## *ABSTRACT*

*The high demand for coconut milk in Indonesia, both for household needs and the food industry, encourages the need for the development of a more flexible coconut milk squeezing machine. The existing coconut milk squeezing machine used in the Industrial Engineering Laboratory of Telkom University still uses a cam starter system without speed control and power monitoring. This causes the engine to work constantly, so power consumption tends to be higher. This study aims to design a motor speed control system on a coconut milk press machine using a Wemos D1 R2 microcontroller, VFD inverter, and PZEM-004T power sensor. The design process is carried out using the Waterfall method approach, through the stages of needs analysis, system design, implementation, testing, and maintenance. The designed system allows the operator to select three speed modes (slow, medium, fast) and monitor power consumption in real-time through a local web-based GUI. The test results show that the controller system is able to regulate the motor speed according to the selected mode, with a direct effect on power consumption. The test results show that the system is able to significantly reduce power consumption, especially in the slow speed mode (347.29 W) compared to the fast mode (955.05 W) or the existing machine (960.46 W). In addition, this system is also proven to increase the yield of coconut milk, where in squeezing 1 kg of coconut produces 520 g in slow mode, 440 g in medium mode, and 334 g in fast mode.*



*Keywords*— ***Coconut Milk Squeezing Machine, Coconut Milk, Speed Control System, Microcontroller, Inverter, Waterfall.***