Numerical and Analytical Approach for Film Condensation on Different Forms of Surfaces

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Abstract : This paper seeks to the solution of condensation around of a flat plate, circular and elliptical tube in way of numerical and analytical methods. Also, it calculates the entropy production rates. The first, problem was solved by using mesh dynamic and rational assumptions, next it was compared with the numerical solution that the result had acceptable errors. An additional supporting relation was applied based on a characteristic of condensation phenomenon for condensing elements. As it has been shown here, due to higher rates of heat transfer for elliptical tubes, they have more entropy production rates, in comparison to circular ones. Findings showed that two methods were efficient. Furthermore, analytical methods can be used to optimize the problem and reduce the entropy production rate.