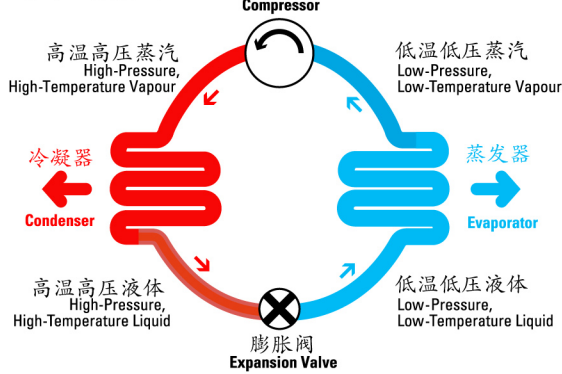


Reverse Carnot cycle 逆卡诺循环



Follow the laws of Conservation of energy
遵循能量守恒定律(热力学第一定律)

Condenser

$$q_k = i_{\text{冷出}} - i_{\text{冷进}}$$

Unit theory heat transfer capacity of Condenser

$$Q_k = G * q_k$$

Unit theory heat transfer capacity of Condenser

$$Q_k = Q_0 + N_i$$

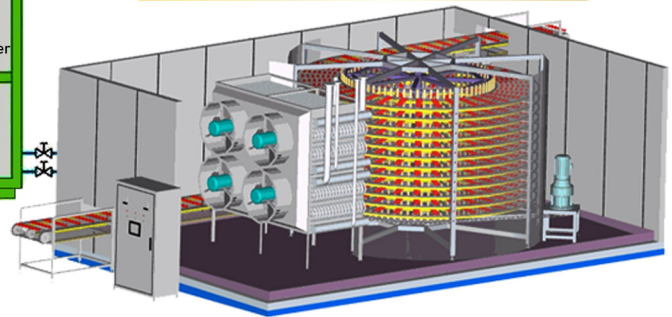
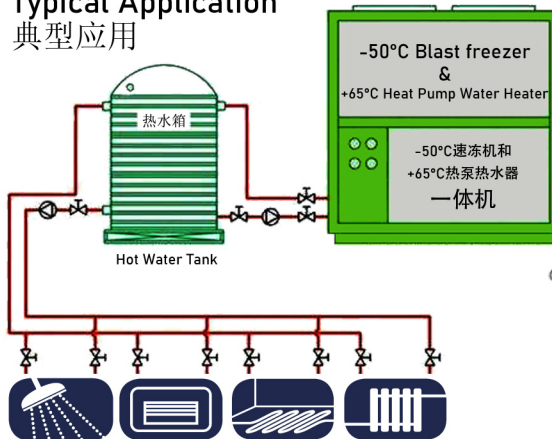
Unit theory heat transfer capacity of Condenser

q_k = 冷凝器单位理论散热量
 Q_k = 冷凝器总理论散热量
 Q_0 = 制冷量

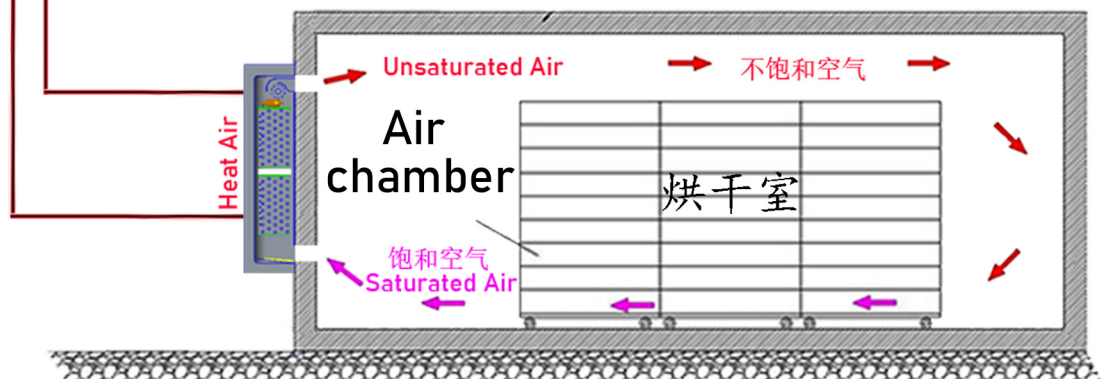
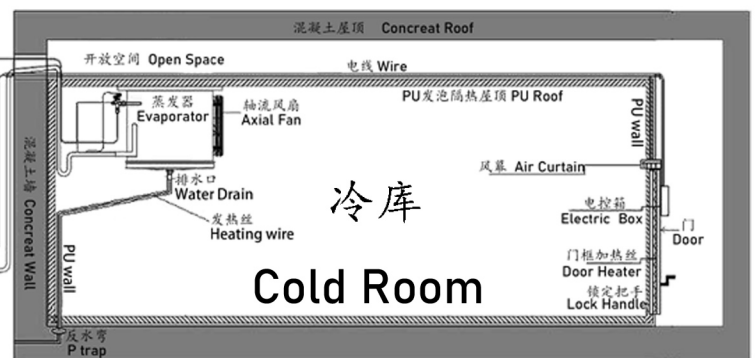
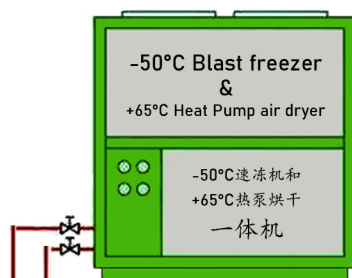
G = 制冷剂流量
 N_i = 压缩机指示功率

