SUMMARY

Some sentra nilam existing in Java Island are located in Kabupaten Ngawi, Kabupaten Nganjuk and Kecamatan Wonosalam. Until the present time patchouli oil production in these places are conducted by distillation process using wood as a fuel for extracting patchouli oil. Wood used in this process is usually derived from surrounding forest where sentra nilam exists. If this deforestation is done continually, there will be an ecosystem damage which eventually can impair our environment. Due to this fact, it is necessary to develop an alternative fuel which can replace wood as fuel. One of many alternative methods used is by developing blotong – based briquette that uses some additive materials like carbonized rice husk, carbonized coconut shell, carbonized coffee bean shell as well as coal. Blotong itself is another solid waste of the cane sugar industry. To develop such fuel it is needed press machine which is capable of making briquette fuels. This research focuses the design and development of press machine using hydraulic systems as moving power.

This research is started by studying many information about blotong and its additive materials existing in journals, textbook and internet. This activity also studies about properties of blotong and the additive materials used in this research. The next step is designing fuel mixture or briquette composition which consisting of blotong as main fuel material and additive materials like carbonized rice husk, coconut shell, coffee bean shell and coal. This fuel mixture is composed in fixed proportion of each constituent. After briquette composition has been determined, compression test is conducted in the laboratory on this fuel mixture to know compression force using universal testing machine. This compression force will be used as a starting point to design hydraulic system for machine press and to design and develop punch and die used to form briquette fuel.

Results of this research show that blotong – based briquette derived has high calorific value especially blotong – based briquette with additive material from carbonized coconut shell so that this fuel is very potential to replace wood fuel used in sentra nilam. Hydraulic press machine, punch and die that are developed in this research can meet specification required to make blotong – based briquette.