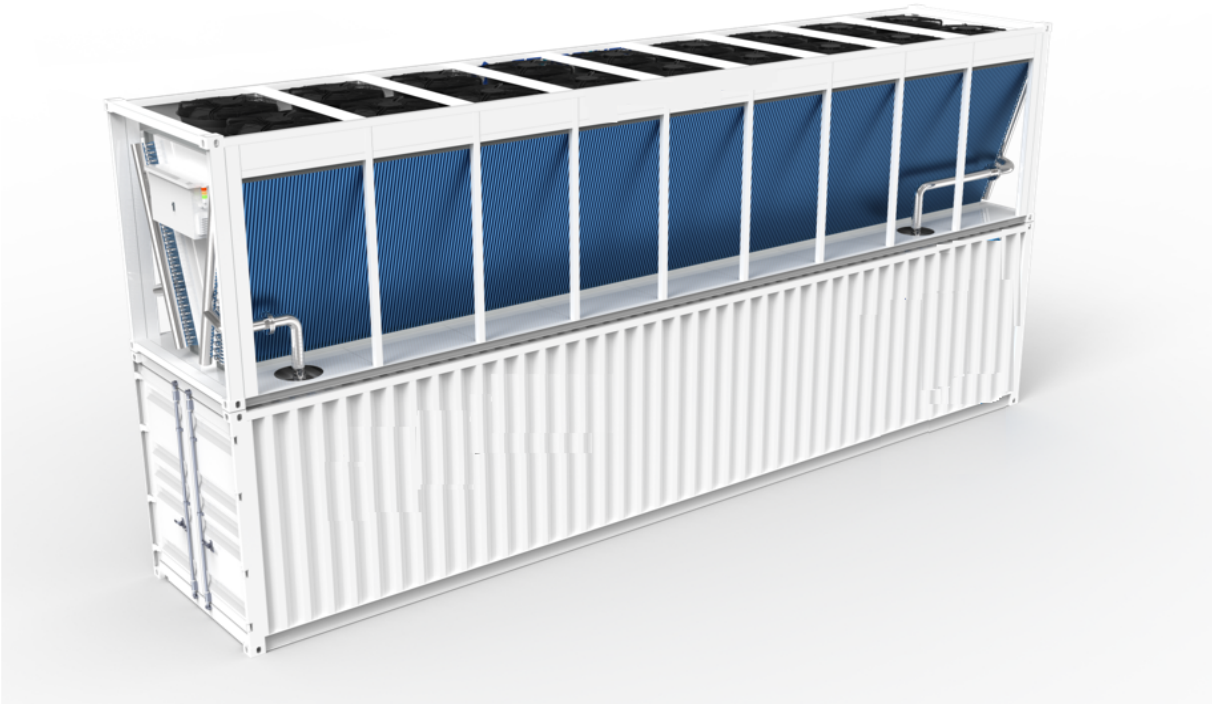
Hydro Container Solution For Channing

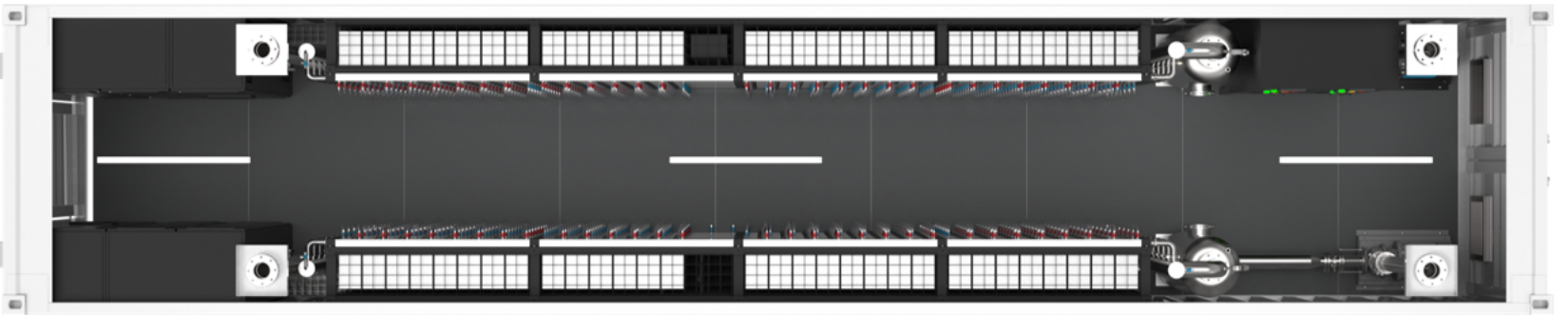
PRODUCT OVERVIEW

Advantage:

- It has lower transportation costs compared to the traditional 20-foot container solution.
- The same power capacity can save 2/3 of the land occupied compared to a 20-foot container solution.
