ANALYSIS OF HEAT TRANSFER PORTABLE FURNACE WITH BRIQUETTE COAL FUEL FOR FORGING PROCESS

Student Name : Rizki Anggiansyah
NRP : 2108 030 048
Department : D3 Mechanical Engineering FTI-ITS
Counselor Lecturer : Ir. Joko Sarsetyanto, MT

Abstract
Portable furnace with briquette coal fuel which tested in this final project is a furnace that is used for forging. This furnace is designed to overcome the weaknesses that occur in conventional furnace. These weaknesses such as the simple form of furnace which is just clay box, there is no way for ash separator, and the fuel still using wood charcoal.

The source of heat from the furnace is derived from the burning coal briquette which has dimensions (0.16x0.16x0.115)m. Metal heating performed until the temperature above the recrystallization temperature (700°C). To ensure the forging process can running well. The furnace that has high efficiency to eliminate the heat loss.

From the calculation results, the average heat loss that occurs is 562001.69(W) during 24 minutes with spent 4 kg of fuel. The higher calorific values of at 562001.69(W) and the lower calorific value of at 529201.94(W) has an efficiency of 84%.

Keyword : forging, furnaces, coal briquettes, the temperature