

**Research Title:** Development on domestic gas stove using the metal open-cellular porous media

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## ABSTRACT

This research aims to increase the thermal efficiency ( $\eta_{th}$ ) of domestic gas stove that uses the highest amount of Liquefied Petroleum Gas (LPG) not excess 5.78 kW, in accordance with Thailand Industrial Standard, TIS 2312-2549. The gas stove was designed and reconstructed with Nickle-Chorme (Ni-Cr) metal open-cellular porous material. In addition, three throat diameters at the mixture exit before reach to porous plate were investigated. The diameters had 2.7, 3.5 and 4.3 cm. and were defined as MOB#1, MOB#2 and MOB#3 respectively. The results of the present gas stoves were compared with two conventional gas stoves including of radial slotted ports burner (RB) and honey comb porous ceramic burner (PB). From the experiment, the boiling time of the water in all three MOB were faster than the conventional stove burners (PB and RB). The level of  $\eta_{th}$  of MOB was higher than 50% particular in MOB#3. On the other hand,  $\eta_{th}$  of PB and RB were 38.98% and 41.44% respectively. Moreover, no  $NO_x$  and a lower level of CO emitted by three MOB were obtained. Thus, it can be confirmed that the preheat gas stove in this project was an effective burner owing to a higher efficiency and lower emission.

**Keywords:** Thermal efficiency Domestic gas stove Porous material