- Highly prefabricated modular design greatly reduces the amount of work and time required for deployment.



TOP VIEW of Miner container



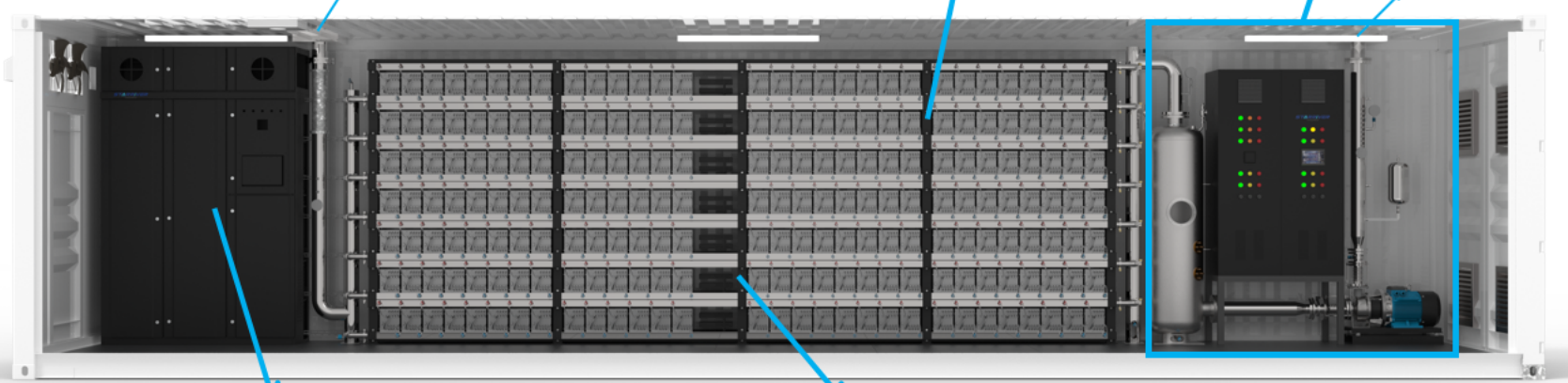
System Info	
Container	2pcs 40HQ
Miner container weight	9080kg
Drycooler weight	9230kg

When deployed, simply place the dry cooler container in position, connect the four flange interfaces, and connect to the main power supply.

