عنوان مقاله:

Application of the static mixer on desuperheater performance

محل انتشار:

بیستمین کنفرانس دینامیک شاره ها (سال: 1402)

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خلاصه مقاله:

One of the methods to decrease the temperature of superheated steam is by injecting cooling water using a desuperheater, the evaporation of the droplets leads to a reduction in superheated steam's temperature. In this study, a desuperheater model with the injection of cooling water against the direction of the superheated steam flow after a static mixing element and another model without the static mixer are simulated by using the discrete phase model (DPM) and implementing the lagrangian-eulerian approach. Heat and mass transfer between water droplets and superheated steam is simulated as a two-phase ۳D flow in ANSYS FLUENT by considering the standard k-ε turbulence model. The effect of the static mixer on droplet evaporation is studied, the results indicate that the presence of a static mixer leads to an increase in mixture between the injected droplets and superheated steam and this phenomenon improves the heat transfer and increases the evaporation rate.

کلمات کلیدی:

Desuperheater, Structural innovation, Numerical simulation, DPM, Thermal desalination

لینک ثابت مقاله در پایگاه سیویلیکا: