

## Pressure Drop Study in Moving and Stationary Beds with Lateral Gas Injection

**Authors :** Vinci Mojamdar, Govind S. Gupta

**Abstract :** Moving beds in the presence of gas flow are widely used in metallurgical and chemical industries like blast furnaces, catalyst reforming, drying, etc. Pressure drop studies in co- and counter - current conditions have been done by a few researchers. However, to the best of authors knowledge, proper pressure drop study with lateral gas injection lacks especially in the presence of cavity and nozzle protrusion inside the packed bed. The latter study is more useful for metallurgical industries for the processes such as blast furnaces, shaft reduction and, COREX. In this experimental work, a two dimensional cold model with slot type nozzle for lateral gas injection along with the plastic beads as packing material and dry air as gas have been used. The variation of pressure drop is recorded at various horizontal and vertical directions in the presence of cavity and nozzle protrusion. The study has been performed in both moving and stationary beds. Also, the experiments have been carried out in both increasing as well as decreasing gas flow conditions. Experiments have been performed at various gas flow rates and packed bed heights. Some interesting results have been reported such as there is no pressure variation in the moving bed for both the increasing and decreasing gas flow condition that is different from the stationary bed. Pressure hysteresis loop has been observed in a stationary bed.

**Keywords :** lateral gas injection, moving bed, pressure drop, pressure hysteresis, stationary bed

**Conference Title :** ICPPT 2018 : International Conference on Pyrometallurgical Processes and Technologies

**Conference Location :** Sydney, Australia

**Conference Dates :** January 29-30, 2018