

BITSINK AI CHILLER 2050

2,050 kW AIR-TO-WATER TRIM CHILLER | ENGINEERING DESIGN BASIS



DESIGN PARAMETER	ENGINEERING VALUE
Application	Trim chiller downstream of dry cooler for expanded GB300 facility loop
Nominal cooling capacity	2,050 kW / 583 RT
Required peak-summer trim duty	~1,612 kW calculated
Guaranteed selection target	>= 1,800 kW net at 95°F ambient
Design ambient	95-104°F / 35°C
Entering facility fluid	40.0°C / 104°F
Leaving facility fluid	30.5°C / 86.9°F
Nominal facility flow	700 GPM / 159 m³/h
Fluid	70% DI water / 30% inhibited propylene glycol
Evaporator pressure drop target	<= 15 psi / 103 kPa
Water-side working pressure	150 psig minimum
Refrigerant	R-1234ze(E), A2L
Refrigeration circuits	8 independent circuits
Circuit capacity	~256 kW each
Compressor architecture	8 x VSD semi-hermetic compressors
Evaporator architecture	8 x dedicated refrigerant-to-glycol plate heat exchangers
Condenser architecture	V-bank microchannel air-cooled condenser
Fans	16 x large-diameter EC axial fans; 2 rows x 8
Full-load chiller input target	~460-550 kW at design point
Full-load heat rejection target	~2,500-2,650 kW
Electrical service	480 V / 3 phase / 60 Hz
Estimated MCA	~860 A preliminary
Recommended MOCP	1,000 A preliminary
Controls	PLC/HMI; BACnet/IP; Modbus TCP/RTU

SYSTEM OPERATING

OPERATING STAGE	FLUID CONDITION / DUTY
Chiller to CDU	~30.5°C / 86.9°F
Facility return at doubled design load	~42°C / 107.6°F at ~700 GPM
Dry cooler	42°C entering -> 40°C leaving
Dry cooler heat rejection	~340-350 kW at doubled flow/capacity basis
Residual trim-chiller duty	~1,610-1,620 kW
Chiller leaving target	30.5°C maximum

PRELIMINARY PERFORMANCE MAP

AMBIENT	EWT	LWT	NET CAP.	INPUT	COP
75°F / 24°C	38°C	30.5°C	~2,160 kW	~400 kW	~5.4
85°F / 29°C	40°C	30.5°C	~2,060 kW	~440 kW	~4.7
95°F / 35°C	40°C	30.5°C	~2,050 kW	~500 kW	~4.1
105°F / 41°C	40°C	30.5°C	~1,860 kW	~550 kW	~3.4
115°F / 46°C	40°C	30.5°C	~1,720 kW	~610 kW	~2.8

PRELIMINARY PHYSICAL / ELECTRICAL

Overall dimensions	Approx. 480 x 96 x 96 in (12,192 x 2,438 x 2,438 mm)
Operating weight target	~23,700 lb preliminary
Facility connections	8 in minimum; final by velocity / pressure-drop review
Fan quantity	16 EC axial fans - 2 rows x 8
Estimated MCA	~860 A preliminary
Recommended MOCP	1,000 A preliminary
Sound target	<= 81 dBA at 10 ft - subject to final fan/coil selection

CONTROL INTENT Dry cooler operates as the first-stage economizer. Chiller enables when dry-cooler outlet cannot maintain the facility target and modulates to hold approximately 30.5°C leaving fluid. The 2.05 MW nominal rating provides margin above the calculated ~1.61 MW peak-summer trim duty.