

Imperial builds pharmaceutical warehouse with ground-breaking passive cooling approach

The Imperial Logistics group faced the challenge of establishing a pharmaceutical regulatory compliant, temperature controlled storage facility that would not require a consistent supply of electricity in Malawi. They overcame this challenge with a ground-breaking passive cooling approach set to become the gold standard in warehouse design in developing countries.



This new, 2,000m² facility, which is 11m-high and offers 2,500 pallet positions, is situated in Lilongwe, Malawi. Dr Iain Barton, Imperial Logistics Group Business Development Executive: Healthcare, reveals that it features passive temperature control technologies that require no generated power supply, but which provide and maintain the required temperatures of between 15 and 30°C.

“Correct storage conditions for pharmaceuticals are critical to the success of the pharmaceutical supply chain and ultimately the successful treatment of patients. When these products experience extreme temperatures, they lose their potency, physically change and could jeopardise patients’ health,” Barton explains.

“Achieving the required temperature conditions for pharmaceutical products in Africa is especially difficult considering the lack of readily available funding as well as the lack of sufficient resources to generate a consistent supply of electricity.”

“Malawi, like many developing countries, is plagued with electricity disruptions and, at times, fuel shortages. Over 90% of Malawi’s electricity supply is generated from hydroelectric plants that are operated by the Electricity Supply Corporation of Malawi (ESCOM). Load shedding is regularly used by ESCOM, to ration the power supply since it is unable to meet the country’s electricity demands.”

The passive cooling approach

Passive cooling is a building design approach that focuses on heat gain control and heat dissipation in a building, in order to improve the internal temperature with low or nil energy consumption, Barton explains. The passive technologies used by Imperial Health Sciences in the Lilongwe warehouse are thermal roof paint, to reflect solar rays, turbine ventilators for the extraction of roof heat, polyurethane styrofoam for thermal insulation, and PVC strip curtains, which restrict thermal flow.

Imperial Health Sciences established this warehouse for Malawi’s Central Medical Stores Trust (CMST). The project was



funded and procured by the United Kingdom's (UK's) Department for International Development (DFID), and the facility will hold inventory for CMST. It was completed in eight weeks and obtained PMPB (Pharmacy, Medicine and Poisons Board of Malawi) approval.

“We are extremely proud to have delivered a facility that, in addition to setting industry leading standards for pharmaceutical warehousing in Malawi, is also able to achieve 15 to 30°C pharmaceutical storage temperatures by using a combination of passive technologies that are not dependent on electricity and fuel,” Barton states.

He notes that the passive cooling approach has the added benefit of having less impact on the environment than mechanical cooling generated power technology. “This combined technology is the ideal way forward when it comes to maintaining pharmaceutical temperature requirements, particularly in a resource and budget constrained setting such as Malawi and the rest of Africa. Passive temperature controlled technologies can go a long way in providing quality assurance of pharmaceuticals in order to ensure product integrity for the patient,” he concludes.

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