

Experimental Investigation of an Ice-Bank System Performance

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In order to verify the mathematical model of an ice bank system developed for the purpose of predicting the system performance, experimental measurements on the ice-bank thermal storage system were performed. A static, indirect, cool thermal storage system, with external ice building/melting on the coil was considered. The tested system was installed as a part of a production line in the dairy “Antun Bohnec” in the city of Ludbreg, Croatia. Energy stored in a form of ice during night is used for rapid cooling of milk after the process of pasteurization during day time. The ice-bank system was tested under real operating conditions to determine parameters such as time varying heat load imposed by a consumer, refrigeration unit load, storage capacity, supply water temperature to the load and to find storage charging and discharging characteristics, i.e. ice building and melting rate. Experimentally obtained results were then compared to the computed ones. It was found that calculated and experimentally obtained results are in a good agreement as long as there is ice present in the silo.