000
	Tons	67	77	86	94
Cooling Capacity**	kW	179	205	228	251
	kcal/h	154000	176000	196000	216000
	Tons	51	58	65	71
Total Installed Power*	kW	65.9	74.3	80.4	96.8
Total Absorbed Current*	A	118.7	130.6	141.4	168.3
Power Supply*	-	400V / 3 / 50 Hz			
Compressor Input Power*	kW	52.3	60.6	66.7	72.8
Number of Compressors	-	4	4	4	4
Fan Input Power*	kW	6.1	6.2	6.2	14.8
Number of Fans	-	2 / Ø800 mm	2 / Ø910 mm	2 / Ø910 mm	4 / Ø630 mm
Fan Air Flow*	m^3/h	41000	47200	47200	61600
Pump Input Power*	kW	7.5	7.5	7.5	9.2
Pump Pressure*	bar	3	3	3	3
Water Flow*	m^3/h	46	54	58	62
Refrigerant Gas	-	R410a			
Compressor Type	-	Hermetic / Scroll			
Evaporator Type	-	Shell & Tube			
Condenser Type	-	Aluminium Microchannel			
Noise Level***	dBA	<80			
Protection Class	-	IP 54			
Storage Tank Capacity	l	830	830	830	830
Expansion Tank Capacity	l	24	24	24	24
Water Connections	-	3" VIC	3" VIC	3" VIC	3" VIC
Dimensions					
Height	mm	2377	2377	2377	2377
	inch	94	94	94	94
Width	mm	2272	2272	2272	2272
	inch	89	89	89	89
Length	mm	3906	3906	3906	3906
	inch	154	154	154	154
For R454B					
	UNIT	**MCHILL-XL 236**	**MCHILL-XL 272**	**MCHILL-XL 301**	**MCHILL-XL 331**
Cooling Capacity*	kW	224	257	286	315
	kcal/h	193000	221000	246000	271000
	Tons	64	73	81	90
Cooling Capacity**	kW	171	196	218	241
	kcal/h	147000	168000	188000	207000
	Tons	49	56	62	68
Total Installed Power*	kW	62.5	70.2	76.0	92.1
Total Absorbed Current*	A	113.0	122.7	134.0	161.3
Power Supply*	-	400V / 3 / 50 Hz			
Compressor Input Power*	kW	49	56.5	62.3	68.1
Number of Compressors	-	4	4	4	4
Fan Input Power*	kW	6.1	6.2	6.2	14.8
Number of Fans	-	2 / Ø800 mm	2 / Ø910 mm	2 / Ø910 mm	4 / Ø630 mm
Fan Air Flow*	m^3/h	41000	47200	47200	61600
Pump Input Power*	kW	7.5	7.5	7.5	9.2
Pump Pressure*	bar	3	3	3	3
Water Flow*	m^3/h	46	54	58	62
Refrigerant Gas	-	R454b			
Compressor Type	-	Hermetic / Scroll			
Evaporator Type	-	Shell & Tube			
Condenser Type	-	Aluminium Microchannel			
Noise Level***	dBA	<80			
Protection Class	-	IP 54			
Storage Tank Capacity	l	830	830	830	830
Expansion Tank Capacity	l	24	24	24	24
Water Connections	-	3" VIC	3" VIC	3" VIC	3" VIC
Dimensions					
Height	mm	2377	2377	2377	2377
	inch	94	94	94	94
Width	mm	2272	2272	2272	2272
	inch	89	89	89	89
Length	mm	3906	3906	3906	3906
	inch	154	154	154	154

* Evaporator water inlet/outlet temperature 20/15°C, external air temperature 25°C;
** Evaporator water inlet/outlet temperature 12/7°C, external air temperature 25°C;
*** Average value obtained in free field on a reflective surface at a distance of 10 m from the condensate side of the machine and at a height of 1.6 m from the unit support base.

