Experimental Investigation of Temperature Profiles Along a Heated Tube at Depressurization from Supercritical Pressures at Medium Heat and Mass Fluxes

Abstract:
Heat transfer at supercritical pressures and the rewetting of surfaces at subcritical pressures during transient operation of steam generators is subject of current experimental investigation. The newly built high pressure test rig “HIPER” is presented and results of a first transient test campaign are presented. At supercritical pressures the observed temperature profiles show a normal appearance, no deteriorated heat transfer was provoked. During the depressurization a different behavior was detected, a steep rise in the temperature profile can be observed. Depending on the experiment movement in up- or downstream direction or an immediate steady position can be observed.

Stichworte:
heat transfer; supercritical pressure; depressurization; experimental temperature profile