

## R744 Chiller Package



## Future-Proof Chilling & Heating



### CHILLED GLYCOL

- 246 kW cooling @ 0°C LFT
- 2,800 L (750 gal) capacity glycol tank with cold recirculation system
- 7.5 hp centrifugal process pump with VFD, 165 GPM @ 35 psi
- 3" 150# flanged process connections



### HIGHLIGHTS

- Simultaneous chilling and heating
- Cost-effective, high-efficiency performance
- Low environmental impact
- Peak hot water production = 22 GPM
- Time to fill an empty 100 hL hot liquor tank to 80°C = 2 hours



### GENERAL

- Dimensions (LxWxH): 240" x 96" x 114"
- Designed for ambient temperatures from -20°C to 45°C



### REFRIGERATION

- R744 transcritical semi-hermetic compressors with capacity control (VFD)
- Active oil management and reclaim system
- 304 stainless steel welded piping, insulated
- Designed and manufactured to ASME B31.5
- Electric regulating and expansion valves
- Integrated control system with optimization algorithms
- On-skid fan-coil gas cooler/condenser with fan speed control (adiabatic option available)
- Stainless plate copper brazed heat exchangers
- Panel-mount touchscreen interface & SCADA



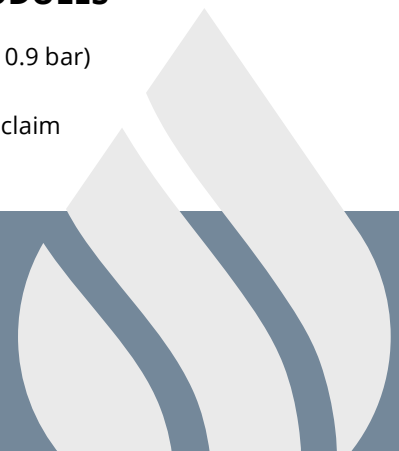
### HEAT RECLAIM

- On-board heat reclaim exchanger with temperature maintenance & recirculation system
- Fully optimized proportional control
- 1-1/2" 150# flanged process connections to site storage tank



### OPTIONAL MODULES

- Low quality (14 psi / 0.9 bar) steam boiler
- Freerecovery™ CO<sub>2</sub> reclaim from fermentation



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### Performance Summary—Chilling Only

-10°C evaporator temperature, -5°C LFT, cooling mode.

COP = Useful energy / Energy in



		Subcritical Operation				Transcritical Operation				
Ambient Temperature	°C	5	10	15	20	25	30	32	35	40
	°F	41	50	59	68	77	86	90	95	104
Cooling Capacity	kW	206	206	206	206	206	206	206	193	176
	Btu/h	702872	702872	702872	702872	702872	702872	702872	658516	600512
Power Consumption	kW	39	49	61	79	84	112	126	133	147
	hp	52	65	82	106	111	150	169	178	196
COP	-	5.32	4.21	3.37	2.59	2.47	1.84	1.63	1.45	1.20

### Performance Summary—Partial Heat Reclaim (PHR) Mode

Heat reclaim system heating 10 GPM of water from 20°C to 80°C (156 kW). COP includes heat energy transferred.



		Transcritical Operation								
Ambient Temperature	°C	5	10	15	20	25	30	32	35	40
	°F	41	50	59	68	77	86	90	95	104
Cooling Capacity	kW	206	206	206	206	206	206	206	193	176
	Btu/h	702872	702872	702872	702872	702872	702872	702872	658516	600512
Heat Reclaimed	kW	156	156	156	156	156	156	156	156	156
	Btu/h	532294	532294	532294	532294	532294	532294	532294	532294	532294
Power Consumption	kW	72	77	80	89	91	109	123	130	144
	hp	96	103	107	119	121	145	164	173	192
COP (incl PHR)*	-	5.06	4.69	4.51	4.07	3.99	3.32	2.94	2.69	2.31

### Chilled LFT Capacity Range



Leaving Fluid Temperature	°C	-5	0	5
	°F	23	32	41
Cooling Capacity	kW	206	246	290
	Btu/h	702872	839352	989480
Glycol Flow Rate*	m3/h	36.5	36.5	36.5
	GPM	160	160	160

### Heat Reclaim Capacity



Heating Capacity	kW	300
	Btu/h	1023600
Leaving Fluid Temperature, Hot Water	°C	80
	°F	176
Inlet Temperature	°C	20
	°F	68
Fluid Flow Rate*	m3/h	4.5
	GPM	20

\* Pump discharge pressure = 2 bar (30 psig)

