

## **ABSTRACT**

The research conducted aims to help fulfil the supply of drinking water for the TNI. In addition, it develops a tool that uses dehumidification technology in the form of an Atmospheric Water Generator (AWG). The tool is made efficient in producing drinking water and portable so that it is easy to move and carry.

This research is to present a practical and innovative solution in helping the need for drinking water supply in border forest areas with limited access to water sources such as rivers, lakes, and groundwater. The research method used is the design, testing, and analysis of the AWG prototype. The AWG uses the principle of air cooling to condense water vapor from atmospheric air. The prototype uses a vapor compression refrigeration system that enables efficient water condensation. In addition, this research also includes analyzing the performance of the AWG system in producing drinking water by considering factors such as energy efficiency, operation reliability, and quality of the produced water.

The results show that the AWG system based on vapor compression refrigeration system can produce drinking water with quality that meets health standards and has the potential to be a sustainable alternative in the provision of drinking water, especially in areas with limited water access. This research contributes to the development of alternative drinking water producing technologies that are environmentally friendly and can be implemented.

Keywords: drinking water, AWG, condensation, VAC