MCHILL-XL-NT MODEL					
For R410A					
	UNIT	**MCHILL-XL 236 NT**	**MCHILL-XL 272 NT**	**MCHILL-XL 301 NT**	**MCHILL-XL 331 NT**
Cooling Capacity*	kW	236	272	301	331
	kcal/h	203000	233000	259000	285000
	Tons	67	77	86	94
Cooling Capacity**	kW	179	205	228	251
	kcal/h	154000	176000	196000	216000
	Tons	51	58	65	71
Total Installed Power*	kW	58.4	66.8	72.9	87.6
Total Absorbed Current*	A	105.7	117.6	128.4	152.3
Power Supply*	-	400V / 3 / 50 Hz			
Compressor Input Power*	kW	52.3	60.6	66.7	72.8
Number of Compressors	-	4	4	4	4
Fan Input Power*	kW	6.1	6.2	6.2	14.8
Number of Fans	-	2 / Ø800 mm	2 / Ø910 mm	2 / Ø910 mm	4 / Ø630 mm
Fan Air Flow*	m^3/h	41000	47200	47200	61600
Pump Input Power*	kW	N/A			
(1) Max. Water Pressure*	bar	6	6	6	6
(1) Required Water Flow*	m^3/h	46	54	58	62
Refrigerant Gas	-	R410a			
Compressor Type	-	Hermetic / Scroll			
Evaporator Type	-	Shell & Tube			
Condenser Type	-	Aluminium Microchannel			
Noise Level***	dBA	<80			
Protection Class	-	IP 54			
Storage Tank Capacity	l	N/A			
Expansion Tank Capacity	l	N/A			
Water Connections	-	3" VIC	3" VIC	3" VIC	3" VIC
Dimensions					
Height	mm	2377	2377	2377	2377
	inch	94	94	94	94
Width	mm	2272	2272	2272	2272
	inch	89	89	89	89
Length	mm	3906	3906	3906	3906
	inch	154	154	154	154
For R454B					
	UNIT	**MCHILL-XL 236 NT**	**MCHILL-XL 272 NT**	**MCHILL-XL 301 NT**	**MCHILL-XL 331 NT**
Cooling Capacity*	kW	224	257	286	315
	kcal/h	193000	221000	246000	271000
	Tons	64	73	81	90
Cooling Capacity**	kW	171	196	218	241
	kcal/h	147000	168000	188000	207000
	Tons	49	56	62	68
Total Installed Power*	kW	55.0	62.7	68.5	82.9
Total Absorbed Current*	A	113.0	122.7	134.0	161.3
Power Supply*	-	400V / 3 / 50 Hz			
Compressor Input Power*	kW	49	56.5	62.3	68.1
Number of Compressors	-	4	4	4	4
Fan Input Power*	kW	6.1	6.2	6.2	14.8
Number of Fans	-	2 / Ø800 mm	2 / Ø910 mm	2 / Ø910 mm	4 / Ø630 mm
Fan Air Flow*	m^3/h	41000	47200	47200	61600
Pump Input Power*	kW	N/A			
(1) Max. Water Pressure*	bar	6	6	6	6
(1) Required Water Flow*	m^3/h	46	54	58	62
Refrigerant Gas	-	R454b			
Compressor Type	-	Hermetic / Scroll			
Evaporator Type	-	Shell & Tube			
Condenser Type	-	Aluminium Microchannel			
Noise Level***	dBA	<80			
Protection Class	-	IP 54			
Storage Tank Capacity	l	N/A			
Expansion Tank Capacity	l	N/A			
Water Connections	-	3" VIC	3" VIC	3" VIC	3" VIC
Dimensions					
Height	mm	2377	2377	2377	2377
	inch	94	94	94	94
Width	mm	2272	2272	2272	2272
	inch	89	89	89	89
Length	mm	3906	3906	3906	3906
	inch	154	154	154	154

* Evaporator water inlet/outlet temperature 20/15°C, external air temperature 25°C;
** Evaporator water inlet/outlet temperature 12/7°C, external air temperature 25°C;
*** Average value obtained in free field on a reflective surface at a distance of 10 m from the condensate side of the machine and at a height of 1.6 m from the unit support base.
(1) Suggested water pump values for "NT" models

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PROCESS WATER CHILLERS

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