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Prove Of Concept For High Voltage Supply In Radiation Detection

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ABSTRACT

Most of ionizing radiation detectors are using high voltage to activate the detectors into operation mode. These radiation detectors, such as ionization chamber, proportional counter and Geiger-Mueller (GM) counters and scintillation detector etc, must adopt HV power supply system in the application process. Nevertheless, each type of radiation detector requires a specific HV value depending on the particular radiation detection method. Even within a specific detector type like the Geiger Mueller tube, different models consume varying HV values based on their specifications and optimal voltage requirements. The radiation detection device is a primary instrument extensively used in the Malaysian Nuclear Agency. Typically, when the device's HV component is damaged, the options are to either replace it or have it repaired by an external party. Hence, the objective of this project is to develop internally a versatile range of HV modules. These modules will not only cater to small detectors like GM tubes but also provide support for larger detectors such as HPGE or ion chambers. This initiative aims to not only save costs but also facilitate HV applications in other projects and foster in-house skill development.