

A Key Comparative Study Between a Self-Aspirated and an Air-Induced Porous Medium Burner(Book chapter)

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Abstract:

Burners have a very vital role in both industrial as well as domestic sector, hence involvement of porous media within them makes their features very efficient and eco-friendly. Most of the conventional porous media burners (PMB) require auxiliary equipment to supply sufficient air in order to assure complete combustion. Though the PMB offer high efficiency, the equipment such as air compressor consumes extra energy that causes the impracticality for domestic use. The self-aspirating technique works by promoting air into the burner system by using the momentum of the fuel jet normally by the fuel nozzle in the burner. In this work, comparative assessment between a self-aspirating and an air-induced PMB has been done. The self-aspirated PMB is capable of producing a flame temperature up to 540 °C while the air-induced PMB maximum flame temperature is 634 °C for uncoated PM and 750 °C for SiC-coated PM. Surface temperatures of the PMB were visualized by a thermal imager which clearly distinguished the flame pattern and concentration between the self-aspirated and air-induced PMB. © 2022, The Author(s), under exclusive license to Springer Nature Switzerland AG.

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