ABSTRACT

Data statistic increase of the human life expectancy from the people of the world has resulted in the rise of a total elderly person across the entire world, especially in Indonesia. According to data projection from the Indonesia Ministry of health prediction, it shows that at 2035 Indonesia gonna experience a significant rise of elderly people in its society, nearly doubling the previous census data from 2019. Henceforth the government needs to make a lot of preparation in regard to innovation and improvement in the field of medical facility technology such as a nursing bed for the patient, so the state can ready itself for an upcoming aging population problem in 2035.

All of the technology design that's been implemented on the medical bed system for nursing the elderly patient involves the mechatronics system method as a whole design thinking of the bed. The system component that has been proposed includes a tilting mechanism as the bed tilt angle control, an elevating mechanism that controls the maximum and minimum height of the bed, and a vital sign monitoring system. Then all of the subsystems above got actualized into an integrated mechanical and electrical system of the bed that will be controlled by the wired remote.

The result of the system design of the mechatronics bed system are an actualized prototype that has been scaled down 1:2 prior to the actual hospital bed size (100 cm x 50 cm x 15~30 cm), control performance of the tilting mechanism with ± 15° tilting range from side to side, height adjustment of the bed from minimum to maximum height level (15 cm - 30 cm) and three vital sign monitoring parameter each mentioned as body temperature, heart rate, oxygen saturation level with range of accuracy of 99,5% ~ 99,97%, 92,6% ~ 100%, dan 97,6 ~ 100% consecutively that gonna be displayed on OLED 128 x 64 display.

Key Word: *Medical bed, mechatronics, mechanics, digital control, vital sign, monitoring*