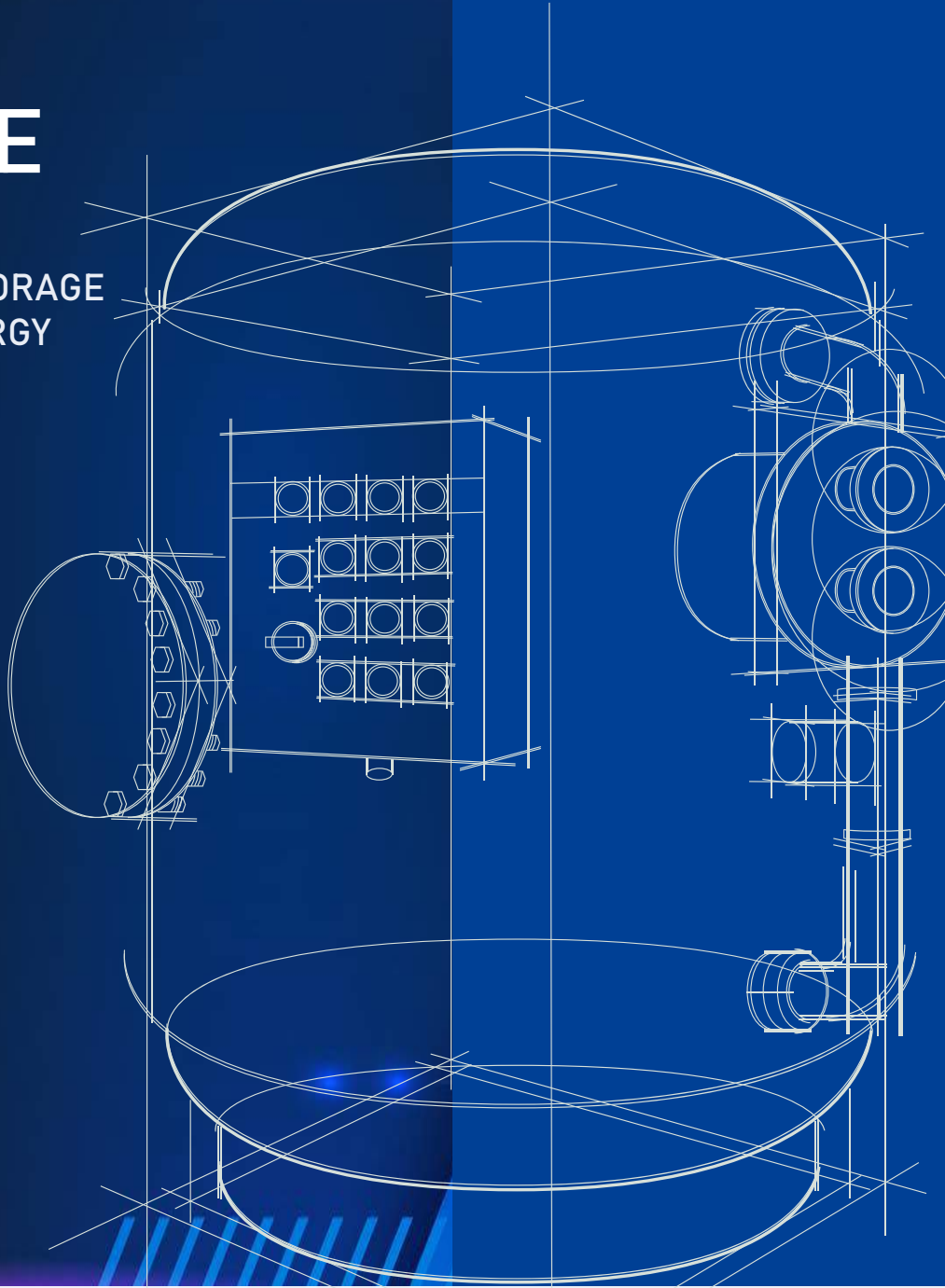


# THERMAL ENERGY STORAGE

PERFECT FOR  
INTERMEDIATE STORAGE  
OF THERMAL ENERGY

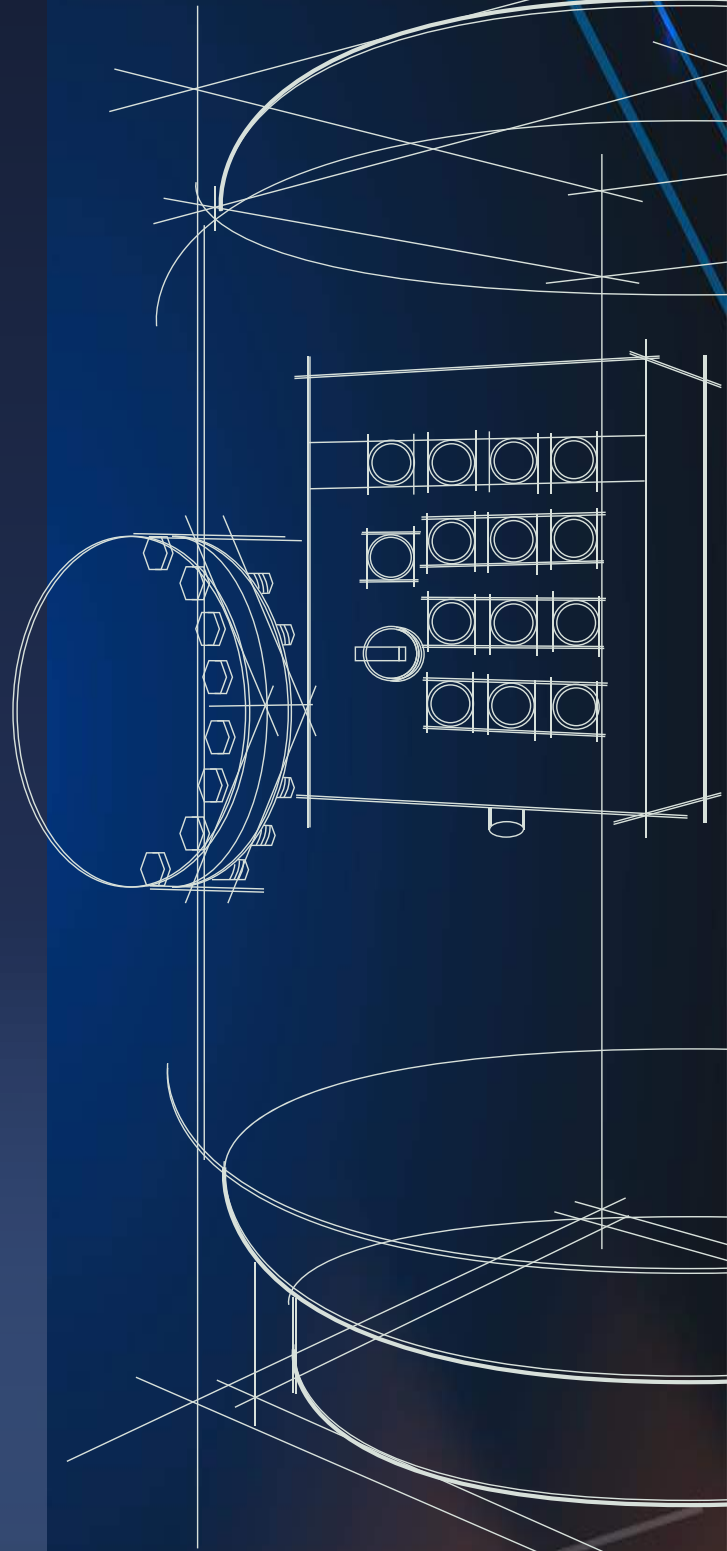


## OUR COMPANY

IES Group was established in 1998 and headquartered in Hong Kong. With perseverance and commitment to the idea of “creation of excellence”, IES has experienced a steady development and continual growth since our establishment.

With over 20 years of experience within the industry of manufacturing heat exchangers, as well as the integration of automated control systems. Our expertise ranges from R&D, manufacturing, sales & service: offering our customers a complete product and service experience. We specialize in the design and manufacturing of various types of high-efficiency heat exchangers, energy-saving and environmentally friendly products based on market demands and requirements. Our design and products adhere to ISO 3834 and BS PD 5500 and other related industry standards. With the versatility of our products, they have been applied in air conditioning, central heating systems, space and pool heating; and across multiple industries including power plants, metallurgy, petrochemical, food processing, data center and pharmaceutical covering China, Hong Kong, Macau and Southeast Asia.

IES Group's production site is based in Guangdong, covering over 10,000m<sup>2</sup> in area, featuring multiple production lines. The production facility is capable of providing customers with a wide spectrum of products through integrated systems, including Plate Heat Exchanger and Plate & Shell Heat Exchanger.

