

GDC Chilled Water Thermal Energy Storage Plant, Putrajaya



The project is as 100,000 RThr, Chilled Water Thermal Energy Storage Tank, Plant and pump station. The system was designed to cater for tie in with future extension without disruption to the operation.



Chilled Water Plantroom Design & Commissioning Evaluation for 5 towers (Rihan Height, Abu Dhabi)
The project consists of 5 Chilled Water Plantroom requiring Design and Testing and Commissioning Evaluation.



GDC Chilled Water Thermal Energy Storage Plant, Putrajaya (ACEM Engineering Award 2015 – Bronze Award of Commendation)



Chilled Water Piping from Chilled Water Plant to Development in KLIA 2 Including KLIA 2 Terminal, Sepang, Selangor

Sales & Marketing



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Ariel

Ariel Thermal Energy Storage Tank

- Real time monitoring
- Reduce greenhouse gas emissions and pollutants
- Reduce capacity
- Optimize energy usage
- Off peak cooling
- No down time during short chiller/power outage
- Decouple cooling from central cooling plant
- Demand shifting

MADE IN MALAYSIA

Subject to changes to suit client's requirement

● ACCURATE ● QUALITY ● DEMAND SHIFTING



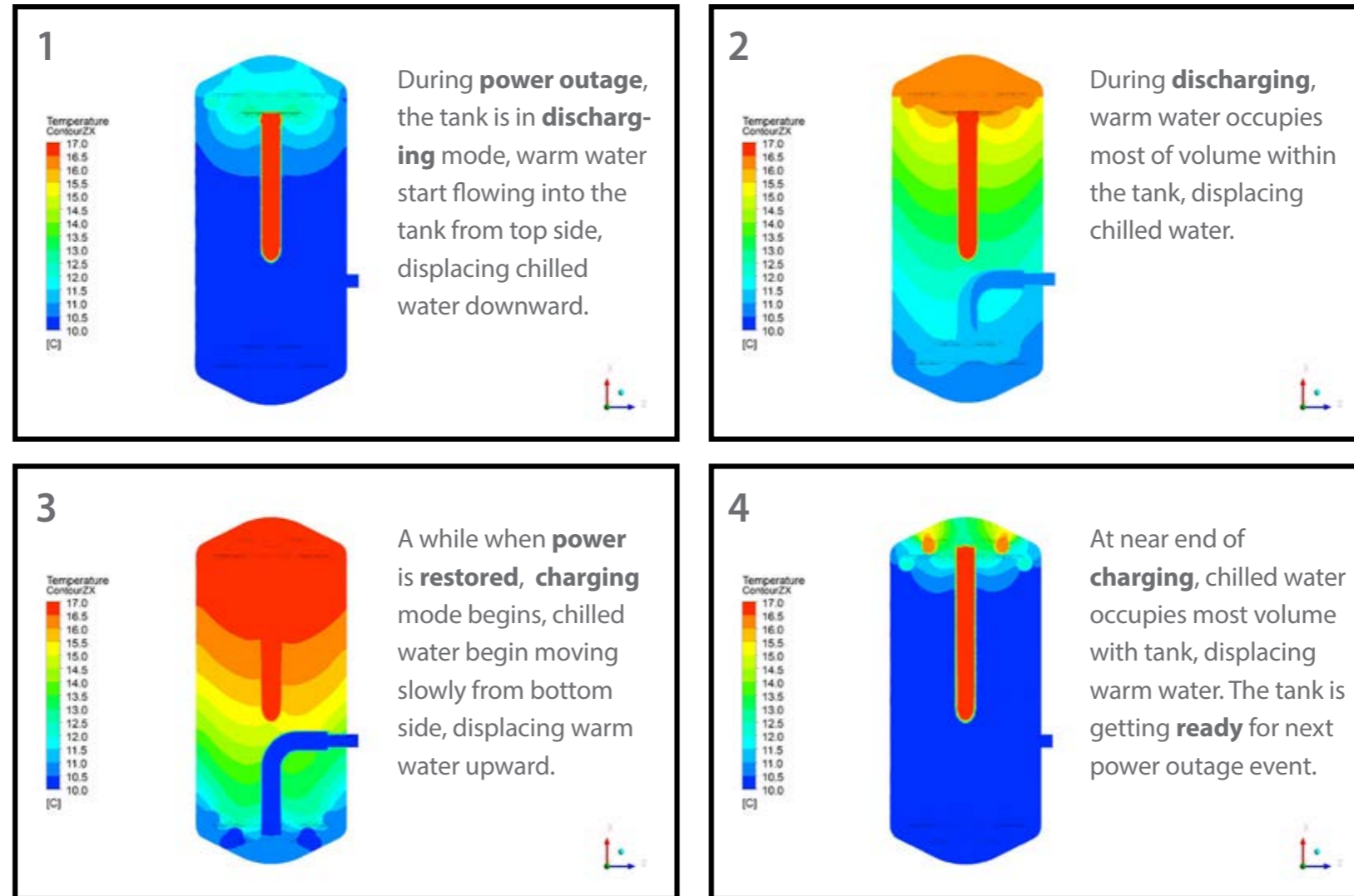
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Manufacturer name:
**KONG BROTHERS ENGINEERING
 WORKS SDN. BHD.**