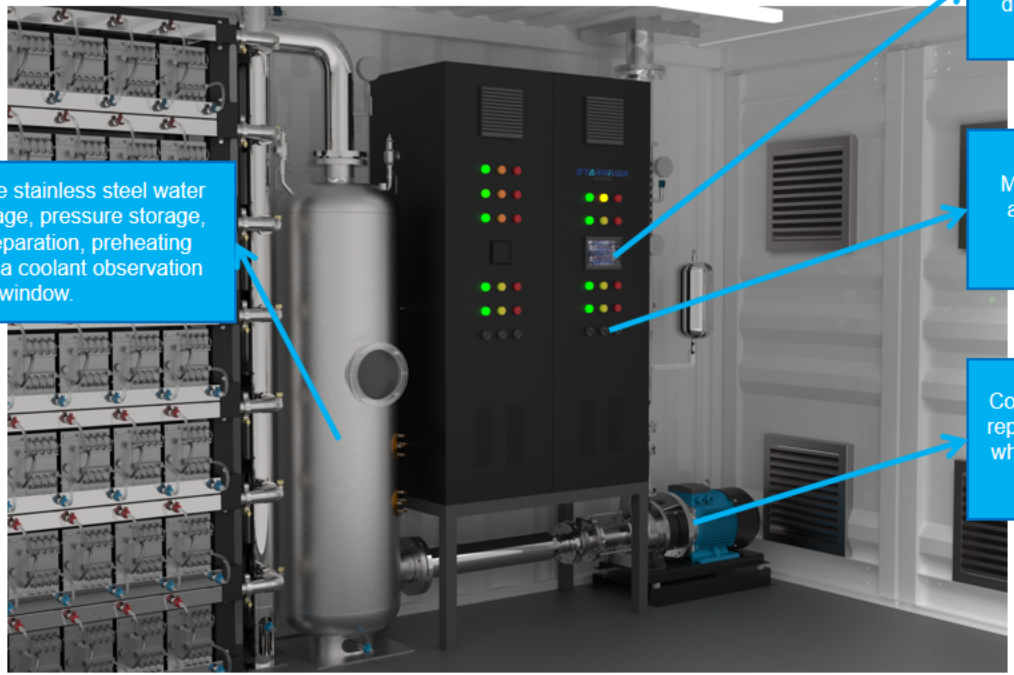
Introduction to SR40 V1

- One container can hold 420 Antminer hydro miners max.
- Target Miner: Bitcoin Miner S19/21 hydro.
- Total load: 2412kW
- System power consumption,PUE＜1.05 .
- Integrated dry cooler.
- Type of container: 40HQ*2
- Design heat dissipation: 2400KW@30°C ambient temp .
- High air volume fans: 18 PCS.

LAYOUT (Single group)



CDU



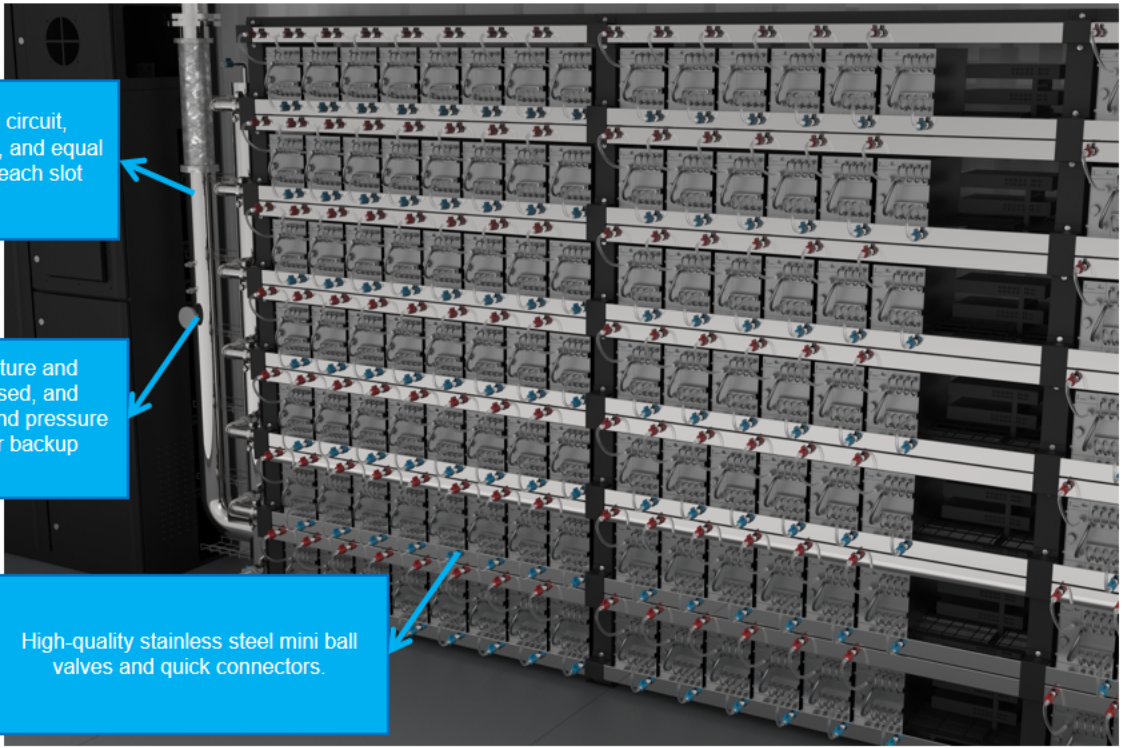
320L all-in-one stainless steel water tank with storage, pressure storage, water-gas separation, preheating function, with a coolant observation window.

