

COMPREHENSIVE PERFORMANCE TESTING AND EVALUATION OF THE CPU WIND
TUNNEL

A Project Study

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ABSTRACT

This research paper focuses on the comprehensive performance testing and evaluation of the newly built Central Philippine University (CPU) wind tunnel, which is the first and only closed vertical loop main duct wind tunnel with a rectangular cross-section of 2.4 x 2.0 meters and a total combined center length of 27 meters in the Philippines. The study aimed to test the upper limit of maximum overall wind speed, rate of temperature change, and heat generated during the wind tunnel operation and establishes recommendations for improving the wind tunnel's performance. The team faced multiple obstacles and technical difficulties during the initial testing and construction, such as the instability of data-obtaining processes and electronic sensors' resolution problems. Still, the researchers were able to gather data and establish recommendations to improve the wind tunnel system. The findings of this study could contribute to future researchers, engineers and professionals, and institutions seeking to develop and conduct tests in wind tunnels. The recommended improvements include adding a debris trip system, establishing a heat map system, reducing air leakages, adding instrumentation port systems, performing more testing required parameters, establishing an effective heat exchanger, and adding an emergency shut-down button for safety purposes.