Abstract: The thesis is concerned with computation of a lift force generated by flow past a cylinder. It provides definition of fundamental terms regarding flow and recounts the laws of balance. It offers an alternative formulation of balance of momentum for the particular case of steady flow – Crocco's theorem – which formulates balance of momentum using total enthalpy and links the change of entropy with vorticity. Next, Biot-Savart's law for vortex filament in a fluid is derived. Potential flow and complex potential are then used to describe flow past a cylinder; lift force is calculated as a product of velocity at infinity, the fluid's density and circulation. Using Crocco's theorem, the thesis considers release of the heat of condensation, the change in entropy and the following emergence of vorticity resulting in circulation and, consequently, lift force. The thesis can be used to provide basis for an experiment.

Keywords: Crocco's theorem, Biot-Savart's law, potential flow past a cylinder, lift force, circulation as a result of change of entropy.