

Case Study

Lupin reduces air-conditioning load through fresh air pre-cooling

Lupin Limited reduced the tonnage of their air conditioning system by integrating HMX's fresh air pre-cooling, resulting in substantial savings in their overall cooling costs.

Background

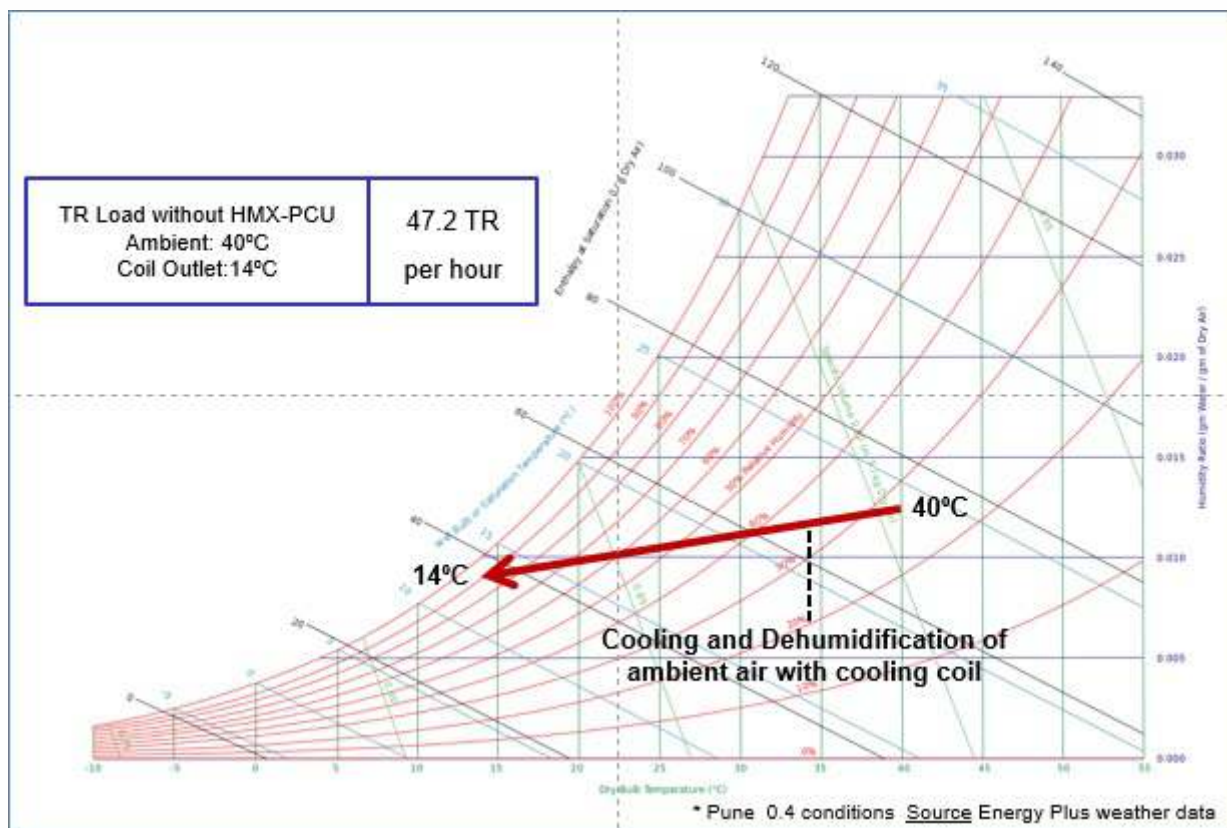
Lupin Limited is a transnational pharmaceutical company headquartered in Mumbai. Lupin's businesses encompass the entire pharmaceutical value chain, ranging from branded and generic formulations, APIs, advanced drug delivery systems to biotechnology.

Challenges

Lupin's facility in Pune, India, is a state of the art facility for tablet manufacturing. The tablet manufacturing process requires strict temperature control and very low relative humidity (RH), which is why pharmaceutical companies generally use air-conditioning systems to maintain the temperature and dehumidifiers for RH control.

The facility has clean rooms on the ground and first floors for various processes. These clean rooms are cooled by 12 dedicated AHUs (air handling units) with a capacity of 15,000 CFM each. These AHUs are stacked together on a common service area on the second floor and are connected to a chilled water system.