HMI： A 10-inch touch screen that allows you to adjust the water temperature, temperature difference, and circuit pressure.

Manual override control buttons and knobs, supporting manual forced operation

Convenient design for quick pump replacement with circulation water, where the valve can be closed for easy replacement.

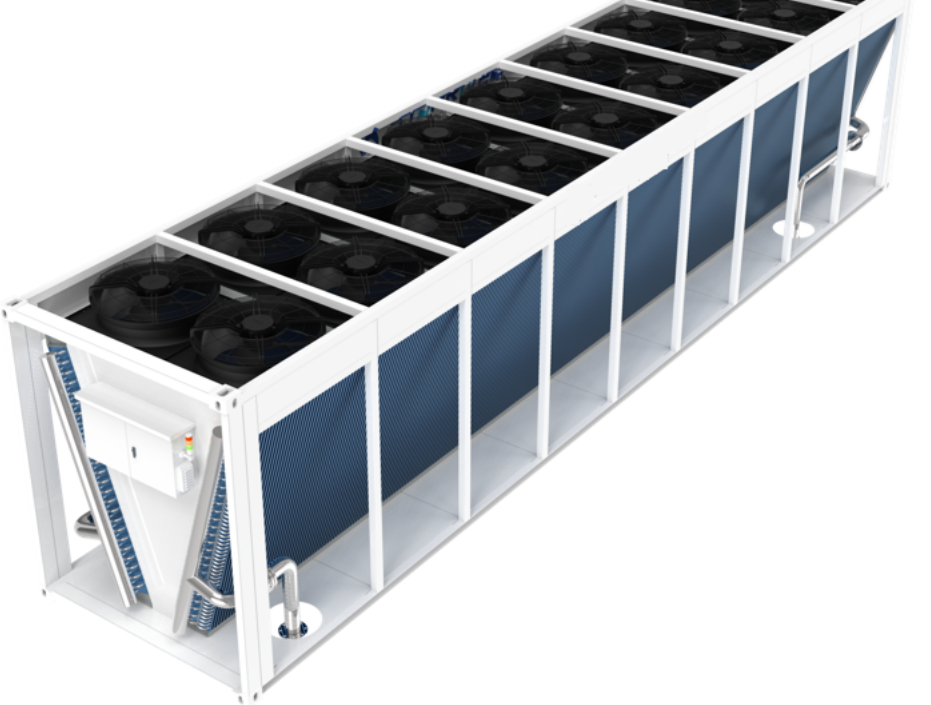
Mainiflod


A full 304 stainless steel circuit, balanced water path design, and equal length and resistance for each slot cooling circuit.
High-precision temperature and pressure sensors are used, and mechanical temperature and pressure gauges are provided for backup observation.
High-quality stainless steel mini ball valves and quick connectors.

