

# Distributor optimization: Analysis via design of experiment (DOE) on perforated plate distributor in fluidized bed

## **Abstract**

Generally in industry, the fluidization process involves with plate distributor and used a type of perforated plate distributor as their fluidization process. In terms of observation, this type of distributor has used a large amount of energy consumption. Currently, the new design of perforated plate that involved; (i) number of slotted, (ii) slotted width, (iii) slotted length and (iv) thickness distributor has been produced and tested via Computational Fluid Dynamics (CFD). Then, the results from the simulation in each perforated plate are been extracted and analyze by using a Design of Experiment (DOE) method through full factorial design (FFD). Results from the statistical analysis have shown a significant parameter on performance of the fluidization that was assessed by pressure drop values and velocity distributions values. The results from this statistical analysis showed a significant parameter on mean tangential velocity and pressure drop. In conclusion, by using the optimization method the new design of distributor would propose less energy consumption in future fluidization application.