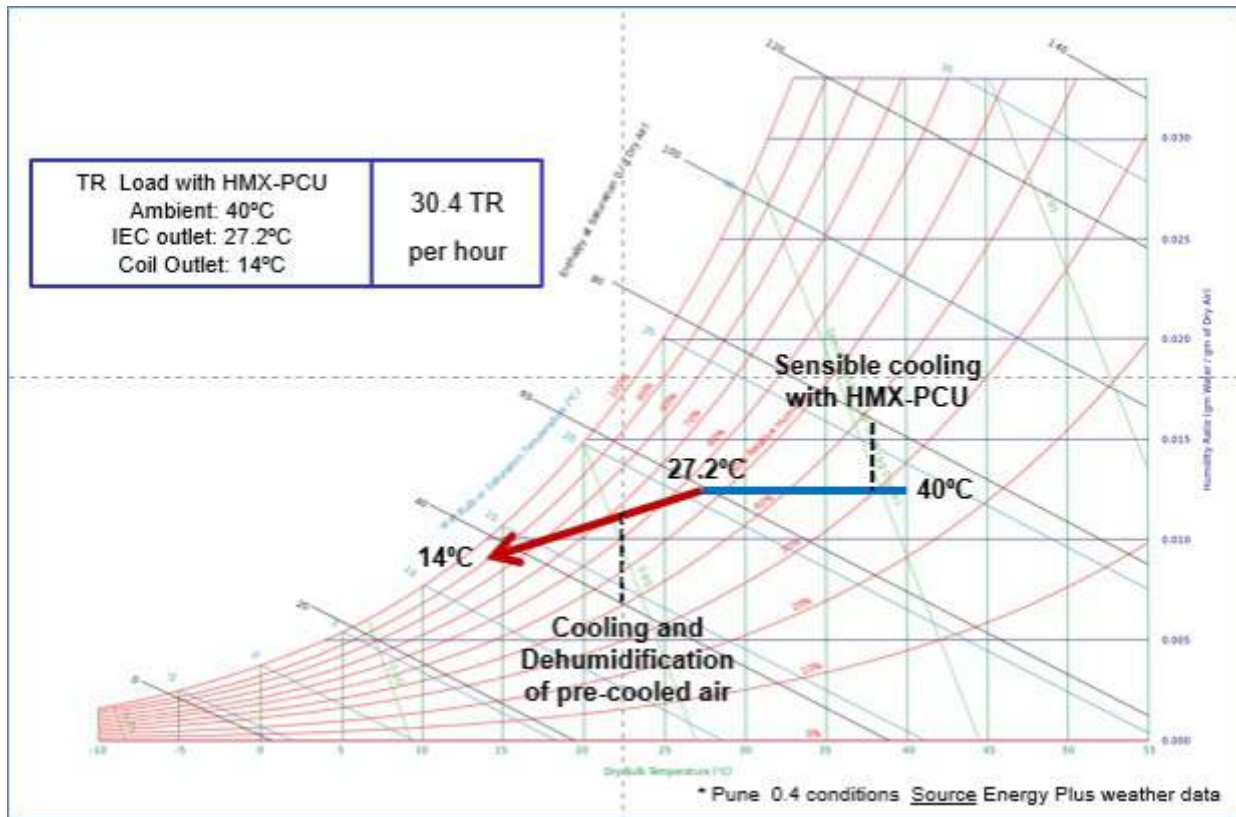
For maintaining a healthy indoor air quality (IAQ) inside the rooms, each AHU is designed to have a specific provision for 4-5% fresh air intake and the rest 95% is re-circulated from within the room. Since the fresh ambient air is generally of higher temperatures than the recirculated air, cooling this fresh air places a significant load on the chilled water system.



Psychrometric Representation of the Cooling of Incoming Fresh Air without HMX-PCU

Solution

To ensure that the requirement of 4-5% fresh air in each room is met while simultaneously reducing the TR load, one common unit of HMX-PCU was installed in the AHU bay. The 8000 CFM HMX-PCU is an indirect evaporative cooling (IEC) module which sensibly pre-cools the fresh air before it enters the AHUs, thereby reducing the overall load on the chilled water system.



Psychrometric Representation of the Cooling of Incoming Fresh Air with HMX-PCU



Schematic of Lupin, Pune, Service Floor

Result

The HMX-PCU has proved to be an eco-friendly way to reduce tonnage load on the air-conditioning system. In the peak summer, HMX-PCU can save up to 15% of the operational cost required for running the entire air-conditioning system.

Lupin's management is very happy with the results of the HMX-PCU and is looking forward to implementing the solution in other manufacturing facilities as well.