PDC

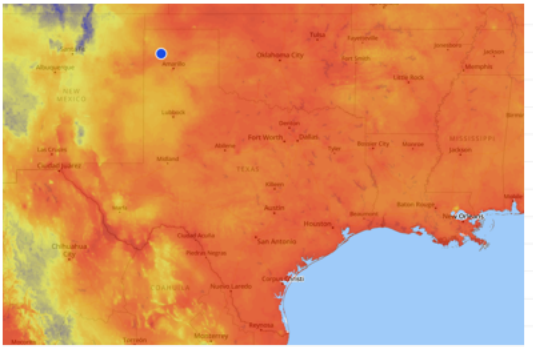
3200A Smart PDC	
Power Capacity(MAX)	2257 kW
Input Voltage	3-phase 350-415V 60Hz
Certification	CE/UL
SPD	YES
Integrated Wiring	YES
Each miner is paired with a circuit breaker.	YES
Electricity meter	YES

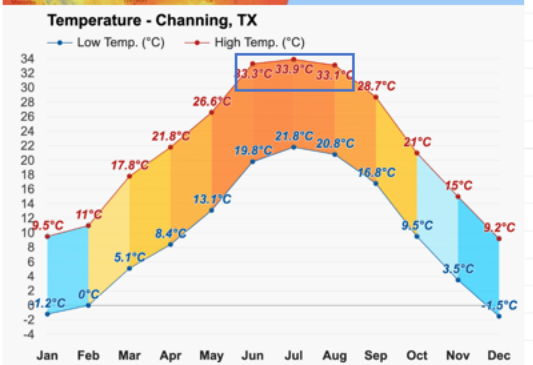
Cooling parameters	
Electricity Consumption	8-72 kW
Input Voltage	3-phase 350-415V 60Hz
Certification	CE/UL
Single Fan Power	4kw
Fan Type	AC
Number of Fans	18pcs
Heat exchange area	8606㎡
Cooling capacity@30°C	2.2MW
Water temperature	inlet40-outlet50
Maximum Total Airflow	333529.4 CFM
Noise@10m	⩽75db
Evaporative cooling pad	Optional
Electrical Protection	Thermal overload protection Overcurrent Protection



Weather Conditions

Location: Channing





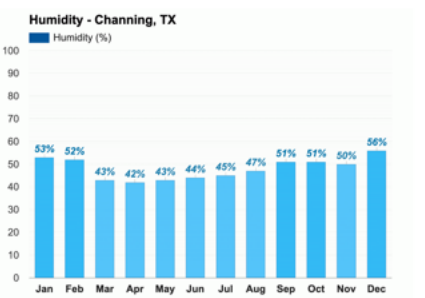
Monthly average high and low temperature

8 am	24°	Sunny	0%	SSW 15 km/h
9 am	26°	Sunny	0%	SW 20 km/h
10 am	30°	Sunny	0%	SW 23 km/h
11 am	32°	Sunny	0%	SW 22 km/h
12 pm	35°	Mostly Sunny	15%	SW 21 km/h
1 pm	37°	Mostly Sunny	15%	SW 19 km/h
2 pm	38°	Mostly Sunny	15%	SSW 19 km/h
3 pm	39°	Mostly Sunny	15%	SSW 20 km/h
4 pm	40°	Partly Cloudy	15%	SSW 19 km/h
5 pm	40°	Partly Cloudy	15%	SSW 22 km/h
6 pm	39°	Partly Cloudy	15%	S 25 km/h
7 pm	38°	Partly Cloudy	15%	S 25 km/h
8 pm	37°	Partly Cloudy	15%	S 24 km/h
9 pm	34°			SSE 18 km/h
10 pm	31°	Mostly Cloudy	15%	SSE 20 km/h
11 pm	30°	Partly Cloudy	15%	SSE 23 km/h
Wednesday, July 31				
12 am	28°	Partly Cloudy	15%	SSE 18 km/h
1 am	27°	Partly Cloudy	0%	SSE 18 km/h
2 am	26°	Partly Cloudy	0%	SSE 17 km/h
3 am	25°	Mostly Clear	0%	S 16 km/h
4 am	25°	Partly Cloudy	0%	S 16 km/h
5 am	24°	Partly Cloudy	0%	S 16 km/h
6 am	24°	Partly Cloudy	0%	SSW 16 km/h
7 am	23°	Mostly Sunny	0%	SSW 15 km/h
8 am	25°	Sunny	0%	SSW 16 km/h

