

## ABSTRACT

*Application of mercury in the health realm has begun to be eroded and limited by the world health agency and by the Indonesian Ministry of Health, this is because the effects of mercury in contact and used for health can cause allergies, skin irritation, itching, and dermatitis. Based on the problems arising from the use of mercury in medical devices, a study was conducted to reduce the use of mercury in the health realm by designing a digital sphygmomanometer device that is free from mercury. The contribution of this research is that it can replace the role of mercury sphygmomanometer which is dangerous in the event of contact with these substances. The working system that adapts by mercury sphygmomanometer will make it easier for the user. The MPX5050GP sensor will detect the pressure value in the cuff and adjust the display on the device with a system that is processed in the microcontroller, then the processed data will be forwarded to the led bar graph driver so that the led bar graph lights up according to the pressure value read on the MPX5050GP sensor. The results of the pressure value displayed on the led bar graph shows the pressure value read by the sensor. The result of this research has the smallest error 0% at 300 mmHg of point measurement and the largest error value 0.81% at 200 mmHg of point measurement. The results of this study can be implemented on tensimeter tool users in order to minimize the use of mercury on sphygmomanometer devices.*

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**Keyword : Sphygmomanometer, led bar graph, Sensor MPX5050GP, Microcontroller.**