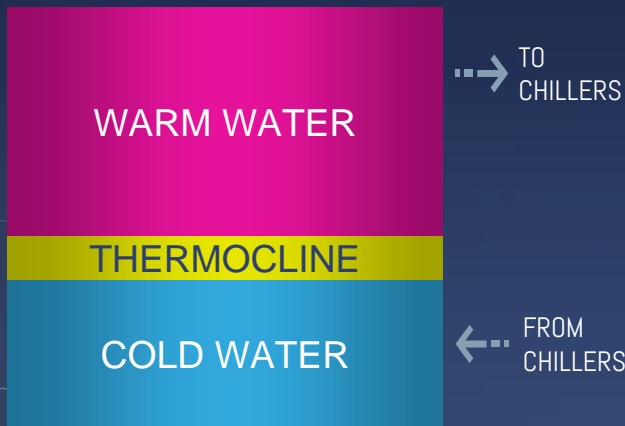


# PRODUCT INTRODUCTION

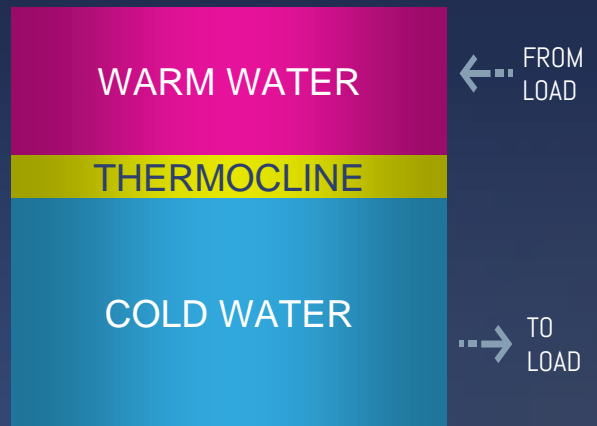
With the ongoing trend in energy saving by reducing energy consumption, IES has integrated this theme into its product design and manufacturing philosophy. Intermittent thermal energy usage causes fluctuations in energy consumption in chiller systems, hence additional operation cost and significant wear on the system, meanwhile oversized system are often prescribed to accommodate the peak usage, leading to inefficiencies. To tackle the problem, IES has developed a Thermal Storage Tank, which stores the thermal energy in the form of chilled water.

The advantage of the system is that chilled water can be produced and stored during off-peak hour. During peak hour, the chilled water is pumped from the bottom of the storage tank and distributed to the facility, whilst the warmer water enters from the top of the tank hence smoothing out the energy consumption of the chiller system. Due to the differential density of chilled water and warm water, it allows natural stratification of the warm water and chilled water, rising to top and settled at the bottom within the tank. In order to achieve stratification, minimal mixing and turbulence within the tank must be ensured such that a narrow and sharply defined thermocline is formed. In doing so, IES has adopted advanced diffuser design in the inlet and outlet piping to control the fluid profile to laminar flow.

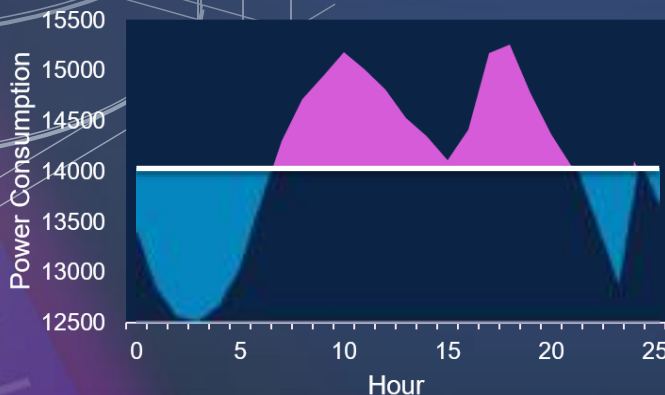
## CHARGING



## DISCHARGING



Power Consumption throughout the Day



During the off-peak hours chilled water is being storage inside the buffer tank, while during peak hour the water is being consumed without requiring the maximum power consumption load.

# DESCRIPTION

## STRATIFICATION

Our unique diffuser design allows even distribution of inlet and outlet water from the storage tanks, this would minimize turbulence and create stable thermocline effectivity stratifying the warm (top) and cold (bottom) inside the tank.

## BUFFER PLATE

Restrain and regulate the flow of water inside the tank and lessen chances of hot/cold water mixing

## DATA LOG TEMPERATURE

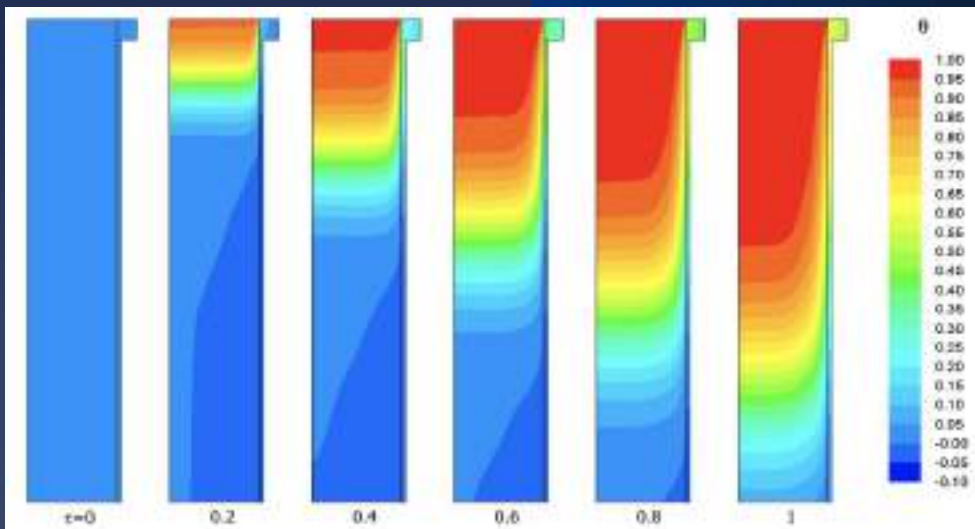
Temperature sensors can be installed at different height on the water storage tank, for monitoring tank states and data collection.



