

**BIOMASS PELLETT FROM OIL PALM EMPTY FRUIT BUNCHES
(OP-EFB)**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

BIOMASS PELLETS FROM OIL PALM EMPTY FRUIT BUNCHES (OP-EFB)

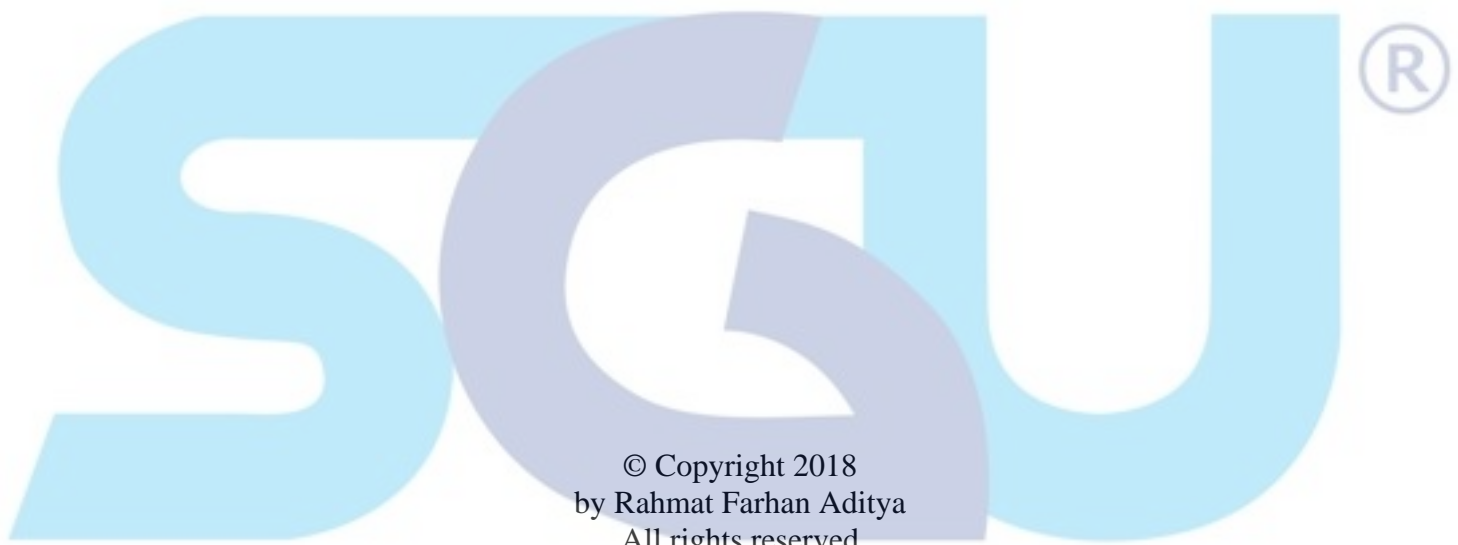
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Oil Palm growths in Indonesia are getting higher every year. Oil palm plantation produced various waste, including oil palm empty fruit bunches (OP-EFB). 95 % Indonesia energy demand still provided by the fossil fuel and only 5 % provided by renewable energy, which provide opportunity of OP-EFB biomass pellets to be utilized as alternative resource. The research of biomass still low, especially research of OP-EFB biomass pellets. Therefore, the research objectives were to determine the production process of OP-EFB and to define the most effective binder and binder ratio for the biomass pellets. This research experiments consist of shredding, chopping, drying, grinding, and sieving as raw material pretreatment. Also, varying the binder and binder concentration of the mixture between raw materials was the part of this thesis research. The binders used in this thesis research are PVAC paste and tapioca based paste with 4 variations of concentration. The analyses of the biomass pellets characteristic are density, compressive strength, proximate analysis (moisture, ash, volatile matter, and fixed carbon), calorific value, combustion rate, and gas chromatographic & mass spectroscopy (Pyr-GCMS). The result shows that OP-EFB biomass pellets are qualified to be considered as biomass pellets. The most effective OP-EFB biomass pellets is biomass pellets with 10% tapioca binder concentration.

