

CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME III

Editors:

Md. Zahangir Alam
Ahmed Tariq Jameel
Azura Amid



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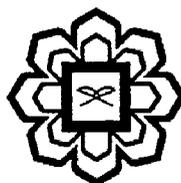
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**Department of Biotechnology Engineering
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International Islamic University Malaysia**



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CHAPTER 31

IMPROVEMENT OF CONVENTIONAL MILLING PROCESS IN PALM OIL PROCESSING: ROTARY FILTER PRESS

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ABSTRACT

The effectiveness of the Rotary Filter Press in removing solids from the press liquor was examined and then analyzed its possibility in replacing the functions of the conventional screw press and vibrating screen. Literature review on the conventional equipment used in the mill which is Twin Screw Press was conducted. Alternative equipment, the Rotary Filter Press was proposed and its design and principal of operation were discussed. Besides, the advantages and disadvantages of both the conventional and alternative equipment were compared. It was observed that the Rotary Filter Press capable to remove some of the non-oily solids (NOS) from the press liquor but no results were obtained for the feed of Depulper mesh as the fibrous mesh often choked the system. Therefore, several modifications were suggested to improve the efficiency of the equipment such as control of water dilution in the Depulper mesh and inclusion of perforated plates in the equipment design.

Keywords: Rotary Filter Press, Twin Screw Pass, Non-Oily Solids (NOS),

INTRODUCTION

Palm oil mills processes fresh fruit bunches (FFB) received from the oil palm plantation into crude palm oil (CPO) and palm kernels. The CPO obtained is then sent to the palm oil refineries to obtain pure oil while the palm kernels are processes at palm kernel crushing plants into crude palm kernel oil (CPKO). There are ten steps involved in palm oil processing which are reception and storage of FFB, sterilization, stripping, digestion, oil extraction, clarification, sludge treatment, nut fibre separation, nut cracking and kernel drying (Ngan et al., 1999). However, the main focus of this study is only the oil extraction step where the rotary filter press is proposed to use in replacing the conventional equipment, twin screw press. Replacing proposed equipment also can reduce number of equipment used in milling processes of palm oil. It is because the proposed equipment is not only can be used in press station but also in the clarification station. Additionally, feed capacity can also be increased consequently can increase the recovery of oil from the exhaust sludge. The effectiveness of the Rotary Filter Press in removing solids from the press liquor is examined and then analyzed