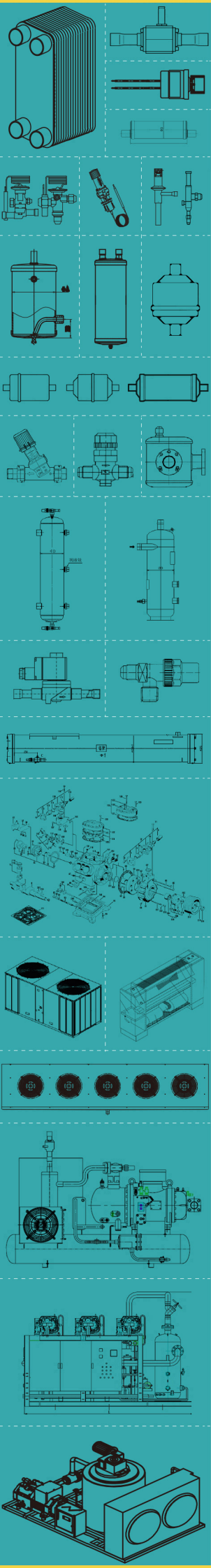
www.bowasolution.com
Heat Exchanger calculation
换热器计算

Typical Application 典型应用



Freezer Tunnel 冷冻隧道





速冻和热泵一体机
Blast freezer & Heat Pump Integrated Unit

BWZ

速冻和热泵一体机
Blast Freezer & heat pump
integrated Unit

005

压缩机排量(m³/h)
Comp. Displacement

F

Evaporator
蒸发器

B

Heat Recovery
热回收

F

冷凝器
Condenser

B: 板换 Plate Heat Exchanger
C: 壳管式换热器 Tube & shell HEX
F: 铜管铝箔换热器 Fin & Tube HEX
M: 微通道 Micro-channel HEX

无None: 无热回收 No heat recovery;
B: 板换 Plate Heat Exchanger
C: 壳管式换热器 Tube & shell HEX
F: 铜管铝箔换热器 Fin & Tube HEX
M: 微通道 Micro-channel HEX

B: 板换 Plate Heat Exchanger
C: 壳管式换热器 Tube & shell HEX
F: 铜管铝箔换热器 Fin & Tube HEX
A: 铝排 Pipe Evaporator

数据基于蒸发温度-51°C, 冷凝温度65°C(环温55°C),无过冷

All data is basing on E.T.-51°C, C.T. 65°C (Ambient temperature 55°C), no subcool

Compressor (m³/h)	Evaporator 蒸发器		Heat Recovery 热回收	
	冷量 Cooling	冷冻能力 Frozen Capacity	热量 Heating	加热能力 Capacity
	kw	kgs per hour	kw	L/h
16.24	2.52	63.00	7.3	156.95
22.50	3.49	87.25	10.6	227.9
26.84	4.17	104.25	12.2	262.3
32.48	5.04	126.00	13.44	288.96
41.33	6.42	160.50	17.9	384.85
48.50	7.53	188.25	20.9	449.35
56.25	8.73	218.25	23.9	513.85
73.60	11.43	285.75	31.2	670.8
84.50	13.12	328.00	40.7	875.05
110.50	17.16	429.00	47.8	1027.7
126.80	19.69	492.25	55	1182.5
151.60	23.54	588.50	62.4	1341.6

冷冻能力 基于蒸发温度-51°C, 冷库-45°C及鲜鱼比热3.2KJ/KG.°C, 入库温度0°C
Frozen Capacity basing on E.T.: -51°C, fresh fish specific heat 3.2KJ/KG.'C,
inlet temp. 0°C and room temp. -45°C

加热能力 基于冷凝温度65°C, 出水温度60°C, 进水温度20°C;
Heating Capacity basing on C.T.60°C, water outlet 60°C, Water inlet 20°C