PD 5500:2015  
UK'S Manufacturing & Assembly  
Standard of Pressure Vessel



ISO 3834  
International Welding Systems  
Certificate



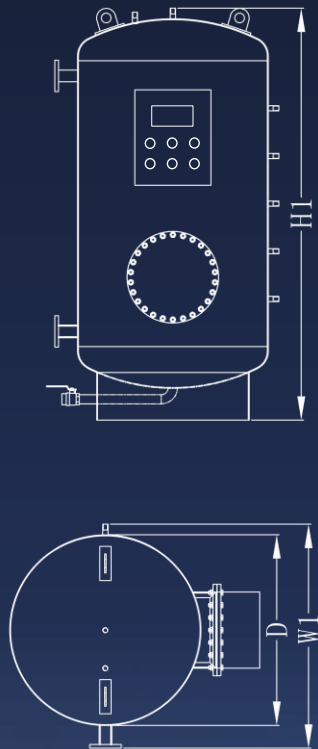
## CFD

The use of CFD greatly improves the prediction and observation of the microscopic and macroscopic features within the thermal storage tank. It is noticeable a defined thermocline appears in the contour plots during discharge, indicating that although during discharge the warmer fluid does not mix with colder fluids as separated by the thermocline. In addition, the effect of wall on the thermal behavior is visualized

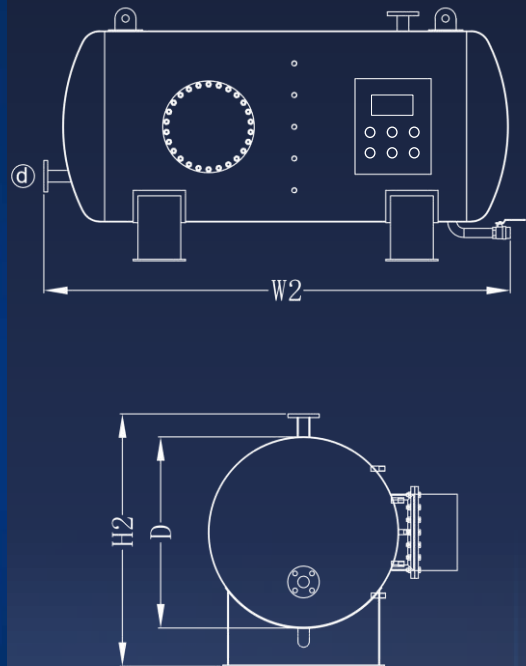
# SPECIFICATIONS

- Pressure rating up to 25 bar, storage capacity from 100Litres to 15,000 Litres
- 100% Austenitic Stainless Steel 304, 316,316L or 316 Ti
- World approved high quality Flux Cored Wire Welding and Plasma Arc Welding technique are used
- Standard conformity BS PD5500, ISO 3834

## VERTICAL



## HORIZONTAL



Model code	Capacity	Diameter	Width		Height		Weight		Connection Size	
		D	W <sub>1</sub>	W <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	10Bar	16Bar	Water inlet	Water outlet
	L	mm	mm		mm		kg		Connector/Flange ( mm )	
TES	1000	900	900	1820	1935	1240	345	430	65	65
	1500	1000	1000	2170	2290	1340	430	520	65	65
	2000	1100	1100	2380	2500	1440	590	680	65	65
	2500	1300	1300	2190	2310	1640	680	830	65	65
	3000	1300	1300	2560	2680	1640	780	1020	65	65
	4000	1300	1300	3320	3440	1640	1000	1350	80	80
	5000	1500	1500	3160	3280	1840	1250	1650	80	80
	6000	1600	1600	3330	3450	1940	1620	2180	100	100
	7000	1600	1600	3820	3940	1940	1950	2460	125	125
	8000	1800	1800	3510	3630	2140	2120	2680	125	125
	9000	1800	1800	3910	4030	2140	2210	2950	125	125
10000	2000	2000	3580	3700	2340	2280	3230	125	125	

Remarks :

1. Horizontal 2. Vertical

3. The size of the above table is factory standard size, and other specifications can be customized according to customer requirements.





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