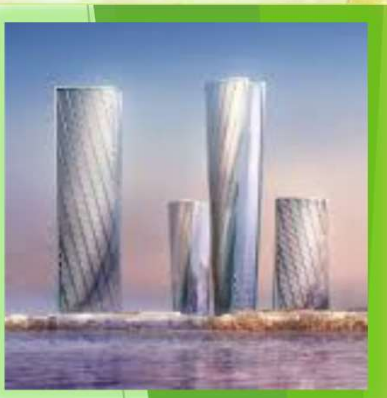
PCM

Phase Change Materials
Thermal Energy Storage

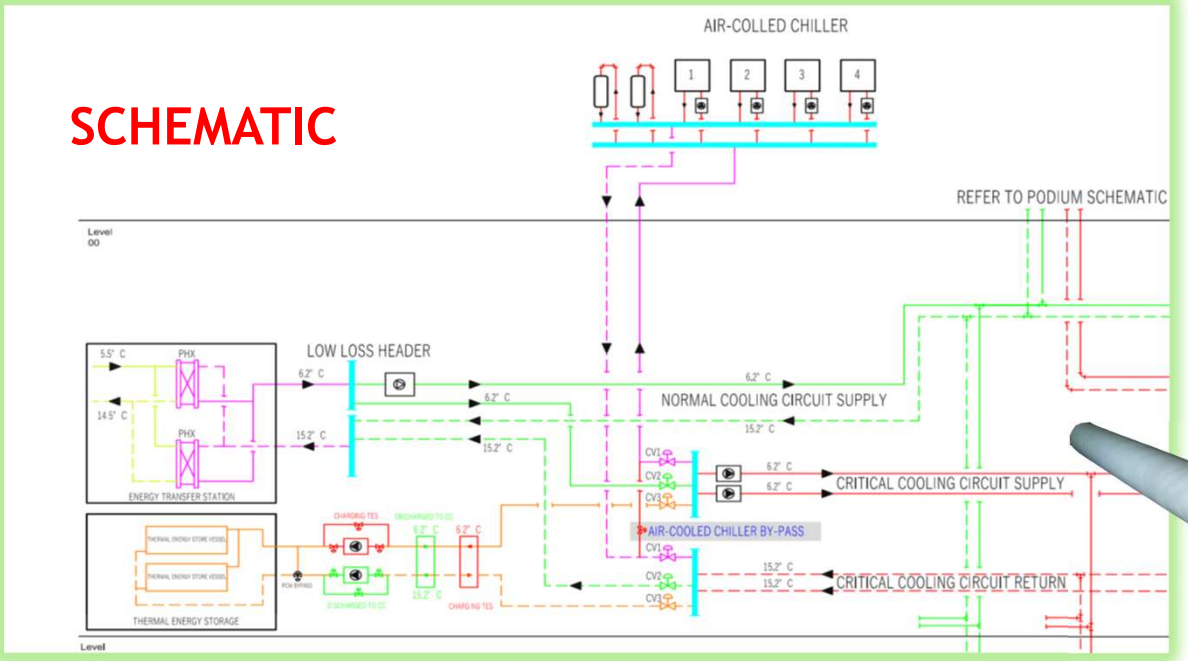
Lusail Towers, Qatar



Qatar is aiming for large scale district cooling (DCS) options for any new development and the latest addition to this aim is the new four high rise Lusail Towers project for their cooling demand.

Although existing DSC provides chilled water for the full loads for all four buildings all year round but it is essential to provide a back up system for the critical services such as IT rooms in case of any issues with the DSC system.

SCHEMATIC



TubeICE

During normal operation mode +4^{0}C (39^{0}F) cold water provided by the DSC charging total 11 nos 18m3 (4,755 USG) tanks filled with **+6.5^{0}C (43.7^{0}F)** PCM which encapsulated in 50mm (2") x 1m (3ft) long HDPE **TubeICE™** containers. Total **198m3 (52,306 USG)** TES tanks provide a stand-by cooling capacity of **7,920 kWh (2,250 RT-h)** which is enough time to give the back up chillers to start and reach their full load operations without adding any pull-down loads of the main circuit so the supply temperature for the cooling system is not affected. Under emergency it may take 15~30 minutes for the chillers to load and provide the full cooling capacity it is vital to eliminate any additional thermal inertia pull down loads from the chilled water pipework during the initial 15~30 minutes. PCM based TES by absorbing that short period cooling loads and effectively enabling the chillers to catch up and provide vital emergency loads without any impact on the chilled water supply temperatures.