

## Experimental and Prediction of the Development of Low-Calorific Swirl Burner

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### Abstract

This paper discusses the development of swirl vane burner in a staged combustion system. The swirl effect of this burner has benefit to stabilize the flame front and to increase the surface area across in which heat and mass transfer exchange occurs significantly influences heat and mass transfer. Two major methods are used, the mathematical methods using package FLUENT Version 5 and experimental study in a pilot scale of two-stage combustion. There are 3 (three) variation of swirler angle burner model in this investigation i.e. fixed vane swirler with 20, 30 and 40 degree angle (?) respectively. Measurements of the 20o, 30o and 40o swirl-vane burner flow field and the chemistry in an air staged combustion system has been performed. The predicted and measured flame temperature of each swirl-vane shows a promising result e.g., for application in a small wood dryer.

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