ABSTRACT

The bottle filling process is one of the important stages in the food and beverage industry, including at PT XYZ which is a manufacturer of packaged pasteurized milk. Accuracy and efficiency in this process greatly affects quality and productivity. This final project aims to provide a systematic overview of the human machine interface (HMI) design process that focuses on the human factors engineering (HFE) and ergonomics clauses of ISA-101*, in order to improve the effectiveness of interactions between operators and the system. The study was conducted using the waterfall method which includes the stages of needs analysis, interface design, script creation, database integration, and testing through process scenarios. The final project object is a bottle filling workstation used as a case study to design a control system and monitor in the form of an HMI. The design results are evaluated based on the success of the test scenarios and their compliance with HFE principles, such as ease of navigation, visual readability, reduced cognitive load, and increased situational awareness. The results of the final project show that the designed HMI has met the functional and ergonomic aspects, and can be used as a reference in designing human-centered interface systems in similar industrial environments.*

Keywords*: *human machine interface,* ISA-101, *human factors engineering, bottle filling, ergonomic, metode waterfall.