

ABSTRAK

UMKM Batik Mantaran is one of the batik makers located in Padukuan Mantaran, Klegen / Polowidi, Trimulyo, Sleman District, Yogyakarta Special Region. Batik Mantaran still uses simple and imprecise stove tools, so the process of boiling the water for the evening pelorotan becomes long to one hour to one and a half hours and the amount of production cannot be maximized.

Therefore, it is necessary to redesign the maximum combustion appliance to accelerate boiling, reduce fatigue, time and risk of operator injury while working. The design stage is based on the Pahl and Beitz method. The furnace is designed effectively by paying attention to the attributes including boiling time which is easier to operate, easy to maintain, durable and durable, then the design of the molding material is realized in a real form.

The results showed that the furnace developed in this study could reduce the processing time from 68.91 minutes to 57.08 minutes, and test the level of user satisfaction of 4.41 on a scale of 5, indicating that the furnace was classified as good.

Keywords: *Design of furnace tools, Pahl and Beitz, effective*