Calibration process quantity reduction of the thermal voltage converter standard using a three-stage build-up and build-down method

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Abstrak

Currently, three single junction–type Thermal Voltage Converter (TVC) standard units represent the highest standard of AC (Alternating Current) voltages owned by the Electrical Metrology Laboratory, Research Centre for Metrology—Indonesian Institute of Sciences. The accuracy of the single junction–type TVC is maintained regularly via intercomparison processes using a one-step build-up and build-down method. To reduce the calibration process quantity, three steps of build-up and build-down measurements that refer to the 4 V measurement point of a HOLT production single junction–type TVC were carried out. The dissemination processes with the best measurement accuracy up to 20 ppm were successfully obtained from measurement points between 1 V and 20 V via 4–1V, 4–2V, 4–3V, 4–6V, 4–10V, and 4–20V formations.