A new moving boundary model for transient simulation of dry-expansion evaporators

A new moving boundary model is presented for describing the dynamics of dry-expansion evaporators. The model is derived from conservation equations for mass and energy integrated over the two-phase and the superheated region. The new model is numerical fast compared to discretized models and very robust to sudden changes in the system. The model is well suited for open loop simulation for system design and model based control strategies as e.g. optimal LQG (linear quadratic gaussian) control. Simulation results for a refrigeration system are shown for different changes in evaporator fan speed, compressor speed and expansion valve opening. The simulation results show the expected trends, but the model has not yet been validated with experimental data.

**General information**
Publication status: Published
Organisations: Department of Mechanical Engineering, Energy Engineering
Contributors: Jensen, J. M., Knudsen, H. H.
Publication date: 2002

**Host publication information**
Source: orbit
Source-ID: 62579
Research output: Chapter in Book/Report/Conference proceeding ⇒ Article in proceedings – Annual report year: 2002 ⇒ Research ⇒ peer-review