One-day sample

1 pm	37°C Feels like: 37°C		Mostly Sunny Wind: 18km/h SSW Pressure: 1006mbar Humidity: 23%	Precip. probability: 15% Precipitation: 0mm Visibility: 16km
2 pm	39°C Feels like: 39°C		Mostly Sunny Wind: 18km/h SSW Pressure: 1005mbar Humidity: 20%	Precip. probability: 15% Precipitation: 0mm Visibility: 16km
3 pm	40°C Feels like: 40°C		Partly Cloudy Wind: 19km/h SSW Pressure: 1004mbar Humidity: 17%	Precip. probability: 15% Precipitation: 0mm Visibility: 16km
4 pm	40°C Feels like: 40°C		Partly Cloudy Wind: 18km/h SSW Pressure: 1003mbar Humidity: 16%	Precip. probability: 15% Precipitation: 0mm Visibility: 16km
5 pm	40°C Feels like: 40°C		Partly Cloudy Wind: 24km/h S Pressure: 1002mbar Humidity: 16%	Precip. probability: 15% Precipitation: 0mm Visibility: 16km

Typical humidity at high temperatures



Average annual humidity

Weather Conditions

Summary:

1.The months with an ambient temperature of over 30°C for the entire year are approximately three months.

2.In the high temperature of more than 30 degrees, it is usually 10am-11pm, accounting for about 48% of the proportion of the whole day.(Worst estimate)

3.In hot weather, the typical humidity usually does not exceed 30%,The wet bulb temperature is usually no higher than 26 degrees.

4.The ambient temperature will be below zero.

5.The highest temperature is about 42 degrees Celsius.

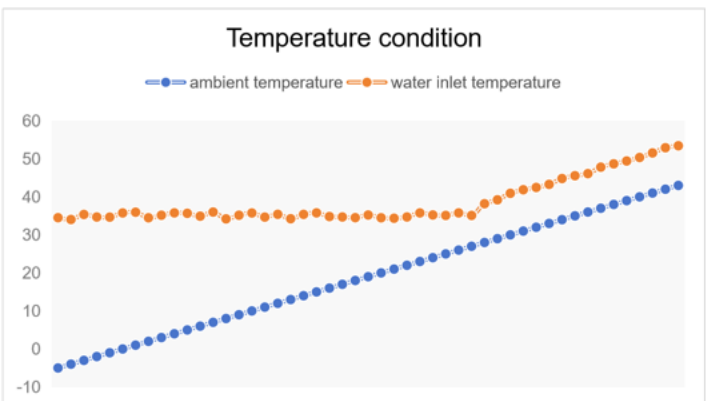
PLAN A

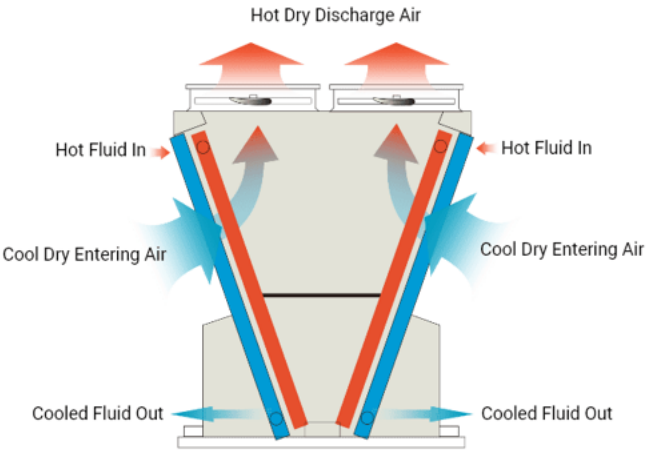
Description of PLAN A:

Completely adopt the dry cooler solution for heat dissipation, without adding other intervention measures.

In the case of the target model s21hyd, this plan one box can operate about 340 units in the condition of no high-temperature shutdown throughout the year.(No abnormal high temperature)

The optimum J/T ratio cannot be achieved at ambient temperatures above 27 degrees Celsius.





PLAN A

Advantage of PLAN A:

1.Minimal maintenance requirements.

2.Completely no water consumption.

