

Homework on boiling and condensation, Ch. 10 of Incropera 7<sup>th</sup> Edition textbook

Problem	Modifications	Answers
10.49a	Change the condensate rate to <b>30.0 kg/hr</b>	$T_s=71.3\text{ }^\circ\text{C}$
10.58 & 10.59	Change the steam pressure from 0.2 bar to <b>0.3327 bar</b> Change the surface temperature in problem 10.58 and 10.59 to <b>27°C</b>	10.58 $h_D=6050\text{ W/m}^2\text{K}$ , $q'=32.8\text{ kW/m}$ 10.59 : Enhancement factor=1.154
10.61a	Change the steam pressure from 0.1 bar to <b>0.1351 bar</b>	$h_{DN}=7124\text{ W/m}^2\text{.K}$ , $\dot{m}' = 653.8\text{ kg/m hr}$
10.41a,b	Change the velocity from 0.05 m/s to <b>0.1 m/s</b>	$h_{\text{two-phase}}=7365\text{ W/(m}^2\text{.K)}$ , $T_{\text{wall(2phase)}}=194.1\text{ }^\circ\text{C}$ $T_{\text{wall(vapor)}}=462.5\text{ }^\circ\text{C}$
10.67	Change the inlet saturated steam pressure from <b>1.5 bar</b> to 2.1245 bar	$h_D=6178\text{ W/(m}^2\text{.K)}$ $\dot{m}'=0.01445\text{ kg/(m.s)}$
10.68a	Change the inlet saturated steam pressure from <b>1.5 bar</b> to 2.1245 bar	$h_D=39400\text{ W/(m}^2\text{.K)}$ $\dot{m}'=0.0922\text{ kg/(m.s)}$