PCM

Phase Change Materials
Thermal Energy Storage

Somacis Graphics – Dongguan-China

Rapid growth of industry and domestic power demand somehow well passed the power generating capability of the grid and therefore for a few hours of the day local electricity rates are punitively expensive in order to discourage power consumption so the grid can be stabilised. operational costs. Hence, any type of TES is beneficial to shift the loads and avoid this excessive power charges as well night cooler ambient higher efficiencies.

Existing chilled water based A/C system provides cooling for production areas which is essential to keep the production going 24/7.
By simply running the existing chillers over-night utilising spare capacity to build **4.25 MWh (1,200 ton-h) +8C (47F) PCM** thermal energy storage day-time one can shut down the chillers for a few hours in order to avoid these punitive electricity rates. TES tank is a site built concrete tank next to the existing plantroom.


TES Tank (100 m3)


Chillers


Pump Set


PCM Containers

**+8ºC (47F)
PCM
TES TANK
4,250 kWh
(1,200 RT-h)**

By simply shifting the day peak loads to off-peak night period it is estimated not only a reduction of approximately **15~20%** actual power consumption but most importantly avoiding day time punitive electricity rates overall annual running cost could be reduced dramatically. These savings are so impressive as it is estimated a pay back less than 2 years for the overall retrofit PCM-TES installation in their factory in Taiwan. Installation is carried by an investment company who has already installed a few similar PCM-TES system as an Energy Management Contract.