

The effect of zeolite adsorbent granular size on solar adsorption chiller for universitas Indonesia area

Nasruddin, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=9999920530328&lokasi=lokal>

Abstrak

Cooling systems in tropical countries consume a large portion of the overall energy usage in a building, especially in tropical climates, where there is an especially high demand on cooling systems throughout the year. This paper presents a simulation of the effect of zeolite adsorbent granular size on a zeolite-water solar adsorption chiller for Universitas Indonesia. The adsorption chiller is being mathematically modeled and calculated numerically, using MATLAB®. The mathematical modeling is based on heat transfer principles inside the system for the water inlet and outlet of the system. The adsorption chiller is based on the most recent chiller developed by Shanghai Jiao Tong University (SJTU). The simulation results generally demonstrated the running characteristics of the chiller under a range of different values of granular size. The average granular sizes used in the simulation ranged from 0.5 mm to 1.5 mm. Furthermore, the simulation results showed in detail that the smaller the average granular size of zeolites, the faster the time needed to reach the maximum hot water temperature and the balance state of chilled water outlet temperature.