Company Registration No: 198001003281 (57065-V)



Ariel Thermal Energy Storage Tank



SPECIFICATIONS SUMMARY

- Tank Specification :

- Design Code :
 ASME Sect VIII Div1, Ashrae Design Guide

- Design Pressure :
 6 BARG

- Working Media :
 Ethylene Glycol, water or as specified

- Shell/Dish Material :
 BS EN 10025 S275JR or equivalent

- Working temperature :
 -10°C to 60°C or as specified

- Insulation :
 Poly Urethane, 0.023 w/mK @ 100mm or as specified

- Capacity :
 10000 litres, 20000 litres or as specified

- Available Thickness :
 9mm, 12mm

CFD SIMULATION



What
ARIEL is the brainchild of a group of District Cooling Professional Engineers registered with Board of Engineers Malaysia. The first fully designed, tested and certified TES was in 2012 - GDC Chilled Water Thermal Energy Storage Plant, Putrajaya where the design won ACEM Engineering Award 2015 – Bronze Award of Commendation) . To date they have **engineered, tested and certified for use more than 150,000 RThr.**

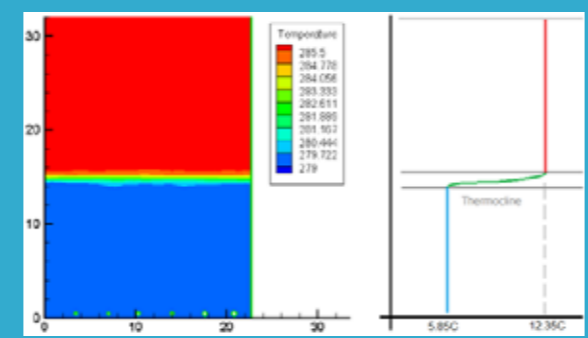
Where
 ARIEL is ideal for us in **DATA CENTER, FACTORIES, DISTRICT COOLING PLANT** . The design for ARIEL are in **compliance** to

ASHRAE and the construction of the tank met the required JKPP standards.

Why
 ARIEL TES technologies offer **unique** benefits, such as helping to decouple the cooling demand from central cooling station when there is a power failure and **shift the load demand** to buffer tanks. Thus ensuring continuous chilled water supply to data hall.

How
Stratified Thermal Energy Storage (STES) System Design Concept:
 The primary principle of a STES System is that cooler water is denser than warmer water. Therefore, under a full **laminar flow** condition, the Return Chilled Water (of a higher Temperature) will rest on top of the Supply Chilled Water Temperature (of a lower Temperature).

For a prolonged discharge STES System, possibly over a period of 10 hours, thermal exchange will occur between the two touching water surface, but, because of the laminar nature of the water, the thermal exchange is extremely slow creating a **transitional layer**, which is called the Thermocline.



In a relatively similar way, a Buffer Thermal Energy Storage System is for quick water discharge with minimal mixing of warm and cold water. Therefore, the primary principle of a BTES System is to **minimise the turbulence** within the tank during discharge of the Chilled Water. The design takes into account of the following; minimise the CHW velocity exiting the diffusers, minimise the interference of the diffuser to the vertical flow of the water, **breaking up swirls in the water and preventing the "Wall Effect"**.

General STES Targeted Specifications:

1.	Reynolds Number of Water in Tank	<2000
2.	Froude No	<0.5
3.	Figure of Merit (FOM)	<90%
4.	Pressure Drop of System	<5m WG
5.	Heat Gain over rated TES capacity (subject to size of TES tank)	2-5%
6.	Diffuser Material	PVC PN16
7.	Tank Material	Carbon Steel
8.	Design to ASHRAE Guideline for Thermal Energy Storage System	Yes

MCS-MAGNUM-10.1-12
 Description & Specifications

DESCRIPTION
 The **MCS-MAGNUM-10.1-12** consists of a MCS-MAGNUM **controller** along with a **Touchscreen** 10.1 in display.

Information and graphics on the MCS-TOUCH-10.1 are shown on a 10.1" high resolution (1280x800) LCD display with LED backlighting, which will guarantee long-life operation.

The MCS-TOUCH-10.1 comes **preloaded with the MCS-CONNECT program** that allows you to view the 'unit's status', 'extended history', 'alerts', 'alarms', setpoints, and more, all in a user- friendly graphic format. Also, with a proper authorization code, changes can be made to the setpoints, sensor offsets, schedule, etc.

The user is able to email 'ALARM ALERTS' back to a technician. The emails will include 'SAVE DIAGNOSTIC DATA' to help troubleshoot the alarm.

Also with the internet connection you can send 'SMS TEXT MESSAGES' with job site name and alarm, message only.