Keywords: Oil Palm Empty Fruit Bunches, Biomass, Biomass Pellets, Tapioca, PVAC.



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DEDICATION

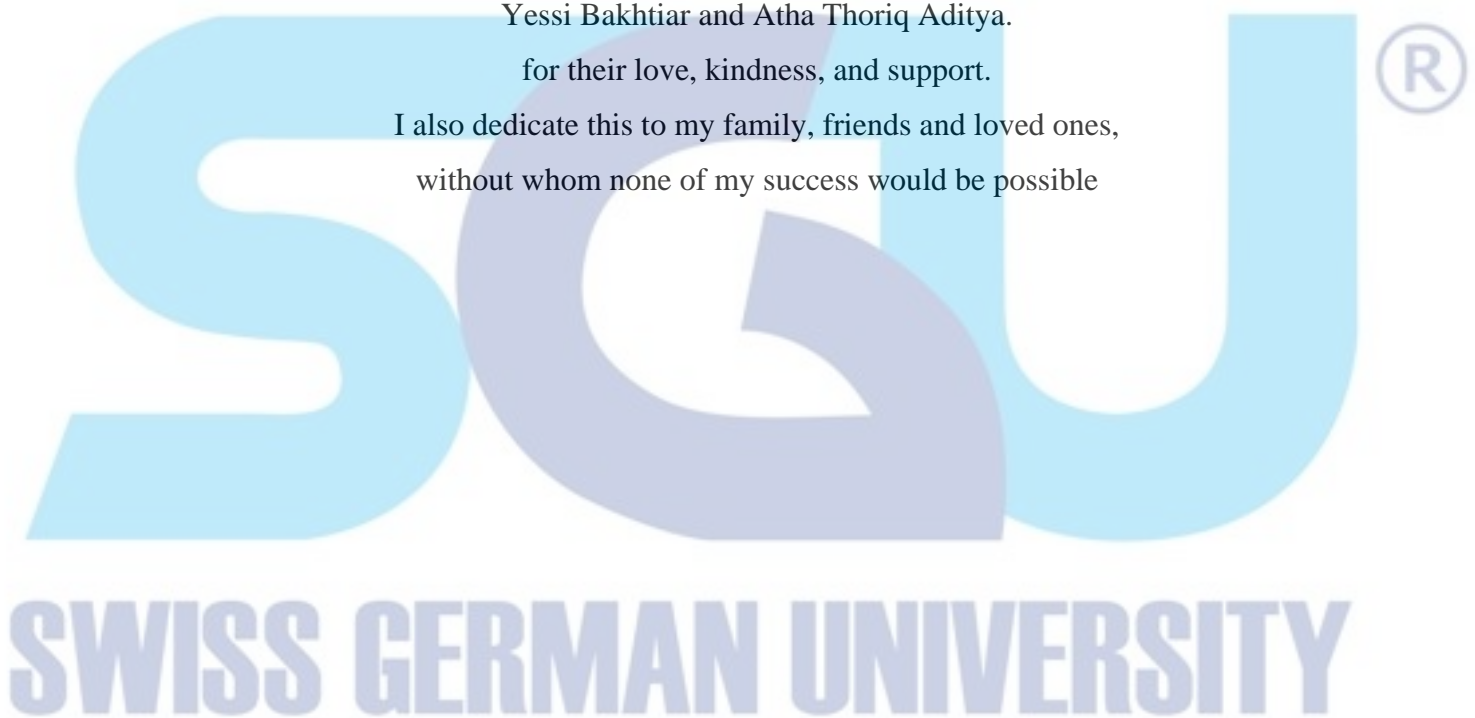
I dedicate this work first and foremost to Allah S.W.T.

To my mom and brother,

Yessi Bakhtiar and Atha Thoriq Aditya.

for their love, kindness, and support.

I also dedicate this to my family, friends and loved ones,
without whom none of my success would be possible



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