

A Study of Non-uniform Pressure Distribution in Vacuum Chamber during Dynamic Gas Flow

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Vacuum chambers have wide application for a variety of purposes such as material processing, vacuum gauge calibration, etc. Pressures generated in such chambers do not remain uniform during dynamic gas flows. In many industrial as well as research processes, it is vital to know the pressure distribution and to achieve maximum uniform pressure in the chambers during continuous gas flows. Pressure non-uniformities are minimized by using baffle plates placed on the path of incoming gas molecules. In the present work, the behavior of gas flow in a vacuum chamber, during continuous gas flow, is described in the pressure range 0.1 Pa - 133 Pa and the effect of baffle plate in minimizing the pressure non-uniformities is investigated. It was observed that maximum deviations in the pressure occur near the gas inlet point and that baffle plate largely affects the gas flow in transitional regime.

Key words: Vacuum chamber, Dynamic gas flow, Baffle plate, CDGs