Disadvantage of PLAN A:

1.Natural heat dissipation cannot reduce the water temperature to close to the ambient temperature.Therefore, at ambient temperatures above 27 degrees, the J/T ratio increases, and there will be additional power consumption.

2.Due to the relatively high ambient temperature of Channing, the heat dissipation requirements of 420 units cannot be reached for natural heat dissipation.Will increase the project's single unit cost.It's going to go up 60 to 70 percent.

Power consumption calculation :

1.The optimal power consumption of S21hyd is about 5.4kw.
(water inlet temperature is 35 degrees Celsius)

2.The worst power consumption is about 6kw.
(water inlet temperature is 53 degrees Celsius)

Based on the weather conditions in Channing:

P(actual)-P(optimal)=340*6-340*5.4=204kw.

Additional electricity consumption throughout the year:

$204*24*365*(0.25*48\%)_{annotation}$=214444.8kwh

Annotation:The time of year when optimal power consumption cannot be achieved due to high temperatures.

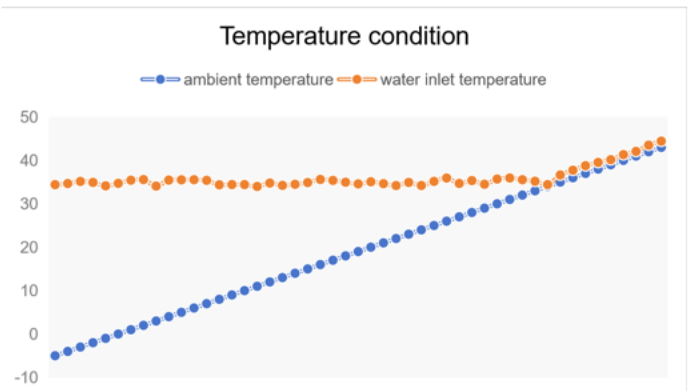
PLAN B (recommend)

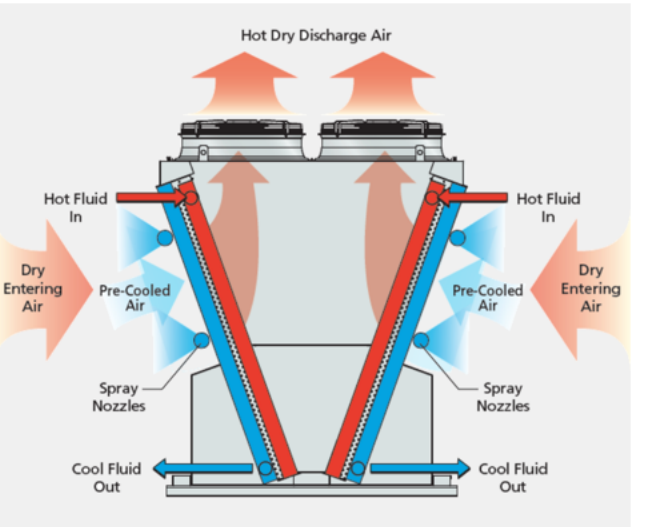
Description of PLAN B:

At the same time, the dry cooler is used to dissipate heat, and the micro-fog pre-cooling system is added.

In the case of the target model s21hyd, this plan one box can operate about 420 units in the condition of no high-temperature shutdown throughout the year.(No abnormal high temperature)

The optimum J/T ratio cannot be achieved at ambient temperatures above 35 degrees Celsius.





PLAN B (recommend)

Advantage of PLAN B:

1.420 units can be operated at full capacity for a single set of containers.

2.More time throughout the year to operate at optimal power consumption, reducing power consumption at single unit.

3.The spray system does not block incoming air when not working and does not add additional fan power consumption.

4.Strong flexibility, controllable water consumption.

Disadvantage of PLAN B:

1.There will be water consumption.

2.Will increase the maintenance of the spray system.

3.The cleanliness of the water is required.

Power consumption calculation :

1.The optimal power consumption of S21hyd is about 5.4kw.
(water inlet temperature is 35 degrees Celsius)

2.The worst power consumption is about 6kw.
(water inlet temperature is 53 degrees Celsius)

Based on the weather conditions in Channing:

P(actual)-P(optimal)=420*6-420*5.4=252kw.

