

CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME III

Editors:

Md. Zahangir Alam
Ahmed Tariq Jameel
Azura Amid



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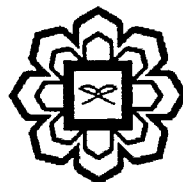
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**Department of Biotechnology Engineering
Faculty of Engineering
International Islamic University Malaysia**



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CHAPTER 17

PROCESS IMPROVEMENT OF CONVENTIONAL PALM OIL MILLING: CONTINUOUS COOKER

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ABSTRACT

The objective of this study is to improve the conventional milling process in palm oil processing by replacing the function of the current used horizontal sterilizer with a Continuous Cooker. A trial study of Continuous Cooker was conducted and results showed that the cooker operated for 55 minutes using low pressure steam of 1 bar and cooking temperature of 98°C. At these operating conditions, the cooker was capable of carrying out the functions of a horizontal batch sterilizer by achieving most of the conventional sterilization purposes. This was proven by the results obtained from trial runs and laboratory analysis conducted on the equipment and its samples.

Keywords: Horizontal sterilizer, Continuous Cooker, fresh fruit bunch, Palm Oil Mill

INTRODUCTION

Sterilization is one of the key processes in the palm oil mill. The fresh fruit bunches (FFB) are cooked using saturated steam at a pressure of 3 bars and a temperature of 140°C is used as the heating medium. The FFB is usually steamed for 75 to 90 minutes (Ngan et al., 1999). The bunches are sterilized in batches using two to six horizontal cylindrical shaped vessels called sterilizers fitted with one or two quick opening doors. Cages are used to transfer the bunches in and out of sterilizers, and various other equipment are needed for handling these cages, including overhead cranes, tippers, conveyors, transfer carriages and tractors. Considerable space and a system of rails are required to facilitate the fitting of the cages and the charging and discharging of the sterilizers. Generally, when the received crops are less in capacity, the fruit bunches will be bulked and processed the next day. This will result in increases Free Fatty Acid (FFA) content in the fruits and leads to poor quality crude palm oil (CPO). Besides that, batch