Additional electricity consumption throughout the year:

$252*24*365*(0.1*25\%)_{annotation}$=55188kwh

Annual water consumption per container is expected to be:

365*24*0.25*48%*1.4t=1471.68t

Annotation:The time of year when optimal power consumption cannot be achieved due to high temperatures.

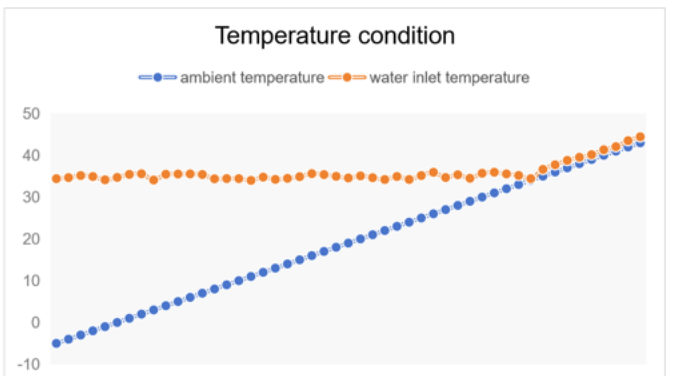
PLAN C

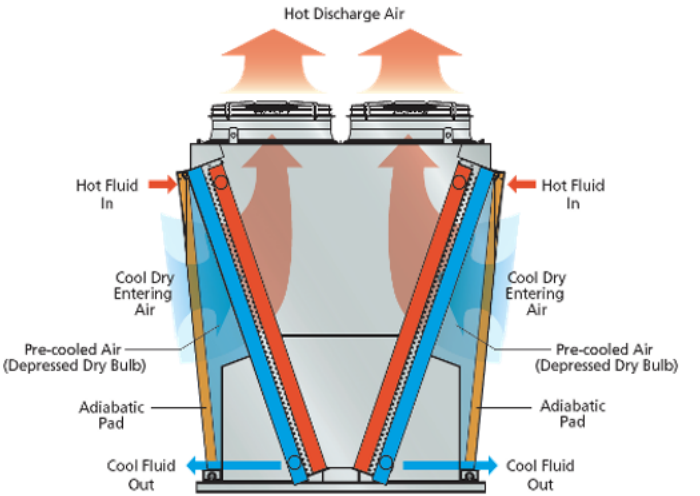
Description of PLAN C:

At the same time, the dry cooler is used to dissipate heat, and the Evaporation-pad pre-cooled system is added.

In the case of the target model s21hyd, this plan one box can operate about 380 units in the condition of no high-temperature shutdown throughout the year.(No abnormal high temperature)

The optimum J/T ratio cannot be achieved at ambient temperatures above 33 degrees Celsius.





PLAN C

Advantage of PLAN B:

1.Can accommodate higher loads than pure natural heat dissipation.

2.More time throughout the year to operate at optimal power consumption, reducing power consumption at single unit.

3.Water quality requirements are lower than spray systems.

Disadvantage of PLAN C:

1.There will be water consumption.

2.Will increase the maintenance.

3.When the precooling system is not working, the evaporation pad will affect the intake volume,The power consumption of the fan system increases.

4.There's a fire risk.

5.It is difficult to accurately control water consumption.

Power consumption calculation :

1.The optimal power consumption of S21hyd is about 5.4kw.
(water inlet temperature is 35 degrees Celsius)

2.The worst power consumption is about 6kw.
(water inlet temperature is 53 degrees Celsius)

Based on the weather conditions in Channing:

P(actual)-P(optimal)=380*6-380*5.4=228kw.

Additional electricity consumption throughout the year:

$228*24*365*(0.2*25\%)_{annotation}$=99864kwh

Annual water consumption per container is expected to be:

365*24*0.53*60%*1.4t=3899.95t

Annotation:The time of year when optimal power consumption cannot be achieved due to high temperatures.